

Synthetic Biology

ZOO 4926 section 11D9—Fall 2017

Instructor Information:

Prof. Edward L. Braun
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Course Description:

Synthetic Biology is a stimulating and challenging survey of the field of synthetic biology. Synthetic biology is a diverse field that merges genetics and engineering and use methods from those fields to: 1) fabricate and redesign existing biological systems; and 2) design and fabricate biological components and systems that do not already exist in the natural world. This course will comprise lectures, discussions, readings from the scientific literature, and a class project.

Textbook:

Synthetic Biology - A Primer: Revised Edition, by Geoff Baldwin et al.

- **Publisher:** Imperial College Press; Revised edition (October 25, 2015)
- **Language:** English
- **ISBN-10:** 1783268794
- **ISBN-13:** 978-1783268795

<https://books.google.com/books?id=mTK6CgAAQBAJ>

Note: his is a relatively inexpensive textbook (approx. \$35 from various sources)

We will also do a number of readings from the peer-reviewed scientific literature.

Course Assignments and Grading:

Course component	Proportion of grade
Participation	35%
Class project	35%
Take home exercises	30%

Class participation

I expect regular attendance. If you are sick, have a family emergency, or plan to participate in a university-sanctioned event just let me know; those absences are excused. Likewise, I will consider excusing you for any reasonable professional development activities; just discuss them with me. But otherwise I expect to see you in class and you will lose 1% of this portion of the grade for unexcused absences. Although some classes will be lectures many will include discussions; I expect everybody to participate. We will also be learning how to use specific computer programs during some classes and participating in those activities is important.

Class project

We will work on project to understand and analyze minimal genome projects, where synthetic biology is used to answer the question of “what is the minimum set of genes necessary for life?” This will involve extracting information from recent scientific papers, learning about the functions of specific proteins that appear to be necessary for life, and preparing a poster about your findings.

Take home exercises

There will be no tests, but I will expect you to produce short (1-2 paragraph) summaries of assigned readings.

Grading scale

The following grading scale will be used (values are percentages):

91-100 A	88-90.9 A-	
85-87.9 B+	81-84.9 B	78-80.9 B-
75-77.9 C+	68-74.9 C	65-67.9 C-
62-64.9 D+	58-61.9 D	

Below 58 is failing (E).

Course policies

* Academic dishonesty will not be tolerated. If cheating or plagiarism is suspected, all persons involved will receive a zero on the affected problem set or exam, and will be reported to the Dean of Students Office.

* If you notice another student engaging in activities to you believe to constitute academic dishonesty please report the potential violation. I take all allegations seriously. However, remember that you are bound by the UF honor code, which states that *“in reporting an alleged Student Honor Code violation, a student shall not intentionally or in bad faith make a false or*

misleading statement.” In other words, I view intentional false allegations as a type of academic dishonesty.

* Attendance in class is required. However, if you cannot attend on specific days just email with the subject line “UNABLE TO ATTEND CLASS ON <DATE>” and provide a brief explanation. If you have concerns at any time just discuss them with me. My goal is to make the course fun to attend!

University support services

Resources are available on campus to help students meet academic goals and solve personal problems, which interfere with their academic performance. Resources include:

1. [UF Counseling and Wellness Center](#), 301 Peabody Hall and Radio Rd Facility, 392-1575, personal and career counseling.
2. [Career Resource Center](#), Reitz Union, 392-1601, career development assistance and counseling.
3. [CLAS Academic Advising Center](#), Farrior Hall, 100 Fletcher Drive, 392-1521, provides advise on course selection and course planning to meet graduation requirements

Disability Notice

Students with disabilities enrolled in this course and who may need disability-related classroom accommodations are encouraged to make an appointment to see me before the end of the second week of the term. All discussions will remain confidential, although the [Student Accessibility Services](#) office may be consulted to discuss appropriate implementation of any accommodation requested.

Schedule

(This schedule is tentative and probably will change – I’ll keep everybody updated)

Topic

Review of Genetics and Molecular Biology

Foundations of Biological Engineering

Reading the Peer-Reviewed Scientific Literature

Comparative Genomics: Tools and Methods

Minimal Cells

Biological Parts, Biological Devices, and Synthetic Biological Systems

Modeling Biological Systems

Ethical, Legal, and Social Impacts of Synthetic Biology