Syllabus
BIOL 342 Microbiology
SPRING 2019

Instructor:
Dr. Mary Beth Leigh
Professor of Microbiology
Office: 228 West Ridge Research Building (WRRB)
Phone: Office (907) 474-6656
mbleigh@alaska.edu (please use “BIOL 342” in subject line)
Office hours: By appointment

Lab TAs:
Chris Kasanke cpkasanke@alaska.edu
Alexis Walker amwalker8@alaska.edu

Course website:
https://biol342-s19.community.uaf.edu
Class times and places

**Lecture:** Murie Auditorium, MWF 11:45 am - 12:45 pm

**Lab:** Room 206 Murie Building. Sections and times below:

<table>
<thead>
<tr>
<th>Lab Section (CRN)</th>
<th>Day</th>
<th>Time</th>
<th>Lab TA</th>
</tr>
</thead>
<tbody>
<tr>
<td>F02 (CRN 33282)</td>
<td>T</td>
<td>9:45 am - 12:45 pm</td>
<td>Alexis Walker</td>
</tr>
<tr>
<td>F01 (CRN 33281)</td>
<td>T</td>
<td>2:00 pm - 5:00 pm</td>
<td>Chris Kasanke</td>
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<tr>
<td>F03 (CRN 33283)</td>
<td>T</td>
<td>6:00 pm - 9:00 pm</td>
<td>Chris Kasanke</td>
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**Open lab hours – Room 206 Murie Building:** Additional times you can come in outside of your normal lab to work on your experiments will be posted on the website.

**Course type:** In-person course with lecture and lab

**Prerequisites**
BIOL 115 (BIOL 106), BIOL 116 (BIOL 105) and CHEM 105 or equivalent

**Catalogue description**
Morphology and physiology of microorganisms. The role of these organisms in the environment and their relationship to humans. Concepts of immunology. Laboratory stresses aseptic techniques for handling microorganisms.

**Student learning outcomes**
- Develop a strong foundation in microbiology
- Gain skills in microbiological lab techniques
- Conduct original research by isolating, identifying and characterizing a bacterium
- Develop scientific literature research, writing and oral presentation skills
- Develop creativity and practice interdisciplinary integration across the arts, humanities, and sciences

**Course materials**
- **Course website:** [https://biol342-s19.community.uaf.edu](https://biol342-s19.community.uaf.edu) - This is the centralized location for class materials. The SCHEDULE is updated often with links to lecture slides, lab handouts, deadlines for assignments, and other useful information. You will also post some assignments to the website. You should be auto-enrolled in the website so you can log in with your UA credentials to create and comment on posts.
● **Lecture slides** and supplementary material will be posted on the course website after each lecture (see SCHEDULE for links)

● **Lecture videos** (when available) will be posted on the course website within a few days after each lecture (see SCHEDULE for links)

● **Lab handouts** will be posted on the course website (look in the SCHEDULE for links). You must **print them** out in advance, read them (there will be a **clicker quiz** at the start of each lab) and bring your own copy of the handout to class. Get a binder to keep them organized.

● **Blackboard** will be used for posting grades and possibly for some online homework assignments.

● **REQUIRED technology**
  ○ **TurningPoint student response devices or ResponseWare app for smartphone** are required for completing lab quizzes and possibly other activities in lectures/labs.

● **REQUIRED text:** *Brock Biology of Microorganisms, 15th edition*, by Madigan, Bender, Buckley, Sattley, and Stahl.
  ○ Note: MasteringMicroAccess is not required

● **Additional resources you may find helpful**
  ○ Digital resources through library
    ■ *Bergey's Manual of Systematic Bacteriology*
    ■ *Microbial Diversity: Form and Function in Prokaryotes, 1st Ed.,* by Oladele Ogunseitan

  ○ Books about scientific writing
    ■ *Writing Papers in the Biological Sciences, Fourth Ed.*, by Victoria E. McMillan

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**LECTURE ACTIVITIES**

**Lectures:** I will lecture regularly on the core content of the course. During the course of lectures, we will occasionally break for discussions and individual or group activities. Asking questions throughout lecture is highly encouraged. Attending and participating actively in lecture activities will help ensure your success at learning the material.

**Readings:** Readings are assigned to provide additional background information and support for the lecture content. Consult the schedule for the readings that support each lecture topic. Exam
material focuses primarily on material covered during class in the form of lectures and assignments but may include material from the assigned readings as well.

Assignments: The goals of these exercises are to help your understanding of the material, promote critical thinking, and develop research and writing skills important to success in a scientific (or any other) career.

- Approximately 16 assignments of varying format will be assigned in the lecture portion of the course (usually 10 pts each). Some are to be completed as homework while others are to be done during class either individually or in groups. Often they will be open-note problems, so always bring your notes or a way to access the course website so you can look them up (laptop, smartphone, tablet, etc.). In-class assignments will sometimes occur without prior notice and are due the same day during class. Others will be assigned in advance and are to be turned in during class or submitted online (e.g. website posts, Blackboard assignments, or google forms).

Exams: There will be three exams in lecture: Exam 1, Exam 2, and a comprehensive Final Exam. Study guides will be provided in advance and I’ll hold review sessions in the lecture period prior to the exams. You’ll have the opportunity to request topics for review. Questions will be written in a variety of formats, such as multiple choice, fill-in-the-blank, short answer and essay. Please make every attempt to be present for exams. If you know you are going to be absent, contact me well in advance to make arrangements to take the exam. In the event of illness or unexpected absence for an exam, please contact me as soon as possible (email) so we can make other arrangements.

LAB ACTIVITIES

Lab handouts: Lab exercises are an integral and important part of this course and lab work constitutes approx. half of your grade. Lab exercise handouts will be posted on the course website, typically 1 week in advance. YOU MUST READ THE LAB HANDOUT BEFORE LAB, and BRING A COPY with you to lab or have a way to digitally access it during lab. If you use a digital device, be attentive to our safety rules to avoid contaminating your device.

Lab quizzes: Short quizzes (10 pts ea) will be given immediately at the beginning of every lab period using clickers. TAs have been instructed not to allow students who are late to complete the quiz. The quiz focuses primarily on the content in the lab handout for that day’s lab. The
purpose is to ensure that you’ve read the handout thoroughly and are prepared for the day’s activities.

You are responsible for completing all parts of your lab handouts, including recording results and observations and answering brief questions about your results. Lab handouts are generally due to your TA in the lab period following the one in which the activities were completed (TAs will announce deadlines). In lab you will sometimes be working with partners, and it is expected that each partner will contribute equally to the exercise and turn in their own separate work.

KEEP A LAB NOTEBOOK for your research project. Note all dates when you work with your isolate, as well as all observations, experiments and results you obtain for your research project. Even though you will report many of your research activities in lab handouts, be sure also to document tasks and results in your notebook. You can cite the lab handouts in your lab notebook for lengthy protocols, etc. The lab notebook will be checked periodically by your TA during class, and will be turned in twice for more detailed grading. It will be graded based on completeness and organization. A good strategy for keeping all of your handouts and research project notes together is to use a 3-ring binder. Your lab notes may be kept either on pages inserted into a binder or in a permanently bound notebook.

Extra lab times: Occasionally you will need to come into lab outside of normal hours to follow up experiments and maintain cultures. This must be done during designated OPEN LAB HOURS. Hours will be announced in class when they’re established and will posted on the website.

Lab practical: Your proficiency in and understanding of general microbiological techniques will be assessed during the lab practical, given at the end of the semester. It is important to thoroughly understand the concepts covered in lab, as well as to be proficient in standard methods such as pure culture techniques, Gram staining, and microscopy. So as you go through the lab exercises, take your time and make sure you understand what you are doing. Don’t be afraid to ask questions!

Missing labs: In general, missed labs cannot be made up due to the extensive amount of prep work required. If you are going to miss a lab for an excused absence (illness, pre-approved travel, emergencies, etc.), please let your TA and me know as soon as possible so that we can attempt to accommodate you. One solution is to attend another lab section, but can only be done with permission so that the TAs know to prepare supplies for more students. Open labs are another opportunity to make up missed tasks. Keep in mind that many of the exercises are completed over the course of two or more lab periods. Completion of the lab exercises
(recording results and observations), as well as developing good lab techniques are critical to successful completion of this course.

**BACTERIAL ISOLATE RESEARCH PROJECT, PAPER AND PRESENTATION**

Over the course of the semester you will isolate, characterize and identify (using DNA sequencing and other tests) a bacterium that you've cultured from a location of your choosing. Once you've taxonomically identified your isolate, you should immediately begin researching your organism by reading scientific literature. As soon as possible, you should begin writing your lab report on your isolated organism. Detailed guidelines for writing the lab report, as well as the grading rubric, and sample lab reports will be provided on the course website. Your lab project and report is a major portion of your grade, and it will be graded very rigorously. Drafts are due for each section of the lab report so you can receive feedback prior to the final paper.

*Additional support for lab report:* Consult the book *Writing Papers in the Biological Sciences*, Fourth Ed., by Victoria E. McMillan for writing style and advice. For higher level advice on writing, see *Writing Science*, by Joshua Schimel (digital edition available through Rasmuson Library, see link above under course materials). For guidance with some aspects of writing consult the Writing Center (8th floor, Gruening Bldg).

Oral presentation: You will give a short (~5 min), informal oral presentation on your project during your lab section at the end of the semester.

**ASSESSMENT**

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<thead>
<tr>
<th>ITEM</th>
<th>POINTS*</th>
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<tr>
<td>Assignments (approx. 16 x 10 pts ea)</td>
<td>160*</td>
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<tr>
<td>Microbial Art project + presentation</td>
<td>50</td>
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<tr>
<td>Exam I</td>
<td>100</td>
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<td>Exam II</td>
<td>100</td>
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<tr>
<td>Final exam</td>
<td>150</td>
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<tr>
<td><strong>LECTURE TOTAL</strong></td>
<td><strong>550</strong>*</td>
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Lab:
Lab exercises/handouts (11 x ~15 pts ea) 165*
Lab quizzes (10 x 10 pts ea) 100
Lab notebook 25
Lab report section drafts (4 x 15 pts) 60
Final lab report 100
Oral presentation 20
Lab practical exam: 100
LAB+RESEARCH PROJECT TOTAL 570*

TOTAL (est.) POINTS FOR THE COURSE 1120*

*Note: Total point values may vary, particularly the number of assignments and the exact point values for lab handouts.

Grading Scale (% of total course points)
Final grades for the course will be based on the following scale. No curve will be used.
A+ 97 – 100  A  94 - 96.99  A- 90 - 93.99
B+ 87 - 89.99  B  84 - 86.99  B- 80 - 83.99
C+ 77 - 79.99  C  74 - 76.99  C- 70 - 73.99
D 60 - 69.99
F < 60

I (Incomplete):
I follow the University of Alaska Fairbanks Incomplete Grade Policy: “The letter “I” (Incomplete) is a temporary grade used to indicate that the student has satisfactorily completed (C or better) the majority of work in a course but for personal reasons beyond the student’s control, such as sickness, has not been able to complete the course during the regular semester. Negligence or indifference are not acceptable reasons for an “I” grade.”
**Attendance:** It is strongly recommended that you attend all lectures and labs. Students who attend class regularly perform better than those who don’t. Exercises and graded assignments to enhance learning will occasionally be done during lecture periods without advanced warning, so it is best to always attend.

Attendance will be taken in lab. If you have more than 3 unexcused absences in lab, this will result in a failing grade. As noted above: In general, missed labs cannot be made up due to the extensive amount of prep work required. If you are going to miss a lab, please let your TA and me know as soon as possible so that we can attempt to accommodate you. In some cases you may be able to attend another lab section later in the week, but this is not guaranteed and may only be done with permission.

**Cell phones:** Silence your phones during class and only have them out if you’re actively using it for class-related work.

**IMPORTANT NOTE ON PLAGIARISM AND ACADEMIC DISHONESTY**
Plagiarism and/or other academic dishonesty on any assignment in this course will not be tolerated. Plagiarism will result in a failing grade on the assignment, and may also result in a failing grade in the course or even expulsion from the University, depending on the severity, in accordance with the UAF Student Code of Conduct. Be sure to acquaint yourself with the definition of plagiarism to avoid accidental errors!

Students are required to review the UAF policy on Academic Dishonesty and Plagiarism.  
https://www.bw.uaf.edu/undergraduates/academic_honesty.php

**Late work policy:** Late assignments, term papers, etc. will be penalized 5% per day they are late, this penalty will be excused only in documented case of illness, family medical reasons, or other extenuating circumstances at instructor’s discretion. If you have what you feel is a legitimate reason for needing an extension, contact the instructor or your TA asap and we will do our best to accommodate you if you are communicative and have valid reasons for the delay.

**Student Support Services**
UAF is committed to equal opportunity for all students. Students with even minor disabilities, as well as students who are the first in their families to attempt a four-year college degree, or students whose incomes are low, have opportunities for tutorial and other forms of support from the Office of Disability Services or the office of Student Support Services. If you need classroom accommodations or other support, please meet with me during office hours as soon
as possible to let me know; and please contact Student Support Services at https://www.uaf.edu/sss to enlist the appropriate support. I will be happy to provide the appropriate accommodations and support or services to assist you in meeting the goals of the course.

Student Protections and Services Statement
Every qualified student is welcome in my classroom. As needed, I am happy to work with you, disability services, veterans’ services, rural student services, etc., to find reasonable accommodations. Students at this university are protected against sexual harassment and discrimination (Title IX), and minors have additional protections. As required, if I notice or am informed of certain types of misconduct, then I am required to report it to the appropriate authorities. For more information on your rights as a student and the resources available to you to resolve problems, please go the following site: www.uaf.edu/handbook/

Effective communication resources: Students who have difficulties with oral presentations and/or writing are strongly encouraged to get help from the UAF Department of Communication’s Speaking Center (907-474-5470, speak@uaf.edu) and the UAF English’s Department’s Writing Center (907-474-5314, Gruening 8th floor), and/or CTC’s Learning Center (604 Barnette st, 907-455-2860).

UA is an AA/EO employer and educational institution and prohibits illegal discrimination against any individual: alaska.edu/nondiscrimination.

SCHEDULE

The class schedule can be found on the course website. Check the schedule often for updates and for new links to lab handouts, assignments, lecture slides, and more.