The Physiology Undergraduate Major in the University of Arizona College of Medicine

Tucson, AZ

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A central tenet of the American Physiological Society (APS) is to support educational endeavors teaching physiology at the undergraduate, graduate, and medical school levels.

(https://www.the-aps.org/education/)

APS Council recognizes the importance of undergraduate curricula focusing on physiology and physiology-related topics

Undergraduate programs in physiology are a critical component of the “Physiology Pipeline” needed to produce the next generation of physiologists
Physiology Undergraduate Majors in the U.S.

- Less than 30 undergraduate programs offering a BS/BA in physiology
- No more than six Physiology undergraduate degree programs located administratively in a medical school or college of medicine

University of Arizona Physiology Undergraduate Major (PSIO)

• Located administratively in the University of Arizona College of Medicine since 2005

• One of the top five undergraduate majors by enrollment at the University of Arizona from 2002-2010 (currently second)

• The largest biological sciences undergraduate major at the University of Arizona

• Winner of the 2006 Provost’s Award for Meritorious Departmental Achievement in Undergraduate Instruction
Enrollment in the PSIO Major

Number of PSIO and PRP Students vs. Academic Year

- Number of PSIO and PRP Students: 0, 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600
Aspirations of PSIO Majors

Professional Aspirations of UA PSIO Majors (2010)

56% Medical school
9% Post-baccalaureate program in physical or occupational therapy
7% Physician assistant
5% Graduate school in a biological science (Masters or doctoral program)
5% Dentistry
4% Sports medicine
3% Doctorate in pharmacy
11% Various other professions
The PSIO Major Curriculum

- **University Requirements** (27-41 units)
  - English
  - Math
  - Second Language
  - General Education (Tier 1 and Tier 2 Arts and Humanities)
The PSIO Major Curriculum

• Math and Science Requirements
  - General chemistry (2 semesters)
  - Organic chemistry (2 semesters)
  - Physics (2 semesters)
  - Math (Calculus I and II)
The PSIO Major Curriculum

- Physiology (PSIO) Requirements
  - Human Anatomy and Physiology (8 units)
  - Integrative Cellular Physiology (7 units)
  - General Protein and Metabolic Biochemistry (3 units)
  - Upper division lecture course (6-12 units)
  - Independent study/research units (0-6 units)
The PSIO Major Curriculum

• Upper Division Electives
  - Advanced Topics in Cell Physiology
  - Scientific Method and Professional Ethics
  - Exercise and Environmental Physiology
  - Immune Physiology
  - Respiratory Physiology
  - Neuroendocrine Control of Systems Physiology
  - Neurophysiology: Sensorimotor
The PSIO Major Curriculum

• Upper Division Electives
  - Endocrine Physiology
  - Mathematical Modeling of Physiological Systems
  - Cardiac and Skeletal Muscle Biology
  - Cardiovascular Physiology
  - Current Scientific Issues in Society
  - Inflammation and Disease
Additional Elective Opportunities

- Independent Study
- Directed Research
- Senior Honors Thesis

Need 42 upper division units in major

Need 120 total units to graduate
Overview of PSIO Major

• Excellent preparation for:
  ➢ Medical school
  ➢ Graduate school in a biological science
  ➢ Various health professions
Challenges to the PSIO Major

- Budgetary limitations
  - Until now, tuition dollars have not followed students

- Large teaching loads
  - Tenured faculty: average 35-40 lectures per year
  - Absolute need for several full-time lecturers

- Administrative challenges
  - Need support of university administration in College of Medicine and on Main Campus

- Shortage of physical space on campus
  - Need numerous large classrooms and laboratories
• All relevant information about the PSIO major at the University of Arizona can be found in: