

Syllabus: Biomimicry Foundations 2018

Course Information

Course Description: This course will introduce the interdisciplinary field of biomimicry. We will learn essential concepts of biomimicry using multiple perspectives including biology, design, business and engineering. Biomimicry is the process of learning about and from nature in order to transfer that knowledge and propose innovative solutions to human-related problems. That same process also helps advance knowledge creation in biology and the other supporting fields. Our interdisciplinary approach will make use of examples highlighting convergent themes in biology, design, business and engineering including form-function relationships, waste reduction, life cycles and sustainability. Thus, knowledge obtained in the course can be used as a framework for students interested in pursuing deeper study in biomimicry as well as a foundation for application to other fields of interest. Familiarity with basic concepts in Biology, Art/Design, Business, or Engineering are helpful, but deep knowledge of any single discipline is not required to complete or benefit from taking this course.

Prerequisites: None

Objectives: Upon successful completion of this course, you should be able to:

1. Describe the theory and methods behind biomimicry
2. Provide diverse examples of biomimetic applications and how they work
3. Use tools introduced in class to further your own ideas for biomimetic design
4. Apply tools introduced in the class to advance your studies in fields such as biology, design, business or engineering

Required Texts: None. Readings will be provided.

Topic Outline:

Week	Topic
1	Introduction
2	Iconic Case Studies
3	Emerging Case Studies
4	Biomimicry Design Process
5	Tools and Concepts 1 (Problems and Functions)
6	
7	Tools and Concepts 2 (Discovery)
8	
9	Tools and Concepts 3 (Abstraction/Translation)
10	
11	Northeast Ohio Examples (lab tours/interviews/discussions)
12	
13	Biomimicry and Entrepreneurship (the path from idea to start-up)
14	
15	

Evaluation and Assessment

Grading Scale

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
93-100	90-92	86-89	83-85	80-82	76-79	73-75	70-72	66-69	63-65	60-62	<60

Breakdown of Final Grade

Students are evaluated in the following areas:

Description	Percentage of Final Grade	Type of Assessment
4 Quizzes	10%	Test
2 Exams	20%	Test
6 Assignments	40%	Rubric
Discussions and participation	30%	Teacher observations
TOTAL	100%	

1.- Lecture exams (20% of your final grade):

There will be two (2) exams. These will include questions related to reading, homework, and classroom meeting materials. The exams are not cumulative. There will be no final exam.

2.- Quizzes (10% of your final grade)

Quizzes will range from 5-10 questions covering material from lectures/discussions and assigned readings. Quizzes are intended to give you some practice in working through and applying concepts prior to taking exams. Quiz dates, format, and topics will be discussed and set in class in advance. Quizzes cannot be made up.

3.-Assignments (40% of your final grade)

Throughout the semester, class meetings will be a mixture of lecture, discussion, skills exercises and essay writing. Homework assignments will extend in-class work and are designed to give you practice and experience in the practice of the biomimicry design process. All work must be original and must be completed to be graded.

Required Texts

There is no required text for this class. Readings will be provided in Brightspace.

Additional Resources

Biomimicry institute and Biomimicry 3.8, are sister organizations that promote education, research and collaboration among professionals interested in biomimicry:

<https://zqjournal.org/>

www.biomimicry.net

www.biomimicry.org

www.asknature.org - digital library of Nature's solutions

Instructor Contact and Reply Policy

As the teacher of this class I will:

- Log on to the course website at least once a day to answer questions, check in with discussions, and provide feedback on assignments.
- Read all discussions and assignments, providing feedback to help extend learning and answer questions.
- Answer e-mails and respond to discussion board "Help!" questions within 24 hours during weekdays and 48 hours over weekends and holidays (unless otherwise announced).

Technical Support

If you have technical questions or require technical assistance, please contact ZipSupport:

- By Phone: 330-972-6888
- By Email: support@uakron.edu.

[The ZipSupport Help Desk web site can be found here.](#)

[Springboard self-help guides can be found here.](#)

Academic Support: The Writing Lab and eTutoring

The University of Akron provides both on ground and online help with writing.

The Writing Commons, Writing Lab, and Writing Center

The University of Akron provides free assistance to currently enrolled students at two main campus locations as well as Wayne College. Select the location name to access the website of each.

[Bierce Writing Commons](#)

Bierce Library, room 68

For Appointments, Call (330) 972-6548

Day and Evening Appointments Available

[Polsky Writing Lab](#)

303 Polsky Building For Appointments Call (330) 972-7046

Day and Evening Appointments Available

[Wayne College Writing Center](#)

Smucker Learning Center

For appointments call (330) 684-8960

eTutoring

The University of Akron also offers online tutoring, called eTutoring, which is provided through the Ohio eTutoring Collaborative. Students at The University of Akron have access to online

tutoring in Writing, Accounting, Chemistry, Math (through Calculus II), and Statistics. The Online Writing Lab allows you to submit a draft of your paper to a tutor, ask for specific feedback, and receive your work back with a tutor's comments in approximately 24 to 48 hours. You may submit up to three drafts per paper. eChat will allow you to meet with a tutor in one-on-one tutoring sessions via a fully interactive, virtual online environment. Offline questions will allow you to leave a specific question for an eTutor, who will respond within 48 hours (but usually sooner). [Select this link to learn more about eTutoring services.](#)

Accessibility Statement

Any student who has a disability that substantially limits learning in a higher education setting may contact [the Office of Accessibility](#) for information regarding eligibility for reasonable accommodations. The office telephone number is (330) 972-7928 (Voice) or (330) 972-5764 (TDD).

Etiquette for use of Brightspace

1. **Avoid language that may come across as strong or offensive.** Language can be easily misinterpreted in written communication. If a point must be stressed, review the statement to make sure that it would not be offensive; then post the statement. Humor and sarcasm may easily be misinterpreted, so try to be as matter-of-fact and professional as possible.
2. **Keep writing to a point and stay on topic.** Online courses require a lot of reading. When writing, keep sentences focused and brief so that readers do not get lost in wordy paragraphs and miss the point of the statement. Also, do not introduce new topics; it may just confuse the readers.
3. **Read first, write later.** Read all posts or comments before personally commenting to prevent repeating commentary or asking questions that have already been answered.
4. **Review, review, then send.** There's no taking back a comment that has already been sent, so it is important to double-check all writing to make sure that it clearly conveys the exact intended message.
5. **An online classroom is still a classroom.** Though the courses may use an online tool, appropriate classroom behavior is still mandatory. Respect for fellow classmates is always important.
6. **The language of the Internet.** Do not write using all capital letters, because it will appear as shouting. Also, the use of emoticons can be helpful to convey nonverbal feelings (example: :-)) or :-()), but avoid overusing them.
7. **Consider the privacy of others.** Ask permission prior to giving out a classmate's email address or other information.
8. **If possible, keep attachments small.** If it is necessary to send pictures, change the size to an acceptable 100k.
9. **No inappropriate material.** Do not forward virus warnings, chain letters, jokes, etc. to classmates or instructors. The sharing of pornographic or insensitive material is forbidden.

Bibliography

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