College of Earth, Ocean, and Atmospheric Sciences
Undergraduate Academic Credit Internship Approval Form

ATS/ENSC/GEO/GEOG/OC 410

Internship Approval. Internships are experiences that integrate knowledge and theory learned in the classroom with practical application and skill development in professional settings. They are educational and professional stepping stones that are unique to each student and therefore can vary widely in their nature and scope. students must obtain approval for a CEOAS Undergraduate Internship. Approval is based on the following criteria. Does the internship:

- Align with your major and careers interests?
- Include real work projects, duties and tasks that fit with your skills and aspirations?
- Fulfill a clear set of learning goals and objectives?
- Provide ongoing supervision, direction and guidance?
- Include opportunities for you to reflect and get feedback on your learning and growth?

For-Credit versus Non-Credit? Work with your academic advisor to determine whether or not you need to request Credit or Non-Credit approval.

- Request **For-Credit** approval if you need to fulfill academic credit for your Experiential Learning requirement in the major and/or if you need to fulfill any other credit requirements to obtain your B.S. degree (upper-division, residency, total, etc.).
- Request **Non-Credit** approval if you have already fulfilled your credit requirements to graduate in any of these areas. The form to request non-credit for internships can be found: https://beav.es/JTn

Total Hours versus Total Credits? Undergraduate Internships whether **For-Credit** or **Non-Credit,** need to consist of at least 3 hours of engagement per week over 10 weeks of the instructional term or 30 hours total. If you are requesting **For-Credit** approval, 3 hours per week over 10 weeks or 30 hours is equivalent to 1 academic credit; 6 hours per week over 10 weeks or 60 hours total equals 2 academic credits; etc. Request fewer credits than total hours of engagement if needed to meet graduation requirements. For example, if you have an internship with 20 hours of engagement per week but only need 3 credits to meet graduation requirements (9 hours per week over 10 weeks or 90 hours total), you would indicate your total hours but request 3 credits.

***Please note: Approval cannot be granted retroactively for internships completed previously**

Oregon State University

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Complete this form *prior* to starting your internship. The deadline to submit completed forms is Wednesday of WEEK 1 of the internship term. Please note the following steps to complete:

1. **In consultation with your Internship Supervisor, complete all information in the form and sign.**
2. **Have your Internship Supervisor sign the form.**
3. **Submit the completed form by email attachment to Erin.Lieuallen@oregonstate.edu**

For International Internships: follow OSU Risk Management guidelines for International Travel and register with OSU's International Travel Registry, which enrolls students in OSU's Travel Accident and Sickness Plan (except for international students traveling to their home country) if approved.

International Students must complete a CPT form

Student Information

Name: Morgan Miller OSU ID: 933 827 363

OSU Email: millemo2@oregonstate.edu Phone: 541 954 1055

Supervisor Information

Internship Host Organization: Oregon State University's Department of Botany and Plant Pathology

Name and Title of Supervisor: Ricardo Alcala Briseno

Supervisor Email: ricardo.alcalabriseno@oregonstate.edu Phone Number: 352 460 8011

Address: 2701 SW Campus Way, Corvallis, OR 97331 (Cordley Hall) City: Corvallis

State: Oregon Zip: 97330 Country (if outside USA): _____

Internship Details

Internship Position Title: Undergraduate Learning Experiences in working with Big Data in Agriculture Internship

Internship Location (city, state, country): Corvallis, Oregon, United States

Internship Start Date: June 20, 2023 Internship End Date: August 11, 2023

Hours per week: 40 Estimated Total hours: 320

Paid or Volunteer: $1500 stipend

Internship Credit

Course: ☐ ATS ☑ ENSC ☐ GEOG ☐ GEO ☐ OC Select Campus: ☑ Corvallis ☐ Ecampus

Total # Credits: 3 *1 Cr = 3hrs of work/week or 30 hours* Term(s): Summer 2023 (3)

***# Credits in which terms** example fall 2020 (3 cr), winter 2021 (3 cr)*

A maximum of 1 credit may be used for students approved by instructors to serve as **Learning Assistants.**

1. Describe your internship and be specific as possible. Who are you working for and what is the mission of the organization? What type of work will you be performing? What are the objectives of the project(s)?

   I will be participating in the Big Data in Agriculture Internship, an REEU funded by the USDA-NIFA and hosted by OSUs Department of Botany and Plant Pathology. The internship is designed to provide foundational biocomputational experience to undergraduates interested in working with Big Data to answer biological questions related to agriculture. I will be working with my supervisor to perform a wood-microbiome analysis using data collected from diseased and healthy poplar trees. I will: (1) use UNIX command line operations for data-file manipulation and processing; (2) use the statistical computing language R and microbiome-sequencing package DADA2 for metabarcode analysis; (3) reference databases to determine species composition within microbiome datasets; (4) use diversity analysis to measure the similarity/difference between diseased and healthy microbiomes; (5) prepare a report and present findings in a research symposium. The objective of this project is to investigate how phytopathogen infection affects poplar wood-microbiome makeup and diversity.

2. Briefly describe your academic interests and professional goals. What career path do you envision for yourself in the first few years after graduation? How will this internship help you along that path?

   I am interested in using large-scale geospatial and/or genomic data to study the complex interactions between populations and their environment. More specifically, I have a keen interest in combining remote sensing and genome data to study synchronous biological cycles, such as diurnal vertical migration, oak masting, seasonal migration, and population cycling. I am also interested in applying similar landscape-wide assessments to study the environmental knock-on effects of agricultural practices, land management methods, or phytopathogen spread. This program aligns precisely with my current academic trajectory. Foundational biocomputational experience will be immediately valuable as I begin to pursue more advanced academic and research opportunities in graduate school. Beyond graduate school, Big Data experience will help me access valuable professional opportunities, engage with modern biological investigation, and find success as a biocomputational researcher.

3. Identify at least three learning objectives. What specific skills relevant to your degree program and professional goals do you hope to acquire by completing this internship?

   Develop Foundational Biocomputing Experience and Skills - Use of statistical software to manipulate and visualize data will be an essential skill within any geospatial or biological field of research. This opportunity will help me develop: (1) command line operation skills; (2) effective use of software such as R and Python; (3) and techniques for data analysis, visualization, and communication.
   Gain Valuable Experience Working with Big Datasets - Big Data experience will be especially relevant to the types of scientific investigation (genomic and remote sensing) I intend to pursue. This opportunity will help me understand: (1) how to ethically and effectively apply quantitative methods to big datasets; (2) how to access and use genomic databases; (3) what methods and programs are needed for microbiome analyses; (4) how to use microbiome data to answer biological questions.
   Cooperate within Transdisciplinary Teams to Solve Biocomputational Problems - As a researcher, I must be able to

4. What process or methods will you regularly employ to critically evaluate whether you are meeting your learning objectives during the course of your internship? (weekly meetings w/ supervisor, work log) How often will you receive feedback from your supervisor?

   I will be working in close proximity with my supervisor, instructor, and/or peer-groups daily throughout the program. From my current understanding, there will be dedicated weekly check-ins between me and my supervisor to evaluate my progress, solve problems, and make preparations for the report and presentation. I intend on sharing these learning objectives with my supervisor so that we can use them to evaluate my progress during these meetings.

Required Signatures (Digital Signature Certificate or hand written signature)

Student Signature: Morgan Miller Morgan Miller Date: 06/12/23

Supervisor Signature: Ricardo I. Alcalá Briseño Date: 06/12/23

Academic Advisor Signature: _____ Date: _____

Submit this completed form to Erin Lieuallen, CEOAS Experiential Learning Coordinator
As an attachment to an email to Erin.Lieuallen@oregonstate.edu
No later than Wednesday of Week 1 of term for which credit is requested.
Please allow 24-48 hours for a response.
If approved, students and their supervisors are emailed confirmation and further detailed instructions regarding registration,