

Southern Illinois University at Carbondale

Department of Psychology

**BRAIN AND COGNITIVE SCIENCES
PROGRAM HANDBOOK**

December 2006

Southern Illinois University at Carbondale

Department of Psychology

Brain and Cognitive Sciences Program Handbook

I. Purpose of the Program.

The Brain and Cognitive Sciences program offers an interdisciplinary major within the graduate program in Experimental Psychology. The program emphasizes cognitive behavior approached from a combination of developmental (infancy and childhood, adolescence and aging), neurobiological, behavioral and computational perspectives. As an integral part of their training, students become active participants in ongoing faculty research programs in the Brain and Cognitive Sciences. Students will receive training in two or more different research methodologies, and are expected to develop a multidisciplinary approach to their own research.

II. Faculty and Their Research Interests.

Lisabeth DiLalla: Behavioral Genetics, Social Cognition (ldilalla@siu.edu).

Stephanie Clancy Dollinger: Cognitive Aging, Coping, Health and Well-being, Life-span Identity Development (smcd@siu.edu).

Reza Habib: Cognitive Neuroscience, Brain Imaging, Memory (rhabib@siu.edu).

Michael Hoane: The Effects of Vita-Nutrients in Brain Injury and Neurodegenerative Diseases (mhoane@siu.edu).

Eric A. Jacobs: Quantitative Analyses of Behavior, Human Operant Behavior (jacobs@siu.edu).

Michelle Kibby: Child Neuropsychology, Developmental Cognitive Neuroscience (mkibby@siu.edu).

Usha Lakshmanan: Psycholinguistics and Language Development (usha@siu.edu).

Matt Schlesinger: Cognitive Development, Motor Control, Agent-based Models of Sensorimotor Cognition (matthews@siu.edu).

Douglas Smith: Neurophysiology, Vision, Development, Learning & Memory, Recovery of Function (dcsmith@siu.edu).

Michael Young: Causal and Temporal Learning, Variability, Judgment and Decision Making, Computational Modeling of Learning Processes (meyoung@siu.edu).

III. Curriculum.

A. General Departmental Requirements¹

1. Statistics Sequence – one of the following
 - a) Psychology 522 (Experimental Design and Analysis/GLM I) and Psychology 524 (Multivariate Methods of Psychology/GLM II)
 - b) Educational Psychology 507 (Multiple Regression) and Educational Psychology 508 (Experimental Design)
2. Psychology 509 (History and Systems of Psychology)²
3. Psychology 597 (Preprofessional Training)³
4. Research Hours⁴
5. Thesis and Dissertation⁵

B. Brain and Cognitive Sciences Core Requirements

Four courses from the following, with at least one from each pair:

1. *Cognition Core*
 - a) Psychology 511 (Principles of Learning and Memory)
 - b) Psychology 515 (Theory and Research in Cognitive Psychology)
2. *Developmental Core*
 - c) Psychology 554 (Life-span Developmental Psychology)
 - d) Psychology 570 (Early Cognitive Development)
3. *Biopsychology Core*
 - e) Psychology 514 (Neurobiological Bases of Behavior)
 - f) Psychology 516 (Human Clinical Neuroanatomy)

In addition, students take Psychology 572 (Pro-Seminar in Brain and Cognitive Sciences) seminar throughout their tenure in the program (1 credit hour). The pro-seminar will consist of a weekly one-hour meeting during the semester in which faculty members and graduate students present and discuss their research. Program faculty members are required to present at least once each semester.

C. Brain and Cognitive Sciences Research Methodology Requirements

Students are required to get training for at least 3 credit hours in each of two different research methodologies (for a total of 6 credit hours), selected from the following four groupings:

1. *Cognitive/Behavioral Experimentation*
 - a) Psychology 419 (Behavior Genetics)
 - b) Psychology 593 (Lab-based participation in design and running of experiments)

¹ Students in the Brain and Cognitive Science program are not required to fulfill the Departmental Core Distribution Requirement.

² May be satisfied if a student has passed an equivalent course elsewhere and received a grade of B or better, or if a student obtained a score of 650+ on the Advanced GRE.

³ Fulfillment of this requirement is met by a student's appointment as a teaching assistant or research assistant.

⁴ Students must register for at least three hours of independent research in any term beyond the first year in which they are not enrolled for thesis or dissertation.

⁵ Students must register for a minimum of 3 hours of thesis (Psychology 599, Thesis) and 24 hours of dissertation (Psychology 600, Dissertation) credit.

2. *Computational Modeling*
 - a) Psychology 575 (Computational Modeling)
 - b) Psychology 593 (Lab-based student participation in model development)
3. *Neurobiology*
Psychology 593 (Lab-based student participation in design and running of experiments)
4. *Psychological Assessment*
 - a) Psychology 545 (Introduction to Neuropsychological Assessment)
 - b) Psychology 593 (Lab-based participation in assessments)

Expertise in a primary methodology is typically demonstrated by the student's thesis/dissertation research. Expertise in a secondary methodology from a different grouping may also involve research experience (Psychology 593), or may be achieved by taking the appropriate methodology course within the department. The secondary methodology requirement must be satisfied prior to commencing dissertation work.

IV. Specialization

The specialization allows the student to develop expertise within a specific area of Brain and Cognitive Sciences. The specialization is expected to reflect the dissertation interests of the student. Four to six courses are required for the specialization (at least two of which must be regular classes/seminars). Courses taken to fulfill the Brain and Cognitive Sciences Core Course Requirement may not be counted toward the specialization.

Students are required to produce a Specialization Plan at the beginning of the second year, detailing specialization courses and methodology training. A specialization committee composed of the student's advisor and two other faculty members (one of the three must be a Brain and Cognitive Sciences faculty member) must approve the plan. This plan will include the following:

1. Title of specialization
2. List of courses that will support the specialization area (must be 400- or 500-level).
3. List of courses/research experience to support the methodology training
4. A time-line for completion of the preliminary examination and the specialization.

Following approval by specialization committee, the plan (signed by the committee members) must be submitted by the student in writing to the Director of the Brain and Cognitive Sciences program. Plans should be submitted as early as possible, but no later than December of the student's second full year in the program or by the end of the second semester of study if the student comes to the program with a Masters degree. The plan should include a description of the specialization, the courses or equivalent experiences proposed to develop competency in the specialization, the specialization committee, and a target date for completing the preliminary examination. *The specialization committee must approve changes in the specialization plan.*

V. Major Preliminary Examination

Students are evaluated by a major examination based on material in the three core areas, Cognitive/Behavioral, Developmental, and Neuroscience. The examination consists of two three-hour exams, scheduled on the same day with a break between them. Both exams will be based on questions developed by the student and three BCS faculty of their choosing, one from each of the

core areas (the committee must be approved by the PD). The set of possible questions must involve 10 integrative, 7 from their major core area, and 5 from their minor core areas (a total of 22 questions). Although the student can bypass one of the core areas for their core questions, each area must be *equally* represented in their integrative questions (each of which should bridge at least two of the three areas). Note that core questions should cover material that is central to that area and not be too narrowly focused on one or two specializations (e.g., the cognitive/behavioral set cannot exclusively contain questions on psycholinguistics and categorization).

For the morning exam, students answer 3 questions from a set of 5 questions that test the students' general knowledge of the core areas from an integrative perspective. The afternoon exam consists of 6 in-depth questions – four from their chosen major area and two from their minor area – from which the students have to answer 3 questions (two in the major, one in their minor). Expectations are higher for answers to the questions in the student's chosen major area. The committee reserves the right to require that the student answer a particular question on an exam (the other questions can be chosen among the remaining options). The two exams are evaluated, as a whole, on a pass/fail basis by the student's prelim committee.

Exams will be scheduled in the week prior to the first week of classes for the Fall, Spring, and Summer sessions. Students are expected to complete either the Major Preliminary Examination or the Specialization Project by the beginning of the Spring term of their third year, and to have completed both requirements by the beginning of their fourth year. Students must submit a written request to their specialization committee if they deviate from the time-line outlined in the Specialization Plan.

Upon successful completion of the major preliminary examination, a Masters thesis or equivalent (see Sections VI and VII), and the residency requirement, the student is granted formal admission to doctoral candidacy.⁶

Residency Requirement. This issue produces more problems and confusion than any other. The timing of *when* you can take Psyc 600 (dissertation hours) and other courses is critical in satisfying various program requirements. Residency is usually not an issue for those entering with a Masters degree since all courses from outset counts toward residency, but those who are delayed in defending their thesis often run into trouble. The following must be done *in sequence*:

- i) Successfully defend Masters thesis.
- ii) Take 24 credits (max 6 Psyc 600) to meet residency requirement & Pass written preliminary exam. The 24 credits must be completed after the Masters defense.
- iii) Doctoral candidacy achieved. See the Graduate Administrator to complete the appropriate paperwork.
- iv) Take 24 credits of Psyc 600 (6 could have been completed before candidacy achieved). At least 18 of these must be completed after you've been granted doctoral candidacy.
- v) Successfully defend dissertation.

⁶ There is an important distinction between admission to the doctoral program and admission to doctoral candidacy. The doctoral degree should not be conferred less than six months or more than five years after achieving candidacy. A deviation from this timeline requires approval of the dean of the Graduate School.

VI. Thesis and Dissertation

The student's Master's Thesis and Doctoral Dissertation will be undertaken in areas of interest to the student. Typically, the thesis and dissertation will involve a research project in the student's specialization area or will focus on some problem of an applied nature related to that area. Prior to initiating thesis or dissertation research, a written prospectus of the proposed research must be approved by a faculty committee. The Master's Thesis committee normally consists of three faculty members, and the Doctoral Dissertation committee of five faculty members. In each case, the committee must include a majority of faculty from the department and a faculty member outside the BCS area; the dissertation committee must also include a member outside the department. Students must pass an oral exam and defense of their thesis and dissertation research, conducted by their thesis and dissertation committees. Forty-eight credit hours are required for a Masters Degree. Twenty-four credit hours of residency are required after admission to the Doctoral Program; and 18 credit hours of Psychology 600 (Dissertation hours) are required for graduation. Additional information about theses and dissertations is contained in the "Blue Book", *Rules and Regulations of the Department of Psychology Governing the Psychology Graduate Program*.

VII. Students Entering with a Masters Degree in Psychology

Upon acceptance to graduate study in the Department of Psychology at SIUC, the student must present a copy of their Masters thesis to the Director of Admissions. The Director will determine if the thesis qualifies as an empirical project. If approved, the student will be directly admitted to the doctoral program.

If an empirical Masters thesis was not completed, the student will be accepted in the Masters program but may receive accelerated entry to the doctoral program once a Masters equivalency project has been completed. This project should be of the same scope and magnitude as a thesis. The student will work with their advisor to determine the nature of the project, and the student shall adhere to their advisor's recommendations for completing various stages of the project. A defense of the project may be requested.

The anticipated dates of completion of the various program requirements will be accelerated; program completion is targeted for three years rather than the usual four. Specifically, the specialization plan should be submitted as early as possible, but no later than the end of the first year of study, and most other program requirements are expected to be fulfilled one year earlier than that expected for students entering without a Masters degree (see Section XI). The timeline for those entering with a Masters without an empirical thesis follow a somewhat different timeline (again, see Section XI).

Fulfillment of Brain and Cognitive Sciences course requirements (see Section III) will be handled on an individual basis. Completion of equivalent courses during the Masters degree are expected to substitute for some of the courses normally required of our students. Course waivers are decided by the faculty teaching equivalent courses at SIUC or the Brain and Cognitive Sciences Director if no faculty member is available to make such a determination. Typically, the

authoritative faculty should be given a course syllabus, textbook or other materials, and any other supporting materials (e.g., class papers) in order to make his or her determination. Students are responsible for material from courses taught at SIUC for the preliminary exam regardless of whether the course was waived. Course waiver forms are available from the Psychology department, graduate office. A copy of the signed form should be given to the Brain and Cognitive Sciences director and the original is kept in the student's file.

VIII. Additional Program Components

A. Advisement

Students are assigned an advisor from among faculty associated with the program. As far as possible, the interests of students are matched with those of their faculty advisors. As students progress and their interests mature, changes in assignment of faculty advisors may be made. The student and the advisor will develop a plan of study that will meet the interests and career objectives of the student and satisfy program requirements. The advisor and two faculty members, at least one of whom is a Brain and Cognitive Sciences faculty member, from a relevant area of study will constitute an advisory committee for the development of the specialization plan. Regular meetings of the faculty are held to monitor each student's progress through the program.

B. Training Assignments

Students are required to register for one hour of Psychology 597 (Preprofessional Training) each semester. As an integral and important part of the program, students participate as research assistants in ongoing faculty research programs, grants, and contracts, or as teaching assistants. Each student is expected eventually to gain both teaching and research experience. The training assignment requires 20 hours per week. Specific training assignments vary according to the needs of the department, and the interests and competencies of the student. Training assignments outside the Psychology Department may be appropriate, especially for advanced students. The outside department office in which the training assignment is done would generally be expected to provide stipend support for the student. Students have taken outside department training assignments doing applied research and statistical analyses for units such as Institutional Research, Personnel Services, Liberal Arts Dean's Office, and the Student Health Program.

C. Electives

Students take elective courses to broaden their education in Psychology or a related area, to develop additional skills, or to develop in greater depth their areas of specialization. As full-time students, Psychology graduate students are expected to register for approximately 12 graduate credit hours per semester, which provides ample opportunity for elective courses.

IX. Student Evaluations

The departmental faculty regularly evaluates student performance and progress. All first year students are evaluated at the end of their first semester, and all students are evaluated in October. The evaluations are based on an assessment of the student's performance in course work, performance of the training assignment, rate of progress toward the degree, and evidence of

professional attitudes and ethical behavior. Students not in good standing are also evaluated during the Summer term.

Formal evaluation is done by the entire faculty of the department based on the recommendation of the faculty of the program in which the student is enrolled. Much of the information on which the evaluation is based comes from the student's advisor, the supervisor of the training assignment, and the BCS director. Hence it is important that there be free communication between the student and these faculty so that the student not be taken by surprise when evaluations are reported. It is important for students to make sure that they understand how their work is being received.

The evaluation process will lead to one of three categories of student status: good standing, warning, or probation. Most students progress through the program in good standing, with the faculty happy with their progress. Warning is intended to convey that the student's performance is deficient in some respect and the deficiency must be rectified in order to return to good standing. Probation is intended to inform the student of a more serious deficiency, one that may lead to a recommendation that the student be dropped from the program if the deficiency is not rectified, or if further problems occur. Students placed on Warning or Probation will be informed of the reasons for that action and what they must do to return to good standing.

Note that neither warning nor probation carry any penalty in and of themselves - there is no intent to make the student's life more uncomfortable by placing him or her on warning or probation. It is a formal way in which the faculty informs students that they are not meeting faculty expectations and what they must do to return to good standing.

Warning is not a prerequisite step to probation. In certain extraordinary circumstances (e.g., a serious ethical violation – see APA guidelines for examples) a student may be dropped from the program without having first been placed on probation. When a student is on probationary status, the Experimental Program faculty will prepare a recommendation to be considered at each student evaluation meeting of the whole faculty. That recommendation will be to either return the student to good standing, maintain the probation, or drop the student from the program. The student will be provided an opportunity for a hearing with the program faculty prior to the formulation of any recommendation to drop the student from the program.

The following describes the faculty's expectations for student performance and progress, and the deficiencies that may lead to warning or probationary status.

A. Progress toward the Degree

1. Specialization Plan, Master's Thesis, and Major Preliminary Examination

Each of these requirements should be completed by the deadlines indicated in Table 2, 3, or 4 (see Section XI). Failure to meet a deadline will result in a Warning; continued failure to complete a requirement will result in the student being placed on probation.

2. Maximum Time to Graduate

A student's eligibility for financial aid is terminated after the academic year in which a cumulative total of 75 masters hours or 100 doctoral hours is attempted.

3. Dissertation

It is expected that students will hold a prospectus meeting for their dissertation by end of the fall term of year 4. It is expected that students will defend their dissertation by the end of the summer term of year 4. Once students have completed the major prelim, the specialization and core coursework, they are no longer subjected to student evaluations. Students are typically not funded by the Psychology Department after their fourth year.

B. Course Work

Students are expected to enroll for 12 credit hours every semester in residence (except Summer), to complete all courses with a grade of B or better, and to maintain a grade-point-average (GPA) of at least 3.25. Any course in which a student receives a C cannot count toward fulfilling a BCS course requirement – it will have to be retaken or replaced.

Warning status will be recommended if a student receives a grade of C or worse in a graduate course, has a GPA of less than 3.25, or has two or more INC grades. Probation will be recommended if the student's GPA is less than 3.0, or if there is a continuing pattern of INC grades.

C. Training Assignment

Students are expected to receive training assignment evaluations that are at least "Satisfactory". Warning or probation may be recommended for a "Marginal" training assignment evaluation, depending on the nature of the less-than-satisfactory evaluation. Probation will be recommended if the student receives an "Unsatisfactory" training assignment evaluation.

D. Professional and Ethical Behavior

Students are expected to behave professionally and ethically as students, researchers, and professional psychologists. Depending on the nature of the unprofessional or unethical conduct, students may be placed on warning, probation, or may be dropped from the program. University and APA standards and principles will be used in making such decisions.

X. Illustrative Schedule.

Because the schedule of courses will vary from year to year, and the courses students take to fulfill requirements will vary, the illustrative schedule in Table 1 does not list a sequence of specific courses. Rather, a sequence of required, core, specialization, and elective courses is listed which will prepare the student for completion of all program requirements in four years. Students, who have previously fulfilled the History and Systems or Departmental Core Distribution requirements, may substitute Brain and Cognitive Sciences core, specialization, or elective courses for those courses. Students and advisors should take special note of the fact that many graduate courses in the Psychology Department are offered in alternate years, and they should devise their schedules accordingly. Students should plan to complete their Master's Thesis by the end of their second year, and both the major prelim and specialization courses by the end of their third year.

Table 1

Year	Fall	Spring	Summer
1	PSYC 509/Core* (3) EPSY 506/507 Core/Elect (4) Core/Elect (3) PSYC 572 (1) PSYC 597 (1) (12)	PSYC 522/EPsy 508 (4) Core/Distrib** (4) Spec/Res.Train*** (3) PSYC 572 (1) PSYC 597 (1) (13)	PSYC 593 (6) PSYC 597 (1) (7)
2	PSYC 524 Spec/Elect (3) Core/Distrib (3) Elect/Res. Train (3) PSYC 572 (1) PSYC 599 (2) PSYC 597 (1) (13)	Core/Spec/Elect (3) Core/Spec/Elect (3) Core/Spec/Elect (3) PSYC 572 (1) PSYC 599 (2) PSYC 597 (1) (13)	PSYC 593 (3) PSYC 599 (2) PSYC 597 (1) (6)
3	Spec/Elect (3) Spec/Elect (3) PSYC 593 (4) PSYC 572 (1) PSYC 597 (1) (12)	Spec/Elect (3) Spec/Elect (3) Elect (3) PSYC 593 (3) PSYC 572 (1) PSYC 597 (1) (14)	PSYC 593/600 (6) PSYC 597 (1) (7)
4	PSYC 600 (12) PSYC 572 (1) PSYC 597 (1) (14)	PSYC 600 (12) PSYC 572 (1) PSYC 597 (1) (14)	PSYC 600 (6) PSYC 597 (1) (7)

* "Core" refers to Brain and Cognitive Sciences Core courses.

** "Distrib" refers to Departmental Core Distribution Requirement courses.

*** "Res. Train" refers to credit hours towards satisfying the research methodology training requirement.

XI. Time Line

Table 2 (Entering without a Masters or Equivalency)

Year	Major Activity to Be Completed	Warning/Probation Status ⁷
1		
2	<p>Specialization plan by end of fall term.</p> <p>Thesis Prospectus by end of fall term.</p> <p>Thesis Defense by end of summer term</p>	<p>Warning if no specialization plan by end of fall term</p> <p>Probation if no specialization plan by end of summer term.</p> <p>Warning if no thesis prospectus by end of fall term</p> <p>Probation if no thesis prospectus by end of summer term</p> <p>Warning if no thesis defense by end of summer term.</p>
3	Major Prelim before Jan. 31.	<p>Probation if no thesis defense by end of fall term.</p> <p>Warning if major prelim not passed by Jan. 31.</p> <p>Probation if major prelim not passed by end of summer term.</p>
4	Dissertation prospectus and defense by end of summer term.	

Table 3 (Entering with an Empirical Masters)

Year	Major Activity to Be Completed	Warning/Probation Status
1 (1st day of Fall session to last day of the summer session)	Specialization plan by end of summer term.	Warning if no specialization plan by end of summer term.
2	Major Prelim before Jan. 31.	<p>Probation if no specialization plan by end of fall term.</p> <p>Warning if major prelim not passed by Jan. 31.</p> <p>Probation if major prelim not passed by end of summer term.</p>
3 (September to August)	Dissertation prospectus and defense end of the summer term	

Table 4 (Entering with a Masters but Required to Complete Equivalency Project)

⁷ Warnings and Probations may also occur for (1) receiving a grade of C or lower in a graduate course, (2) a cumulative GPA of less than 3.25, (probation if less than 3.0), (3) two or more INC grades (probation if a pattern of INC grades continues); (4) marginal training assignment evaluations (probation if unsatisfactory evaluation); (5) unethical or unprofessional conduct (serious breaches may result in immediate dismissal).

Year	Major Activity to Be Completed	Warning/Probation Status
1 (1st day of Fall session to last day of the summer session)		
2	<p>Specialization plan by end of Fall term.</p> <p>Equivalency Project Proposal by end of fall term</p> <p>Equivalency Project (with defense, if required) by end of summer term.</p>	<p>Warning if no specialization plan by end of fall term</p> <p>Probation if no specialization plan by end of summer term.</p> <p>Warning if no equivalency project proposal by end of fall term.</p> <p>Probation if no equivalency project proposal by end of summer term.</p> <p>Warning if equivalency project not complete by end of summer term.</p>
3	Major Prelim before Jan. 31.	<p>Probation if equivalency project not complete by end of fall term.</p> <p>Warning if major prelim not passed by Jan. 31.</p> <p>Probation if major prelim not passed by end of summer term.</p>
4	Dissertation prospectus and defense by end of summer term.	