

LRES - Land Resources & Env Sci

LRES 505. Concepts of GIS in Environmental Science. 3 Credits. (2 Lab, 1 Rec) Su

8 Weeks GIS Concepts in Environmental Science utilizing QGIS opensource software to build a spatial science toolkit. Evaluate vector and raster analysis in LRES topics. Semester project will deliver professional study area map, data management of graduate work, and exposure to advanced spatial techniques.

Term	CRN	Section	Session/Dates	Days	Location	Time
2020 Summer Semester	11433	801	Non-standard term dates 18-MAY-20 10-JUL-20	-	ONLINEWEB-	

LRES 536. Ecology of Invasive Plants II. 1 Credit. (1 Lec) Su

PREREQUISITE: LRES 569. Through this course, students will learn to organize plant population data and analyze it to determine population temporal and spatial dynamics. In addition they will learn how to apply the conclusions drawn from the analysis to invasive species management decisions.

Term	CRN	Section	Session/Dates	Days	Location	Time
2020 Summer Semester	10910	801	Non-standard term dates 29-JUN-20 10-JUL-20	-	ONLINEWEB-	

LRES 539. Ecological Restoration and Management. 3 Credits. (2 Lec, 1 Lab) Su

PREREQUISITES: This course is restricted to LRES-online students only. General Biology, General Ecology. Insights into ecological processes require an understanding of the unique chemical environment that wetlands represent. You must be familiar with basic high school chemistry (e.g., Eh/pH/redox) to be able to succeed in this course. Similarly, you must be familiar with basic, high-school-level quantitative approaches in environmental sciences. This class combines readings, field measurements and site visits to examine scientific, legal and management components that define the practice of restoration. Fundamentals are based on foundational science and practical elements that affect the implementation of restoration projects.

Term	CRN	Section	Session/Dates	Days	Location	Time
2020 Summer Semester	11224	001	Non-standard term dates 08-JUN-20 30-JUN-20	MTWRF -		8:00am - 5:00pm

LRES 557. Thermal Biology in YNP. 2 Credits. (1 Lec, 1 Lab) Su

2 cr. LEC 1 RCT/DIS 1 PREREQUISITE: B.S. Science/Science Education; Enrollment limited to M.S. Science Education Graduate Program A survey of the ecology of important organisms common in thermal habitats of Yellowstone National Park, including a review of different life forms (prokaryotes and eukaryotes) and their modes of metabolism, and the physical, and chemical habitats that define their environment. Course includes lecture, laboratory, and field components. Students will be asked to design curricula for K-12 audiences.

Term	CRN	Section	Session/Dates	Days	Location	Time
2020 Summer Semester	10837	001	Non-standard term dates 06-JUL-20 10-JUL-20	MTWRF	GAINES243	8:00am - 5:00pm

LRES 562. Land Rehab Field Problem. 2 Credits. (2 Lab) Su

alternate even years. PREREQUISITE: ENSC 460, ENSC 461. Extended field trip to numerous drastically disturbed sites across the Northern Plains. On-site review of land rehabilitation problems, solutions, and methodologies. Participation by industry, regulatory agency staff, and rehabilitation professionals will occur at most sites.

Term	CRN	Section	Session/Dates	Days	Location	Time
2020 Summer Semester	11304	001	Non-standard term dates 11-MAY-20 22-MAY-20	-	-	-

LRES 566. Chemical Ecology. 3 Credits. (3 Lec) F

PREREQUISITE: Graduate standing in LRES Graduate program or permission of instructor. How organismal interactions are shaped through plant secondary metabolites--emphasizing the impacts on ecosystems across multiple scales and in response to a rapidly changing climate. This course combines lectures with student led discussions on contemporary issues and developments in the field and is also designed to improve critical readings of the primary literature and effective communication in science. Co-convened with ENSC 466.

Term	CRN	Section	Session/Dates	Days	Location	Time
2020 Summer Semester	11305	801	Non-standard term dates 13-JUL-20 28-AUG-20	-	ONLINEWEB-	

LRES 569. Ecol of Invasive Plants in GYE. 2 Credits. (1 Lec, 1 Lab) Su

2 cr. LEC 1 LAB 1 Current theories on what makes species invasive and what ecosystem conditions invite or resist non-indigenous plant species will be considered. Direct involvement in field research associated with testing methodology for monitoring the invasive potential of several exotic species in the otherwise pristine mountain environments.

Term	CRN	Section	Session/Dates	Days	Location	Time
2020 Summer Semester	10838	001	Non-standard term dates 06-JUL-20 10-JUL-20	MTWRF	ABB238	8:00am - 12:00pm
2020 Summer Semester	10838	001	Non-standard term dates 06-JUL-20 10-JUL-20	MTWRF	ABB234	12:00pm - 5:00pm

LRES 582. Streamside Science for Teachers. 3 Credits. (3 Lec) Su

PREREQUISITES: Graduate standing; ability to work with Microsoft Excel spreadsheets; practicing educator. The primary goal of this course is to increase the water resource knowledge of students through hands-on, field-based curriculum. To accomplish this, students will be asked to adopt a local stream and perform lab assignments "in the field" to better understand hands-on water quality monitoring techniques. The course will improve the teaching skills of secondary science teachers utilizing distant delivery technologies. By completing this course, secondary science teachers will have a better understanding and hands-on working knowledge of the characterization and quantification of water quality as it relates to secondary school science curriculum and environmental issues on a global scale.

Term	CRN	Section	Session/Dates	Days	Location	Time
2020 Summer Semester	11055	801	Intersession	-	ONLINEWEB-	

LRES 586. Lake Ecology for Teachers. 2 Credits. (1 Lec, 1 Lab) Su

This course will provide a comprehensive understanding of the biotic and abiotic factors that influence lake dynamics. It will address the unique ecosystem of Yellowstone Lake with an emphasis on the aquatic invertebrate life. This will be accomplished through lecture, field investigation, and laboratory analysis. Students will synthesize and be able to apply learned skills and knowledge in their classroom (grades 5-12). The course will take place in Yellowstone National Park and on the MSU campus. Montana State University educators, National Park Service resource managers, and other agency professionals will join the class to provide a multi-disciplinary perspective.

Term	CRN	Section	Session/Dates	Days	Location	Time
2020 Summer Semester	11073	001	Non-standard term dates 20-JUL-20 24-JUL-20	MTWRF	ABB238	8:00am - 5:00pm

Font Notice

This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

Times was used instead of Adobe Garamond Pro.

The editor may contact Leepfrog for a draft with the correct fonts in place.