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## **NRM 601: RESEARCH METHODS IN NATURAL RESOURCES MANAGEMENT**

**Fall Semester 2023**

### **COURSE SYLLABUS**

#### **CLASSES**

Lectures and discussions, Wednesday, 2:15 to 4:15 pm, AHRB 183

#### **INSTRUCTOR AND COORDINATOR**

Dr. Jenifer Huang McBeath

Office: 130 Arctic Health Research Building (AHRB)

Telephone: (907) 474-7431

Email: [jhmcbeath@alaska.edu](mailto:jhmcbeath@alaska.edu)

#### **OFFICE HOURS**

Tuesday and Thursday 11:30 am—1:30 pm. and by appointment

#### **SCOPE AND LEARNING OBJECTIVES**

This course is designed as an introduction (for graduate students) to the research methods employed in various fields of natural resources management, including agriculture, forestry, ecology and the social sciences. This course is intended to acquaint students with the relationship between theory and research, the nature of scientific inquiry, approaches to research, the sequence of steps involved in scientific investigation, obtaining grant funds to support research, analysis and interpretation of research results, and presentation of results.

The primary objectives of this course are:

- 1) introduce students to the concepts of scientific research,
- 2) instruct students in rules and guidelines of research ethics,
- 3) expose students to diverse methods and instruments in biological and social science research,
- 4) instruct students in grant writing.

This course will be taught by experts on the subject matters and disciplines.

#### **GRADING SYSTEM**

Final grades will be assigned based on merit. The bottom and top three percentage points of each letter grade below will be assigned a '-' and '+', respectively.

A = 90% or higher

B = 80-89%

C = 70 -79%

D = 60-69%

F = <60%

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## REQUIREMENTS

1. Attendance and Participation. Regular attendance is essential and good attendance will be rewarded. Attendance counts for 20 percent of the course grade. Active participation in class by asking questions and engaging in discussion improves the learning environment for all students, and is strongly encouraged. Please avoid distracting classmates (and instructor) by open cell phones, texting in class, and surfing the web.
2. Write a grant proposal for a research project in natural resources. Each student will develop a proposal by selecting a research topic in natural resources to be submitted to a granting agency. This proposal should follow the criteria of the selected agency. The grant proposal accounts for 35 percent of the final grade.
3. Proposal presentation. Each student will present and defend his/her proposal. This presentation accounts for 20 percent of the final grade.
4. Other Work. Students will read others proposals and serve as reviewers. Proposal evaluations will be submitted after each of the oral presentations based on a list of criteria given during the lecture on grantsmanship. This evaluation accounts for 25 percent of the final grade.
4. Plagiarism and cheating are serious offenses, prohibited by the UAF Student Code of Conduct. Any source directly quoted or paraphrased in your assignments should be properly cited.
- 5) Contact the instructor immediately if you are unable to attend the class or hand in an assignment on time.

## COURSE OUTLINE AND READING SCHEDULE

<u>Date</u>	<u>Topic</u>	<u>Lecturer(s)</u>
Aug. 30	Introduction Plant Pathology	J. McBeath
Sept. 06	Ethics	G. McBeath
Sept. 13	Mineral Nutrition to Manage Plant Diseases	D. Huber
Sept. 20	GMO and Glyphosate: Impact on Man, Animal, Crops, and the Environment	D. Huber

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Sept. 27	Entomological Research	C. Campbell
Oct. 04	Environmental Engineering Research Methods	S. Aggarwal
Oct. 06	Modeling the Arctic Climate System	J. Walsh
Oct. 11	Genetic Analysis of Quantitative Traits	M. J. Hasan
Oct. 18	Leafhopper, Jetstream, and Phytoplasma	J. McBeath
Oct. 25	Gathering Quantitative Social Science Data via Survey Research	P. Fix
Nov. 01	Unmanned Vehicles and Agriculture	J. Hartsook
Nov. 08	Methods in Horticulture Research	M. Karlsson
Nov. 15	Advances in Geospatial Data Science Applications in Natural Sciences	S. Panda
Nov. 22	Fall Break (No class)	
Nov. 29	Proposal Presentation (25 minutes per presenter)	
Dec. 06	Proposal Presentation., Proposal Submission	

### **LIST OF LECTURERS**

**Dr. Srijan Aggarwal**, Civil & Environmental Engineering, College of Engineering and Mines (CEM)

**Dr. Clinton Campbell**, Entomologist, United State Department of Agriculture (USDA), Animal and Plant Health Inspection Services (APHIS), Plant Protection and Quarantine (PPQ), Federal Way, Washington.

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**Dr. Peter Fix**, Professor of Outdoor Recreation, Department of Natural Resources and Environment, College of Natural Sciences and Mathematics (CNSM)

**Dr. Jakir Hasan**, Assistant Professor of Small Grain Breeding, Institute of Agriculture, Natural Resources and Extension (IANRE)

**Mr. Jeffrey Hartsook**, Scientific Program Manager, Bayer—Crop Sciences.

**Dr. Don Huber**, Professor Emeritus, Department of Plant Pathology, Purdue University

**Dr. Meriam Karlsson**, Professor of Horticulture, Agricultural and Forestry Experiment Station (AFES), IANRE and Department of Natural Resources and Environment, CNSM

**Dr. Jenifer Huang McBeath**, Professor of Plant Pathology and Biotechnology, AFES, IANRE and Department of Natural Resources and Environment, CNSM

**Dr. Jerry McBeath**, Professor emeritus, Political Science, College of Liberal Art (CLA)

**Dr. Santosh Panda**, Associate Professor of GIScience, IANRE, and Department of Natural Resources and Environment, CNSM

**Dr. John Walsh**, Chief Scientist, Alaska Center for Climate Assessment & Policy, Alaska Climate Adaptation Science Center (CASC), International Arctic Research Center (IARC).