

Syllabus – Fall 2020

Excluding materials for purchase, syllabus information may be subject to change. The most up-to-date syllabus is located within the course in HuskyCT.

Course and Instructor Information

Course Title: Physiology of Archaea and Bacteria

Format: On-line

Prerequisites: Either an introductory Biochemistry or Microbiology course.

Professor: Kenneth Noll

Email: kenneth.noll@uconn.edu I will respond to all questions within 24 hours during weekdays. I will respond within 48 hours to questions asked on the weekends. **I will not answer questions about course material within 24 hours of an exam, so get your questions in before then.**

Office Hours/Availability: Virtual office hours by appointment.

Course Materials

Required course materials should be obtained before the first day of class.

Required textbooks are available for purchase through the [UConn Bookstore](#) (or use the Purchase Textbooks tool in HuskyCT). Textbooks can be shipped ([fees apply](#)).

Required Materials: (subject to change as the course develops)

1. *The Physiology and Biochemistry of Prokaryotes* by White, Drummond and Fuqua; 4th edition, 2011
2. Articles and other materials posted on the course HuskyCT site

Additional course readings and media are available within HuskyCT, through either an Internet link or Library Resources.

Course Description

Examination of biochemical energy generation, regulation of metabolism, and cellular structures of archaea and bacteria. Physiological processes as they occur in nature and the biotechnology industry.

Course Objectives

Students in the course will gain an appreciation for the modes of energy generation and harvesting as exhibited among the Bacteria and Archaea. The evolution of selected processes will be examined. The interactions of these organisms with their natural environment as a consequence of these activities will also be explored.

Course Schedules

Writing assignment schedule

Assignment	Pages	1 st draft	2 nd draft
Paper 1	5	Sept. 14	Sept. 23
Paper 2	5	Oct. 12	Oct. 21
Paper 3	5	Nov. 9	Nov. 18

All writing assignments are due through SafeAssign by noon on the dates indicated above. If an assignment is not submitted as required, its score will be reduced as described under "Late submissions" in "Grade Calculations" below.

The instructor reserves the right to change due dates if necessary as the semester progresses. All changes will be communicated in an appropriate manner.

Exam schedule

Midterms: Sept. 29 and Oct. 27, 11:00-12:15. Final: week of Dec. 14 at the Registrar-assigned date and time. Exams will cover material indicated on the most recently updated lecture schedule on the HuskyCT site.

Lecture schedule (we may not get to all of these)

Topics	Text sections*
1. Cell nutrition	
a. Evolutionary relationships	1.1
b. Cell nutrition	2.2.3
3c. Nitrogen and sulfur assimilation mechanisms.....	13.1, 13.3
2. Cell structure	1.2.2-7
3. Cell wall biosynthesis	2.6, 12.1, 12.3
4. Glycolysis and tricarboxylic acid pathway	Ch. 9
5. Fermentation processes	
a. Free energy in chemical bonds.....	Ch. 8
b. Fermentation energetics	Ch. 15
6. Commercial fermentations, complex polysaccharides and biofuels.....	Ch. 15
7. Electron transport: Aerobic and anaerobic.....	Ch. 5, 19.2.2
8. Membrane energetics: Membrane ATPases, ion pumps, redox free energy	Ch. 4
9. Solute transport processes.....	2.2.4-6, Ch. 17, 19.10.3
10. Anaerobic ecosystems	15.2-15.4
11. Methanogenesis and sulfate-reducing bacteria	14.1.4-6, 13.2
12. Microbial phototrophs: Reaction centers and light harvesting	Ch. 6
13. Archaerhodopsin and proteorhodopsins	4.8.4, 4.9, posted article
14. Gut microbiota	posted articles
15. Chemolithotrophs	13.4
16. Iron respiration	posted articles
17. Direct electron transport.....	posted articles
18. Green sulfur bacteria consortia.....	posted articles

*From the White textbook. Articles will be posted on the HuskyCT site.

Course Requirements and Grading

LECTURES

Video lectures and the associated slides will be posted each Monday for you to view at any time. If you have questions about lecture material, please send Dr. Noll an email. I will post lecture questions (perhaps editing out extraneous text) with their answers so all can see them.

There will be some short lectures posted about writing. The material in those lectures will not be used as material for exams or quizzes.

QUIZZES: questions and their effect on your course grade

For each lecture topic, I will post one or two multiple choice questions. The questions will be based on that topic's assigned readings and previous lecture materials. You should email your answers to Dr. Noll who will give you feedback on your attempts. You can make multiple attempts to get the correct answers. You will get credit for your answer as long as it is a reasonable attempt to answer it correctly. **Note, I will not answer questions about course material within 24 hours of an exam, so get your questions in before then. It is recommended that you do these when they come out to help you keep up on the lecture material.**

These attempts will count as extra credit. You will get 2 points if you have received credit for all the questions, 1.5 point for 99-75% of them, 1 point for 74-50%, 0.5 for 49-25% and no credit for fewer than 25%. These points will be added to your average of course-associated grades.

EXAMS

Midterms will be taken at the assigned class time, 11:00-12:15 on the indicated Tuesdays. The final exam will be offered at the time and date assigned by the Registrar. At those times the exam will become accessible through the course HuskyCT site using the LockDown Browser and Monitor features. You need to use a computer with a microphone and camera for the exams. **You should sit back far enough from the camera so your hands can be seen. If you fail to do this, you may risk a charge of attempting to cheat on the exam.** LockDown Browser will lock down your computer so that you cannot print, copy, go to other websites, access other applications, or close the test until it is submitted for grading. Monitor will use your computer's webcam to visually record you and any sounds while you are taking the exam. This feature will be used to assure that exam

was completed by the proper student and that no assistance was provided.

You can use course materials during the exams including the textbook, your notes, and assigned articles. You should have written or printed copies of notes and articles with you to use during the exam. Former students who have taken these kinds of exams have suggested that you go through your text and notes and put tabs to indicate the locations of different topics so you can more rapidly access information. No electronic resources can be used during the exam, so do not attempt to use other computers, phones, or tablets during the exam. **Your hands need to be visible on the video to assure you are not using such devices.**

WRITING ASSIGNMENTS

Assignments

You will each be provided with three articles that will serve as the basis for each assigned paper. A list of topics to be covered in each paper will be assigned. Each paper is to be 5 pages long, exclusive of the additional page(s) necessary to include its reference list. Short lectures will be posted to give information and advice about writing.

General writing requirements

You will submit the writing assignments as Microsoft Word documents to SafeAssign. **Do not submit pdf files of your work.** If you use different word processing software, see Dr. Noll before submitting an assignment. Both writing assignments must be typed using the following layout. These requirements will be strictly enforced and points will be deducted if they are not met.

- 12 point Times New Roman font
- double spacing between lines in a paragraph (set to 0 pts between lines)
- 0 pt spacing between paragraphs
- one-inch margins at both sides, top and bottom.

Some word processing programs use a 1¼ inch default setting for side margins, so change this if necessary. I only need your name at the top of the page. Do not include the date, the course name, your social security number or any other extraneous information.

Citing references

You should use material in other publications to complete your assignments. When you do so, be careful not to copy text from them as this is plagiarism. See the plagiarism section below for a complete discussion of this topic.

Although you can consult textbooks or websites for background information for yourself, you cannot use textbooks or websites as cited information sources.

When you cite an article in your papers, use the format used in journals published by the American Society for Microbiology, ASM. There is a pdf file ("ASM citation styles") posted on the HuskyCT site under "Writing websites and resources" that describes how to do ASM-style citations. ASM standards include listing all authors, full title of the article, abbreviated journal title, volume number, full listing of pages, and year of publication. You should list at the end of your paper under the heading "References" your cited references in the order in which they are mentioned in the text. This list should be numbered. In the text, the citations are indicated by placing the appropriate number in parentheses at the end of the sentence in which the information is mentioned. Do not list any sources in your reference list that are not cited in the text. The Reference section is not included in the number of assigned pages. Below is an example of what a typical reference for a journal article looks like.

1. Caserta E, Haemig HAH, Manias DA, Tomsic J, Grundy FJ, Henkin TM, Dunny GM. 2012. In vivo and in vitro analyses of regulation of the pheromone-responsive prgQ promoter by the PrgX pheromone receptor protein. *J Bacteriol* 194:3386-3394.

Note the following features of ASM style:

- In-text citations are by number in the order in which references are cited.
- Authors and volume numbers are in bold font.
- The full title of the article is provided.
- The journal name is abbreviated.
- Full page numbers (beginning and end) are provided.
- Volume numbers are not listed.
- Genus and species names are italicized.

If you do provide literature citations, the References go on page 6 of the assignment and that page does not count in the 5-page requirement for the assignment.

Due dates and late policy

The time of your submission of your papers will be determined by the time listed on their postings to SafeAssign. Papers turned in after the assigned time will have 1/10 of the assignment's grade deducted. If a paper is turned 24-48 hrs after the due date and time, 1/5 of the assignment's grade will be deducted. No paper will be accepted 48 hrs after the due date and time.

Evaluation of writing

In evaluating these writing exercises, I will examine their content, format, appropriateness to the target audience, and grammar. You are expected to meet the page requirements of all assignments. **The text on the final page must cover at least $\frac{3}{4}$ of the page to count as a full page. Less coverage will count against your grade. You should not exceed the page requirement by over $\frac{1}{4}$ page either, or it will count against your grade.**

Scoring of writing assignments

Scores for the writing assignments will be assigned for both the first draft and second draft. A final score for these assignments will be calculated as follows. A score based on the assignment's total points will be provided on the first draft. Another score, also based on the assignment's total points, will be provided on the second draft. The score of the second draft will be tripled and added to the first draft's score and this sum will be divided by four to give the assignment's total score. This means the first draft counts for one fourth of the final score for the assignment. It is possible to receive a lower score on the second draft than on the first draft if errors are not adequately addressed.

Plagiarism scoring

If evidence of plagiarism is found on any assignment, that assignment will receive a grade of zero points. Dr. Noll reserves the right to change the grade on an assignment to zero if he learns later that it contained plagiarized material.

FINAL GRADE CALCULATION AND SCALE

Final grade calculation

	points each	total points
3 papers	12	36
2 midterms	20	40
Final exam	24	24
		100

Final grade scale

Grade	Letter Grade	GPA
93-100	A	4.0
90-92	A-	3.7
87-89	B+	3.3
83-86	B	3.0
80-82	B-	2.7
77-79	C+	2.3
73-76	C	2.0
70-72	C-	1.7
67-69	D+	1.3
63-66	D	1.0
60-62	D-	0.7
<60	F	0.0

STUDENT AUTHENTICATION AND VERIFICATION

The University of Connecticut is required to verify the identity of students who participate in online courses and to establish that students who register in an online course are the same students who participate in, complete

the course activities and assessments, and receive academic credit. Verification and authentication of student identity in this course will be by secure access to the learning management system using your unique UConn NetID and password.

Student Responsibilities and Resources

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. Review these important [standards, policies and resources](#), which include:

- The Student Code
 - Academic Integrity
 - Resources on Avoiding Cheating and Plagiarism
- Copyrighted Materials
- Netiquette and Communication
- Adding or Dropping a Course
- Academic Calendar
- Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships
- Sexual Assault Reporting Policy

Plagiarism

1. Indiana University plagiarism Confirmation Certificate

There is a link to the Indiana University “How to Recognize Plagiarism” site on the course homepage (<https://plagiarism.iu.edu/certificationTests/>). The site has tutorials to teach you to recognize the different kinds of plagiarism. There are links there (Definition, Overview, Cases) that define different types of plagiarism. Many of their examples of plagiarism may not be obvious, so you need to read through this material. There are practice questions that will allow you to receive feedback on your answers. There is a 10-question test that you must take at the end of the instruction. Make sure you take the undergraduate test as the graduate student test is harder and has more questions. You can take the test repeatedly until you get all the questions correctly answered. The site changes the questions for each attempt and you cannot change your answer for each question once you have entered it. Consequently, if you do not pass 9 questions, you have to take a new test.

Once you’ve passed the test and provided the requested information, you will be sent an email with the Certificate of completion. Scan your signed copy and send that to Dr. Noll before Sept. 14. Assignments will not be graded until a Certificate is turned in. If it is not turned in before Sept. 23, the first paper will receive a score of zero. No writing assignments after then will be accepted until the Certificate is turned in and each assignment will receive a score of zero.

The course HuskyCT site also has a link to resources at the UConn library that describe plagiarism and give instruction on recognizing it.

2. Plagiarism policy for this course.

In the past there have been misunderstandings about whether it is appropriate to copy material from published sources, internet materials, or other students. Briefly, it is **never** appropriate to copy anything written by someone else (including other students, published works or internet material). The work you turn in **must be in your own words**. Do not copy **anything** from work written by others. All facts and interpretations of facts that are not your own must include a literature citation. When describing factual material, you should describe it in your own words. Do not take phrases from the published work and connect them with your own words. Do not use text from sources and surround it with quotation marks. You need to restate what you read in your own terms. Do not do what is called “creative reiteration” and simply rearrange the words in another author’s text and present it as your own. This, too, is plagiarism. It is best to write your paper without looking at the original work to avoid using those authors’ words.

Although we will use the SafeAssign software to check for possible plagiarism (see below) the final determination of the authenticity of your writing rests with Dr. Noll. Even if SafeAssign does not recognize copied or “creatively reiterated” material, if Dr. Noll determines that it is unacceptable, that is the final decision.

Academic misconduct in any form is in violation of the University of Connecticut Student Code and will not be tolerated. This includes, but is not limited to copying or sharing answers on assignments, plagiarism, and having someone else do your academic work. If you have any questions about the acceptability of your work regarding plagiarism, contact Dr. Noll **before** submitting the work. If submitted work is deemed to be in violation of this policy, that assignment will be given a grade of zero points. Subsequent violations will be dealt with according to the guidelines given in The Student Code (see the link at the course HuskyCT site). Depending on the act, the

Code stipulates that a student could receive an F grade on the test/assignment, F grade for the course, or could be suspended or expelled. See the UConn plagiarism [link](#) on the course HuskyCT site.

Use of SafeAssign

All your writing assignments will be submitted electronically through the SafeAssign software available on the course HuskyCT site. This software checks your paper for plagiarism, from published sources, other students in the class, or other student papers in the SafeAssign database. It is designed to help you learn about correct usage of information in the literature and proper citation of that information.

You will submit your papers to SafeAssign sites that will check the document against a large database of journal articles and websites as well as papers submitted to the SafeAssign database from UConn and other schools. You will receive a report showing the extent to which your writing matches text in that database. If your score is 15-40, you should examine your paper for possible copying and make necessary changes. If the score is above 40, there may be serious overlap between your work and that of others and you need to address this. SafeAssign provides evidence of possible plagiarism. The final determination of authenticity lies with Dr. Noll.

For each assignment, you can submit your document to a link called "Test document" under the SafeAssign link on the course's HuskyCT site. This will allow you to get a score on your paper so you can make changes if needed. Be aware that this submission does not check your paper against those of others in the class, but this will be checked when your paper is submitted to me. I will not look at submissions to the test run site.

For each final and draft submission, there is a SafeAssign link. These submissions will come to me and cannot be revoked. These are the submissions that must be made by the deadlines posted in the syllabus. These submissions will be compared with papers submitted by other students in the course (but not against your earlier drafts) to catch within-course copying. **Thus it is very important that you not share electronic copies of your papers with anyone else so there will be no chance of misunderstandings regarding authorship.**

Please do not wait to the last minute to upload your paper to SafeAssign if you have not tested the use of the system beforehand. There can be problems and it can take many, many minutes to process a paper. It is best to use FireFox, Chrome or Explorer to upload to SafeAssign. Safari will block access in its default settings, so you must disable the feature that prevents pop-ups. Word processing software other than Microsoft Word sometimes does not upload properly. It is your responsibility to make sure documents upload properly before the deadlines.

Students with Disabilities

The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020 or <http://csd.uconn.edu/>.

Software/Technical Requirements (with Accessibility and Privacy Information)

The software/technical requirements for this course include:

- HuskyCT/Blackboard ([HuskyCT/ Blackboard Accessibility Statement](#), [HuskyCT/ Blackboard Privacy Policy](#))
- [Adobe Acrobat Reader](#) ([Adobe Reader Accessibility Statement](#), [Adobe Reader Privacy Policy](#))
- Microsoft Office (free to UConn students through uconn.onthehub.com) ([Microsoft Accessibility Statement](#), [Microsoft Privacy Statement](#))
- Dedicated access to high-speed internet with a minimum speed of 1.5 Mbps (4 Mbps or higher is recommended).
- A computer with a webcam and microphone for taking exams.

NOTE: This course has NOT been designed for use with mobile devices.

Help

[Technical and Academic Help](#) provides a guide to technical and academic assistance.

This course is completely facilitated online using the learning management platform, [HuskyCT](#). If you have difficulty accessing HuskyCT, you have access to the in person/live person support options available during regular business hours through the [Help Center](#). You also have [24x7 Course Support](#) including access to live chat, phone, and support documents.

Minimum Technical Skills

To be successful in this course, you will need the following technical skills:

- Use electronic mail with attachments.
- Save files in commonly used word processing program formats.
- Copy and paste text, graphics or hyperlinks.
- Work within two or more browser windows simultaneously.
- Open and access PDF files.
- Operate your computer's webcam and microphone.

University students are expected to demonstrate competency in Computer Technology. Explore the [Computer Technology Competencies](#) page for more information.

Evaluation of the Course

Students will be provided an opportunity to evaluate instruction in this course using the University's standard procedures, which are administered by the [Office of Institutional Research and Effectiveness](#) (OIRE).