*All courses are hybrid courses with interaction both in-person at San Diego Zoo Global facilities and in Project Dragonfly's web-based learning community.

**BIO 654: Foundations of Inquiry**

**REQUIRED COURSE**  *Must be taken as first course by all AIP students*

**Credits**: 3  
**In-Person Dates**: 5  
**Offered**: Every summer semester

**Course Description:**

This foundational course will provide participants with the tools needed to make science a fun and enjoyable learning experience while further increasing their competence and confidence levels in the field. The course will include pre-inquiry assessment tools, individual inquiry investigations, interdisciplinary learning and inquiry techniques, and critical-thinking skills. Participants will carry out original inquiry investigations on site at the San Diego Zoo and/or Safari Park. In this course students will explore inquiry not only as a tool for integrated learning, but as a powerful agent for student achievement, public engagement in science, and ecological stewardship. Through this course, students will develop the investigation, critical reflection, and collaboration skills needed to lead inquiry-driven learning for diverse audiences. They will learn to develop a comparative question, design an inquiry-driven scientific study, and develop skills in scientific writing and research.

**Course Themes:**

- Use inquiry to drive learning in science and integrated topics
- Develop a detailed understanding of the cycle of inquiry and types of inquiry questions
- Develop curricular or other learning resources for professional use
- Acquire research experience in the Life Sciences, e.g., on the structure, function, behavior and evolution of plants and animals
- Use the San Diego Zoo, San Diego Zoo Safari Park, and the local community as learning resources
BIO 667: Conservation Research at Living Collection Institutions

REQUIRED COURSE
Credits: 3
In-Person Dates: 5
Offered: Every fall semester

Course Description:

This course provides students with an overview of conservation research conducted in zoological, reserve, aquaria and other ex situ settings. Students will explore key science concepts within the contexts of wildlife conservation, the imperative of in-situ conservation, the multi-disciplinary nature of science, and hands-on conservation research. Participants will learn about current research in the fields of genetics, reproductive physiology, disease diagnostics, ecology, and animal behavior. Course themes explore sustainable population maintenance, wildlife health, bioresource banking, restoration ecology, reintroduction biology, and the role of zoos, reserves and aquaria in conservation.

Course Themes:

• Understanding the multidisciplinary nature of wildlife conservation
• Wildlife disease detection and prevention
• Behavioral enrichment
• Conservation genetics
• Restoration biology
BIO 663: Project Design & Assessment: Socio-Ecological Methods in Conservation

ELECTIVE COURSE
Credits: 3
In-Person Dates: 5
Offered: Every summer semester

Course Description:
Participants will explore the perspectives and approaches from two main areas of conservation research: ecology and social science. Topics will focus on applied aspects of interdisciplinary project design, implementation and analysis, including how to identify and employ appropriate methods. Students will be introduced to statistical theory and application, and directly apply this information by completing problem sets in Excel and R. Coursework requires substantial reading of literature, case studies and completion of group socio-ecological field projects. Projects must include both sociological and ecological components.

Course Themes:
- Foundational understanding of coupled sociological and ecological approaches to conservation
- Journal paper and case study critiques
- Design of multi-disciplinary studies that answer applied conservation questions
- Experimental design (incl. statistics) and evaluation techniques
- Data interpretation, manipulation, analysis and representation
- Fundamental statistical application, including Chi-square, ANOVA, t-test

Preferred Pre-requisites:
- Comfort reviewing, analyzing and summarizing peer-reviewed literature
- Ability to write, including knowledge of appropriate structure of scientific papers/reports
- Willingness to work in an assigned group (based on interests), and employ both sociological and ecological fieldwork techniques
- Willingness to take on a challenge and succeed!
- Previous coursework in ecology and statistics is recommended

Please note that this is an applied, skills-based course. Although it is challenging, we hope it is also very rewarding; please talk to your colleagues who have taken this in the past to understand the level of effort required. There is a degree of overlap and reinforcement of techniques and methods covered in BIO 654 & 699C.
BIO 665: Master Plan in Action

REQUIRED COURSE
Credits: 2
In-Person Dates: 3
Offered: Every summer semester

Course Description:

The AIP Master Plan (MP) represents a student’s ideas and areas of interest as those ideas relate to the student’s professional and community goals. By writing a Master Plan, students are able to focus their AIP journey and visualize the actions and steps that they might take toward completing their master’s degree during the 2.5- to 5-year timeframe. During this course with guidance and input from peers and the AIP Cohort advisor, students work on completing their Master Plans. This method ensures that students have a workable plan that helps them anticipate ways to incorporate the projects they create as part of their AIP experiences into their professional and life goals. Students will also think about the common threads and program tenets among the projects in this cohesive body of work, which ultimately becomes their final master’s portfolio due as the culminating experience at the end of their degree.

Course Themes:

• Development of a personal Strategic Plan for student’s Master’s degree
• Further development of peer review skills
• Project management
• Improve literature-based research skills
• Develop critical review skills when reading primary literature
BIO 699C: Human Dimensions of Conservation

ELECTIVE COURSE
Credits: 3
In-Person Dates: 5
Offered: Every summer semester

Course Description:

Conserving wildlife is a complex endeavor that requires the integration of sound science from both the social and natural sciences. This course will explore how the social sciences can inform conservation. A growing field of study that draws from several of the social sciences is human dimensions of wildlife. This course will examine how human dimensions emerged as a field of scientific inquiry and why it is important. It will provide an overview of the social science concepts and methods that are the foundation of human dimensions. Students will consider how current conservation issues can be addressed through an understanding of human thought and action. Students will use the human dimensions approach to address a current conservation issue and by the conclusion of the course, they will be able to identify tools, frameworks, and concepts that can be used to influence human behavior to effectively conserve wildlife.

Course Themes:

• Potential impact of conservation initiatives on local communities and vice versa
• The role of anthropology, socioeconomics, and psychology in conservation
• Conservation education and outreach for communities abroad
• Project sustainability through engagement of local communities
• Human-wildlife conflict and solutions
BIO 656: Environmental Stewardship: Conservation Education

ELECTIVE COURSE
Credits: 3
In-Person Dates: 4
Offered: Every fall semester

Course Description:

In response to current environmental threats and biodiversity loss, education and outreach are essential for connecting people to these issues. This course explores strategies for development, implementation, and evaluation of conservation education programs, with main emphasis on inquiry-driven learning and participatory methods. Students investigate environmental stewardship, research science and conservation opportunities and solutions in their local communities, practice inquiry-based learning, develop a conservation project to be used in their classroom or community, and reflect on ecological and carbon footprints. At the end of this course, students will have a solid understanding of community-based conservation, with a particular emphasis on current issues facing local habitats in the communities where they live.

Course Themes:

• Connecting the dots: local and global conservation issues – causes, impacts and solutions
• Tools for measuring and understanding impact of educational initiatives
• Strategies for engaging communities and groups in conservation action
BIO 657: Biodiversity of Southern California

ELECTIVE COURSE
Credits: 3
In-Person Dates: 5
Offered: Every Fall semester (starting Fall 2016)

Course Description:

Through both zoo-based and field-based experiences, this course explores regional wildlife conservation issues, as well as field investigation techniques that scientists and citizens can use to study and conserve biodiversity in the California Floristic Province. Students will be exposed to observational and experimental approaches and will practice field investigation techniques that can provide rigorous, engaging inquiry experiences. Student-conducted investigations will be used to contribute to local ecological knowledge by describing natural systems, noting differences in habitats, and identifying environmental trends and issues. This course focuses on different ecoregions in the area and highlights different conservation issues or themes based on that ecoregion.

Course Themes:

• How scientific inquiry is used to solve local wildlife conservation issues
• Field methods in biodiversity assessment and monitoring
• Current issues and solutions for Southwest wildlife and habitat conservation
• Techniques for engaging students and community members in citizen science projects and other outdoor science exploration
BIO 620: Graduate Research: World Habitats
Spring 2016, 2018

ELECTIVE COURSE
Credits: 1
In-Person Dates: 1
Offered: Every other spring semester

Course Description:
Participants will gain a thorough understanding of evolutionary theory and how organisms adapt to habitats. With a focus on island biogeography, we will explore evolution on islands in the context of David Quammen’s The Song of the Dodo. Participants will engage in readings related to research done by San Diego Zoo Global, as well as relevant discussions in the field, culminating in an Action Plan centering on this issue. An optional field site visit where island biogeography can be illustrated in-situ may also be available.

Course Themes:
• Island Biogeography
• Evolutionary Theory
• Conservation
• Community Action
BIO 620: Graduate Research: Conservation Innovation
Spring 2017, 2019

ELECTIVE COURSE
Credits: 1
In-Person Dates: 1
Offered: Every other spring semester

Course Description:

In this course, participants will explore how innovation is essential in responding to modern environmental and societal challenges. Like all other skills, creativity can be refined and strengthened through practice, and throughout the semester, students will be engage in design exercises to build creative capacity. By applying their natural curiosity and imagination to human design challenges, students will create new products and services that improve our world. This emphasis placed on innovative thinking will empower students to create projects that result in social and ecological change.

Course Themes:

• Strategies for idea generation and brainstorming
• Strengthening creativity as a skill
• Working through the creative process to create an innovative prototype
BIO 620: Graduate Research or Internship

ELECTIVE COURSE
Credits: 1-2
In-Person Dates: None
Offered: Every semester

Course Description:

This option provides AIP students with the opportunity to work one-on-one with zoo professionals and/or community leaders on projects that directly contribute in specific ways to the student’s Master Plan and overall master’s skill set. The experience is intended to be pragmatic, and the student is expected to take on significant independent responsibilities within the chosen internship. Internships should fall outside the normal day-to-day tasks conducted at students’ workplaces. Internships should also be distinctly different than work used in other Advanced Inquiry Program courses including Master Plan in Action, Masters Capstone, all Leadership Challenges, Community Engagement Labs, and others. Examples of internship projects include analyzing information to share with a public audience, designing a new community outreach initiative, developing community conservation or education programs, and more. Internships may be held at the zoo (e.g., working with a visitor engagement initiative), community organization (e.g., Boys & Girls Clubs, YMCA, Parks Department), or both.

Course Themes:

Students will develop the “real-world” skills needed to be productive contributors to their chosen fields of study. Depending on the student’s Master Plan, each student will develop a unique set of skills that will enhance their Master Plan objectives. These skills may include, but are not limited to, the following:

• Develop solutions to complex conservation and/or education problems
• Network and work collaboratively with professionals in their chosen fields
• Explore career opportunities and develop a more informed plan for post-graduation success
• Identify and refine student-created goals in light of the internship experience