TRIAL COURSE OR NEW COURSE PROPOSAL
(Attach copy of syllabus)

SUBMITTED BY:

Department	BIOL	College/School	CNSM
Prepared by	Devin Drown	Phone	907-474-2602
Email Contact	dmdrown@alaska.edu	Faculty Contact	Devin Drown

1. ACTION DESIRED (CHECK ONE): Trial Course [X] New Course [ ]

2. COURSE IDENTIFICATION: Dept [BIOL] Course # [F494] No. of Credits [4]

Justify upper/lower division status & number of credits:	This course requires students to analyze and synthesize concepts based on substantial previous coursework/background from multiple topics across biology. The semester long project will require independent exploration of the scientific literature and development of a novel research question.

3. PROPOSED COURSE TITLE: The Human Microbiome

4. To be CROSS LISTED? YES/NO NO If yes, Dept: [ ] Course # [ ]

NOTE: Cross-listing requires approval of both departments and deans involved. Add lines at end of form for additional required signatures.

5. To be STACKED?* YES/NO NO If yes, Dept. [ ] Course # [ ]

How will the two course levels differ from each other? How will each be taught at the appropriate level?:	

* Use only one Format 1 form for the stacked course (not one for each level of the course) and attach syllabi. Stacked course applications are reviewed by the (Undergraduate) Curricular Review Committee and by the Graduate Academic and Advising Committee. Creating two different syllabi (undergraduate and graduate versions) will help emphasize the different qualities of what are supposed to be two different courses. The committees will determine: 1) whether the two versions are sufficiently different (i.e. is there undergraduate and graduate level content being offered); 2) are undergraduates being overtaxed?; 3) are graduate students being undertaxed? In this context, the committees are looking out for the interests of the students taking the course. Typically, if either committee has qualms, they both do. More info online – see URL at top of this page.

6. FREQUENCY OF OFFERING: Fall Even-numbered Years

Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) — or As Demand Warrants

7. SEMESTER & YEAR OF FIRST OFFERING (Effective AY2015-16 if approved by 3/31/2015; otherwise AY2016-17) Fall AY2016

8. COURSE FORMAT:

NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council. Furthermore, any core course compressed to less than six weeks must be approved by the Core Review Committee.

COURSE FORMAT: (check all that apply)	[ ]1	[ ]2	[ ]3	[ ]4	[ ]5	[X] 6 weeks to full semester
OTHER FORMAT (specify)						
Mode of delivery (specify lecture, field trips, labs, etc)	Combined Lecture and labs					

9. CONTACT HOURS PER WEEK: `3` LECTURE hours/weeks   `3` LAB hours /week   ☐ PRACTICUM hours /week

Note: # of credits are based on contact hours. 800 minutes of lecture=1 credit. 2400 minutes of lab in a science course=1 credit. 1600 minutes in non-science lab=1 credit. 2400-4800 minutes of practicum=1 credit. 2400-8000 minutes of internship=1 credit. This must match with the syllabus. See http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/guidelines-for-computing-/ for more information on number of credits.

OTHER HOURS (specify type) [   ]

10. COMPLETE CATALOG DESCRIPTION including dept., number, title, credits, credit distribution, cross-listings and/or stacking (50 words or less if possible):

Example of a complete description:

FISH F487 W, O   Fisheries Management
  3 Credits   Offered Spring
  Theory and practice of fisheries management, with an emphasis on strategies utilized for the management of freshwater and marine fisheries. *Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; ENGL F414; FISH F425; or permission of instructor. Cross-listed with NRM F487. (3+0)*

> BIOL F494   The Human Microbiome
> 4 Credits Offered Fall Even-numbered years
> Biology of host-associated microbiomes with an emphasis on the human microbiome. Explore microbial impacts on the behavior, physiology and fitness of their host. Humans as hosts and include model and non-model systems.
> Prerequisites: BIOL F260, STAT F200X

11. COURSE CLASSIFICATIONS: Undergraduate courses only. Consult with CLA Curriculum Council to apply S or H classification appropriately; otherwise leave fields blank.

H = Humanities [   ]   S = Social Sciences [   ]

	YES:	NO:	X
Will this course be used to fulfill a requirement for the baccalaureate core? If YES, attach form.			

IF YES, check which core requirements it could be used to fulfill:

[O = Oral Intensive, Format 6] ☐   W = Writing Intensive, Format 7 ☐   .   X = Baccalaureate Core ☐

11.A Is course content related to northern, arctic or circumpolar studies? If yes, a **"snowflake" symbol will be added in the printed Catalog, and flagged in Banner.**

[YES   ] ☐   NO ☐ |

12. COURSE REPEATABILITY:
  Is this course repeatable for credit? .... |YES ☐   NO [X]

Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).	

How many times may the course be repeated for credit?	☐ TIMES
If the course can be repeated for credit, what is the maximum number of credit hours that may be earned for this course?	☐ CREDITS
If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course?	☐ CREDITS

13. GRADING SYSTEM: Specify only one. Note: Changing the grading system for a course later on constitutes a Major Course Change – Format 2 form.
  LETTER: [X]   PASS/FAIL: [   ]

14. PREREQUISITES

> BIOL F260, STAT F200X

These will be *required* before the student is allowed to enroll in the course.

15. SPECIAL RESTRICTIONS, CONDITIONS

> None

16. PROPOSED COURSE FEES

> $200

Has a memo been submitted through your dean to the Provost for fee approval?
Yes/No

> No

17. PREVIOUS HISTORY

Has the course been offered as special topics or trial course previously?
Yes/No

> No

If yes, give semester, year, course #, etc.:

18. ESTIMATED IMPACT
WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

> This course will require lecture and lab space.
> The course fees will be used to cover the cost of lab supplies.

19. LIBRARY COLLECTIONS

Have you contacted the library collection development officer (kljensen@alaska.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No	X	Yes		

20. IMPACTS ON PROGRAMS/DEPTS

What programs/departments will be affected by this proposed action?
Include information on the Programs/Departments contacted (e.g., email, memo)

> Biology and Wildlife

21. POSITIVE AND NEGATIVE IMPACTS

Please specify positive and negative impacts on other courses, programs and departments resulting from the proposed action.

> This course will provide a positive impact on students wanting to continue to learn about advanced topics in microbiology (moving beyond BIOL 342).

JUSTIFICATION FOR ACTION REQUESTED

The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed course.

> It is now widely recognized that humans are host to a diverse assemblage of microbes. This associated microbiota impacts the behavior, physiology and fitness of their host. This trial course will broadly explore the biology of host-associated microbiomes. In the process, we will address humans as hosts and include model and non-model systems as tools for research in this complex field. This course will cover research questions on the ecology and evolution of host-associated microbiomes. Additionally, we will explore research methods and tools used to collect and analyze microbiome data.
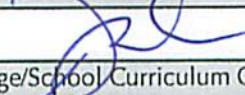>
> Benefit to students, filling a curriculum gap: There is currently no course like this offered within the University of Alaska system. Both UAF and UAA offer courses which broadly cover microbiology. The development of this independent course will extend students learning into this developing field. The main course is focused on understanding host-associated microbiomes with a specific interest in human microbiomes. The research approaches and techniques used are broadly applicable to many aspects to microbiology. For instance, the same techniques are used for understanding environmentally associated
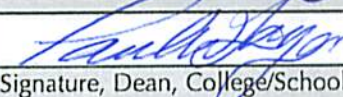
microbiomes such as the home or hospital. This course will provide a depth of knowledge in a growing field relevant for many career paths in biological sciences and human health.

Benefit to students, biomedical research: Understanding the role of the human microbiome is an important missing component of current investigations of the human health, so much so that the NIH started the Human Microbiome Project (HMP) in 2007. Research into host-associated microbiomes, especially human associated, is very young. However, this area is already making a huge impact into the general direction of health related research. The interest in personal genomics has spawned a huge interested in personalized medicine. The proposed course presents an opportunity for undergraduates to learn the methods and techniques of collecting genomic data from microbiome samples. By providing training in the commonly used methods of genomic analysis, we are better preparing future Alaskans to generate and interpret data in the genomics era.
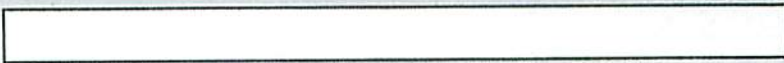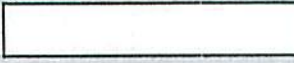
APPROVALS: *Add additional signature lines as needed.*

	Date	1/29/16
Signature, Chair, Program/Department of: Biology & Wildlife		
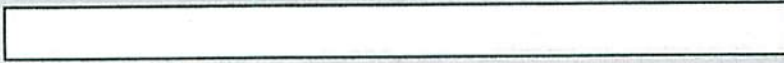
	Date	4/7/16
Signature, Chair, College/School Curriculum Council for: CNSM		

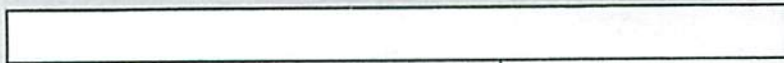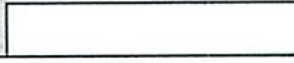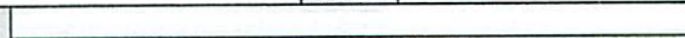|	Date	4/7/16
Signature, Dean, College/School of: CNSM		

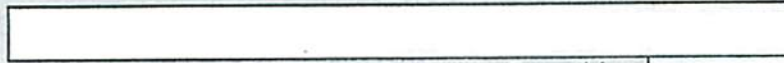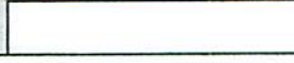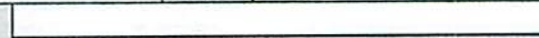Offerings above the level of approved programs must be approved in advance by the Provost.

	Date	
Signature of Provost (if above level of approved programs)		
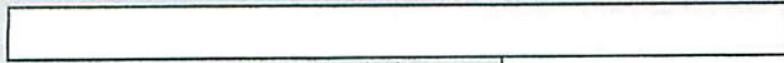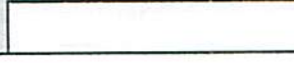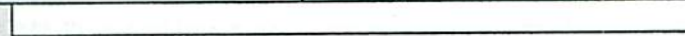
ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

	Date	
Signature, Chair Faculty Senate Review Committee: ___Curriculum Review ___GAAC		

___Core Review ___SADAC

ADDITIONAL SIGNATURES: *(As needed for cross-listing and/or stacking)*

	Date	
Signature, Chair, Program/Department of:		

	Date	
Signature, Chair, College/School Curriculum Council for:		

	Date	
Signature, Dean, College/School of:		

The Human Microbiome (BIOL F494)
Fall 2016 Syllabus

Prerequisites: BIOL 260, STAT 200X   **Credits: 4**

Location and meeting times:
Lectures (BLDG ###):   Tues/Thurs 9:45-11:15 AM
Labs (BLDG ###):   Thurs 2:00-5:00 PM

Instructor information
Dr. Devin Drown   Email: dmdrown@alaska.edu   Phone: 907-474-2602
Office Hours (224 WRRB):   Weds 10-11 AM or by appointment

Course readings/materials
Course readings will consist of papers from the primary literature. There is **no required textbook** for this course. **Other course materials:** I will post readings (as PDFS or web links) on the course Blackboard site. Blackboard Site (http://classes.uaf.edu/): Your grades will be recorded on this site and I encourage you to check that all grades are entered here and in agreement with those on your returned work. Copies of the course syllabus (including the lecture and lab schedules) will also be posted on this site.

Course description
It is now widely recognized that humans are host to a diverse assemblage of microbes (Blaser 2014b). This associated microbiota impacts the behavior, physiology and fitness of their host. The goal is to broadly explore the biology of host-associated microbiomes. In the process, we will address humans as hosts and include model and non-model systems as tools for research in this complex field.

Course Goals
This course will cover research questions on the ecology and evolution of host-associated microbiomes. Additionally, we will explore research methods and tools used to collect and analyze microbiome data. It will draw on the information you have gained in other courses and should also assist you in finding links between seemingly disparate fields of biology. Therefore another goal of this course is to expose UAF biology students to a more advanced level of study and prepare them to go on in biology-related fields. Understanding the role of the human microbiome is an important missing component of current investigations of the human health, so much so that the NIH started the Human Microbiome Project (HMP) in 2007.

Student Learning Goals
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 the ecology and evolution of host-associated microbiomes. They will have both read and discussed current research methods as well as having

actively applied some of the methods through the lab modules. 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

Instructional Methods

This course will be a combination of instructor led lectures and activities and student directed discussions. The weekly lectures and activities will focus on providing students a background and context of the field. Student directed discussions will include two distinct communities: 1) a discussion with members of the class; 2) an online research discussion engaging the broader science community. See Weekly Readings for more details. Lab modules will provide a hands on introduction to the methods in common use for data collection and analysis of host-associated microbiomes. The course project will allow you to collect and analyze new data and finally present your research findings to the class.

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. If you have any doubt about whether a particular action constitutes cheating, plagiarism or fabrication of data, please seek clarification from the course instructor.

Late assignments: Lab exercises and homework will be due at the beginning of lab on the date indicated on the schedule (unless otherwise noted). Late assignments will not be accepted unless the student has received written approval from the course instructor.

Electronic devices: Cell phones should be out of view during both lecture and lab. Likewise you should not be checking email, browsing the web, or messaging during lecture or lab time. Doing so will result in your being asked to leave, and you will be marked as absent. If there are extenuating circumstances that require you to be accessible by cell phone please discuss these with me ahead of time.

Evaluation

Weekly Readings

For the second lecture period each week, we will discuss the current literature of host associated microbiomes. A different student each week will be responsible for being a discussion facilitator. The facilitator will choose core papers and background reading on a subject. These readings will provide examples of concepts/patterns we cover in lecture and demonstrate how microbiome research is practiced. You will be asked to read assigned journal articles from the primary literature. You will also have a written assignment (thought piece) on the article(s) due before the discussion. These readings will provide examples of concepts/patterns we cover in lecture and demonstrate how microbiome

research is practiced. The facilitator will engage the students in a discussion during class time using feedback from the thought pieces.

Blog Post

There is a need to communicate beyond the ivory towers of our institutions. It is a worthy goal and a necessary component of doing science especially on a publically funded project. The greater use of science blogs is also a vital part of this communication. Making the science we do as public as we can is an important part of public outreach. We need to make sure that our science and how we do it is freely available to the public and our peers. For this assignment, you will select a paper from the primary literature and drafting a blog post to be published on the course website.

Microbiome research project

Across many labs in this course, you will be collecting microbiome data from yourself and your classmates. These lab modules provide a hands on introduction to the methods in common use for data collection and analysis of host-associated microbiomes. This research project will serve three purposes: 1) collect new data on the skin microbiome; 2) perform novel analysis; and 3) address a specific research question comparing your data to previously published data online.

Microbiome Under the Midnight Sun

To finish the class, we'll host a mini-symposium, Microbiomes Under the Midnight Sun (MUMS). During this research symposium, each class member will present their own research findings based on their lab work on skin microbiome sampling.

Grading Breakdown

Successful completion of this class will require turning in all of the assignments on time. Each assignment is weighted as indicated below:

Discussion facilitator		20%
Thought pieces (10 @ 2%)		20%
Blog post		20%
Topic	1%	
First Draft	5%	
Revised Draft	5%	
Peer Reivew (2 @2%)	4%	
Final post	5%	
Microbiome research project		20%
Symposium Presentation		15%
Symposium peer evaluation		5%

Overall course grades will be assigned on the following scale

Numerical Score	Grade
90.0-100%	A
80.0-89.9	B
70.0-79.9	C
60.0-69.9	D
below 60	F

Support Services
Students seeking additional help should discuss their concerns or needs directly with the instructor.

Disabilities Services
Any student needing accommodation of a disability should provide me with a letter from the Office of Disability Services within the first two weeks of class. The Office of Disability Services (http://www.uaf.edu/disability/ 208 Whitaker BLDG, 474-5655) also requires students contact them at least 3 days in advance of any exam for which they need special arrangements.

Course calendar

Week	Tuesday	Thursday	Lab	Assignments
1	None	Lecture: Introduction	Gut Check	
2	Lecture: Humans as hosts	Discussion: Human Microbiome Project	HMP Data Analysis and Coordination Center	
3	Lecture: Model systems, lessons from mice	Discussion: Student topic	Bioethics and IRB	
4	Lecture: Non-model host systems, *Nasonia*	Discussion: Student topic	Science Communication	
5	Lecture: Environmental Metacommunities	Discussion: Student topic	Data collection: Community module	
6	Lecture: Plant-microbe interactions	Discussion: Student topic	Data collection: Community module	
7	Lecture: Evolution, Hologenome	Discussion: Student topic	Data collection: Genome module	Blog topic
8	Lecture: Coevolution	Discussion: Student topic	Data collection: Genome module	
9	Lecture: Genomics	Discussion: Student topic	Introduction to Bioinformatics	
10	Lecture: Human Disease	Discussion: Student topic	Data analysis module	Blog draft
11	Lecture: Behavior, Antibiotics	Discussion: Student topic	Data analysis module	Research project question
12	Lecture: Physiology, Obesity	Discussion: Student topic	HMP DACC data mining	Blog revised draft
13	Blog peer review	Wordpress basics	Blog publishing	Blog final
14	Lecture: Personalized medicine	Research project analysis	Research project analysis	Research project results
15	Microbiome mini-symposium	Microbiome mini-symposium	Gut Check	