



**Cognitive Psychology Graduate Training Program  
MA/PhD Program Requirements**

September 12, 2018

The Training Area in Cognitive Psychology is a program of graduate study leading to the degree of Doctor of Philosophy in Psychology. The requirements described below reflect those set by the Graduate School and the faculty of the Cognitive Psychology Graduate Training Program. To state the requirements for the Doctor of Philosophy degree in terms of credit hours would be misleading. Students who receive this degree must demonstrate that they are proficient in some broad subject of learning and that they can critically evaluate work in this field; furthermore, they must have shown the ability to work independently in their chosen field and must have made an original, significant contribution to the advancement of knowledge. Studies leading to the Doctor of Philosophy degree must be chosen to contribute to specialized competence and a high order of scholarship in a broad field of knowledge. A field of study chosen by the student may reside within one department or it may include two or more closely related departments. The criterion of what constitutes an acceptable field of study shall be that the student's work must contribute to an organized program of study and research without regard to the organization of academic departments within the University.

The requirements and procedures described herein reflect an emphasis on timely progress toward completion of the degree and on providing students with early and reliable feedback on their progress. To achieve this goal, we have specified several stages where students will be evaluated by the faculty to assess strengths and weaknesses, and to specify possible unfavorable outcomes such as probation or dismissal from the program. Although it is important to specify these possible outcomes, we expect them to be extremely rare. All students are admitted to the graduate program with the expectation that they will successfully complete the Ph.D. requirements, so these measures should not be interpreted as reflecting any intention to “weed out” students from the program.

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\* For more information go to:  
<http://www.colorado.edu/cognitive-psychology/>

## **A. Coursework**

### **Core Courses**

#### 1. Graduate Statistics

In the first year, all students must take a two-semester sequence of Graduate Statistics (PSYC 5741 and 5751)

#### 2. Proseminars

In addition, all students are required to take the Cognitive Proseminar sequence summarized below. This Proseminar sequence is team-taught by members of the faculty in the program and is designed to provide a comprehensive overview of basic research methods and major content domains within cognitive psychology and cognitive neuroscience. Although there is no module specifically dedicated to cognitive neuroscience, relevant work that uses cognitive neuroscience methods will be incorporated within each module. The Proseminar sequence consists of the following six half-semester modules:

1. Research Methods (PSYC 5685);
2. Perception and Attention (PSYC 5665);
3. Memory (PSYCH 5695);
4. Language (PSYC 5815);
5. Executive Function (PSYC 5825);
6. Thinking (PSYC 5835)

Research Methods (3 credits, full semester, starting Fall 2018) will be taken in the Fall of the first year, and the others will be offered on a rotating basis within the first two years. The other 2-credit Proseminars meet either one half-semester (2 days per week) or one full-semester (1 day per week). Students must pass the essay exam given at the end of each module to demonstrate their mastery of the materials covered in that module. These exams will fulfill one component of the Preliminary Examination (as specified below).

### **Minor Requirement**

To fulfill the minor requirement for the Doctor of Philosophy degree, the student must take at least two courses, 5000-level or above, outside his or her major area of specialization. The two minor requirement courses should be approved by the program director. Outside courses taken in fulfillment of the Cognitive Science, Neuroscience, or Cognitive Neuroscience Ph.D. can satisfy the minor requirement. For students with previous graduate work at another university, the minor requirement cannot be waived. For those students, appropriate transfer credit toward the minor may be given at the discretion of the Program Director.

## **B. Research**

Research is the primary focus of graduate training, and students should be continuously engaged in research throughout their graduate careers. The following sections describe the formal minimal research requirements.

### **B1. Annual Research Presentations**

Each student is required to present his or her research to the members of the program (both faculty and students) at least once each year, until the student graduates. In the first and second years, the presentation forum is usually the Department's Ekstrand Memorial Mini-Convention held late in the spring semester (typically the last Monday of Spring Semester). In the third year and the subsequent years, the forum for this is typically the Cognitive Lunch meeting (every Monday at Noon). **Regular attendance at Cognitive Lunch is required of all graduate students.** Except in cases where registration will increase a student's fees, all graduate students are expected to enroll in the cognitive lunch course (Cognitive Psychology Research Update, PSYC 6605, 1 credit) each semester each year.

### **B2. First Year Project**

Each student must select a provisional faculty advisor by the end of the first month, design a research project during the first semester, and complete the project by the end of the second semester. The results of this first-year project must be reported at the Department's Ekstrand Memorial Mini-Convention. The student must also turn in a complete written report of the first-year project, which is due two weeks after the Mini Convention. An advisory committee that consists of three members of the Cognitive Program, formed by the student and his or her faculty advisor, will evaluate the progress of the first-year research on the basis of the quality of both the oral presentation and the written report.

### **B3. Master of Arts Degree**

In order to be admitted to candidacy for the Doctor of Philosophy degree, each student in the program is required to earn a Master of Arts degree. Deadline for completion is by September of the student's third academic year.

The minimum requirements for the degree are:

1. Thirty hours of course work with a grade of B- or better in each course.
2. A thesis approved by a Psychology Department faculty committee of three (see below).
3. Completion of the statistics requirement with B- or better in each semester.
4. All requirements imposed by the Graduate School, Non-Thesis Master Plan

(<http://www.colorado.edu/graduateschool/academics/graduation-requirements/master-graduation-without-thesis>)

*Note.* For technical reasons, the program does require a thesis but uses the non-thesis master plan of the Graduate School.

### **Master's Thesis**

A Master's Thesis Advisory Committee of three persons is formed by the faculty advisor in consultation with the student and the program director. All committee members must hold Graduate

School faculty appointments. Members outside the Cognitive Psychology program are acceptable. The student must submit a written proposal for a Master's thesis project to the advisory committee for approval. The proposal should be approved, including Committee meeting, by December of the second year. Students should consult with their advisor on the proposal format. Typically the proposal will include introduction, methods, and preliminary results for any completed experiments; along with methods, hypotheses, and predictions for planned experiments.

A written version of the Introduction, Methods, and Preliminary Results should be given to the advisor and committee, which is due two weeks after the Mini Convention of the second year. Each second-year student's Mini-convention talk will typically cover the same material.

The Master's thesis must:

1. Deal with a definite topic related to the student's major field of interest;
2. Be based upon independent study and investigation;
3. Represent the equivalent of at least six semester-hours of work;
4. Comply with the other requirements of the Graduate School, Non-Thesis Master Plan ([http://www.colorado.edu/GraduateSchool/academics/master\\_graduation\\_packet\\_non\\_thesis.html](http://www.colorado.edu/GraduateSchool/academics/master_graduation_packet_non_thesis.html))
5. Be completed, including oral defense, before October of the third academic year.

Each candidate for the Master's degree takes an examination after the thesis has been completed. This examination is conducted orally by the three members of the thesis advisory committee and is open to the public. The written thesis must be submitted to the committee at least two weeks before the oral defense, unless otherwise agreed upon by all committee members in advance. Failure to meet this deadline will require cancellation and rescheduling of the defense. Students are expected to send an email announcement of the defense time, along with the title and abstract, to all cognitive faculty and students. Although this examination focuses on the Master's thesis, other work in formal courses and seminars in the major field may also be covered. The thesis advisory committee votes on whether the candidate has passed the examination and makes a recommendation to the program faculty about whether or not the student should be permitted to continue work toward the Doctoral degree. Students who have not completed their Master's degree before October of their third year can be terminated from the program or placed on probation.

The thesis can be evaluated at 3 levels as determined by the committee:

1. *Passed at the Doctor of Philosophy Level:* The student has passed the thesis at a high level and can continue toward pursuit of the Ph.D. This is the expected outcome for most students.
2. *Failure at the Doctor of Philosophy Level, Masters Level Pass Only:* The student passes with a Master's degree, but is not allowed to continue toward pursuit of the Ph.D.
3. *Failure at the Masters Level:* The student is not awarded a Master's degree, and is not allowed to continue toward pursuit of the Ph.D.

### **Master's Thesis from another Institution**

Students entering the program with a Master's Degree from another institution (or department) may opt to submit their existing thesis to the Program for consideration as completing the Cognitive Psychology Master's Thesis requirements. A 3-faculty committee will be assembled, as specified above. The thesis will be evaluated by each committee member (pass/fail), with failure

requiring that the student complete a new thesis. Primary evaluation criteria will consider the content (i.e., relevance to cognitive psychology) and quality of the thesis relative to typical theses completed within the Program. No oral defense is required.

#### **B4. Preliminary (Comprehensive) Examination**

Before admission to candidacy for the Doctor of Philosophy degree, the student must pass a preliminary (or “comprehensive”) examination in the field of concentration and related fields. This examination will test the student's mastery of a broad field of knowledge, not merely the formal course work completed. Passing the exam is typically accompanied by an increase in the student’s stipend.

#### **Preliminary Examination Structure**

##### **1. Proseminar Exams**

Students will take 6 proseminars during their first 3 semesters in the program. These proseminars will fulfill the breadth requirement of the preliminary exams. Each proseminar will include a written final exam. Typically, take-home exams will be given, with about 3 questions that each require approximately 3-5 page answers (double spaced). The grade on the exam will be recorded separately from the course grade (the latter would likely include other components such as presentation grades). Any student receiving a grade below B- on any proseminar exam will have failed the preliminary exam. If an individual instructor intends to assign a failing grade on an exam (below B-), the instructor will distribute the exam to the rest of the faculty to solicit further opinions. If needed, a faculty meeting will convene. The faculty may consider options other than failure of the preliminary exam (e. g., probation) if extenuating circumstances do not indicate that failure (and subsequent dismissal from the program) is warranted.

##### **2. Literature Review Paper (or “Comps Paper”)**

Students will prepare a literature review on a topic that is likely to be their dissertation topic, or any area that the student is considering for a dissertation topic. A three-person committee will evaluate the paper.

- Proposal. A written proposal will be approved by the committee by January of the third year (or 4<sup>th</sup> for dual/triple degree students). The proposal should be approximately 1000-1500 words in length. Two lists of references should be provided. (1) Approximately 10-20 “Completed Readings” should be listed to demonstrate that the student has begun reading the relevant literature. (2) “Intended Readings” should include about 20-40 additional references that the student intends to consider for the final paper. These numbers are merely rough guidelines that will vary with the student’s current mastery of the literature, and the final paper is not limited to these references.

- Final Paper. The student is expected to write a brief review paper, styled similarly to papers published in Trends in Cognitive Sciences (TICS). See TICS for examples. The paper should be approximately 4000-6000 words, not including references. The word-count estimates are meant as rough guidelines, variation is expected. The committee will be looking at whether the substantive goals are achieved and not counting words. Do not include “Boxes” that are typically in TICS

papers. It is expected that the student's advisor will read drafts of the paper, and will provide guidance. By September of the 4th year (5<sup>th</sup> year for students pursuing joint degrees), there will be an oral defense that gives the committee an opportunity to ask students questions about the paper and topic. The written thesis must be submitted to your committee at least two weeks before the oral defense, unless otherwise agreed upon by all committee members in advance. Failure to meet this deadline will require cancellation and rescheduling of the defense. Students should spend no more than one-semester's worth of time writing the paper. The official deadline includes an extra summer in case other commitments are too pressing during that spring semester (e.g., TAing a lab course).

### **Preliminary Examination Evaluation**

In both the Proseminar Exams and Literature Review Paper, students will need to demonstrate the following abilities:

- (1) Mastery of the relevant literature.
- (2) An ability to critically analyze and synthesize previous research, rather than simply reviewing/listing.
- (3) An ability to clearly connect data and theory.

The graduate school requires an examining board of five (5) Graduate Faculty for the Comprehensive Examination. The complete examining board will include the three faculty members on the Literature Review Paper committee and two of the student's proseminar instructors. These five will sign the evaluation document after all requirements are complete.

The examination can be evaluated at 3 levels as determined by the committee:

- (1) *Passed at the Doctor of Philosophy Level:* The student has passed the examination at a high level by meeting all expectations (B- or above) on both the Proseminar exams and Literature Review. This is the expected outcome for most students.
- (2) *Failure at the Doctor of Philosophy Level, Option to Revise the paper:* The student does not pass at a high level, but is given an opportunity to revise the paper. If the paper is sufficient in many respects, but has a few notable deficiencies that are relatively straightforward to address, then the option to revise will be considered. If, however, the paper is deficient in many ways and/or severely so, then revision will not be an option. The Proseminar exams cannot be re-taken, so must be passed on their initial administration.
- (3) *Failure at the Doctor of Philosophy Level:* The student does not pass, and will not be advanced to candidacy for the doctoral degree.

## **B5. Doctor of Philosophy Degree (PhD)**

### **Admission to Candidacy and Graduate School Requirements**

A student must apply for admission to candidacy for the Doctor of Philosophy degree on forms supplied by the Graduate School office at least two weeks before the preliminary examination is defended. The student must have completed at least three semesters of residence and must have passed the preliminary examination before admission to candidacy. The chair of the student's doctoral advisory committee must sign the Application for Admission to Candidacy Form.

After completion of the Preliminary Exam requirements, the student is required to enroll in at least 5 dissertation hours per semester until her or his thesis is complete. The Graduate School requires students to have completed (or in progress) at least 30 dissertation hours in order to defend.

## **Ph.D. Dissertation Committee**

The Ph.D. dissertation committee must adhere to all current Graduate School and Department of Psychology and Neuroscience rules. As of the date of this document, the following rules are consistent, but may be superseded by any subsequent Graduate School or Department changes.

Every Ph.D. dissertation committee will have at least 5 members. There will be at least (a) two faculty from the Cognitive Psychology graduate training program, (b) one member of the graduate faculty from outside the department (presently required by the Graduate School), and (c) one member of the graduate faculty from within the department but outside the Cognitive Psychology graduate training program. Note that faculty members with a secondary affiliation in Cognitive Psychology program can serve as the “outside” member of the committee. However, the spirit of the “outside member” is to add diversity of perspectives and expertise within psychology but outside the student’s area. Students and faculty are accordingly encouraged to select committee members to fulfill the “outside the program” category that bring this diversity of perspectives to the committee. The remaining members are at the discretion of the dissertation advisor. The Associate Chair/Director of Graduate Education can advise on and shall approve of the “outside of area” psychology faculty member in consultation with the dissertation advisor. The departmental committee membership names shall be placed on file with the Associate Chair/Director of Graduate Education before the review and approval of the dissertation proposal.

For dual and triple degrees, check with each program’s latest additional Ph.D. Committee requirements:

- Neuroscience: <https://www.colorado.edu/neuroscience/graduate-education-neuroscience>
- Cognitive Science: <https://www.colorado.edu/ics/graduate-programs/cognitive-science-combined-phd>
- Cognitive Neuroscience: <https://www.colorado.edu/ics/graduate-programs/cognitive-neuroscience-combined-phd>

## **Doctoral Thesis Proposal**

Students will submit a formal dissertation proposal by January of their fourth year (or fifth year for dual/triple-degree students). Students should consult with their advisor on the proposal format. Typically the proposal will include introduction, methods, and preliminary results for any completed experiments; along with methods, hypotheses, and predictions for planned experiments.

## **Doctoral Thesis**

The doctoral thesis is based upon an original investigation and shows mature scholarship and critical judgment as well as familiarity with tools and methods of research. To be acceptable, this dissertation should be a worthwhile contribution to knowledge in the student's special field. The

doctoral thesis must be finished and submitted, in typewritten form, to the committee members for inspection at least two weeks before the day of the final examination, unless otherwise agreed upon by the committee.

### **Final Examination**

After the thesis is made available to the Ph.D. dissertation committee, a final examination on the thesis and related topics is conducted. This examination is oral and is open to anyone. As mentioned above, the written thesis must be submitted to the committee at least two weeks before the oral defense, unless otherwise agreed upon by all committee members in advance. Failure to meet this deadline will require cancellation and rescheduling of the defense. The examination is conducted by the Ph.D. dissertation committee. More than one dissenting vote will disqualify the candidate in the final examination. The format of the exam is determined by the committee, but typically it begins with a brief (20-30 minute) presentation by the candidate of the dissertation research. The candidate is expected to answer questions about the thesis topic itself as well as about other related subjects. Arrangements for the final examination must be made in the dean's office at least two weeks in advance. The time and place of examination must be publicly announced in the department. Upon passing the final examination, the completed thesis will be turned in to the Graduate School within a one-month period.

### **C. Teaching Experience**

All students must obtain teaching experience prior to the awarding of the Doctorate. This requirement is normally met by serving as a Teaching Assistant for at least one semester. Serving as a CLIPR TA does not fulfill the teaching experience requirement.

### **D. Summary of Deadlines**

All students are required to complete their degree requirements by the end of their fifth year in the program unless they (a) are completing a joint Ph.D. in Cognitive Science or Neuroscience, Cognitive Neuroscience Triple Degree, or a Certificate in Behavioral Genetics (see Deadlines below); or (b) have requested and received a leave of absence during that time. Students failing to meet this deadline are terminated from the program unless they receive an approved extension. A request, in writing, for an extension must specify the extenuating circumstances necessitating the extension. Furthermore, approval of the request requires that, in the opinion of the program faculty, the student is making demonstrable progress toward completion of degree requirements and that the final completion date can be predicted with reasonable certainty. The program faculty will not grant most requests for extension; students should plan their programs with this consideration in mind.

The following deadlines will be strictly enforced under normal circumstances, and failure to meet these deadlines may result in probation or dismissal from the program. The primary exception to these deadlines will involve students pursuing joint Ph.D.'s in Cognitive Science, Neuroscience, or Cognitive Neuroscience or a Certificate in Behavioral Genetics. These students will be allowed additional time to complete their Preliminary Exam Paper (Literature Review) and their Ph.D.



Proposal, as specified below. Students pursuing only a certificate in Cognitive Science will not be eligible for these extensions. Although the deadlines in the first two years will typically be close to the actual completion dates, students are encouraged to complete all requirements as soon as possible rather than waiting for deadlines at each step. For example, a student who completes the Comprehensive Examination requirements early will have more time to complete the Ph.D. dissertation. Extended deadlines for joint-degree students should be considered as deadlines of last resort. In most cases the faculty expects completion much before those dates. In all cases, committees have the discretion to set their own deadlines for individual students.

The faculty acknowledges that there may be some flexibility in meeting deadlines when dictated by individual student needs, faculty priorities, unexpected circumstances, etc. Thus, each student's exact path to meet the requirements will be determined by that student's advisor, with assistance from relevant advisory committees (e.g., Master's Committee, Ph.D. Committee, etc.). This consideration pertains to issues such as deadlines, proposal/thesis formats, preliminary exam review paper requirements, etc. Regarding deadlines, advisors have the authority to enforce or extend them as circumstances warrant. Extension is likely to be granted when delays are caused by legitimate extenuating circumstances, but not when lateness reflects problems with a student's abilities or dedication to meet requirements in a timely fashion. In cases of conflict between the student and advisor in agreeing on these issues, the Program Director should be consulted.

Any extension must be approved at least two weeks prior to the deadline by the advisor, any relevant committee, and the Program Director. The student should write an email that very briefly (1-3 sentences) explains the reason for the delay, and proposes an alternative deadline. That email should be sent to the advisor and committee. The advisor will give her or his approval by forwarding it on to the Program Director. The Program Director will forward it on to the rest of the Cognitive Faculty to keep everybody apprised of that student's progress.

#### Standard Deadlines

First Year Project – End of Second Semester of First Year (typically last Monday of Spring Semester)

Master's Proposal – December of 2nd Year

Master's Introduction, Methods, Preliminary Results Write-up – April of 2<sup>nd</sup> Year

Master's Defense - September of 3rd Year

Preliminary Exam Paper Proposal - January of 3rd Year

Preliminary Exam Paper Defense - September of 4th Year

PhD Proposal - January of 4th Year

PhD Defense – April of 5<sup>th</sup> Year

#### Extended Deadlines for Joint Degrees

- Starting with the Preliminary Exam Paper Proposal, each deadline is pushed forward one year.
- Students seeking dual/triple-degree time extensions must be formally enrolled/accepted into the dual/triple-degree program before the standard Preliminary Exam Paper Proposal deadline.

### **E. Progress Reviews**

The program faculty meets regularly to review each student's progress. Each advisor provides each student with a written summary of that evaluation. Grades in required and optional

courses and seminars as well as performance in research and teaching assistantships enter into this evaluation. Students whose progress is judged not satisfactory in some respects will either be (a) put on probation or (b) terminated from the program. Students not showing sufficient promise may be encouraged to leave the program and/or placed on probation, even if they have met the nominal program requirements. It is impossible to stipulate all the conditions under which this situation may arise, but a general scenario is that the student passed all requirements, but the performance on several components was marginal. Students who are put on probation must fully address all the concerns stated in their written summary by the specified date to continue their graduate study.

All students will be evaluated at the end of each year. Prior to this review, each student must complete an Education Plan that will be submitted to the Cognitive Program Director. The Cognitive Administrative Assistant will distribute an Education Plan form to students near the end of the spring semester, and it should be completed and submitted by the end of the semester.

As detailed in the “Master’s Thesis” section above, the Master’s Committee also evaluates whether or not the student will be allowed to continue toward pursuit of the Ph.D., with or without passing the Master’s requirements.

## **F. Miscellaneous**

All Graduate School requirements pertaining to residence, minimal credit hours, Master's thesis and Doctoral dissertation must be met before completion of the program. Students who enter the program with a Master's degree from another university may be excused, upon petition to the program faculty, from writing another Master's thesis. Such students are subject to the same evaluation at the end of the first year as the other first-year students. After the first year research project is completed, the Preliminary Examination Committee can be formed and the examination scheduled as soon as is appropriate.

<http://www.colorado.edu/psych-neuro/graduate-programs/resources-current-graduate-students>

## **G. Typical Path to the Doctoral Degree in Cognitive Psychology**

The requirements indicated by \* must be completed by the specified deadline for students to be allowed to continue their graduate study. For dual/triple-degree students, starting with the Preliminary Exam Paper Proposal, each deadline is pushed forward one year.

### **I. First Year**

- A. the General Statistics sequence (two semesters)
- B. Research Methods Proseminar in Fall; Two other Proseminars in Spring
- C. conduct and complete the first-year research project
- D. department research presentation (Mini-convention talk)\*
- E. turn in a complete written report of the first-year project by the end of the second semester\*
- F. apply for in-state resident status with University Registrar in June/July before second year begins.

### **II. Second Year**

- A. the remaining portion of the Cognitive Proseminar sequence

- B. work on a minor area (or joint degree) requirements
- C. work on Master's Thesis
  - Proposal due in December
  - Intro and Methods due in May
- D. department research presentation (Mini-convention talk)\*

### III. Third year

- A. Complete Master's Thesis including Oral Defense (by September)\*
  - Know the graduate school requirements, thesis specifications, and have the appropriate forms:  
<http://www.colorado.edu/GraduateSchool/academics/>
- B. form Preliminary Examinations committee and have the Literature Review proposal approved by the committee by January\*
- C. complete minor area (or continue with joint degree) requirements
- D. complete teaching experience requirement
- E. one graduate course not included in the core requirements
- F. cognitive lunch talk

### IV. Fourth year

- A. Complete and Defend Preliminary Exam paper by September\*
- B. form Doctoral Dissertation advisory committee
- C. prepare the written doctoral dissertation proposal by January\*
- D. cognitive lunch talk

### V. Fifth (and Sixth) years

- A. carry out dissertation research and write dissertation
  - Know the graduate school requirements, thesis specifications, and have the appropriate forms: <http://www.colorado.edu/GraduateSchool/academics/>
- B. oral final examination (Dissertation Defense)
- C. get a job or post-doctoral position
- D. cognitive lunch talk (each year)