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# Psychobiology

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## FACULTY

\*Year of initial appointment at Binghamton

Burright, Richard G., *Professor*, PhD, 1966, University of Illinois: Sensory processes, gene-environment coactions, quantitative methods. (1963)\*

Clark, Anne Barrett, *Associate Professor*, PhD, 1975, University of Chicago: Evolution and ecology of behavior; behavioral development and life histories of birds. (1989)

Di Lorenzo, Patricia M., *Professor*, PhD, 1981, University of Rochester: Neurophysiology of the chemical senses. (1985)

Donovick, Peter J., *Professor*, PhD, 1966, University of Wisconsin: Human neuropsychology, traumatic brain injury, biopsychology, gene-environment coaction. (1966)

Gerhardstein, Peter, *Assistant Professor*, PhD, 1973, University of Minnesota: Perception, memory, development. (1999)

Horwath, Kathleen L., *Associate Professor*, PhD, 1982, University of Notre Dame: Comparative and environmental biochemistry, cell and molecular biology, circadian and insect physiology. (1988)

Isaacson, Robert L., *Bartle Distinguished Professor*, PhD, 1958, University of Michigan: Limbic system, mechanisms of cell death and brain damage. (1978)

Madison, Dale M., *Associate Professor*, PhD, 1971, University of Maryland: Behavioral ecology and sociobiology, chemical ecology of vertebrates. (1977)

Miller, Ralph R., *Professor*, PhD, 1969, Rutgers-The State University: Information processing in animals, evolutionary psychology. (1979)

Romero, Maria-Teresa, *Assistant Professor*, PhD, 1987, City University of New York: Neural plasticity, transplantation and biological rhythms. (1993)

Savage, Lisa, *Assistant Professor*, PhD, 1992, University of Minnesota: Animal models of memory disorders, psychopharmacology. (1995)

Smotherman, William P., *Professor*, PhD, 1974, Northern Illinois University: Developmental psychobiology. (1988)

Spear, Linda P., *Distinguished Professor and Coordinator of Behavioral Neuroscience Graduate Area*, PhD, 1975, University of Florida: Developmental psychobiology, psychopharmacology. (1976)

Spear, Norman E., *Distinguished Professor*, PhD, 1963, Northwestern University: Memory processing, developmental psychobiology. (1974)

Witt, Diane, *Assistant Professor*, PhD, 1989, University of Maryland: The neurobiology of reproductive processes and social behavior. (1996)

Affiliated faculty have appointments in the departments of Psychology and Biological Sciences.

## UNDERGRADUATE PROGRAM

The BS major in psychobiology offers the student a firm basis in biology, psychology and chemistry, along with courses in a variety of other disciplines. The program provides the breadth and depth necessary for the interdisciplinary study of the biological bases of behavior. The major is offered in two tracks.

In order to declare their major, students must first meet with the psychobiology program's academic adviser for a brief advising session to discuss major requirements. Students will then receive permission to formally declare their major at the Harpur College academic advising office.

For more information, e-mail the undergraduate psychobiology program at [psybio@binghamton.edu](mailto:psybio@binghamton.edu).

### Molecular Track

This track places emphasis on a cellular and molecular analysis of brain/behavior interrelationships. Topics include neuroanatomical, neurophysiological, neurochemical, neuroendocrine and genetic analyses of behavior and physiological function. Students contemplating graduate study in psychobiology/physiological psychology, neuroscience or related disciplines are encouraged to select this track.

### Organismic Track

This track places emphasis on an organismic approach to the study of the biological bases of behavior. Topics include animal social behavior, behavioral ecology, sociobiology, orientation systems, biorhythms and information processing (perception, learning, memory, communication). Students considering graduate study in these areas should select this track.

### REQUIREMENTS FOR EITHER TRACK:

CORE: The following 11 core courses must be taken (44 credit hours): PSYC 111, 243, 344, 362, BIOL 113, 114, BIOL 363 or 464 or PSYC 327, CHEM 111 or 107 and 108, CHEM 231

and 332, and PSBL 480 or PSYC 473 (requires prior adviser approval) or BIOL 480 (requires prior adviser approval).

CHEM/MATH/PHYS: Six to 10 credit hours of electives in chemistry, math, and physics selected from CHEM 221, 335, 434, MATH 221, 222, 323, CS 140, 240, PHYS 121 or 131, PHYS 122 or 132.

RELATED SUBJECTS: Four to six credit hours of electives in related subjects selected from ANTH 111, 168, 337, 338, BIOL 479, CLAS 121, PHIL 121, 122, 148, 200, 423, SOC 251, CS 100, 105.

## ADDITIONAL REQUIREMENTS

A) Laboratory Requirement—among the electives, three courses (two to four credit hours each) at the 200 level or above must be taken that are either laboratory courses or courses that contain a weekly laboratory or field experience. Organic Chemistry Laboratory (CHEM 335), as well as elective laboratory courses in biology and psychology, will meet this requirement.

B) Upper-level Requirement—at least 20 credit hours of the elective courses for the major must be taken at the 300 level or above.

C) Pass/Fail—no courses for the major may be taken Pass/Fail other than independent research.

D) Minimum Grade—students must earn a passing grade (D or better) for course credit.

E) Some courses may fulfill multiple requirements. For example, PSYC 352 would satisfy one laboratory course, two credits of the 20 required credits in 300 level or above courses, and two credits in the psychology electives category.

F) The Psychobiology Seminar (PSBL 480) can be fulfilled by taking a four-credit seminar that covers a psychobiology-related area. These are offered each semester in both biology and psychology. A list of approved seminars will be available prior to advance registration each semester. Any upper-level psychology or biology seminar (400 level or above) can be used as a psychology or biology elective, but the same seminar *cannot* be used to fulfill both the PSBL 480 requirement and a psychology or biology elective requirement.

G) In order to fulfill degree requirements students need to have 32 credits from the courses listed in whichever track they have chosen. Taking the minimum amount of credits for each subdivision in a track *will not* meet this requirement. They will need to take two more four-credit courses to fulfill the correct credit amount.

## ADDITIONAL ELECTIVE REQUIREMENTS DEPENDENT UPON TRACK SELECTED:

A total of 32 credit hours of elective courses are required for either track, with the distribution of these electives across topic areas varying with the track as outlined below:

Category of Courses	Molecular Track credits	Organismic Track credits
Biology Type-A Electives	10-14	2-6
Biology Type-B Electives	2-6	6-10
Psychology Electives	2-6	6-10

**Type A Biology Electives:** select from BIOL 115, 215, BCHM 301 and 302, BCHM 303 and 304, BIOL 302, 310, 311, 313, 318, 320, 350, 420, 421, 422, 457.

**Type B Biology Electives:** select from BIOL 115, 250, 312, 330, 335, 360, 363, 424, 459, 464, 466, 470.

**Psychology Electives:** select from PSYC 220, 223, 327, 330, 351, 352, 353, 354, 356, 357, 358, 359, 473 (requires prior adviser approval), 490 (requires prior adviser approval).

**With the advance permission of the Psychobiology Program's academic adviser,** up to eight credits of independent research may substitute for eight hours of elective credit under either the type A biology, type B biology or psychology elective category as *determined by the adviser*. In order for the full eight credits to count toward the major, one independent study must be in psychology and one in biology. In this instance, up to eight credit hours of independent research could count as one of the required laboratory courses and/or up to eight hours toward the upper-level elective requirement (except where noted). If a student has two independent studies in either psychology or biology, only *one* will count toward the major. Independent research experience is recommended for students planning postgraduate studies.

## INDEPENDENT STUDY COURSES

PSYC 392. Introduction to Psychology Research (requires prior adviser approval) *credit varies*

PSYC 397. Independent Study (requires prior adviser approval) *credit varies*

PSYC 499. Advanced Independent Study (requires prior adviser approval) *credit varies*

BIOL 496. Independent Study (requires prior adviser approval) *credit varies* (BIOL 496 may not fulfill laboratory requirement)

BIOL 497. Independent Research (requires prior adviser approval) *credit varies*

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## HONORS PROGRAM IN PSYCHOBIOLOGY

Outstanding students in psychobiology are encouraged to participate in the honors program in psychobiology. Participation requires the preparation of an honors thesis that consists of a proposal, data collection, written analysis and an oral defense of the final thesis. Successful completion of the Honors Program results in graduation with "Distinguished Independent Work in Psychobiology."

### Prerequisites and Requirements

To gain acceptance to the honors program in psychobiology, a student must: (1) have declared psychobiology as a major (with "molecular" or "organismic" track specified); (2) have achieved at least junior standing; (3) have a minimum overall GPA of 3.0 and a minimum GPA of 3.3 in those courses taken toward the major; and (4) be accepted by a supervising faculty member whose research is in the field of psychobiology.

### Appeals

Any student who fails to meet one or more of the requirements listed above may petition the director(s) of the psychobiology program for a waiver of a particular requirement. No waiver will be granted without the written support of the supervising faculty member. Such appeals must be requested *before* the thesis project is begun.

### Procedures

#### FORMATION OF HONORS COMMITTEE

Prior to the end of the seventh semester, a student must form an honors committee, consisting of three faculty members: the student's supervising faculty member (who acts as chair) and two other faculty members, at least one of whom must be from a department other than that of the supervising faculty member. These additional faculty members should be chosen in consultation with the supervising faculty member. When appropriate, postdoctoral staff or faculty members from other universities may be appointed.

#### WRITTEN RESEARCH PROPOSAL

During the semester prior to the semester in which the honors project is to be completed, the student must submit a written research proposal to the members of the honors committee at least two weeks before a scheduled meeting. At this meeting, the honors committee must assess the

practicality of the proposal and the candidate's ability to do the work. Approval of the proposal by the honors committee is required before acceptance into the honors program and before initiation of the honors research (preliminary work only may be completed prior to the submission of the proposal). A copy of the approved proposal signed by all members of the committee and a completed Honors Program Application Form [available from the director(s) of psychobiology] must be filed with the director(s) no later than the end of the semester prior to receiving honors.

#### ACADEMIC CREDIT FOR HONORS WORK

Honors work *per se* carries no academic credit. Ordinarily, the candidate will sign up for four credit hours of independent research in the department in which the student's supervising faculty member resides. A student who drops out of the honors program, or who fails to meet the thesis deadlines, will still receive a grade for his or her research activities.

#### HONORS THESIS

A well-edited draft of the honors thesis must be given to the members of the honors committee at least two weeks before the defense, which must take place before the exam period of the semester in which the student wishes to receive honors. An honors thesis should follow the format of a scientific paper. The thesis should include background information and the rationale for the proposed work, a detailed description of the methods and results, and a discussion of the results in the context of the relevant scientific literature.

#### DEFENSE OF THE THESIS

A defense of the honors thesis will be conducted in the presence of the committee and any other interested parties. The student is responsible for notifying the director(s) of the time and place of the defense. The defense will consist of a brief (15-20 minutes) presentation of the research followed by questions from the committee.

#### PROCEDURES FOR FINAL CERTIFICATION

Determination of the student's receipt of the "Distinguished Independent Work in Psychobiology" designation will reside solely with the student's honors committee, assuming that the student has met all the requirements described above. Such certification must be conveyed to the director(s) by the supervising faculty member so that timely notification of the designation can be transmitted to the dean's office and the registrar. A copy of the final honors thesis, signed by all members of the

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honors committee, must be filed with the director(s) to certify completion of the honors program.