

Capstone Seminar: Urban Ecology of Richmond, BIOL 475-[Removed], Spring 2018, 2 cr

Time, Place: [Removed]

Instructor: Chris Gough, Ph.D.; [Removed]; cmgough@vcu.edu

Office Hours: [Removed]

Course rationale:

Contemporary urban environmental problems are complex, requiring interdisciplinary partnerships to study and resolve, and to effectively educate a diverse public. Students in this Biology Capstone will identify environmental challenges in the Richmond area, and work with engineers to design, build, and deploy custom-built sensors for recording environmental data to answer a local research question. Results will be summarized and presented by students in a broadly accessible format for public consumption, and with the support of artists.

Student Learning objectives:

Students will demonstrate knowledge of local urban ecology concepts and challenges. They will learn how to conduct interdisciplinary and team-oriented research across science disciplines and in partnership with the arts, and how to communicate complex scientific concepts and results to a broad audience using creative, non-technical approaches. Participants will understand the necessity of integrating expertise from multiple disciplines to develop and deploy technology for studying contemporary urban environmental problems.

Student Assignments (solo = you only; group = biology teammates or biology-engineering):

(1) Paper or presentation overview (5 pts each, solo):

Students should summarize in an informal journal-style (but typed, please!) their impression of the specified reading or presentation. *For readings*, overviews are due the day of the discussion in class; *for presentations*, overview summaries are due the following week.

(2) Let's build a CO₂ measurement device! (10 pts, group):

Students will be assessed on the completion and proper functioning of their creation.

(3) Round Robin Proposal Brainstorm (10 pts, group):

Students will receive credit for developing, refining, and presenting ideas to the broader group.

(4) 5-Slide Proposal Presentations (10 pts, group):

Students will be assessed and receive credit for presenting in a short single-slide format their research goals and methods, along with a providing a compelling argument for the overall need to address the question(s) of choice.

(5) Weekly progress reports during the design, build, deploy (10 pts, solo)

phase of the class should summarize in a single page progress made toward project completion and goals. The report may include an image or figure presenting preliminary data, and address project successes and challenges.

(6) Project presentations (20 pts, group)

will be delivered by the whole group, and assessed according to the rubric submitted to students prior to the presentation date.

Student expectations:

Read ahead, *come to class* and participate – talk, contribute to discussion, ask questions! Participate in all group activities with enthusiasm and as a fully engaged partner. Learn something, and enjoy!

Tentative course schedule

Class/ Location	Date	Topic	Activity/Reading (Assignment)
1 [Removed]	[Removed]	Course introduction: Urban ecosystems introduction and what's this class all about anyway? (Biology only)	
2	[Removed]	Urban environmental challenges, and group activity 1 (Biology-Engineering)	McPhearson et al. 2016, <i>BioScience</i> ; Instructor introductions, group assignments and ice breaker, world café-style brainstorm (1)
3	[Removed]	Survey of contemporary urban ecology: challenges and opportunities (Biology Only)	Pickett et al. 2008, <i>BioScience</i> ; https://blogs.scientificamerican.com/guest-blog/from-stem-to-steam-science-and-the-arts-go-hand-in-hand/ (1)
4	[Removed]	The urban heat island of Richmond (Biology-Engineering)	Presentation by Dr. Jeremy Hoffman, Science Museum of Virginia (1)
5 [Removed]	[Removed]	DIY Data collection and sensor-building (Biology Only, but all welcome)	Let's build a CO ₂ measurement device, with special guests: Dr. Jeff Atkins and Ellen Stuart-Haentjens (2)
6	[Removed]	Data collection example (Biology-Engineering)	Data collection example: thermocouples for measurement of temperature
7	[Removed]	Group brainstorm of class project objective	Proposal Brainstorm, big group (3)

		(Biology-Engineering)	
8	[Removed]	Spring break	NO CLASS
9	[Removed]	(Biology-Engineering)	Groups deliver project proposal presentations (4)
10	[Removed]	Research! (Biology-Engineering)	Design, build, deploy measurement devices and sensors (5)
11	[Removed]	Research! (Biology-Engineering)	Design, build, deploy measurement devices and sensors (5)
12	[Removed]	Research! (Biology-Engineering-ART)	Design, build, deploy measurement devices and sensors, begin data analysis (5)
13	[Removed]	Science communication to the masses (Biology- Engineering-ART)	Presentation by Jon-Phillip Sheridan, Assistant Professor of Art (1)
14	[Removed]	Green wall experiment to design (Biology-Engineering-ART)	Present results to class (6)
15	[Removed]	ICA opening	SEE YOU AT GRADUATION

Point – letter grade correspondence

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
<60	F

Attendance Policy and Late Assignments:

Attendance is required unless an absence is excused in advance per the University's attendance policy. Students must be present to receive credit for weekly journal commentaries (1st half of course) and field trip participation (2nd half of course). Late assignments will not be accepted unless excused by the instructor. This course is largely participation driven, so your attendance and contributions to discussion are essential.

The required syllabus statements originally included here are maintained by the Office of the Provost and are regularly updated. To prevent the dissemination of information which may no longer be accurate or complete, the full text of the required syllabus statements have been removed from this document.

Students should visit <http://go.vcu.edu/syllabus> and review all syllabus statement information. The full university syllabus statement includes information on safety, registration, the VCU Honor Code, student conduct, withdrawal and more.