

Council on Undergraduate Education 2016-2017

October 28th, 2016
Talley Student Union 4140
1:30pm-3:00pm

Call to Order 1:30pm

- Welcome and Instructions, Chair Peggy Domingue
- Remarks from Associate Vice Provost, Dr. Barbara Kirby

New Business

- Approval of CUE September 30, 2016 Minutes
- Course and Curricular Business

Consent Agenda

Action	Type	Notes
PS 306 Gender and Politics in the United States	Revision	UCCC Approved changes to the Student Learning Outcomes and Course Description pending the addition of the grading scale. Reviewed for SS in 2014, reviewed for USD in 2011
BIO 233 Human-Animal Interactions	Revision	Changing prefix to ZO. Previously reviewed for IP in 2010.

New GEP Shell Special Topics Offering

Presenter	Reviewers	GEP Category Under Review	GEP Action	Notes
Petty (Lee)	Parker, Gilmartin, Allen	IP	IPGE 295 Biologically Inspired Design	New IP Shell

Courses for GEP Category - Review

Presenter	Reviewers	GEP Category Under review	GEP Action	Notes
Knowles	Keene, Parker, Petty	SS	ANT 252 Cultural Anthropology	Slight changes to title, description, and student learning outcomes
Knowles	Ozturk, Sills, Nowel	SS	ANT 253 Unearthing the Past: Introduction to World Archaeology	GK already reviewed. Changes to title, learning outcomes, and description
Outing	Levine, Ashwell, Joines	GK and VPA	MUS 202 Introduction to Music Literature II	Slight change to add S/U option and transportation fee

Courses New to GEP

Presenter	Reviewers	GEP Category Under review	GEP Action	Notes
Outing	Joines, Petty, Keene	IP	HON 312 Outbreak	New Honors course

Discussion: Follow up on IP category discussion.
Announcement from Office of Assessment.

Notes:

- All linked course actions are viewable in CIM.
- To view actions, please click on the hyperlink. You may need to use your Unity ID to log in.
- If you experience issues logging in, please go to <https://next-catalog.ncsu.edu/courseadmin/> and type the course prefix and number into the search bar.

Council on Undergraduate Education 2016-2017September 30th, 2016
Talley Student Union 4140
Call to Order: 1: 32pm

Members Present: Chair Peggy Domingue, Chris Ashwell, Sarah Ash, Jeff Joines, Karen Keene, James Knowles, Alice Lee (Proxy), Cynthia Levine, Andy Nowel, Ozturk Hatice, Frederick Parker, Kim Outing, Tania Allen, Ingrid Schmidt, Erin Sills, Jason Miller (Proxy), Adam Skrzecz, Tania Allen

Members Absent: Tim Petty, Ghada Rabah, David Gilmartin

Ex-Officio Members Present: Li Marcus, Lexi Hergeth, Stephany Dunstan

Guests: Genia Sklute

WELCOME AND INTRODUCTIONS

➤ *Remarks from Chair*—Peggy Domingue introduced Tania Allen as the new member from Design.

➤ Dr. Kirby reviewed the GEP categories and the past approval process and how we address US Diversity as a GEP. She said the University has begun assembling a taskforce for GEP category regulations. Dr. Kirby shared information from the meeting with the legal council and differentiated between the role of members and guests for CUE.

➤ Category/Categories Discussion

Members broke into three groups to discuss the Interdisciplinary Perspective GEP categories. Dr. Kirby introduced the small group format for the meeting to discuss the IP GEP category to determine and clarify what expectations CUE has.

Sarah Ash shared her experience with CUE and GEP category requirements. She discussed how Interdisciplinary Perspectives went from Science Technology and Society to Interdisciplinary Perspectives. Explained that the origin of Interdisciplinary Perspective was more general and expressed the need for the IP category to have clarification on what is expected.

Group Discussion:

- What does the rationale mean?
- Identify keywords or phrases that help define or describe the IP category.
- Identify confusing, vague words or phrases.
- Applications and Recommendations: What does CUE need in order to move forward with clear, regular review of IP.

Members will discuss with their colleges and will come together to discuss possible implementations next meeting.

- Approval of the Minutes from September 16th, 2016. – *Approved Unanimously*
 - Discussion: The minutes were presented and approved without further discussion.
- Nomination for Chair elect: Member Chris Ashwell moved to nominate Karen Keene as the new chair elect. – Approved Unanimously

NEW BUSINESS

Consent Agenda (SSUS 295 Language, Communication and Culture) —*Approved Unanimously*

Discussion: Member Chris Ashwell moved to approve the consent agenda. Member discussed crosslisting the course. The consent agenda was presented and approved without further discussion.

GEP Review

- ENG 372 American Poetry, Twentieth Century and Beyond: (Humanities) – *Approved Unanimously*
Discussion: Presented by member James Knowles.

- ENG 399 Contemporary Literature: (Humanities) – *Approved Unanimously*
Discussion: Presented by member James Knowles.
- FLR 303 Russian Literature in Translation: The Nineteenth Century: (Humanities) – *Approved Unanimously*
Discussion: Presented by Proxy Jason Miller. Members discussed the description wording and potential confusion. Friendly suggestion to rephrase wording.
- Motion to extend the meeting to 3:10PM by member Chris Ashwell, second by Jeff Joines. *Approved Unanimously*
- FLR 304 Russian Literature in Translation: The Twentieth Century: (Humanities) – *Approved Unanimously*
Discussion: Presented by Proxy Jason Miller. No further discussion.
- FLR 318 Russian Cinema and Society: (Humanities) – *Approved Unanimously*
Discussion: Presented by Proxy Jason Miller. No further discussion.

GEP New

- ENG 465 British Literature and the Dissolution of Empire: (HUM [review] and GK [new]) – *Approved Unanimously*
Discussion: Presented by member James Knowles. Members discussed the confusion for students to know when the alternate years, designating even or odd years. There is an option in the SIS catalog to clarify. Member said this course is a part of the new curriculum redesign and will be one of many revisions.

Meeting adjourned at 3:05 pm

Respectfully submitted by Lexi Hergeth

GEP Interdisciplinary Perspectives Special Topic Shell Offering (IPGE 295)

This form is to be used for submitting a Special Topics shell offering for the Interdisciplinary Perspectives GEP category to the Council on Undergraduate Education (CUE)

Course action proposals for a GEP shell offering must provide documentation to show how the course is designed to enable a student to achieve the particular GEP category objectives.

The **GEP *Interdisciplinary Perspectives objectives*** will provide instruction and guidance that help students to:

1. Distinguish between the distinct approaches of two or more disciplines.
2. Identify and apply authentic connections between two or more disciplines.
3. Explore and synthesize the approaches or views of the two or more disciplines.

IPGE 295

Department(s)/Program	Biological Sciences; Biomimicry	New GEP Special Topics Offering <input checked="" type="checkbox"/>
Special Topic Title: (30 character limit)	Biologically Inspired Design	Review for 2nd Offering <input type="checkbox"/>
Term to be Offered	Spring, 2016	
Instructor Name/Title	Adrian Smith, Research Assistant Professor; Sara Queen, Assistant Professor	

SECTION 1: GEP CRITERIA

Instructions:

- At least one of the Instructor's student learning outcomes must be listed under each GEP category objective.
- Achievement of the outcomes must allow students to meet the GEP category objectives.
- Outcomes must illustrate what students will do in order to demonstrate they have achieved the outcome.
- At least one means of evaluation must be listed under each outcome and provide data to allow the instructor to judge how well students have achieved outcomes.
- Student learning outcomes that are relevant to the GEP category objectives must be applied to all course sections.
- For assistance with writing outcomes and list of active verbs using *Bloom's Taxonomy* [\[Click Here\]](#)

List the Instructor's student learning outcomes for the course that are relevant to GEP *Interdisciplinary Perspectives Objective 1: Obj. 1) Distinguish between the distinct approaches of two or more disciplines.*

By the end of the course, students will be able to differentiate between disciplinary approaches used by a biologist and a designer whose work is inspired by biological organisms (biomimicry).

Measure(s) for above Outcome:

Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.

Students will be asked to outline and contrast the methods of analysis, opportunity identification, and problem solving used by a biologist and a biomimicry designer. An assignment reporting on design and scientific insights gathered from using termite mounds as a model will be used to directly assess this.

List the Instructor's student learning outcome(s) for the course that are relevant to GEP *Interdisciplinary Perspectives Objective 2: Obj. 2) Identify and apply authentic connections between two or more disciplines.*

By the end of the course, students will be able to identify the ways in which the study of functional aspects of biological organisms is central to the goals of both a biomimicry designer and a biologist.

Measure(s) for above Outcome:

Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.

A classroom activity will place students in interdisciplinary groups, they will be given an organism and some background information about it. They will then present what aspects of that organism might be useful from each other's opposite disciplinary perspective. Designers will present potential points of interest for biologists & biologists will do the same for designers.

List the Instructor's student learning outcome(s) for the course that are relevant to GEP *Interdisciplinary Perspectives Objective 3*:

Obj. 3) Explore and synthesize the approaches or views of the two or more disciplines.

By the end of the course, students will be able to take a biological model system or organism and derive insights and research questions that apply to both biology and design that utilizes biomimicry.

Measure(s) for above Outcome:

Describe the assessments that will be used to determine if students have achieved the outcome. Including a relevant example assignment/question/prompt is encouraged for clarity.

Students will work in interdisciplinary teams to formulate research questions, gather data, and test functional design and biology hypotheses from given organisms. They will produce a blended biology & design portfolio describing the project from both biology & design insights.

To assist CUE in evaluating this course for Interdisciplinary Perspectives, please provide answers to the following questions:

A. Which disciplines will be synthesized, connected, and/or considered in this course?

Biomimicry; Biology

B. How will the instructor present the material so that these disciplines are addressed in a way that allows the students "to integrate the multiple parts of view into a cohesive understanding"?

The course will center around examples of and methods of inquiry in both disciplines (see s

SECTION 2: REQUISITES AND SCHEDULING

General guidelines:

- GEP Courses should have at least 25% of seats non-restricted (i.e. available to all students).
- GEP Courses should have no more than ONE pre-requisite.
- GEP Special Topics are approved as a one-term offering.
- The course syllabus for all sections must include the GEP *Interdisciplinary Perspectives* category designation and GEP student learning outcomes.

Special Topics Term Scheduling:

- List below the course scheduling detail:
 - Meeting time and day(s): already scheduled as BIO 295 037 & 038
 - Seat count: 16
 - Room assigned or room preference including needed classroom technology/seat type: already scheduled
- If this course is to be piggy-backed with a department special topic, list the piggy-backed course prefix/number below. (EX: BIO 295 with NSGK 295)

What percentage of the seats offered will be open to all students? 25 %

- a. If seats are restricted, describe the restriction being applied. majors in life sciences and design
- b. Is this restriction listed in the course catalog description for the course?

List all course pre-requisites, co-requisites, and restrictive statements (ex: Jr standing; Chemistry majors only). If none, state none.

Open to majors in Life Sciences and Design only

List any discipline specific background or skills that a student is expected to have prior to taking this course. If none, state none.
(ex: ability to analyze historical text; prepare a lesson plan)

none

SECTION 3: ADDITIONAL INFORMATION

Complete the following 3 questions or attach a syllabus that includes this information.

1. Title and author of any required text or publications.

see draft syllabus

2. Major topics to be covered and required readings including laboratory and studio topics.

see draft syllabus

3. List any required field trips, out of class activities, and/or guest speakers.

see draft syllabus

SIGNATURE PAGE FOR IPGE 295

RECOMMENDED BY:

HEAD, DEPARTMENT/PROGRAM DATE

**For GEP Special Topics Submission Form, follow the standard workflow for approval of a special topic offering in your College which may or may not include review by the College CCC.*

ENDORSED BY:

CHAIR, COLLEGE COURSES & CURRICULA COMMITTEE DATE

COLLEGE DEAN DATE

APPROVED BY:

CHAIR, COUNCIL ON UNDERGRADUATE EDUCATION DATE

DEAN, DIVISION OF ACADEMIC AND STUDENT AFFAIRS (DASA) DATE

APPROVED EFFECTIVE DATE _____

Biologically Inspired Design

Course Syllabus

DRAFT SYLLABUS

CLASS INFORMATION

Meeting times:

Tuesdays (class): TIME in BU 1202

Friday (studio): 9:35am-12:20pm in DCL 282

Background:

This course will introduce design and biology students to the field of biomimicry and other intersections of design, engineering, biology, and ecology. Students will work in interdisciplinary teams to study natural systems and apply new discoveries to product design. This course is offered through the Departments of Biological Sciences, Applied Ecology, and Architecture.

Biomimicry is an emergent field of study that derives human design applications from natural systems. Generally, biomimicry has involved either designers searching for a particular organism that has solved their design challenge, or scientists taking their discoveries and data and searching for someone to provide a human-use application. What would happen if designers and biologists combined their research processes to explore functional biodiversity? What if innovative design thinking guided the process of scientific inquiry, and design solutions were generated alongside scientific discovery?

The course includes lectures by instructors and guest professionals involved in biomimicry, design and biology. Learning will happen through experimentation, readings, written essays, classroom discussions, and a semester-long interdisciplinary team project.

In the course's inaugural year team projects will leverage current research on social insects underway at NC State University and the NC Museum of Natural Sciences. Students will work in cross disciplinary teams to observe and understand functional attributes of various species including nest architecture, surface patterning, and leg cleaning brushes. It is hypothesized by biologist and ecologists that each of these traits contribute to ant colony health. It will be the task of the student research teams to form research questions and design research experiments to further study these traits as well as speculate on opportunities to apply select traits in the design of our built environment- from products to urban systems.

COURSE OBJECTIVES

- Familiarize students with the interdisciplinary field of biomimicry
- Establish a unique educational experience for design and biology students to synergistically combine their knowledge and experience
- Differentiate between the approaches used by biologists and designers whose work is inspired by biological organisms
- Identify the ways in which the study of functional aspects of biological organisms is central to

Biologically Inspired Design

Course Syllabus

the goals of both design and biology

GOALS

- Students will have a broad knowledge of the field of biomimicry and how its principles can be applied to design
- Students will get valuable experience in cross-disciplinary teamwork
- Students will be able to take a biological system and derive insights and research questions useful to both biology and design
- Students will demonstrate their knowledge through interdisciplinary project deliverables

COURSE STRUCTURE

The course will consist of 2 weekly meetings: **Tuesday** will begin with a 30 - 45 minute lecture followed by class discussion, and **Friday** will be used for hands-on research and design studio time. Students should also expect to spend time outside of class to work on their main project throughout the semester.

SCHEDULE (preliminary)

WEEK	DATE	CLASS	INSTRUCTORS	DUE
1	T Jan 10	Syllabus overview; Instructor Intros; History of Biomimicry	All	
	F Jan 13	Class Experiment: Functional Architecture	All	Reading 1
2	T Jan 17	MLK Holiday		
	F Jan 20	Class Experiment: Functional Architecture		
3	T Jan 24	Biomimicry Precedent: Termite Building; Disciplinary Presentation Assignment	All	Reading 2
	F Jan 27	Disciplinary presentations		Discipline presentation
4	T Jan 31	Instructor presentations of project areas	All	
	F Feb 3	Class Experiment: Applying the Design Process:: Brainstorming/Ideation		project rankings
5	T Feb 7	Approaches to Biomimicry	All	Reading 3
	F Feb 10	Class Experiment: Applying the Design Process:: Problem Definition and Research Approaches	Queen	
6	T Feb 14	Guest Lecture, Applied Ecology	Rob Dunn	
	F Feb 17	Group work		
7	T Feb 21	Guide to research, how to read a science paper	All	
	F Feb 24	Group work bench mark 1		
8	T Feb 28	Opportunities for Design Applications, Introduction to	Queen	scientific

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Course Syllabus

		Material Ecology and the work of Neri Oxman		literature exercise
	F Mar 3	Group work		
BREAK				
9	T Mar 14	Self-organization, Group Behavior, and Biomimicry	All	
	F Mar 17	Group work bench mark 2		
10	T Mar 21	Nanoscale biomimicry	All	Reading 5
	F Mar 24	Group work		
11	T Mar 28	Biophilia	All	
	F Mar 31	Group work bench mark 3		
12	T Apr 4	"Life Principles" Biomimicry	All	
	F Apr 7	Group work		
13	T Apr 11	How to make a poster; visual design I		
	F Apr 14	Group work bench mark 4		
14	T Apr 18	Visual design II		
	F Apr 21	Group work		
15	T Apr 25	Prep for show		
	F Apr 28	CLASS SHOW - LAST DAY OF CLASS		

READINGS (will be provided)

- 1 - "The architecture of subterranean ant nests: beauty and mystery underfoot"; Walter Tschinkel (2015) *Journal of Bioeconomics*
- 2 - "A Good Place to Settle"; Janine Benyus (2011) in *Biophilic design: the theory, science and practice of bringing buildings to life*
- 3 - "Contrasts, convergences, and consequences"; S Vogel (1999) *Cats' Paws and Catapults: Mechanical Worlds of Nature and People*
- 4 - "Good Design"; Richard Dawkins (1986) *The Blind Watchmaker*
- 5 - "On Being the Right Size"; J.B.S. Haldane (1928)

EXPECTATIONS

Expectations of students:

- Energy, commitment and motivation to learn, excel and accomplish
- Respect for one another and the value each team member brings to the project
- Self-motivation, self-discipline and a desire to exceed expectations
- Willingness to help others and to seek help when required

Expectations of instructors:

- Articulate a clear vision for the course, maintain a reasonable schedule and define a set of appropriate deliverables
- Evaluate work and student performance/work fairly and consistently
- Provide honest, direct feedback and help when required

Biologically Inspired Design

Course Syllabus

- Challenge all students to achieve the highest level of performance possible

INSTRUCTOR INFORMATION

Dr. Clint Penick

Postdoctoral Researcher; Department of Applied Ecology, NC State & NC Museum of Natural Sciences

Office: 373 David Clark Labs

capenick@ncsu.edu

Office hours by appointment

Prof. Sara Glee Queen

Assistant Professor of Architecture, NC State

Office: 305 C Brooks Hall

Sara_queen@ncsu.edu

Office hours by appointment

Dr. Adrian Smith

Research Assistant Professor, Dept. of Biological Sciences, NC State

Lab Head, NC Museum of Natural Sciences

Office: 280 David Clark Labs

aasmith7@ncsu.edu

Office hours by appointment

POLICIES

Attendance

Due to the time-sensitivity of lab activities, students are expected to attend all classes. In the event of absences, students are responsible for contacting instructors as soon as possible to make arrangements for make-up work. Documentation for excused absences must be provided no more than a week after the return to class.

Arrival to class more than 10 minutes late will be considered an absence. Missing multiple class sessions (3) without reason will be considered excessive and will result in a letter grade reduction. After (5) unexcused absences students will fail the course.

Late Assignments

Students will be given detailed assignment descriptions in class. Assignments will be due on the dates listed in the handouts. Assignments must be posted or turned in according to the stated requirements for the assignment. Failure to turn in your work on time will result in a grade of zero. This includes printed materials for pinups.

Make-up Work

Students with excused absence must make up work within one week of returning to class. Students are responsible for collecting all necessary assignments, class notes, and readings.

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Course Syllabus

Academic integrity

Students are required to comply with the university policy on academic integrity as described in the Code of Student Conduct. <http://policies.ncsu.edu/policy/pol-11-35-01>. We also expect all students to comply with the Pack Pledge “I have neither given nor received unauthorized aid on this test or assignment.”

Electronic component

Students may be required to disclose personally identifiable information to other students in the course, via electronic tools like email or web-postings, where relevant to the course. Examples include online discussions of class topics, and posting of student coursework. All students are expected to respect the privacy of each other by not sharing or using such information outside the course

Safety

Strict adherence to safety procedures is mandatory, and failure to do so may result in dismissal from the class. Students will be required to sign an informed consent form regarding course safety at the beginning of class.

Accessibility

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with the Disability Services Office at Suite 2221, Student Health Center, Campus Box 7509, 919-515-7653. For more information on NC State's policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (REG02.20.01)

Non-Discrimination Policy

NC State University provides equality of opportunity in education and employment for all students and employees. Accordingly, NC State affirms its commitment to maintain a work environment for all employees and an academic environment for all students that is free from all forms of discrimination. Discrimination based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation is a violation of state and federal law and/or NC State University policy and will not be tolerated. Harassment of any person (either in the form of quid pro quo or creation of a hostile environment) based on race, color, religion, creed, sex, national origin, age, disability, veteran status, or sexual orientation also is a violation of state and federal law and/or NC State University policy and will not be tolerated. Retaliation against any person who complains about discrimination is also prohibited. NC State's policies and regulations covering discrimination, harassment, and retaliation may be accessed at <http://policies.ncsu.edu/policy/pol-04-25-05> or http://www.ncsu.edu/equal_op/. Any person who feels that he or she has been the subject of prohibited discrimination, harassment, or retaliation should contact the Office for Equal Opportunity (OEO) at 919-515-3148.

GRADING

Readings

There will be readings that will require 1 page written responses. Prompt questions will be provided.

Biologically Inspired Design

Course Syllabus

This will be 20% of your grade.

Participation

Active participation in class discussions, group work, and interdisciplinary activity is key. This will be 20% of your grade.

Projects

In the 4th week of class, you will be placed into a group with 3 other students to work on a final biomimicry project. The project will have four phases, each with benchmark deliverables and due dates. Each benchmark will be 10% of your grade. The final presentation of your project will also be 15% of your grade.

Other Deliverables

Other deliverables given throughout the semester will add up to 5% of your grade. These include the scientific literature exercise and disciplinary presentations.

Grading Breakdown

Readings	20%
Participation	20%
Project	55%
Deliverables	5%

Total	100%

Grading Scale and Meaning

A = consistently excellent, honors quality performance and work. 90 to 100 points.

B = above average performance and work. 80 to 90 points.

C = average performance and work. 70 to 80 points.

D = below average performance and work. 60 to 70 points.

F = unacceptable performance and work. Below 60 points.