

Implementing Interdisciplinary Learning Experiences



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Anticipation Guide

Directions: **Agree** or **Disagree** or **Edit**?

1. Anyone can teach.
2. Active, or deep learning in students is fostered by note taking and discussions with fellow students.
3. Technology allows teachers to teach more powerfully, more efficiently, and with less effort.

Overview

1. Introduction
2. Outcomes & Options
3. Distribution of Experiences
4. General Education Minors
5. An Alternative Pathway
6. Conclusion



perspective EDR



Outcomes & Options



Gen Ed Learning Outcomes

SRU

Liberal Studies Program

- [9] Basic Requirements
- [3] The Arts
- [9] Global Community
- [3] Human Relationships
- [9] Science, Tech, & Math
- [3] Challenges of Modern Age

36-39 credits

Gen Ed Learning Outcomes

VT
Pathways to Gen Ed

- [9] Discourse
- [9] Quant & Comp Thinking
- [6] Reasoning in the Natural Sciences
- [6] Reasoning in the Social Sciences
- [6] Critique & Practice Design and the Arts
- [6] Critical Thinking in Humanities

Integrative Outcomes 42 credits

- Ethical Reasoning
- Intercultural & Global Awareness

Gen Ed Learning Outcomes

VT
Pathways to Gen Ed

Reasoning in the Natural Sciences

Indicators

1. Explain the foundational knowledge of a particular scientific discipline.
2. Apply principles and techniques of scientific inquiry.
3. Evaluate the credibility and the use/misuse of scientific information.
4. Analyze the reciprocal impact of science and society.

General Education Options

1. Distributive Pathway
2. Pathways Minor
3. Alternative Pathway

...with active and
integrative
pedagogies



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and Educational Research (CIDER)
| Furthering higher faculty commitment to teaching excellence by assisting faculty with the
implementation of instructional practices that foster meaningful student learning.


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for
Pathways for
General Education

www.cidervt.edu

Pathways to General Education *Pilot Courses*
Spring 2018

Introduction to Poetry

ENGL 1004 - CRN: 13745




Course Description:
This course examines the basic genres of poetry from a historical perspective with emphasis on close reading and understanding of symbolism and connotation, and on the development of critical thinking skills. Students learn to analyze the rhetorical strategies a poet often uses by identifying the author's choice of a particular genre in reading the poem. They will investigate the larger social context of poetry, the role of the poet in a global and national context, and their self-responsibility as citizens of a diverse and multicultural world. The course will include a series of writing assignments, critical reading assignments, and a final project. Students will receive individualized feedback on their writing, and will participate in a final project presentation and discussion.

Prerequisites:
ENGL 1000 or ENGL 1001

- **Class Meets:**
Sundays and Thursdays, 10:00am-12:00pm (ENGL 1004)
- **Class Room:**
Room 207 - Allen Cultural Center, and Room 206 - Center for the Study of the American Experience
- **Potential Pathways core courses:**
ENGL 1000, ENGL 1001, ENGL 1002, ENGL 1003, ENGL 1004, ENGL 1005, ENGL 1006, ENGL 1007, ENGL 1008, ENGL 1009, ENGL 1010, ENGL 1011, ENGL 1012, ENGL 1013, ENGL 1014, ENGL 1015, ENGL 1016, ENGL 1017, ENGL 1018, ENGL 1019, ENGL 1020, ENGL 1021, ENGL 1022, ENGL 1023, ENGL 1024, ENGL 1025, ENGL 1026, ENGL 1027, ENGL 1028, ENGL 1029, ENGL 1030, ENGL 1031, ENGL 1032, ENGL 1033, ENGL 1034, ENGL 1035, ENGL 1036, ENGL 1037, ENGL 1038, ENGL 1039, ENGL 1040, ENGL 1041, ENGL 1042, ENGL 1043, ENGL 1044, ENGL 1045, ENGL 1046, ENGL 1047, ENGL 1048, ENGL 1049, ENGL 1050, ENGL 1051, ENGL 1052, ENGL 1053, ENGL 1054, ENGL 1055, ENGL 1056, ENGL 1057, ENGL 1058, ENGL 1059, ENGL 1060, ENGL 1061, ENGL 1062, ENGL 1063, ENGL 1064, ENGL 1065, ENGL 1066, ENGL 1067, ENGL 1068, ENGL 1069, ENGL 1070, ENGL 1071, ENGL 1072, ENGL 1073, ENGL 1074, ENGL 1075, ENGL 1076, ENGL 1077, ENGL 1078, ENGL 1079, ENGL 1080, ENGL 1081, ENGL 1082, ENGL 1083, ENGL 1084, ENGL 1085, ENGL 1086, ENGL 1087, ENGL 1088, ENGL 1089, ENGL 1090, ENGL 1091, ENGL 1092, ENGL 1093, ENGL 1094, ENGL 1095, ENGL 1096, ENGL 1097, ENGL 1098, ENGL 1099, ENGL 1100
- **Potential Pathways integrative courses:**
ENGL 1000, ENGL 1001, ENGL 1002, ENGL 1003, ENGL 1004, ENGL 1005, ENGL 1006, ENGL 1007, ENGL 1008, ENGL 1009, ENGL 1010, ENGL 1011, ENGL 1012, ENGL 1013, ENGL 1014, ENGL 1015, ENGL 1016, ENGL 1017, ENGL 1018, ENGL 1019, ENGL 1020, ENGL 1021, ENGL 1022, ENGL 1023, ENGL 1024, ENGL 1025, ENGL 1026, ENGL 1027, ENGL 1028, ENGL 1029, ENGL 1030, ENGL 1031, ENGL 1032, ENGL 1033, ENGL 1034, ENGL 1035, ENGL 1036, ENGL 1037, ENGL 1038, ENGL 1039, ENGL 1040, ENGL 1041, ENGL 1042, ENGL 1043, ENGL 1044, ENGL 1045, ENGL 1046, ENGL 1047, ENGL 1048, ENGL 1049, ENGL 1050, ENGL 1051, ENGL 1052, ENGL 1053, ENGL 1054, ENGL 1055, ENGL 1056, ENGL 1057, ENGL 1058, ENGL 1059, ENGL 1060, ENGL 1061, ENGL 1062, ENGL 1063, ENGL 1064, ENGL 1065, ENGL 1066, ENGL 1067, ENGL 1068, ENGL 1069, ENGL 1070, ENGL 1071, ENGL 1072, ENGL 1073, ENGL 1074, ENGL 1075, ENGL 1076, ENGL 1077, ENGL 1078, ENGL 1079, ENGL 1080, ENGL 1081, ENGL 1082, ENGL 1083, ENGL 1084, ENGL 1085, ENGL 1086, ENGL 1087, ENGL 1088, ENGL 1089, ENGL 1090, ENGL 1091, ENGL 1092, ENGL 1093, ENGL 1094, ENGL 1095, ENGL 1096, ENGL 1097, ENGL 1098, ENGL 1099, ENGL 1100
- **Prerequisites:**
ENGL 1000 or ENGL 1001
- **Contact:** Dr. George Allen
allen@liberalarts.vt.edu


pathways.gesis.vt.edu

 **Office of General Education** | general@vt.edu | (540) 231-4433
Room 102, Suite 10200, 3715, 2nd Floor, Blacksburg, VA 24061

Pathways to General Education *Pilot Courses*

Resources Geology

GEOS 1004




CRN 83632 | 83633

Course Description:
This course highlights the geology, distribution, and use of the earth's natural resources, including abundant and scarce metals, precious stones and gems, building materials, industrial minerals, fertilizers, nuclear energy, water, oil, and other minerals.

Prerequisites:
ENGL 1000 or ENGL 1001

- **Class Meets:**
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General Education Minors



General Education Minors

Criteria for a Cross-disciplinary Gen Ed Minor

1. 18 credit hours (minimum)
2. 09 credit hours of Pathways courses* (minimum)
3. 06 credit hours at 3000/4000 level (minimum)
4. Addresses 3 Pathways outcomes* (minimum)
5. Meets *both* integrative outcomes*
6. Contains a capstone course*
7. Located in a specific department, but multi-college
8. All students must have access to the minor

* criteria not present in regular minors



Pathways to Sustainability

Sustaining human development for all. Water is essential to humanity's ultimate challenge and reward to every student in every place. This Pathway's major helps students connect their talents and abilities to this challenge through an integrated exploration of water, ecosystems, culture, and economic interests.

In phase 1 of your pathway, major students take a base course (science) that integrates social, ecological, and economic connections and dynamics.

In phase 2, students will take 1 course in each of 3 domains: Humanities, Ecology, and ART & Design. We like to think of them as the 3 C's of our minor. We're looking for those courses!

In phase 3, students take a capstone course that integrates material from each of the courses in the minor.

Seeking Sustainability 1

Seeking Sustainability 2

1 of 3 courses in Humanities

1 of 3 courses in Ecology

1 of 3 courses in ART & Design

Practicing Sustainability Capstone

Depending on restricted electives selected, this minor will provide:

- 33% of the requirements in the course
- 100% of the requirements in Social Scientific Reasoning
- 50% of the requirements required in Critical thinking in the Humanities
- 50% of the requirements in scientific reasoning
- 50% of the credits required in ORIG and PRACT in ORIG and PRACT

MIND AND LANGUAGE

PROPOSED PATHWAYS MINOR
CONTRIBUTING UNITS: ENGLISH, PHILOSOPHY, PSYCHOLOGY, AND SOCIOLOGY

1. OVERVIEW

This proposed pathways minor is designed to address the following three types of questions:

Questions about the mind: What is the nature of consciousness? How do the cognitive processes of perception, memory, and learning work? What is the nature of mental illness?

Questions about language: What is a language? What are the grammatical structures of the English language? How can we tell whether an argument in English is valid using a formal system such as first-order logic?


Questions about connections between mind and language: How is language represented and processed? The speak in languages – do we think in a language as well? What is the relationship between the meanings of words and contents of our concepts? How might the language we speak influence the way we think?

2.1. THE MIND SEQUENCE

- PSYC 200: Psychology of Learning (Pre: PSYC 200)
- PSYC 206: Nervous Systems & Behavior (Pre: 206A)
- PSYC 209: Principles of Psychological Research (Pre: PSYC 206A)
- PSYC 407A: Cognition and Perception (Pre: PSYC 206A, 206B, and 209A)
- PSYC 411A: Cognitive Psychology (Pre: PSYC 206A, 206B, and 209A)
- PHIL 428A: Philosophy of Mind (Pre: one PHIL course)
- SOC 471: Psychology of Mental Illness (Pre: 400-471)

2.2. THE LANGUAGE SEQUENCE

- PHIL 320: Modern Logic and Its Development
- PHIL 422: Philosophy of Language (Pre: one PHIL course) (New course)
- ENGL 404A: Language and Society (Pre: ENGL 1105 or 1284)
- ENGL 406A: Modern English Linguistics
- ENGL 407A: English Syntax (Pre: ENGL 1105)
- ENGL 408A: Topics in Linguistics (Pre: ENGL 405A or 406A)



Can't it eat just one pipe?

3. CAPSTONE

Capstone experiences that address the interface of mind and language; these can include undergraduate research, presentations, lab work, etc.

4. NEEDS

1. Help with developing adequate learning outcomes.
2. Help with codifying capstone experiences.
3. Suggestions about other courses that would be appropriate for the minor.

5. CONTACT

Kelly Trugala
Dept. of Philosophy
323 Major Williams Hall
880-321-8108
trugal@vt.edu



Computation, Cognition, and Creativity



Contributing Units: Computer Science, Music, Philosophy (and hopefully many more)

THEME/OVERVIEW

This Pathways Minor enables students to gain a deeper understanding of the technologies in which they live, work, and play, and to appreciate the relationships between many fields of study and disciplines. The minor includes work from several domains:

- what does it mean to be human in a world of thinking machines;
- how our senses of self and community are influenced by social media;
- how our understanding of art and computer media can be used to create new forms of artistic expression, design, and education;
- what are the distinctive social implications and ethical dilemmas posed by computing technology that pervades and enables.

The intent of the minor is to foster interdisciplinary interests, understanding, and connections.

IDENTIFIED COURSES

- CS288: Introduction to Computational Thinking
- CS288B: Digital Signal Manipulation
- CS288C: Linux Lab/CS288C
- CS288D: Computer Music and Multimedia I
- CS288E: Computer Music and Multimedia II
- PHIL402: Special Topics in Philosophy: Mind & Machines
- PHIL428: Philosophy of Mind

This is a very incomplete list of possibilities. We have had discussions with faculty in English, Psychology, and the digital humanities but have not yet identified specific courses.

NEEDS

COMPUTATION IS TAUGHT in any field of study where there are opportunities to show:

- the interplay between computation and another field of study, where each sheds light on the nature of the other;
- aspects of the fundamental nature of computation, cognition, or artifacts that change our understanding of the others;

OF MOST VALUE are courses that:

- emphasize interdisciplinary interactions among students, and
- incorporate pedagogical practices to encourage engagement and experimentation/practice.

ENDORSEMENTS

This CS288B and CS288C courses became much more exciting when I realized that many of the theoretical concepts of those courses overlap almost exactly with those of my own research in Artificial Intelligence and Computer Engineering (about 10/10/18).

"The mechanics of this assignment together with the history major bring the kind of thinking I sought and I appreciate the instructor's cultural responsiveness and personal attention (beyond apps)." - Greg at the Boulder Community Center in the Computational Learning Lab.

OUTCOMES


- O: Logic and Position in the Arts and Design
- Several outcomes in the Critical Thinking in the Humanities area are covered, including 3, 4, and 6)
- Several of the outcomes in the Quantitative and Computational Thinking, including the social impacts of computing, dealing with large-scale data, understanding multiple facets of a system. Computation can be applied



Being creative with computation.
New ways of engaging the world.


CONTACT INFORMATION

- Dennis Refura (Computer Science) krefura@cs.vt.edu
- Ben Jantzen (Philosophy) bjantzen@vt.edu
- Erik Lyons (Music) eriklyons@vt.edu



INNOVATION PATHWAY MINOR

College of Engineering, College of Business, College of Science, College of Architecture and Urban Planning



THEME / OVERVIEW

- Innovation is considered one of the core principles of our country's ability to continue to lead the world in high tech, high paying jobs and economic growth (Crough, 2004). Industry firms that are more profitable also tend to be more innovative (McGregor, 2007).
- It is important for students from multiple disciplines be able to innovate and collaborate together to fulfilling the need for more innovation.
- This Innovation Minor is a step towards an interdisciplinary learning experience where students can learn innovation and ideation techniques and be immersed into the entrepreneurial process through courses in multiple colleges and disciplines – mirroring the experiences they will be facing in the industrial sector.

OUTCOMES

- The ultimate outcome would be the formation of a new product venture.
- A general outcome is the positive change in Entrepreneurial Intentions, Self-Efficacy and Mindset change created through this course.

CONTACT INFORMATION

Samantha – CEM Entrepreneurship
 Dr. Bertrigo – CEM Entrepreneurship
 Dr. Lee Jones – CEM Entrepreneurship
 Mckenzie – CEM Entrepreneurship
 Wilson – CEM Entrepreneurship
 Kasper – CEM Entrepreneurship
 David Hagan – CEM Entrepreneurship
 Pauline – CEM Entrepreneurship
 Jay Nelson – CEM Entrepreneurship

IDENTIFIED COURSES

- CREATE!
- The StartUp Class
- The StartUp Capstone Course
 - Marketing
- Business of Entrepreneurship and Small Enterprises
 - Marketing or Entrepreneurship
- Introduction to Product Design
 - Marketing or Entrepreneurship
- Intellectual Property and Technology Transfer
- Introduction to Interdisciplinary Product Development
 - Entrepreneurial Training

NEEDS


- Discourse
 - A course directed specifically at the education of students to present verbal and prose to technical and product information to industry representatives.
- Ethics and Global Views
 - A course or portion of a course directed to educate students to make ethical and moral decisions and to understand the impact their decisions have on their community, both locally and globally.

SALES PITCH

- Multi-Disciplinary Students
- Multi-Disciplinary Educators
- Students from multiple Colleges
- Educators from multiple Colleges
- Educators, mentors, and coaches from industry

CAPSTONE

- As a course preceding the StartUp Class, this course offers structured guidance and coaching toward creating a new technologically innovative venture. This course is intended to aid student teams formed in or before the StartUp Class to achieve the outcome of a new technological venture – or entrepreneurship.



Alternatives



An Alternative Pathway



An Alternative Pathway


Criteria for Alternative Pathways

1. xx credit hours (minimum)
2. 09 credit hours of Pathways courses (minimum)
3. Addresses 3 Pathways outcomes (minimum)
4. Meets *both* integrative outcomes
5. Contains a capstone experience
6. Plan must be submitted in advance
7. Faculty member must oversee the pathway
8. May include study abroad, service learning, undergraduate research

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pheitker@vt.edu • <http://tinyurl.com/2018PGS>

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Outreach and International Affairs

Conclusion



Conclusion

Minors and Alternative Pathways provide faculty and students with

- choice, control, and challenge
- flexibility and complexity
- meaningful and integrated learning

