Denver Zoo AIP Course Descriptions

Title: Foundations of Inquiry

BIO 654 Credits: 3 Term: 1st summer REQUIRED

Course Description: The course will provide participants with the tools needed to make science a fun, enjoyable learning experience while further increasing competence and confidence in science. The course will include pre- and post-inquiry assessment tools, individual inquiry investigations, interdisciplinary learning and inquiry techniques, and critical thinking skills. Participants will carry out and evaluate their own original inquiry investigations.

Themes:

- Conduct inquiry in small groups and hone skills of observation
- Gain tools on how to assess knowledge before and after inquiry
- Develop opportunities for scaffolding of the different uses and applications of inquiry
- Conduct an inquiry with sound experimental design to promote critical thinking
- Discuss how to integrate interdisciplinary collaborations in science, math, literacy, and the arts
- Facilitate all steps of the scientific method and inquiry process

Title: Global Biomes: Denver Zoo Conservation Regions of Focus BIO 699 B Credits: 3 Term: 1st Fall REQUIRED

Course Description: Introduction to the biomes, species and cultures, connected with Denver Zoo's conservation projects. Students will gain insights into Denver Zoo's conservation areas of focus and learn what makes these areas biologically unique. Participants will also engage in discussions about the political, economic and cultural climates of these areas and how these factors shape and determine Denver Zoo's conservation strategies. Participants will examine and discuss the long-term impacts that Denver Zoo strives to achieve in these areas.

Themes:

- Investigate climate patterns and plant/animal adaptations characteristic of different biomes
- Use wildlife on zoo grounds to investigate wildlife of the biomes on zoo grounds
- Explore current research and conservation issues relevant to different biomes

• Learn about current community-based conservation solutions that address relationships between local people and the environment

Title: Graduate Research: Field Methods BIO 620 Credits: 1 Term: 1st Spring

Course Description

This course provides students with an overview of biological and social field based research conducted in zoological, reserve, aquaria and other ex situ settings as well as in situ environments. Students will gain proficiency in applying field methods to ecological questions and conservation practice and explore the multi-disciplinary nature of science, and hands-on conservation research. A premise of this course is that field methods are not only essential for ecological research, they can serve as the basis for participatory education, public engagement in science, and community-based environmental stewardship. Field methods—point sampling, capture/recapture, quadrat studies, pitfall traps, line transects, ethology, and others--are fundamental tools that allow investigators of all backgrounds to generate knowledge needed to become better informed environmental citizens. Students will become familiar with a range of field methods and contribute to on-going research in their communities.

Themes:

- Examine the scientific research and conservation strategies of field biologists.
- Identify strengths and weaknesses of common field methods employed in wildlife research and conservation (e.g., vegetation sampling, insect sampling, transect/quadrat surveys, point count methods for birds, etc.).
- Join and assess current animal research projects (ex: estimating population size and density); examine the scientific research and conservation strategies of at-zoo and off-site animal researchers.
- Engage with and assess multiple data collection instruments and field methodologies to explore examples of tools needed to investigate questions and build understanding that leads to informed action.
- Design and compare field investigations, including steps of the experimental design process: essential question(s), formal hypotheses/predictions (for comparative and correlative studies), data collection tools and materials, collecting and organizing data, analyzing data, presenting conclusions and discussing results.

Title: Human Dimensions of Conservation BIO 699C Credits: 3 Term: 2nd Summer REQUIRED

Course Description: By examining case studies on programs such as: captive population management, wildlife reintroduction and ex situ research and education programs, participants will be asked to evaluate the word "value" as it pertains to wildlife and to critically think about wildlife conservation under the lens of: aesthetic, economic, biological and cultural roles and how these influence the principles applied to conservation.

Themes:

- The role of Zoos and Aquariums in conservation
- Critical thinking about environmental issues
- Impact of culture on conservation
- Solutions to human animal conflict

Title: Master Plan in Action BIO 655 Credits: 2 Term: 2nd Summer REQUIRED Course Description. In this o

Course Description: In this course, participants will perform the largest body of work towards their master plan. Although the course is self-led, students will meet four times for morning peer review sessions to discuss their progress and offer advice and assistance with each other's design and data analysis. Participants will draw upon content and methods from previous coursework to develop and execute their master plan.

Themes:

• Develop a time line for completion of the Master Plan, including inquiry projects, Leadership Challenges, and e-Portfolio.

• Begin developing a cohesive body of work for inclusion in e-Portfolio, potentially design and implement side projects to enhance the overall quality of their Master Plan Project(s).

- Gain an understanding of experimental design and data analysis
- Critical peer review
- Critical examination of research methodologies from published studies

Title: Environmental Stewardship in my Community: Impact of Environmental and Informal Education

BIO 656

Credits: 3

Term: 2nd Fall

Course Description: Participants will explore strategies in informal and environmental education (EE) programs that not only achieve educational goals, but also to result in positive environmental impacts, such as improved water quality or habitat restoration. This course will explore multiple outcomes of EE, including changes in program participants as well as changes in environmental quality. Course participants will also delve into various methods for measuring the impact of EE and engage in readings and discussions about Environmental Education theory and research on its impacts. Putting their new knowledge to work, participants will create an EE program that they will deliver to Denver Zoo visitors, and will then measure the impact of the program on zoo audiences. Finally, participants will develop an action research project in which they will measure EE impact on their own students (or audiences) targeting intended outcomes and desired environmental impacts.

Themes:

- Curricular development and educational leadership
- Inquiry-based learning
- The importance of education for conservation projects
- Strategies for engaging students in local and/or global conservation action
- Explore potential impact of environmental education

Title: Graduate Research: Science Literature

BIO: 620

Credits: 1

Term: 2nd Spring

Course Description: Students will explore contemporary conservation issues by reading and discussing current literature based on conservation efforts. By delving deeper into multi-faceted conservation concerns participants will have the opportunity to explore how they would respond to controversial problems and conflicts. This course will provide participants the opportunity to think critically about the environment and the complex issues that arise when striving to secure a better world for animals.

Themes:

- Current and foundational issues in biodiversity
- Extended online discussions
- Understanding the complexity of issues presented

Title: Regional Ecology: Rocky Mountain Field Investigations

BIO 657

Credits: 3

Term: 3rd summer

Course Description: Investigate current local ecological and wildlife issues, such as invasive species, habitat fragmentation, climate change, pollution and water quality, and analyze solutions. Participants will travel to Denver Zoo's local research site to conduct science based research on a variety of Rocky Mountain indigenous mammals, birds, herps and vegetation. Participants will apply authentic research methods and examine the conservation issues facing these species and engage in discussions of solutions.

Themes:

- Field experiences: observations, tracking, data collection, GPS, restoration
- Guest speakers, visit researchers
- Explore local wildlife research/investigations (guest speakers, visit researchers), highlighting the work of Denver Zoo
- Engaging students and communities in solutions
- Inquiry-based learning

Title: Graduate Research: Master Plan Evaluation and Sustainability BIO 620

Credits: 2 Term: 3rd Fall

Course Description:

This course will help students develop strategies for measuring impact and long term success in regards to their Master Plan. Students will gain an understanding of how attitudes and values are predictors for conservation behavior change and how they can develop instruments to identify these predictors in their targeted audiences. Students will use this course to compile planning documents to examine their Master Plan efforts over the course of the next 5 years (and beyond) and what evaluation tools are necessary to measure success and program sustainability beyond the AIP program.

Themes:

• Understanding of values, attitudes, beliefs as behavior predictors

- Defining behavior and change in regards to measuring impact
- Developing strategies for success in the short/medium/long term

•Developing a comprehensive Master Plan evaluation plan for a minimum of 5 years postgraduation