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BSc in ZOOLOGY  
DEPARTMENT OF BIOLOGICAL SCIENCES

EXECUTIVE SUMMARY  
DECEMBER 2016

# Overview and Context of the Program

The Zoology Program introduces students to the structure (morphology), function (physiology), making (development and evolution) and relatedness (systematics) of animals. While firmly anchored in a broad molecule-to-ecosystem knowledge base, the Zoology Program's advanced courses emphasize comparative and integrative aspects of animal biology of both fundamental and applied nature.

## **Program structure**

Zoology majors complete the entire Biology Core, typically in their first two years in program, which provides a broad background in most facets of the biological sciences. Students then specialize in the field of zoology, selecting courses from amongst a subset of 'required' courses, and then from amongst other courses that constitute the zoology major field based on their interests (see program details below). Students are admitted from high school into the Biological Sciences major program, and then transfer into the Zoology program (Major or Honours) in their third or fourth year, where transfer into the program is competitive based on GPA. Students can also be admitted into the Zoology Honours program directly from high school based on GPA.

## ***Zoology, a Program in Transition***

The Program was founded in the 1960s as one of five specialty majors offered by the Department of Biological Sciences. Its curriculum was originally organized along lines drawn by demarcations between traditional Zoology sub-disciplines such as Taxonomy, Physiology, Anatomy, Embryology, Paleontology and the divisions of the animal kingdom. The Zoology Program is a dynamic program with a well-established tradition of adapting to changing demands when they arise. While a few exponents of this original organizational model still exist, the Program's curriculum has undergone substantial changes and modernizations over the decades in response to the changing face of Zoology but also to personnel changes, fluctuation in economic actualities and shifting educational needs of its students. As a result, the Zoology Program of today is a diverse, highly interdisciplinary, research-inspired program that infuses its curriculum with salient elements of physics, geology, (bio)chemistry, genetics, developmental biology, molecular biology, cell biology, functional anatomy, physiology, paleobiology, ecology, systems biology and non-science components. The Zoology Program's most recent overhaul was initiated in early 2015 in response to impending faculty retirements and the outcomes of a Departmental Unit review.

## ***Ongoing Zoology curriculum review efforts***

Impelled by impending retirements and outcomes of the most recent (2014-2015) departmental review, the Head of the Department called on zoologists to perform a Program review and recommend changes to the Zoology curriculum if deemed necessary. This undertaking led to the conclusion that both the state of and student demand for the Program's curriculum are fundamentally healthy, but that several existing and emerging challenges related to personnel and pedagogy demanded action. In response, Zoologists engaged in a major review of the Program starting Fall 2015, culminating in the proposal of a package of changes intended to streamline and further modernize Zoology's curriculum, reduce its (sub)disciplinary boundaries, enhance its flexibility and sustainability, enhance the multidisciplinary nature of its courses, strengthen its animal systematics component and expand its options for discovery-based research experience. While many of Zoology's current courses will be retained, many of them will be renumbered and undergo significant changes in content and approach. The Program's structure will undergo sweeping changes from a rather rigid three-tiered design to a leaner but more sustainable two-tiered structure that offers its students more choice and more active,

discovery-based learning opportunities. The proposed changes were endorsed in the May 5, 2016 meeting of Department of Biological Sciences Council and successfully progressed through all applicable bodies of governance to final approval in November 2016. These changes to the Zoology Program will be introduced in the 2017-18 Calendar. Given that the Zoology program was in the midst of planning for substantial changes at the time of this curriculum review, the Zoology review team used the data collected to finalize the planned changes to the Zoology Program based on the unit review.

# Guiding Questions

The following critical questions and concerns were used to guide the curriculum review process: Questions 1 and 2 were formulated by the Undergraduate Programs Curriculum Committee of the Biological Sciences Department, and approved by Department Council. Questions 3 and 4 are questions asked by all programs in the Faculty of Science.

## **1. How well do the BioCore courses prepare students for senior courses in each program?**

(The BioCore courses refer to a common set of first- and second-year core courses completed by students in all programs).

**2. In considering courses in each program outside of the BioCore courses: Is course material properly scaffolded throughout the program to best prepare students to meet requirements?** (i.e., to what extent do the content and expectations of later courses build upon the content and expectations of earlier courses?) Are there gaps in the curriculum, in the order in which material is delivered or in the level of expectations as student progress from one course to another?

## **3. Are High Impact Practices being used regularly in each program?**

High-Impact Practices (HIPs) share several traits: They generally demand considerable time and effort, facilitate learning outside of the classroom, require meaningful interactions between faculty and students, encourage collaboration with diverse others, and provide frequent and substantive feedback. Examples of HIPs include, but are not limited to:

- Learning community or some other formal program where groups of students take two or more classes together
- Courses that included a community-based project (service-learning)
- Work with a faculty member on a research project
- Internship, co-op, field experience, student teaching, or clinical placement
- Study abroad
- Culminating senior experience (capstone course, senior project or thesis, comprehensive exam, portfolio, etc.)

## **4. If HIPs are not being used regularly in each program, what is preventing these practices from being used?**

## Action Plan

To address the guiding questions, data were collected from academic staff teaching in the ZOOL program as well as from both current students and alumni. We also used data from the 2014 National Survey of Student Engagement and data provided by the Office of Institutional Analysis, University of Calgary. The action plan below was developed based on information from those sources, and outlines how the ZOOL program will address the findings of this review, to enhance student learning and strengthen the program in the interval between curriculum reviews.

The following chart outlines the recommendations, specific action items, the individual/team responsible, and the timeline for implementation.

Recommendation	Action Item	Who is Responsible?	Due Date
Continue the process of modernizing and streamlining the Zoology program in a way that enhances student education and provides sustainability in terms of teaching resources	Engage all of the zoology faculty, particularly new faculty, in ongoing discussions of the program's strengths and weaknesses, and ways to move it forward (increase HIP, advanced assessment, new opportunities for research)	Zoology program chair and faculty teaching in the program; Associate Head Undergraduate	Short term (1-2 years) and ongoing
Collect data to assess the success of the revisions to program structure as the revised program comes into effect.	Collect data from Zoology majors and faculty members teaching in the program (via surveys and focus groups) regarding their experiences in the program, and assessment of the new program relative to program outcomes	Zoology program chair and faculty teaching in the program; Associate Head Undergraduate	Short term (1-2 years) and at regular intervals thereafter