Alaskan Microbiomes (BIOL 497)

Spring 2020 Syllabus

Prerequisites: None

Credits: 2

Location and meeting times:

Instructor meeting (224 WRRB): Thursday 1:30 PM - 2:30 PM
Independently: 1.5 hours / week

Instructor information

Dr. Devin Drown: 224 WRRB, 907-474-2602, dmdrown@alaska.edu
office hours: Thursday 11 AM - 12 PM

Course readings/materials

Course readings will consist of papers from the primary literature. There is no required textbook for this course.

Course description

This course will cover the microbiome of the built environment including the humans that live there. We will use next-generation sequencing data and advanced bioinformatics tools to explore the microbes that live on us.

Student Learning Outcomes

The successful student will complete this course with a variety of new knowledge and skills. By the end of the course, students will have a greater knowledge of connection between microbiome of the built environment and humans that live there. They will have both read and discussed current research methods as well as having actively applied some of the methods through the laboratory work. Students should be able to demonstrate an ability to:

- Find and explore and critically review the relevant literature
- Carry out the investigations, including collecting and analyzing data
- Draw valid conclusions from the analysis of the data
- Discuss the relevance of the conclusions in the context of previous findings
- Apply current research methods of microbiome investigation

Instructional methods

This individual study course will include student directed discussions with the instructor and independent bioinformatics work. The weekly discussions will focus on providing students a background and context of the field as well as exploring analysis methods.
Service Learning Project

To complete the outreach portion of this course, students will explain their research and its implications to fellow Alaskans. With help from the instructor, students will identify local K-12 classes and arrange for a guest visit. Students will discuss how their research fits into current knowledge of microbiomes and why this matters. At the end of the discussion, the audience should be able to understand how some microbiome research is conducted and what it means for the general public. The goal here is to help inspire future students to engage in research related stem activities.

Course calendar

*Research proposal*  
Due Feb 7, 2020
- Hypothesis or research question
- Brief timeline of proposed study

*Background review*  
Due Feb 28, 2020
- Review of background literature

*Analysis*  
Due Mar 20, 2020
- Written presentation (figures or graphs) of major results
- Description (including location) of all raw data collected

*Service Learning Project*  
Due April 10, 2020
- Presentation to public

*Research report*  
Due April 24, 2020
- Written in the style of a journal article including:
  - A title, authors, affiliations
  - Abstract
  - Introduction (with stated hypothesis/question)
  - Methods
  - Analyses and Results
  - Conclusions/Discussion/Future Directions
Course policies

**UAF Student Code of Conduct:** Cheating, plagiarism and fabrication of data are unacceptable practices both in this course and in science more generally. All of your work should be your own and only your own unless it is explicitly assigned and completed as a group. I do not accept assignments written for other classes. Cheating, plagiarism or data fabrication will result in a course grade of F and possible referral to the University Disciplinary and Honor Code Committee. Also see the UAF Student Code of Conduct at [http://uaf.edu/catalog/current/academics/regs3.html](http://uaf.edu/catalog/current/academics/regs3.html). If you have any doubt about whether a particular action constitutes cheating, plagiarism or fabrication of data, please seek clarification from the course instructor.

Evaluation

Successful completion of this class will require turning in all of the assignments on time and being fully engaged in the discussion.

- Discussion participation: 30%
- Service Learning Project: 30%
- Final Review Paper: 40%

Overall course grades will be assigned on the following scale

<table>
<thead>
<tr>
<th>Numerical Score</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90.0-100%</td>
<td>A</td>
</tr>
<tr>
<td>80.0-89.9</td>
<td>B</td>
</tr>
<tr>
<td>70.0-79.9</td>
<td>C</td>
</tr>
<tr>
<td>60.0-69.9</td>
<td>D</td>
</tr>
<tr>
<td>below 60</td>
<td>F</td>
</tr>
</tbody>
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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 to the following site: [www.uaf.edu/handbook/](http://www.uaf.edu/handbook/).