

Microbiology 405: Biotechnology and Synthetic Biology
Course Outline (4 PAGES) - Fall 2016

Course Instructor: Francis Nano

Office: 245 Petch

**Office Hours: M-F 09:00-
right before coming over.**

Read carefully. The course is not presented and organized in the traditional manner, but rather is a

time for projects. You will alternatively show up to rooms ECS108 and ECS128. See course calendar for your group's formal meeting dates. I will attend all of these and note students' attendance and participation.

1. All lectures are available both as PDFs and as audio presentations of the Power Point presentations. They are available at the M405 "Course Space" site.

Course Space can be found at

<https://www.uvic.ca/cas/login?service=http%3A%2F%2Fcoursespaces.uvic.ca%2Flogin%2Findex.php>

You are expected to view either the PDFs or the audio lectures (or both) on your own. The lectures are divided into groups to help you know what material will be covered on which exam.

2. The projects are meant to inspire both independent and group learning. A reasonable effort should result in a good grade.

3 Classroom time will be devoted primarily to smaller group meetings of a subset of the class. See the class calendar to determine which days you are expected to attend with your group.

The final grades will be determined as follows:

(30%) Midterm exam. October 20.

(35%) Group project.

(35%) Final exam.

Supplementary/optional (free) Text book

Title: Bacterial and bacteriophage genetics [electronic resource] / Edward A. Birge.

Author: [Birge, Edward A. \(Edward Asahel\)](#)

Publisher: New York : Springer, c2006. Edition: 5th ed.

Web Link (from UVic or via sign on from your home):

<http://ezproxy.library.uvic.ca/login?url=http://dx.doi.org/10.1007/0-387-31489-X>

For a review of basic concepts in bacterial genetics see Chapter 1. For a review of the basics of transcription and translation, see Chapter 4. Other chapters have information that may provide a basic review relevant to other topics in the course. You will NOT be examined directly on material from the textbook, but you will be expected to know the basics of bacterial gene regulation and genetics that you learned in lower level course in the Department of Biochemistry and Microbiology.

Section 1. Cloning, PCR & Sequencing.

Introduction.

Enzymes used in biotechnology

PCR basics

Section 2. DNA sequencing and other technologies.

Generation of cDNA.

Fosmids, BACs and YACs.

Sanger DNA sequencing.

Sequencing strategies

Next-gen sequencing.

DNA amplification and genome walking.

Section 3. DNA and Genomic Assembly

Biobricks and Golden Gate

In vitro genome assembly methods (F-PCR, Gibson, SLIC, Pox)

In vivo genome assembly methods (red-

Student rights and concerns.

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, approach the Resource Centre for Students with a Disability (RCSD) as soon as possible (<http://rcsd.uvic.ca/>.) in order to assess your specific needs.

Standard UVic statement on the Course Experience Survey (CES)

“I value your feedback on this course. Towards the end of term, as in all other courses at UVic, you will have the opportunity to complete a confidential survey regarding your learning experience (CES). The survey is vital to providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future. When it is time for you to complete the survey you will receive an email inviting you to do so. Please ensure that your current email address is listed in MyPage (<http://uvic.ca/mypage>) . If you do not receive an email invitation, you can go directly to <http://ces.uvic.ca> . You will need to use your UVic netlink ID to access the survey, which can be done on your laptop, tablet, or mobile device. I will remind you and provide you with more detailed information nearer the time but please be thinking about this important activity during the course.”