BIMM 122 Microbial Genetics Fall 2018

Dr. Kathy Byrne-Bailey
Monday/Wednesday/Friday
1.00 pm-1.50 pm HSS 1330

Dr Kathy Byrne-Bailey
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Email: kbyrne@ucsd.edu (Please put BIMM122 in the subject line)
Office Hours: M and W 12.00-12.50 pm, or by appt.
Questions? Please do not hesitate to contact me or your section leader.

COURSE DESCRIPTION:

Course will consider the organization and function of prokaryotic genomes including content, DNA supercoiling, histone-like proteins, chromosomal dynamics (short-term and long-term), extrachromosomal elements, bacterial sex, transduction, transformation, mobile elements (transposon), epigenetic change, adaptive and directed mutation, transcription and its regulation, sensory transduction, bacterial differentiation, symbiosis, and pathogenesis.
Prerequisites: BIMM 100, I also wish upon wish that you have taken BIMM120 (Microbiology), but it is not required!!
See the detailed schedule of specific topics and concepts covered this semester.

LEARNING OBJECTIVES:

After this course you should have built on the foundations learnt in other courses such as BIMM100 and be able to dive into the scientific literature to gain your information. We will begin to explore microbial genetics at the forefront of our knowledge, looking at modern genetic techniques such as genomic sequencing, but also adding to your understanding of the basics such as replication, transcription and translation, all from a microbial context, usually a bacterial one.

TEXT:

Required Textbook: Molecular Genetics of Bacteria, 4th Edition by Snyder, ASM Press (2015).

Instructor will follow more closely the latest 4th edition, but older editions may be used by students.

The text was chosen to provide you with a good introduction to a subject rich in language and context. However, the text exists solely as a reference within which some topics discussed in class may not be found. Power points and vernacular may not follow the book and vice versa. A list of other text and web sites may be found below and at the back of the syllabus respectively.

Additional resources you may find useful that can be found in the library or online:

- Brock Biology of Microorganisms (Madigan and Bender) (15th Edition) 2018, any edition of this book will help you if you already own it.
- Modern Microbial Genetics (Streips and Yasbin, 2002)
- Microbial Genetics (Maloy et al., 2006)

I reserve the right to assign alternative texts and up-to-date peer reviewed scientific literature that will aid your learning and critical thinking around this course. The syllabus for this course is on the TritonEd. You can access and download this syllabus and any other posted class materials, including lectures, notes, and class assignments.

iCLICKERS:

Required. The frequency in the classroom is "AB". You must register your clicker on TritonED during week 1. Beginning week 2, you must answer at least 75% of the questions in a single lecture to receive participation points for that lecture. You may miss up to two lectures during the quarter and receive full participation credit.

LECTURE:

Lectures will cover the central topics of microbial genetics in the order indicated in the schedule, although the specific order can deviate a bit from that indicated, depending on time. The order of the topics discussed during lectures is different from the order in the textbook.

On the day before each lecture (at the latest), a copy of the lecture slides will be uploaded on the course website. It is highly recommended that you download an/or print out the lecture slides so that you can follow the lecture by taking notes on it. They comprise a skeletal record of what happens in the lecture. However, you may find the lecture slides unintelligible without your own written notes. Therefore, don't think of them as a second, independent "book" you can read but instead as a collaborative record of the lecture that you will create.

CONTACT:

Your TA's and fellow students are your best resource for information and you should first attempt to answer your questions through them. Try emailing your TA's through TritonED. Contact Dr. Byrne-Bailey first only for specific issues unrelated to course content. The best way to contact her is by email. On all emails PLEASE put BIMM 122 in the subject line to indicate that the email pertains to this course. Also, if you email a question the evening before an exam please send it before 5 PM. If you email about anything regarding your status in the course, please include your UCSD username, and PID.

TECHNOLOGY POLICY:

The use of cell phones or any other electronic devices (e.g. pagers, text messaging, PDAs, etc.) is not permitted during exams. Cell phones or other communication devices must be turned off and stored before entering the lecture hall at all times. Use of a cell phone, PDA, or other similar electronic devices during an exam, quiz or assignment is grounds for receiving a failing grade.

Laptop computer policy: Students are welcome to bring laptops to lecture for note-taking purposes. Laptops must be put away (closed and powered off or on sleep mode) during any exams. Unless specifically given permission by Dr. Byrne-Bailey, you may NOT access the web during the lectures. This is extremely distracting to neighboring students and will not be tolerated. Any student found using the web during class time will be required to turn off their computer for the remainder of the lecture and may be denied permission to use a computer in class thereafter.

GRADING:

The Table below shows a summary of the breakdown of your final grade.

Assignment	Percentage of Grade
Exams (2)	50
Sections/assignments	30
Online TritonED quizzes	10
iClicker quizzes	10

EXAMS: 50%: Two examinations are scheduled for the quarter (see class schedule). **The final exam is cumulative and will be held in class. The exams will assess your recall, comprehension, and analysis of the material of the topics** as specified. Examinations will be composed of multiple choice and short answer type problems. If you miss an examination with a documented and pre-approved excuse, a make-up examination may be given at the discretion of the instructor. In general, no make-up examinations will be given. Students that do not take the examination on the scheduled date, without a pre-approved excuse will receive zero points for that examination.

Sections/Assignments 30%: Points will be up for grabs in your sections based on attendance, answering questions and your understanding, as well as asking questions. There will also be an assigned peer reviewed paper every week/fortnight, which will be discussed in your section, and you will turn in a short assignment based on the reading. They will be checked by Turnitin, so no copy and paste!!!!!! They are designed to help you understand the material and critically think about current microbial genetics that we may not have time to cover in class. They can and will be used as exam questions.

For assignment deadlines and assigned papers check the TritonEd website.

General guidelines for reading the research papers:
Familiarize yourself with related topics: Read the related material in the textbook to familiarize yourself with the subject matter. Research papers are written for people who already know something about the subject matter.
Try to answer the following questions as you read the required papers:
1. What questions were addressed in this paper?
Frequently the introduction (or the first few paragraphs of Science and Nature articles) will present background information and raise the questions that will be addressed in the paper.
2. What were the main conclusions from the paper?
The main conclusions will be summarized in the abstract and further discussed in the discussion section. Why were these conclusions important?
3. What experiments were performed to answer these questions?
These will be briefly summarized in the abstract, sometimes also in the discussion (or the last few paragraphs of science or nature papers),and will be discussed at length in the results section of the paper.
4. For each experiment:
What conclusion did the experiment allow? What were the caveats of each experiment? (i.e. were there alternative explanations?) What experiments ruled out these alternatives?
Read the assigned papers before attending section and ask your IA any questions you may have. If questions remain, attend either your IA's or Dr. Byrne-Bailey's office hours.

On-Line Quizzes 10%: There will be **8 quizzes** given online in TritonEd. They will open after class on the Friday until 30 minutes before the next class. They will be short, I promise!!! They can include questions on anything covered in class or from the assigned paper due that week. No make-up quizzes will be given and if you miss a quiz it will not be opened up. The lowest 3 scores will be dropped. Dates for quizzes are provided in the course schedule and on TritonEd.

iClicker quizzes 10%:
There will be questions in class (using iClickers) designed to help you learn the material we have just covered and to also help me pin point whether you have understood concepts in class so I can help you then and there, they also break up the lectures. The questions have been known to turn up on the exams. You will receive 1pty participation and 1 pt for a correct answer per question, maximum of 6 pts per lecture.

NO EXTRA CREDIT WILL BE GIVEN EXCEPT BONUS MARKS ON YOUR FINAL EXAM.

GRADING SCALE

Your grade will be determined based upon the total points/percent's earned on examinations, quizzes, term project and activities (check TritonEd for breakdown as you go along).

A = 85-100% **B = 76-85%**
C = 65-75% **D = 54-64%**
F > 53%

RE-GRADES:

It is your responsibility to check your exam for clerical errors in grading. If a grading error has been made, you should submit a re-grade request to Dr. Byrne-Bailey at the end of a lecture within one week of return of the exam. The time and date of closing down the appeal process will be announced in class. Simply write "please re-grade Q #" or "arithmetic error on p. #" on the cover of your paper. Write a concise description of the alleged error on a separate, attached piece of paper. No re-grades are possible for exams written in pencil or non-permanent ink. Students who submit exams for re-grading understand that we may (1) re-grade the entire exam, and (2) compare the submitted paper to a scanned copy of the original exam. Since course grades are due with the Division of Biology 72 hours after the final exam is given, re-grades of the final will be handled as follows: Graded final exams will be available for pickup a few days after the final is given. Re-grade requests are to be placed under Dr. Byrne-Bailey's office door within one week after graded exams are made available. If the re-grade request is valid and it affects the letter grade of the student in the course, then Dr. Byrne-Bailey will change your course grade accordingly.

OSD students:

Students requesting accommodations and services due to a disability for this course need to provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD), prior to eligibility for requests. Receipt of AFAs in advance is necessary for appropriate planning for the provision of reasonable accommodations. For more information, contact the OSD at (858) 534.4382 (V); (858) 534-9709 (TTY); osd@ucsd.edu, or http://osd.ucsd.edu.

CHEATING:

DON'T. Students are expected to do their own work, as outlined in the UCSD Policy on Integrity of Scholarship (go to TritonLink: Academics: Academic success: Academic integrity). Cheating will not be tolerated, and we will fail any student caught engaging in academic dishonesty. Their identity and the evidence of cheating will be passed to the relevant campus staff for further action. All exams will be closed book and closed-notes; all personal materials including cell phones must be stowed under your seat while exams are in progress. All assignments are to be completed individually, unless otherwise noted.

SECTIONS AND SECTION MEETINGS:

Students have the opportunity to meet with a Teaching Assistant in relatively small groups on a weekly basis. There will be no sections during the first week of classes.

Section attendance is not mandatory but will definitely help your success in the course.

The section meetings provide for:

1. **Academic review**. Each week the TA will provide an opportunity to review the previous week's lectures and readings. This review may take the form of answering your specific and general questions, clarifying something important presented quickly in lectures, expanding on something important described in the textbook. To benefit from these meetings, you must prepare by completing both your lecture notes and the assigned reading. There is no need to bring the textbook to the Section meeting.

2. Advice on studying. The TA's may be able to steer you through the enormous amount of descriptive material in the textbook. They will not know what will be on the exams, but they are experienced enough to know how to set learning priorities. They meet with the professor before each class and can give you her advice on what's important and what is less likely to be a focus on exams.

3. General course announcements. We will make numerous announcements about the course and course-related opportunities.
4. General advice. The TA's are a lot easier to find than the professor so please direct your questions about other courses, majors, careers, summer opportunities, study abroad opportunities to them, in the first instance.

5. Review of online quizzes and exams.

Instructional Assistants: Nina Gao njgao@ucsd.edu
Andy Bodnar abodnar@ucsd.edu

Section	Days	Time	Location	IA	Email
A01	Mon	10-10.50 am	HSS 2321	Andy Bodnar	abodnar@ucsd.edu
A02	Mon	11-11.50 am	HSS 2321	Andy Bodnar	abodnar@ucsd.edu
A03	Fri	2-2.50 am	CENTR 207	Nina Gao	njgao@ucsd.edu
A04	Fri	3-3.50 am	CENTR 207	Nina Gao	njgao@ucsd.edu

COURSE SCHEDULE:

Week 1		
Topics	**Reading/Quiz**	**Sections/Assignments**
Friday, September 28		
• Syllabus • Introduction to Microbial genetics	Quiz 1	• No Sections

Week 2		
Topics	**Reading/Quiz/Assignment**	**Sections**
Monday, October 1		

• The chromosome	Chapter 1	
Wednesday, October 3		
• The chromosome	Chapter 1	• Assignment 1
Friday, October 5		
• The chromosome	Chapter 1	

Week 3		
Topics	**Reading/Quiz/Assignment**	**Sections**
Monday, October 8		
• The chromosome	Quiz 2	
Wednesday, October 10		
• The chromosome	Genomes	• Assignment 1 due • Assignment 2
Friday, October 12		
• The chromosome	Chapter 4, 5 and 6 Plasmids	

Week 4		
Topics	**Reading/Quiz/Assignment**	**Sections**
Monday, October 15		
• The Chromosome	Quiz 3 Chapter 9 Transposons and integrons	
Wednesday, October 17		
• PLASMIDS	Chapter 2	• Assignment 2 due • Review for mid-term
Friday, October 19		
• Plamsids	Chapter 3	

Week 5		
Topics	**Reading/Quiz/Assignment**	**Sections**
Monday, October 22		
• Plasmids	Quiz 4	
Wednesday, October 24		
• Tn	Chapter 3	• Assignment 3 due before your section Review for mid-term
Friday, October 26		
• Tn	Chapter 3	

Week 6		
Topics	**Reading/Quiz/Assignment**	**Sections**
Monday, October 29		

• Review	Quiz 5 Chapter 13	
Wednesday, October 31		
MID TERM IN CLASS *		Assignment 4
Friday, November 2		
• Tn	Chapter 13	

Week 7		
Topics	**Reading/Quiz/Assignment**	**Sections**
Monday, November 5		
• Transcription/translation	Quiz 6 Chapter 2	
Wednesday, November 7		
Transcription/translation	Chapter 2	• Assignment 4 due • Assignment 5 and run through of exam in sections
Friday, November 9		
Transcription/translation	Chapter 2	

Week 8		
Topics	**Reading/Quiz/Assignment**	**Sections**
Monday, November 12		
No classes		
Wednesday, November 14		
• Bacterial differentiation	Quiz 7 Chapter 14	
Friday, November 16		
• Bacterial Differentiation	Chapter 14	

Week 9		
Topics	**Reading/Quiz/Assignment**	**Sections**
Monday, November 19		
• Pathogenesis and virulence		**Only Monday sections this week** • Assignment 5 due
Wednesday, November 21		
No Class		
Friday, November 23		
No Class		

Week 10		
Topics	**Reading/Quiz/Assignment**	**Sections**
Monday, November 26		
• Modern applications	Quiz 8	• Review

Wednesday, November 28		
Pathogenesis		
Friday, November 30		
Pathogenesis		

Week 11		
Topics	**Reading/Quiz/Assignment**	**Sections**
Monday, December 3		
Global regulation		• Review
Wednesday, December 5		
Global regulation		
Friday, December 7		
Review		
	Monday, December 10	
FINAL EXAM: 11.30-2.29 pm Venue TBA		

RESOURCES:

The following resources are provided to help you with your projects & studies. They may also be useful for other classes.	
FGCU Library	http://library.fgcu.edu/
Harvard Biology Links	http://mcb.harvard.edu/BioLinks.html
Internet searching advice	http://www.library.vcu.edu/help/adv.html
Help in evaluating web resources	http://www.fno.org/jun97/eval.htm http://www.ithaca.edu/library/Training/hott.html
PUBMED - National Library of Medicine Resources	http://www.ncbi.nlm.nih.gov/entrez/query.fcgi
PUBMED Central	http://www.pubmedcentral.nih.gov/
Food & Drug Administration (FDA)	http://www.fda.gov
National Institutes of Health (NIH)	http://www.nih.gov/
NIH Health Information	http://health.nih.gov/
American Society of Microbiologist Blog	http://schaechter.asmblog.org/
Todar's Online Textbook of Microbiology	http://www.textbookofbacteriology.net/
Center for Disease Control (CDC)	http://www.cdc.gov/
MicrobeWiki	http://microbewiki.kenyon.edu/index.php/MicrobeWiki

IFLS	http://www.iflscience.com/editors-blog/i-fucking-love-science-teams-science-channel-curate-best-science-content-web