

Integrating Science, Society, and Policy

NR 205

T and Th, 10:05 am – 11:20 am

Lafayette L108

Instructor [Jon Erickson](#), David Blittersdorf Professor of Sustainability Science & Policy
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Office Hours: T and Th, 11:30 am – 1:00 pm
Also by appointment

Teaching	Jolyon Larson	Hannah Weiss
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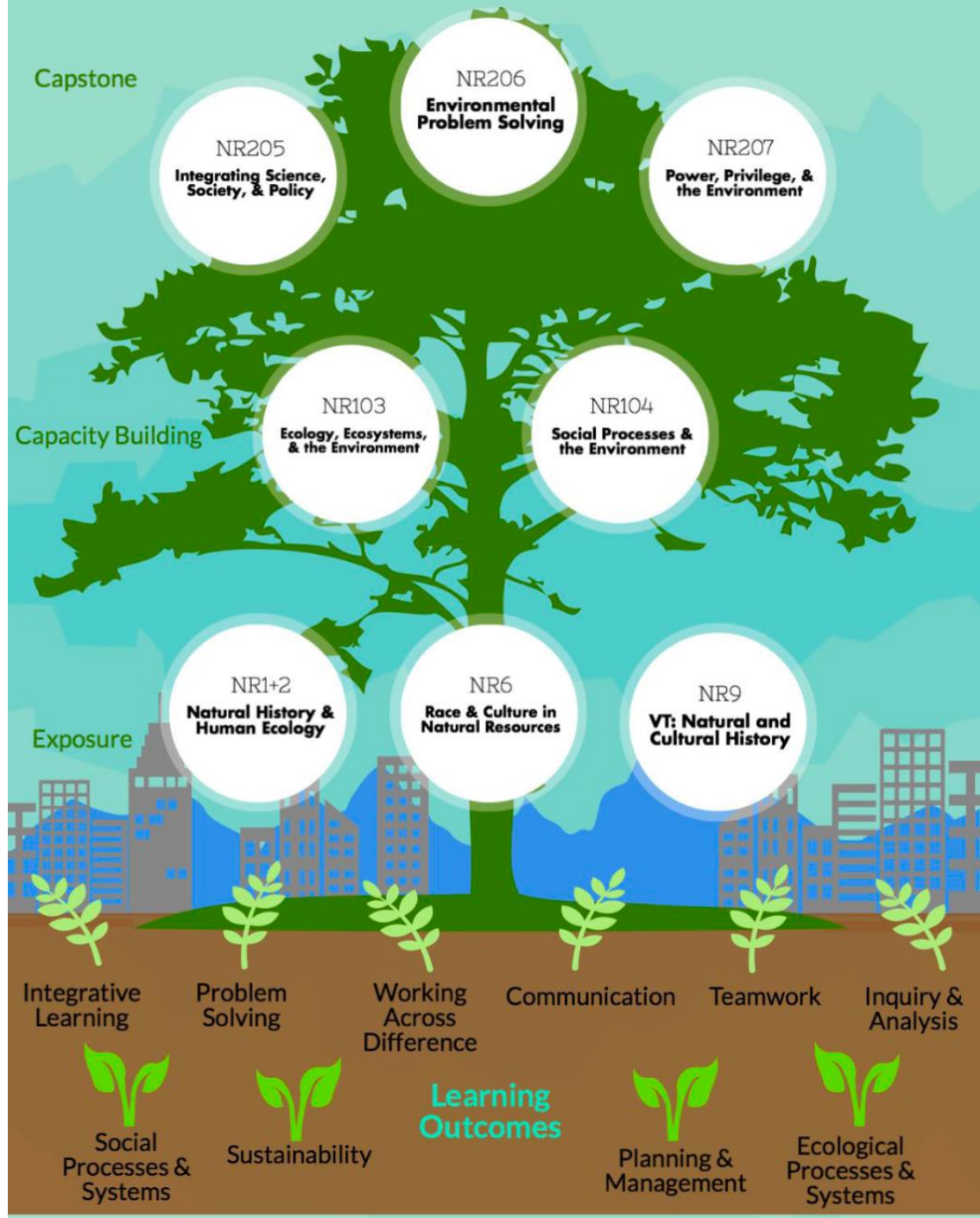
Course Description

The world is in desperate need of global citizens who can engage across disciplinary boundaries in service of solving complex problems. There will always be a role for specialists and experts, but the major challenges facing humanity call for integrated frameworks and approaches to problem-solving that connect science, society, and policy. With a focus on natural and social science integration, this course was developed as the junior year experience in the [Rubenstein School Core Curriculum](#), integrating material from earlier core courses and drawing from expertise in the School's six majors. Students will be introduced to integrative frameworks and methods, with an emphasis on critical thinking and structured decision-making. Working together in small research teams, students will also practice interdisciplinary scholarship, systems thinking, and communications.

Course Objectives

1. Gain broad exposure to the world's coupled socio-ecological challenges at various spatial and temporal scales.
2. Understand a range of integrative frameworks, approaches, and tools for tackling complex problems.
3. Develop professional skills and competencies that enable identifying and communicating with scientists, policy makers, and stakeholders.
4. Gain hands-on experience with the integration of environmental and social components through problem-based learning.
5. Evaluate and assess diverse perspectives and integrative frameworks through peer-based learning and critical reflection.

RSENR CORE CURRICULUM



Assessment

You will have the opportunity to reflect on readings and classroom discussion through Blackboard posts and in-class assignments. *Late work will not be accepted for credit unless you have an emergency and communicate with the professor or TA before the due date.* The first part of class will also be evaluated by two integrative essay assignments. Project work will occur in small groups, including brainstorming, development, research, peer-evaluation, writing, and a final presentation.

Regular attendance is required. We will monitor attendance throughout the semester. You are allowed 2 unexcused absences.

The following is a preliminary guide to your final grade:

Individual:

30% Blackboard Reflections and Peer-to-Peer Discussions

20% Integrative Thinking Essays

10% Attendance

Group:

15% Project Milestones

25% Final Project Presentation and Deliverables

Classroom Conduct

No cell phones, tablets, gizmos, computers, mainframes, light sabers, etc. Slides will be posted on the Course Blackboard page after each class. There is no computer use in class without an ACCESS accommodation, or unless requested to aid group work.

Our Common Ground

The University of Vermont is an educationally purposeful community seeking to prepare students to live in a diverse and changing world. We who work, live, study, teach, do research, conduct business, or participate in the University of Vermont are members of this community. As members, we believe in the transforming power of education and agree to help create and foster an environment where we can discover and reach our true potential.

We aspire to create a community in this class and more broadly that values:

RESPECT	We respect each other. We listen to each other, encourage each other and care about each other. We are strengthened by our diverse perspectives.
INTEGRITY	We value fairness, straightforward conduct, adherence to the facts, and sincerity. We acknowledge when things have not turned out the way we had hoped. As stewards of the University of Vermont, we are honest and ethical in all responsibilities entrusted to us.
INNOVATION	We want to be at the forefront of change and believe that the best way to lead is to learn from our successes and mistakes and continue to grow. We are forward-looking and break new ground in addressing important community and societal needs.

OPENNESS	We encourage the open exchange of information and ideas from all quarters of the community. We believe that through collaboration and participation, each of us has an important role in determining the direction and well-being of our community.
JUSTICE	As a just community, we unite against all forms of injustice, including, but not limited to, racism. We reject bigotry, oppression, degradation, and harassment, and we challenge injustice toward any member of our community.
RESPONSIBILITY	We are personally and collectively responsible for our words and deeds. We stand together to uphold our common ground.

Academic Success

UVM has a variety of programs to help our students succeed, including ACCESS, the Learning Co-op, Student Support Services, and the [Writing Center](#). See: <http://www.uvm.edu/aspprogs/>. Students of the Rubenstein School and Environmental Studies program also work closely with [Laurie Kutner](#) at the UVM Library on environmental research.

Academic Integrity

Any violation of [UVM's Code of Academic Integrity](#) is grounds for failing individual assignments and/or the class.

Road Map

Week	Topics	To Do
Week 1 Jan 15 & 17	Class Overview and Expectations Safe and Just Space for Humanity	<p><u>Watch:</u> Kate Raworth on “Doughnut Economics” [17:38] Johan Rockstrom TED talk [18:10] <u>Read:</u> Steffens et al., 2015; 7 Billion People, One Planet <u>Explore:</u> Stockholm Resilience Centre; Good Life for All w/in Planetary Bounds <u>Due:</u> Blackboard Discussion Board Introduction</p>
Integrated Frameworks		
Week 2 Jan 22 & 24	Big History	<p><u>Watch:</u> David Christian TED talk [17:37] <u>Read:</u> So Bill Gates has an idea for a history class <u>Explore:</u> Big History Project <u>Due:</u> Blackboard Reflection #1</p>
Week 3 Jan 29 & 31	Complex Systems and Chaos Theory	<p><u>Watch:</u> The Secret Life of Chaos [59:13] <u>Read:</u> What Constitutes a Complex System? <u>Explore:</u> Santa Fe Institute <u>Due:</u> Blackboard Reflection #2</p>
Week 4 Feb 5 & 7	Resilience and Adaptive Systems	<p><u>Watch:</u> Resilience & Regime Shifts [2:11, 1:52]; Marten Scheffer [54:20] <u>Read:</u> Scheffer et al., 2001; Chapter 1 of Panarchy <u>Explore:</u> Resilience Alliance <u>Due:</u> Blackboard Reflection #3</p>
Week 5 Feb 12 & 14	Gene Culture Co-Evolution	<p><u>Watch:</u> Lord of the Ants [52:57] <u>Read:</u> The Biological Basis of Morality <u>Explore:</u> Encyclopedia of Life <u>Due:</u> Integrative Thinking Essay #1</p>

Date	Topics	To Do
Integrated Approaches		
Week 6 Feb 19 & 21	From Natural Resource to Ecosystem Management	<u>Read:</u> Meffe et al., 2002; Troy, 2007 <u>Watch:</u> IUCN Ecosystem Management [choose 1 video to watch] <u>Explore:</u> International Union for Conservation of Nature ; Millennium Ecosystem Assessment <u>Due:</u> Blackboard Reflection #4
Week 7 Feb 26 & 28	From Sustainable Development to Sustainable Livelihoods Approach	<u>Read:</u> The Year of Sustainable Development ; <u>Watch:</u> Jeffrey Sachs Lecture [1:06:50] <u>Explore:</u> MOOC The Age of Sustainable Development ; Institute of Development Studies <u>Due:</u> Blackboard Reflection #5
Week 8 Mar 7	<i>No Class on March 5th</i> From Optimization to Dynamic Systems Modeling	<u>Read:</u> Optimization ; Meadows Leverage Points <u>Watch:</u> Intro. to Systems Dynamics Models [4:45] <u>Explore:</u> MIT Introduction to System Dynamics ; Artificial Intelligence for Ecosystem Services <u>Due:</u> Blackboard Reflection #6
Week 9 Mar 19 & 21	From Cost-Benefit to Multi-Criteria Decision Analysis	<u>Read:</u> Hermans & Erickson, 2007 <u>Watch:</u> Multi Criteria Decision Making by James Weber [3:01] <u>Explore:</u> Multi-criteria analysis: a manual <u>Due:</u> Integrative Thinking Essay #2

Date	Topics	Project Work and Milestones
Integrated Practice		
Week 10 Mar 26 & 28	Sustainability Indicators	<u>Explore:</u> Sustainability Indicators 101 SDG Indicators Burlington Legacy Action Plan <u>Due:</u> Group Contracts
Week 11 Apr 2 & 4	Science Communication	<u>Read:</u> Lubchenco, 1998 <u>Watch:</u> Fergus McAuliffe Sharing Science through Story [13:14] <u>Explore:</u> COMPASS Message Box Workbook <u>Due:</u> Project Milestone #1
Week 12 Apr 9 & 11	Participatory Action Research	<u>Read:</u> Kindon et al., 2007, Ch. 2 <u>Watch:</u> Cormac Russell Sustainable Community Development [18:07] <u>Explore:</u> UVM's Agroecology and Livelihoods Collaborative <u>Due:</u> Project Milestone #2
Week 13 Apr 16 & 18	Research Panels	<u>Due:</u> Project Milestone #3
Week 14 Apr 23 & 26	Group Work	
Week 15 Apr 30 & May 2	Research Presentations	<u>Due:</u> Final Deliverables