**Annual Departmental Assessment Report**

**Department of Human Physiology**

**Academic Year of Report: 2019-2020**

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**Section 1: Learning Objectives Assessed for this Report**

Currently, majors in the Department of Human Physiology take a series of six core anatomy and physiology courses taught by three different instructors. The aim of this assessment is to implement the framework and teaching practices of “core concepts” across these six courses and thereby improve the educational experience of undergraduates by creating a new model of learning. The framework of core concepts will help students see they are actually applying the same core concept to new systems, and help them focus on applying physiologic mechanisms in different contexts rather than memorizing something completely new each time.

**Section 2: Assessment Activities**

Assessment activities included the implementation of the core concepts framework into the six courses of the A & P sequence. This involved the creation and completion of the following materials:

* Establish intended learning outcomes pertaining to the core concepts being implemented
* Map where across the courses each core concepts will be introduced and revisited.
* Create assessments testing the knowledge and application of core concepts
* Align assessments and classroom activities with the core concept intended learning outcomes.
* Create of core concept template images and slides to allow for consistency and recognition of core concepts across classes and courses.

**Section 3: Actions Taken Based on Assessment Analysis**

Most scientific disciplines, including physiology, can be difficult subjects to master because students are asked to learn a multitude of factual knowledge as well as use that knowledge to think critically and solve problems. There is more knowledge in physiology than students can be expected to learn, yet the way students approach learning is often toward maximizing retention of facts. The many calls for reforming science education, including “Vision and Change,” (AAAS 2011) emphasize a focus on learning the core concepts of the scientific disciplines. This project improves the educational experience of undergraduates, because it creates a model of learning that emphasizes the understanding of several key fundamental concepts that connect the scientific facts they are learning.

When students encounter a new area of physiology, they tend to approach it as an entirely new topic to learn. The framework of core concepts will help them see they are actually applying the same principles to new systems and help them focus on applying the physiologic mechanisms in a different context rather than memorizing something totally new.

Students also have trouble transferring learned knowledge within and across courses and disciplines (The Core Concepts of Physiology, 2017). Structuring the core concepts framework across the A & P sequence will help students master the essential principles and improve retention and transfer throughout future coursework. Students will no longer feel lost or overwhelmed by a sea of detail but will have the framework of core principles to guide their learning.

*American Association for the Advancement of Science (2011). Vision and change in undergraduate biology education: A call to action. American Association for the Advancement of Science, Washington, DC.*

*Michael, Cliff, McFarland, Modell, and Wright. (2017) The Core Concepts of Physiology: A New Paradigm for Teaching Physiology. Springer Publishing on behalf of the American Physiological Society*

**Section 4: Other Efforts to Improve the Student Educational Experience**

Other efforts include educating and equipping other teaching faculty within the HPHY department to implement core concepts within upper and lower divisions courses. We ultimately aim to establish a curriculum map where we can track where core concepts are introduced and revisited throughout all our course offerings. After focusing on our department, we will then work towards sharing and inviting other science departments to consider framing and teaching their courses using core concepts. Having worked with experts in the field during the initial phase of the project, we hope to be advocates and consultants for other educators on campus to implement core concepts across disciplines.

**Section 5: Plans for Next Year**

The success of this project will be based on students’ knowledge and application of core concepts after having taken the anatomy and physiology sequence. To assess this, we plan on utilizing a learning assessment tool. Phys-MAPS (Measuring Achievement and Progress in Science) is an assessment tool developed to measure large-scale changes in student learning of core physiological principles. This will be administered to students currently taking the Anatomy and Physiology course series and compared to students taking the course following implementation of core concepts learning objectives and frameworks. Through surveys and focus groups we also intend to assess the experience of students and G.E.’s engaging in the anatomy and physiology course sequence. In particular inquiring about what learning and teaching through course concepts was like for them and how the course series might be improved in the future.