

Handbook for the Behavior, Cognition and Neuroscience PhD Program 2017-18 Academic Year

BCaN Director: Mark Laubach, PhD (mark.laubach@american.edu)

BCaN-specific office hours: By appointment on Monday afternoons (Asbury 300)

The Behavior, Cognition and Neuroscience (BCaN) program is an inter-departmental PhD program that provides students interested in applying biological and psychological principles to behavior and cognition with a broad-based curriculum and specialized research training. Program faculty are active scientists with fully equipped laboratories in which students are immediately engaged. Course and laboratory work provide interdisciplinary academic training and unique research opportunities. Through graduate courses, laboratory research, teaching experience, and grantsmanship training, students will leave the program capable of an independent and funded research career.

Participating Faculty

Core Members: Expertise and Independent Research in Behavior, Cognition, and/or Neuroscience

Victoria Connaughton, Stefano Constanzi, Terry Davidson, Katie Holton, Laura Juliano, David Kearns, Mark Laubach, Zehra Peynircioglu, Tony Riley, Colin Saldanha, Arthur Shapiro, Alan Silberberg, Catherine Stoodley, Bei Xiao

Associate Members: Collaboration with Core Members and/or Expertise in Related Topics

Tony Ahrens, Fernando Benadon, John Bracht, William Brent, Stephen Casey, Katie DeCicco-Skinner, Maria Gomez, Kate Gunthert, David Haaga, Nate Herr, Sarah Irvine Belson, Nathalie Japkowicz, Monika Konaklieva, Cristel Russel

Executive Committee

Mark Laubach (Program Director and Chair), Victoria Connaughton, Terry Davidson, Katie Holton, Colin Saldanha, Catherine Stoodley

University-level graduate policies:

<http://www.american.edu/provost/grad/grad-rules-and-regulations-2015.cfm>

NOTE: BOLDED TEXT DENOTES CHANGES MADE TO PROGRAM POLICY WITHIN THE LAST ACADEMIC YEAR, WHICH ARE EFFECTIVE IMMEDIATELY

Course Work

- Students must take a minimum of 54 credits.
- Students must take classes for a letter-grade rather than pass/fail when the option exists.

Four Core Courses (12 credits)

Each student must take a minimum of four content courses that provide a foundation in the area of behavior, cognition, and neuroscience. Note that other courses (either at AU or any of the DC consortium universities) may be substituted for one or more of these core courses with the approval of the Mentor and the BCaN Director.

If courses are taken as Core without the prior approval of the BCaN Director, then they may be reassigned to fulfill the Electives requirement described below. The Program Director will review the students' progress in completing their Core, Statistics, and Elective requirements through the annual reviews (described below), and reserves the right to reassign courses as Electives if they are not appropriate for the mission of the BCaN Program.

- BIO-505 Introduction to Neurobiology -OR- PSYC-601 Physiological Psychology
- BIO-685 Bioinformatics -OR- BIO-687 Principles of Genomics
- BIO-683 Molecular Biology
- BIO-697 Research Methods (Recommended for first-year students)
- PSYC-530 Conditioning and Learning
- PSYC-600 Advanced Memory and Cognition
- PSYC-613 Neuropharmacology: The Biochemistry of Behavior
- PSYC-660 Advanced Developmental Psychology

Two Graduate Statistics Courses (6 credits)

6 credits of Statistics (STAT-516 and above)

Two Specialized Seminars (6 Credits)

Each student must take two specialized seminars (PSYC-597/8, which can be repeated for credit). The topics of the seminars vary from semester to semester but focus on issues in behavior, cognition, and neuroscience. Some examples include courses on Learning and Memory, The BRAIN Initiative, Executive Control and Decision Making, Nutritional Neuroscience, Sex and the Brain. Please note that seminars offered in other departments at AU or consortium universities may be substituted with the approval of the Mentor and BCaN Director.

Two Electives (6 credits)

Each student must take a minimum of two elective courses. These courses can be seminars as well as additional content, laboratory-based courses, or independent studies. If an Independent Study is used to fulfill this requirement, then before registration the student and the supervising faculty member must agree upon and document the title, objective, scope, credit value, and the method of evaluation for the independent study. **Written permission from the BCaN Director is needed for students to use Independent Studies as electives.**

Laboratory Research (24 Credits)

A minimum of 18 research credits must be earned. These credits must include one course (3 credits) in Master's Thesis Research (PSYC-797, which can only be taken once) and two courses (6 credits) in Doctoral Dissertation Research (PSYC-799 or PSYC-898). Each student is expected to participate in research every semester, whether he/she receives academic credit for it or not.

The typical sequence of research credits is as follows:

Year 1 Fall and Spring, Year 2 Fall → PSYC 698 Directed Research

Year 2 Spring → PSYC 797 (Master's Thesis Research)

Year 3 → PSYC 799; PSYC 898 may be taken in special circumstances, and the student can only take it twice and must complete the Master's and Candidacy requirements within one year of enrolling in PSYC 898

Year 4 → PSYC 898 or 899

Year 5 and beyond → PSYC 899

Taking Courses Elsewhere while Enrolled at AU

BCaN students have no specific credit limit for courses taken outside of the University [e.g., in the Consortium]. **Written permission from the BCaN Director is needed, however, to take courses outside the University while enrolled at AU.**

- If there is disagreement between the Mentor and the BCaN Director about the suitability of an alternative course, then the BCaN Executive Committee will resolve the issue.

Testing Out of Required Courses

Students may test out of required courses by passing an exam prepared by the professor who teaches the course. Except for entering first year students, students should notify the professor of their intent one semester prior to the start of the course and must test out of the course within a month of the start of the semester. **The Instructor must notify the BCaN Director that the student has successfully tested out of their course.** Students may test out of a maximum of three courses. If a graduate student fails such an exam, they may not retake it.

Transferring Courses Taken Elsewhere Before Matriculation

Students may transfer up to 6 credits for courses taken prior to enrollment in the Program at accredited institutions outside of the Consortium of Universities of the Washington metropolitan area, if the following conditions are met:

- a. Before the end of the first semester of participation in their AU degree program, students must petition, in writing, the BCaN Executive Committee for consideration of transfer credits. This petition should attach relevant syllabi and an official copy of all transcript showing courses requested for transfer.
- b. Students' petitions must be approved and countersigned by their Mentor and by the BCaN Director prior to submission for review the BCaN Executive Committee. Petitions not approved by Mentor will be returned to students. All transfer of courses also must be approved by the BCaN Executive Committee.
- c. Courses taken at other universities must have a grade of at least B (3.0) in order to be transferred into the graduate program. B- is not acceptable.
- d. Courses transferred from other schools must not have been taken more than 5 years prior to admission to AU.

- e. The courses proposed for transfer were not used as credits toward a completed undergraduate or graduate degree in a similar field, including any area of biology, psychology, or public health.
- f. The following courses cannot be transferred: Independent Study.
- g. Course transfers approved by the Mentor, BCaN Director, and BCaN Executive Committee must be forwarded to the Dean and Provost for final approval.

MA requirements

On the way to the PhD, BCaN students must complete the following requirements in order to receive the en passant MA:

33 credits, including:

3 credits of Directed Research or Master's Thesis Research

3 credits of Statistics (STAT 515 through 524)

27 other graduate-level credits, which must be approved by the student's Mentor, and should satisfy the requirements of the BCaN PhD Program.

Students must also pass a comprehensive examination and complete a Master's Thesis. Successful completion of the oral thesis defense can count as fulfilling the comprehensive requirement for the MA degree (students must fill out the appropriate comprehensive exam completion paperwork).

Specialty Comprehensive Examination

BCaN students must pass a specialty comprehensive exam in their third year. A student, with the help of her/his Mentor, will choose a topic to fully specialize in and form a committee with guidance from the Mentor. This committee may or may not comprise the MA or dissertation committees. A broad-based reading list on this topic will be compiled by the student with input from the committee. The student will then be given an oral and/or written examination on the topic, prepared and scored by the committee members. The format of the examination is up to each Mentor and the committee. If the student is not successful, he/she will be allowed one more attempt. The topic and committee members may remain the same or may change on the next attempt.

Prerequisite: Master's degree. The deadline for this exam is at least one semester before the dissertation defense. Suggested time is before the approval of the dissertation proposal.

A student who fails a comprehensive examination may request one additional attempt. If the BCaN Director approves, the retake of the exam must occur within six months of the date of the first attempt. Students who fail a retake attempt will be dismissed from the doctoral program. The graduate program Director will notify the Registrar of the outcome of all comprehensive exam attempts. *A form is available in the Psychology Department office that must be completed by the student and the BCaN Director for this Program requirement.*

Additional Requirements

Research Assurances and Research Ethics Training

Appropriate protocol review and oversight of faculty and student research is an essential component of Responsible Conduct of Research (RCR) training on campus. All graduate students who are conducting research in partial fulfillment of a Master's thesis or doctoral dissertation are required to participate in RCR training. Documentation of [RCR training](#) must be presented to the Doctoral Program Director with the completed dissertation proposal.

BCaN students are responsible for obtaining the appropriate research assurances for research that involves: human participants, animal subjects, or use of recombinant DNA, infectious materials, select or toxic agents, or human materials. For application forms and guidelines, please see [AU's Research website](#). Copies of research assurances must be presented to the BCaN Director with the completed dissertation proposal.

Candidacy

Students are considered "advanced to candidacy" (or "all-but-dissertation") when they (1) have completed all required course credits and the MA requirement, (2) have passed their specialty comprehensive exam, and (3) have an approved dissertation proposal.

The Program expects that the student's committee will have a role in the design and execution of the dissertation research.

Dissertation proposals should be written at least one year prior to defending the dissertation. Exceptions to this policy must be requested in writing, and a rationale for the exception must be provided. Written approval by the BCaN Director is required for students to defend their dissertation less than one year after forming their dissertation committee.

Changes to the dissertation committee should not be made in the same semester as the dissertation defense. Requests for exceptions to this rule must be made in writing and a strong rationale is expected before any change to the committee can be made. The student can only then request approval for the change in committee membership from the Office of Graduate Studies. The Program Director will not sign off on any OGS forms until the request for the change has been submitted in writing and approved.

Thesis and Dissertation Procedures

Transfer of MA Thesis

University regulations favor approval of transfer of an MA thesis **prior to admission** to one of our graduate degree programs. The BCaN Executive Committee recommends that, for expediency in admissions decisions, the BCaN Director decides whether the thesis should transfer. The BCaN Director will obtain the opinions of two Core program members whose expertise is in the area of the thesis prior to deciding whether it can be transferred.

Theses that have been defended successfully while the student is enrolled in MA or MS programs in the core BCaN departments at AU *prior to the student entering the BCaN Program* are automatically accepted as fulfilling the MA requirement.

If an incoming graduate student wishes to use a defended Master's level thesis from another university for this requirement, then the BCaN Director will send it to two Core program members, whose expertise is in the area of the thesis, for consideration. During this time, the thesis should be on file in the office of the Psychology Department for 10 days, and its availability made known to all BCaN faculty. If both AU faculty approve, the requirement is waived. The BCaN Director will forward this recommendation to the Office of the Provost via the Dean of the College of Arts and Sciences for consideration. If both faculty readers disapprove, the thesis requirement is not waived. If there is a difference of opinion between the two readers, the matter is returned to the BCaN Director for further consideration. With a waiver approved by the Department, Dean, and Provost, the Department requirement for the master's thesis itself is satisfied.

Note that University regulations prohibit transfer of course credits to fulfill the necessary 3 hours of thesis research, however, so that course credits for the thesis cannot also be transferred, although the requirement that these 3 credits be allocated to thesis research may be waived if approved by the Dean as an exception to University regulations.

Content Overlap of Theses and Dissertations

Theses and dissertations should be based on different experiments. The dissertation cannot be a replication of the Master's thesis and should be a substantial new scientific contribution. If there is a question concerning similarities between a student's thesis and dissertation, the question should be brought to the attention of the BCaN Executive Committee.

Committee Composition

It is important that students and faculty understand that even signed thesis and dissertation proposals are not contracts that in any way obligate acceptance of the product of the proposed research by the thesis or dissertation committee.

Students must have at least one core committee member who has demonstrable expertise in the area being investigated. Students are reminded that they may select the faculty members for their committees from the *entire* faculty, not just faculty from their area of specialization.

The PhD thesis committee and dissertation membership and the student's 5-page dissertation proposal (aka prospectus) must be approved by the Mentor, BCaN Director, and the Office of Graduate Studies (CAS and Provost Offices).

The CAS and Provost Office reviews of the committee and the 5-page proposal is a University-level policy.

Thesis Committee

A student's Master's thesis committee must consist of at least three members (at least 2 must be full-time AU faculty). One of the three members must be from outside of the thesis Mentor's home department and will be chosen by the student and the chair of the thesis committee.

Members of thesis committees cannot include former American University graduate students who have graduated less than 5 years before the date of the oral examination.

"Outside" members of thesis committees must be approved by the chair of the committee and must have clear, proven expertise in the area of the thesis. In order to preclude any misunderstandings, it is essential that the details concerning how the committee will operate and the respective role of each member of the committee be discussed and agreed upon at the time the committee is formed.

Dissertation Committee

Rules and procedures for the formation of dissertation committees have been revised by the University: students and faculty Mentors are encouraged to consult <http://www.american.edu/provost/grad/grad-rules-and-regulations-2015.cfm> for the most current information. The dissertation committee must consist of at least four members; one of them must be from outside the Department, and two must be faculty members of the Department. The Chair of the dissertation committee must be a tenured full-time member of the University faculty. All members are encouraged to become involved in the planning and execution of the dissertation.

Members of dissertation committees cannot include former American University graduate students who have graduated less than 5 years before the date of the oral examination. "Outside" members of dissertation committees must be approved by the chair of the committee and Office of Graduate Studies. They must have clear, proven expertise in the area of the dissertation. In order to preclude any misunderstandings, it is essential that the details concerning how the committee will operate and the respective role of each member of the committee be discussed and agreed upon at the time the committee is formed.

Dissertation committee membership must be approved by the BCaN Director and then by the University's Doctoral Council. The Committee Chair will appoint an additional person (the Outside Reader) to participate in the oral defense, to ensure that professional standards are met. More details of this University-mandated procedure are provided at <http://www.american.edu/provost/grad/grad-rules-and-regulations-2015.cfm>.

Please note that your committee must have an **Outside Reader**, defined by University policies (<http://www.american.edu/provost/grad/grad-rules-and-regulations-2015.cfm>):

"At the time of the final examination of the dissertation, at least one additional member will join the core of the Dissertation Committee as an outside reader for the final examination. The purpose of the outside reader(s) is to provide a review of the dissertation by a colleague with the appropriate terminal degree who is an expert in the subject matter of the dissertation. The outside reader should have no direct association with the student. An outside reader serves an advisory role, and the charge to the outside reader is to determine if the dissertation meets general standards in the field, not necessarily to critique the work in detail. Once the dissertation has been successfully defended, all committee members sign the dissertation title page. A letter of approval from the outside reader may replace the outside reader's signature on the dissertation title page."

Students should consider having committee members who are experts in the topics of the dissertation and from universities other than American University. Our proximity to other universities in the DC area, the NIH, and Janelia Farm make this very easy to arrange. A major benefit of having external committee members can occur when the student seeks postdoctoral positions or applied for independent funding after graduation and needs letters of recommendation. Establishing relationships with the dissertation committee is crucial for academic success.

Oral Defenses of Theses and Dissertations

University rules regarding dissertation defense have been revised: please consult the [appropriate section of the University Rules and Regulations for Graduate Study](#) for the most current information.

Master's and dissertation orals must be public. It is the student's responsibility to reserve a room that will accommodate at least 20 people. Students are also responsible for asking a department administrative assistant to post an announcement in [Today@AU](#), email or otherwise notify all faculty and graduate students affiliated with the BCaN program of the date, time, and room of the defense at least one week (7 days) in advance of the defense. **Graduate students are required to submit a copy of their thesis or dissertation to the Program, and it will be posted on the University's Blackboard platform: LIBWEB-999-067: Theses and Dissertations. Please send the document to the Program Director**, not the Psychology Department's academic administrators.

For the Master's orals, at least two of the three committee members must be physically present for the exam. A third committee member can participate in person or via phone or computer connection.

For the dissertation orals, at least three of the four committee members must be physically present and the fourth committee member must be either physically present or participate via phone or computer connection.

Please pay special attention to the following section from <http://www.american.edu/provost/grad/grad-rules-and-regulations-2015.cfm>:

"The dissertation examination will consist of a public presentation by the candidate on the research reported in the dissertation, followed by a formal, public examination of the candidate by the Dissertation Committee. The **Doctoral Program Director** is responsible for posting publically (sic) the announcement of

the oral defense of the dissertation seven days prior to the date of the oral defense, including the teaching unit location and/or website, Today@AU and the Graduate Studies website."

Please send the announcement of your dissertation defense to the Program Director, not the Psychology Department's academic administrators.

Written Format and Revision Timeline

The format for the thesis and dissertation must follow University guidelines. A manual titled "Requirements for Preparation of Theses and Dissertations" is available from the Dean's office. Issues not discussed there should follow the APA format, as per the Publication Manual of the APA, 6th edition (2009). *An electronic copy of every thesis and dissertation must be provided to the BCaN Program Director: **This is the student's responsibility before graduation.***

After the oral defense of the thesis or dissertation, students are expected to make requested revisions and to submit the revised manuscript to the thesis or dissertation committee chair within two months. The final manuscript should be submitted to the Associate Dean for Graduate Studies within six months from the date of the oral defense.

Graduate Student Teaching

Students are assigned Teaching Assignments and the assignments are communicated by the Chair of the Department in which the student will serve as a Teaching Assistant. Students entering the program will normally be assigned to PSYC-116 for their first year in the program. The goal of this assignment is to encourage a cohort experience for incoming students. Exceptions to this policy can be made if the student is entering the program with experience teaching an upper level laboratory while enrolled in an affiliated AU Master's program or has special skills (e.g. web programming) that are of value to the larger University.

Graduate students who would like to further teach courses in departments affiliated with the BCaN Program must fulfill the following requirements:

1. Completion of the MA degree
2. Either of the following:
 - Completion of the Greenberg Teaching Seminar series OR

- Completion of a Teaching Assistant position for the course to be taught, with supervision by a faculty member.

The student is expected to let the faculty member know that they are interested in teaching the course, and write a contract with the faculty for specific supervision in course development and execution. The graduate student will be expected to develop a course portfolio documenting course preparation, including samples of a course syllabus, assignments, and lectures.

Financial Aid

Graduate students in the doctoral program may be supported by graduate assistantships (GAs) funded primarily to help faculty with teaching (TAs) or research (RAs), although both types may involve a mixture of teaching, research, and some administrative activities. Only students in good standing receive such awards. During the academic year (late August through early May), students with departmental fellowships:

- a. are prohibited from holding full-time jobs within the University (University policy)
- b. are prohibited from holding full-time jobs outside the University except with the approval of the BCaN Executive Committee; and
- c. are *discouraged* from holding part-time jobs (20 hours/ week or less) either within or outside the University.

Students receiving University graduate awards are paid biweekly during the academic year. They are expected to work an average of twenty hours per week throughout this period, subject to negotiation with their supervisors. University holidays are, of course, excepted. Students should log their time spent in graduate award activities. The pay schedule for 2016-17 is below. Note that paychecks are **NOT** issued during the period around Holiday Break.

Annual Reviews of Graduate Student Progress

Individual faculty Mentors are responsible for monitoring graduate student progress. In addition, the BCaN Director and Executive Committee will review the progress of all students in the program annually in the Spring term. The results of this review are communicated to the student, and also to the Mentor if the review is not favorable. All graduate students are required to complete progress report forms to facilitate this review of progress.

If the Executive Committee's evaluation of a student's progress is unfavorable, the committee will report the nature of the problems and recommendations for action to the student, Mentor, and Office of Graduate Studies within CAS. Working together, the Mentor, Executive Committee, and Office of Graduate Studies will decide what action to take (e.g., warning, academic probation, or dismissal from the degree program and University) and will communicate this action to the student. Students placed on academic warning or probation will be asked to develop a plan to resolve their issues, with clearly stated milestones for the completion of the required tasks. Students who fail to address deficiencies following this intervention will be dismissed from the program.

Dismissal Criteria for BCaN PhD Students

The following is a summary of grounds for dismissal of a student from the BCaN PhD program:

- a. Students will be dismissed from the University if their cumulative grade-point average (GPA) remains below 3.00 for two consecutive semesters. According to [University regulations](#), the University Registrar places graduate students on probation if their cumulative GPA falls below 3.00. The Registrar permanently dismisses the student if the cumulative GPA does not rise to 3.00 or better the following semester.
- b. Receiving a second C (or lower) grade can result in probation or dismissal (Program regulation), even if the cumulative GPA is 3.00 or higher.
- c. Unfavorable evaluation of progress by the BCaN Executive Committee, followed by BCaN Executive Committee determination that the student should be dismissed.
- d. Not completing degree requirements within 7 years if the student began the BCaN program with a BA or BS, or within 5 years if the student began the clinical program with an MA (Program regulation). Students may apply for a one-year extension of this requirement to the BCaN Executive Committee through their faculty Mentor and then the BCaN Program Director, with the understanding that this application could be denied. At most, three possible one-year extensions of the time limit for the degree program can be granted.
- e. Twice failing the comprehensive examination and/or failing to pass the examination within 6 months of previous failure.
- f. Failing a MA thesis oral or dissertation examination twice.

g. Failing to register for continuing credits before the University's required date in terms when the student is only pursuing PhD dissertation research.
[Administrative action handled by the Office of Graduate Studies.]

Grievance Procedure

If a student disagrees with a decision made by any committee or individual, you can seek reversal of that decision by appealing to the following persons, in the order given: (1) BCaN Director, (2) BCaN Executive Committee, (3) Associate Dean for Graduate Studies, who then makes a recommendation to the Dean of the College of Arts and Sciences. The CAS Dean's decision is final.