Read carefully. The course is not presented and organized in the traditional manner, but rather is a "flipped classroom". This format has students learn basic material on their own, and uses classroom time for projects. You will alternatively show up to rooms ECS104 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. T(e)aY-4(e)410 https://www.uvic.ca/cas/login?service=http%3A%2F%

You are expected to view either the PDFs or the audio lectures (or both) on your own. The lectures are

divided into groups corresponding to the material that will be covered in each midterm.

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. (people outside of a particular group can attend as observers). See the class calendar to determine which days you are expected to attend with your group.

The final grades will be determined as follows:

- (25%) Midterm exam. October 26.
- (10%) Group iGEM presentations.
- (30%) Group project & written abstract.
- (35%) Final exam (Comprehensive, but focused on last half of course.)

Supplementary (free) Text book

Title: Bacterial and bacteriophage genetics [electronic resource] / Edward A. Birge. Author: <u>Birge, Edward A. (Edward Asahel)</u> 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 <u>see Chapter 1</u>. For a review of the basics of transcription and translation, <u>see Chapter 4</u>. 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.

Winning iGEM projects can be found at http://igem.synbioreview.com/all/

Section 2. DNA sequencing and other technologies.

cDNA cloning. Fosmids, BACs and YACs. Sanger DNA sequencing. Sequencing strategies Next-gen sequencing. DNA amplification and genome walking.

Section 3. Elements of genetic circuits.

Natural and synthetic promoters; attenuation and termination. Codon usage, Operons, RBSs and their relevance to biotechnology sRNA and ribolocks. Hybrid systems.

Section 4. DNA and Genomic Assembly

Biobricks and Golden Gate In vitro genome assembly methods (F-PCR, Gibson, SLIC, Pox) In vivo genome assembly methods (red-gam/ TAR) Approaches to Bacterial Genome Engineering Bacterial Genome Assembly. Sidebar: Counter-selection (a "side-bar" means an extra bit of informat

Sidebar: Counter-selection (a "side-bar" means an extra bit of information that is examinable for the concepts; e.g. what is counter-selection and how you use it, 1 example; but NOT the list of counter-selection genes.)

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Nano FE. Curr Opin Biotechnol. 2012 Dec;23(6):897-9. doi: 10.1016/j http://www.sciencedirect.com/science/article/pii/S0958166912001139

Grades will be assigned as follows:

A ⁺	90 -100	B⁺	77 - 79	C⁺	65 - 69	F < 50
Α	85 - 89	В	73 - 76	С	60 - 64	N ** < 50
A-	80 - 84	B-	70 - 72	D	50 - 59	

**<u>N grades</u>

Students who have completed the following elements will be considered to have completed the course and will be assigned a final grade:

One midterm "exam", which will be 1 hour long, essay answer exam. Group project & written abstract. Final exam (Comprehensive, but focused on last half of course.)

DEPARTMENT INFORMATION AND POLICIES

- 1. The Department of Biochemistry and Microbiology upholds and enforces the University's policies on academic integrity. These policies are described in the current University Calendar. All students are advised to read this section.
- 2. Cell phones, computers, and other electronic devices must be turned off at all times unless being used for a purpose relevant to the class. Students having a cell phone, tablet, or computer on their person during an exam will be assumed to have it for the purpose of cheating.
- 3. Any recordings of lectures may only be performed with written permission of the instructor, and are for personal use only. The instructor retains copyright to such recordings and all lecture materials provided for the class (electronic and otherwise); these materials must not be shared or reposted on the Internet.
- 4. Students are expected to be present for the midterm and final exams. Instructors may grant deferrals for <u>midterm</u> examinations for illness, accident, or family affliction, and students must provide appropriate documentation 48 hours after the midterm exam. The Department of Biochemistry and Microbiology considers it a breach of academic integrity for a student taking a deferred examination to discuss orovide approt9oiders io.9(ex)1 0.83 0 T afngent(nt)12(eg)10(r)7(i)5.9(t2)

September 2015

August 2015 ~ Oct 2015 ~ Oct 201						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	Note: ECS 104 is our "main" room. ECS 128 is "breakout" room for group meetings.	1	2 On Day 1 get your group together and figure out how you will communicate,			

September 2015 ~ Cctober 2015 ~						
Sun	Mon	Tue	Wed	Thu	Fri	

November 2015 This is a blank and printable November Calendar. Courtesy of WinCalendar.com



December 2015

This is a blank and printable December Calendar. From WinCalendar.com

No	November 2015 ~ Jan 2016							
	Sun	Mon	Tue	Wed	Thu	Fri	Sat	
			1-22 Groups 1, 2 and 3 present.	2	3	4-23 Last day of classes. Groups 3, 4 and 5 present. All abstracts due via e-mail. Send as Word/Word-like documents, NOT PDF.	5	
6		7	8	9	10	11	12	

Marking scheme for the group project and presentation.

I will combine my evaluations for group participation, slide preparations and for the written abstract to generate the "presentation grade." I will start by assigning everyone a grade of 80%. I will then look at all of the components and ask if a student's performance pushes them above or below the 80% mark. For most students their score will not stray from the 80% very much; it's the presumed class average for this section of the course. However, one would certainly not want to do a half-hearted job on any of these parts of the course and throw out some percentage points.

For the presentation I want everyone to contribute 2-3 slides to the final, edited presentation. Indicate your work by putting your initials in the "invisible" comment section of Power Point-like slides. Often there will be a set of 2 or more initials of students and that is fine. Also, towards the end of the course I will hand out a comment sheet to each member of a group and ask that they write positive comments about especially good group participants. This is one of the ways that I will be alerted to the efforts of some students who generously contribute to the group outside of the classroom.

A group is allowed to make their presentation into a video using something like Camtasia Studio. The group would show this video during their presentation time. This can work well for groups that do not have people who enjoy