

INTERDISCIPLINARY & TEAM TAUGHT COURSES

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Based on previous versions by
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Overview

- What is interdisciplinary?
- Your motivation
- Examples
- Challenges & solutions
- Design your own



Image: <http://socialsciences.cornell.edu/wp-content/uploads/2015/04/Interdisciplinary-Learning.png>

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What is “Interdisciplinary?”

- Take a moment to think about how your research and teaching are / have been / will be interdisciplinary.
- What does interdisciplinary mean in the context of you?

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Interdisciplinary → “Between Disciplines”

- ... Within the Geosciences
- ... Between Sciences
- ... Beyond Science

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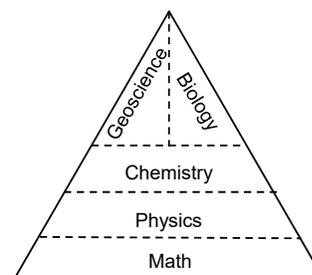
Within the Geosciences



https://www.eduweb.com/portfolio/earthsystems/parent_page.html

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Between Sciences



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Beyond Science

Image: Elwha Dam (<https://www.naturebridge.org/blog/research-brief-interdisciplinary-learning-environmental-education>)

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Goals and Motivation for Interdisciplinary Teaching...

- Why do we, the scientist and professor, want to be more interdisciplinary in our teaching? How do we benefit?
- Why do we want to expose our students to more interdisciplinary learning? How do they benefit?

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Motivation

- For our students:
 - Critical thinking
 - Ethical considerations
 - Prepare to solve problems
 - Appeal to student interest
 - New perspectives
- For the scientist / professor:
 - Geosciences are interdisciplinary
 - Increase enrollments
 - Staying relevant
 - Building networks / finding colleagues

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Marine, Earth, & Atmospheric Science Seminar

- Seminar course designed to bring together undergraduates from all three sub-disciplines
- Team-taught by faculty from each sub-discipline
- Topics covered include research methods, careers, applying to graduate school, ethics in science and science communication

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Earth & Life through Time (Historical Geology)

2nd semester geoscience majors

The Earth System through 4.5 billion years of history

The story of a planet → interdisciplinary

1 professor

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Investigative Science II

For Elementary Education majors
Future K-6 teachers

Covers MN Science Standards for:

- Geology
- Astronomy
- Meteorology
- Life Science

Geology & Biology Professors, but not together...

<https://www.scholastic.com/teachers/blog-posts/alycia-zimmerman/becoming-ms-frizzle-managing-classroom-science-lessons/>

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Making Interdisciplinary Connections: The Science of Time

A Gen Ed Dance course that explored the idea of Time in science and art...

- Calendar & Astronomy
- Big Bang
- History of the Earth
- Performance Art
- Visual Art

Am I a scientist or an artist?

I collaborate with other people.

I have incredible "A-ha!" moments.

I do research, I experiment, I use trial and error.

I use my imagination.

I solve problems.

I AM CREATIVE.

I am curious about the world around me.



Team-taught by myself, Geologist, and my
← colleague, Sharon Mansur, Prof. of Dance

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Lots of other possibilities...

- Science & Policy & History
- Environmental Science
- Watershed Science
- Life in the Universe
- Field Trips
- Linked Courses
- Learning Communities



By NASA/Apollo 17 crew; taken by
either Harrison Schmitt or Ron Evans

- Whatever you can think of...

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Think – Pair - Share

- What are some advantages of interdisciplinary teaching?
- What are some of the challenges of interdisciplinary teaching?

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Challenges?

- What is the scope of the class? Where is "the edge?"
- Approaches: piecemeal vs. integrated sequential learning
- Teaching what you don't know
- Finding collaborators
- Different expectations/language/styles/perspectives
 - Communication and planning
- Attracting students & interpreting student feedback
- Words of caution – institutional / department values, "ownership" of classes

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Solutions

- Find common interests
- With a course, start with 1 or 2 collaborators as the complexity grows quickly
- Set expectations for colleagues & for students
- Communication
- Planning
- Flexibility
- Embrace the unexpected



By NASA/Apollo 8 crew

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Develop Your Own Course/Module

- On your poster...
 - What course / module do you propose?
 - Audience for course / module?
 - What disciplines are integrated?
 - Give one over-arching learning objective or outcome.
 - Approach?
 - Resources needed? (personnel, facility, other?)
- Post It note comments on peer posters...
 - Strengths?
 - Suggestions?
 - Other considerations?

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Start Small

- Identify & talk with faculty and community partners
- Guest speakers in your class and other classes
- Field trips
- Partner with faculty from your department & other depts.
- Partner with others outside your college/university



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Thinking bigger

- Linked courses
- Learning communities
- Organize a symposia on important and/or local issues
- New courses: One time special seminar vs. new course integrated into curriculum
- New major/minor/program



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Resources

- Interdisciplinary Approaches to Teaching:
<http://serc.carleton.edu/sp/library/interdisciplinary/index.html>
- Interdisciplinary Teaching: Designing for Success:
http://serc.carleton.edu/integrate/teaching_materials/interdisciplinary.html

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