

Project Name:	Implementation of an Upper-Level Course in Experimental Physiology (Physiology 435)
MIU Round:	Round 2
Sponsor(s):	Department of Neuroscience (formerly Physiology)
Coordinator(s):	Kevin Strang, Andrew Lokuta, Donata Oertel
Report Date:	Year 1, July 2011; Year 2, July 2012; Year 3, June 2013

Project Specific Goal and Measures

Project Impact Measure(s)	Design and implement an upper-level course in Human Physiology (Physiology 435) in order to: <ul style="list-style-type: none"> • Relieve enrollment bottlenecks in Physiology 335 • Promote student inquiry of physiological systems • Provide an upper-level science course that meets the L&S breadth requirements for students majoring in Biology and/or Occupational Therapy and Physical Therapy.
Project Impact Data Source(s)	The Department of Neuroscience offers enrollment wait lists. By monitoring the number of students on the Physiology 335 waitlist (including the intended majors and academic level of these students), Neuroscience will be able to assess the degree of bottleneck reduction.
Baseline Measure(s)	Enrollments and number of waitlisted students in Physiology 335 in 2009-10 and enrollment in Physiology 435 starting in 2010-11. In Spring 2010 72 students remained on the waitlist for Physiology 335.

General MIU Goals and Measures (applicable to project)

A	Increased access in bottleneck areas	Covered in project goals.
C	Increased capacity for high-impact practices	Students in Physiology 435 participate in an in-class original research experience and are eligible to submit their papers for publication in the Neuroscience Department-hosted website, the <i>Journal of Advanced Student Science</i> .
D	Increased student learning and teaching excellence	Student learning and teaching excellence in Physiology 435 will be assessed in several ways, including: <ul style="list-style-type: none"> • Distribution of final grades. Grades are assigned on absolute standards, not curved. • Course and laboratory evaluations. • Review of laboratory assignments for evidence of desired student learning outcomes.

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E	More tenured, tenure-track faculty teaching undergraduate courses	MIU funds were partially used to hire a new faculty member to teach Physiology 435. Faculty are also reviewing and mentoring the student research projects.
F	Decreased achievement gaps	Since Physiology 435 is a new course, any achievement gaps have not yet been reported. The design of the course was influenced by pedagogy that has been demonstrated to lead to student learning and successful course outcomes including the use of collaborative group learning, low student:instructor ratio, frequent feedback and opportunities to check learning, solicitation of student feedback during the course, and use of a straight grading scale (not a curve).
G	Attention to diversity in new hires	Conducted a national search for qualified applicants according to an authorized recruitment plan. Placed advertisements in both a minority-focused publication (Higher Ed Jobs Web Posting) and a more broad-based professional publication (Chronicle of Higher Education). The total number of resultant applicants was 25. From this initial pool, 4 qualified applicants were interviewed by the Department of Neuroscience (nee Physiology) teaching staff. The position was initially offered to an African American woman who turned down the position for another offer at UW-Madison.
I	Unintended benefits	<ul style="list-style-type: none">• Implementation of Physiology 435 has resulted in a new collaboration with Statistics. Upperclass statistics students are given the opportunity to participate in the independent group research projects. This is a mutually beneficial arrangement where the statistics students provide mentoring in data analyses and the physiology students help put the human physiology content in context.• Neuroscience faculty who are reviewers of the independent research projects are recognizing undergraduates who would like to be involved in ongoing research opportunities in their labs.

Progress Reports

Year 1, 2010-11

- Implemented a new course, Physiology 435 and offered it in Spring 2011 (86 students, 84% biology majors, 80% seniors).
 - Reduced the waitlist for Physiology 335. In Spring 2011 no students remained on the waitlist. For Fall 2011 there is no actual waiting list for the first time in 10 years.
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Year 2, 2011-12

- Offered Physiology 435 in Spring 2012 to 107 students, including 105 juniors/seniors (56 were graduating seniors).
- As part of the laboratory, provided students the experience of developing and testing hypotheses, writing a research report, responding to feedback from faculty members, and revising experiments based on the feedback. Completed reports are published in the Neuroscience *Journal of Advanced Student Science* (see <http://jass.neuro.wisc.edu>).
- Upgraded devices and technology used in physiology laboratory experiments in order to provide students with state-of-the-art data converting boxes, transducers, and analysis software in order to improve the quality of their laboratory experience and engagement with human physiology.
- Students were surveyed about the degree to which they found the course engaging, satisfaction with what they learned, and relevance to their major/goals. Mean responses were above 4 on a 5 point scale.

Year 3, 2012-13

- Offered Physiology 435 in Spring 2013 to 111 students, including 102 juniors/seniors (76 were graduating seniors).
 - Between Physiology 335 and 435, enrollments in these human physiology courses increased by more than 100 students since the start of MIU funding. This has allowed more Biology majors to enroll in a physiology course as a biological science elective.
 - Finalized upgrade of equipment, devices, and technology needed to effectively teach course laboratory sections.
 - Assessment: Conducted a research-based achievement gap intervention in Fall 2012 in conjunction with the Delta Program's achievement gap project. Data analysis and review of findings will occur in Summer 2013.
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