University of Nevada, Reno
Department of Psychology

Cognitive and Brain Sciences
Handbook
V 3.0
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UNIVERSITY OF NEVADA, RENO

The university is located in Reno-Sparks, a community of approximately 250,000. Located on the eastern edge of the Sierras, the city is a major tourist destination and offers a mild climate, spectacular outdoor environments, and wide range of outdoor activities. The town is within an hour’s drive of Lake Tahoe. San Francisco is a 4-hour drive. The University of Nevada, Reno is a fully accredited, doctoral degree granting institution, serving approximately 18,000 students in nearly 70 graduate and over 140 undergraduate degree programs.

DEPARTMENT OF PSYCHOLOGY

The Department of Psychology is made up of three doctoral degree programs comprising the Cognitive and Brain Sciences Program, an APA accredited Clinical Program, and an ABA accredited Behavior Analysis Program. The Cognitive and Brain Sciences and Behavior Analysis Programs also offer Masters degrees. There are 22 faculty members in the Department, and approximately 400 undergraduate majors and 120 graduate students in the various programs on campus.
COGNITIVE AND BRAIN SCIENCES PROGRAM

The Graduate Program in Cognitive and Brain Sciences offers programs of study leading to the M.A. and Ph.D. degrees. Students are given a strong foundation in current theory and methods and have the opportunity to specialize within a number of substantive areas of research that include brain organization in developmental disabilities, comparative and developmental vision, cognitive neuroscience, memory, perception, human factors in aviation, attention, face recognition, consciousness and neuropsychology.

The Psychology department also participates in an interdisciplinary Social Psychology program. The Cognitive and Brain Sciences Program has collaborative links with several other departments on campus, including Biology, Medicine, Computer Science, and the Graduate Program in Biomedical Engineering. Many of the program faculty members also maintain close working links with colleagues and research labs at other universities. A recently added undergraduate degree in Neuroscience provides additional connections between Psychology graduate faculty and those in other departments such as Biology. This inter-collegiate degree is awarded through both the Departments of Psychology and Biology.

During the first two years, students complete a series of foundation courses in statistics, perception, cognition, memory, comparative psychology, and physiological psychology. These courses prepare the students for the comprehensive exam at the end of their second year. In subsequent years a wide variety of seminars and independent study options are available for pursuing students’ areas of interest. The M.A. is usually expected to be completed by the end of the 2nd year, while most students are expected to complete the Ph.D. degree in 5 years.

MISSION STATEMENT

Cognitive and Brain Sciences is a basic component of any academic program in psychology. The Cognitive and Brain Sciences program is committed to quality training of students at the graduate and undergraduate levels and the production of high quality research. It is our goal to offer courses and training in the specific areas represented by our faculty research. We strive to train our students to become researchers and/or teachers in experimental psychology. Since our faculty members are expected to maintain active research laboratories, we provide a fertile environment for graduate and undergraduate students to participate and learn about the research process. It is our purpose to provide masters and doctoral graduate students with extensive background in several basic areas of research, to train them so that they can plan and execute original research in the field and expose them, 'in depth' to a concentrated area of research. These actions are intended to prepare masters graduates for advanced study and turn doctoral graduates into viable candidates for academic positions and successful applicants for external funding.
FACULTY

Marian Berryhill

- Working memory: visuospatial and visuotemporal
- Episodic memory and episodic future thinking
- Neuroimaging, neurostimulation, neuropsychological, behavioral and genetic approaches to understanding how we represent the past

Gideon Caplovitz

- Visual Form and Motion Perception
- Attention
- Consciousness
- Psychophysics, Eye Tracking, EEG and fMRI

Mike Crognale

- Genetics of color vision: Human electrophysiology and psychophysics to determine the genetic basis for color vision variation.
- Comparative vision
- Development and aging of vision: Psychophysical investigations of color vision and electrophysiological assessment of color/luminance processing throughout the lifespan
- Color vision deficiencies applied to assess neural integrity in pathology and physiological stress
- Vision and Human Factors in Aviation

Jeff Hutsler

- Cortical organization in autism spectrum disorders
- Development of cortical structure in autism spectrum disorder
- Comparative organization of the cerebral cortex
- The microanatomical structure of human auditory and language-associated cortices

Jacqueline Snow

- How humans perceive and think about real world 3D objects versus 2D pictures
- The effect of 'realness' vs. 3D virtual reality displays on thinking and behavior
- Form perception in vision and touch
- Neuropsychological disorders of object recognition (e.g., agnosia)
- Multisensory integration
- Methodologies: behavioral studies/psychophysics, fMRI, single-case patient studies
Lars Strother

- Functional neuroimaging of human sensory and motor systems
- Visual perception, attention and perceptual organization
- Intention, action and motor control
- Translational research on visual perception (e.g. optimal visualization of medical images)
- Psychology of visual art

Mike Webster

- Color and form perception
- Face recognition
- Perceptual adaptation
- Vision and the natural environment
ADMISSION REQUIREMENTS

In order to qualify for admission, a candidate must have earned a baccalaureate degree (or equivalent) from an accredited institution. An undergraduate major in Psychology is not required for admission. Those who hold a Masters Degree in Psychology may apply up to 24 credits towards the Ph.D. degree. Course work in related disciplines may be used to satisfy these requirements or may be acceptable transfer credits from a prior Masters Degree program. In either case, exceptions require approval of the Cognitive and Brain Sciences Program Faculty.

Applicants should submit a CV, a statement of goals and interests including a list of desired faculty advisors. A completed application file must contain transcripts of all course work, 3 letters of recommendation, and GRE scores. The Psychology Subject Area of the GRE is not required. Applications are reviewed by the program faculty and admission requires approval by a majority of the faculty through a formal vote.

For International Students, a test of English as a Foreign Language (TOEFL) score of at least 500 is required for admission to the Graduate School. Students who have achieved a TOEFL score of 600 or higher are exempt from Intensive English Language Center evaluation. A TOEFL score of 550 or higher is the minimum necessary for a student to be approved for a teaching assistantship. TOEFL scores are not required for international students who have received a baccalaureate or advanced degree from an accredited university or college in the United States.

GENERAL PROGRAM REQUIREMENTS

Students wishing to obtain a PhD from the Program should initially apply to the PhD program. Only those students wishing to terminate their studies in the Program after the Masters degree should apply to the master’s program. Students admitted into the terminal Masters program will be required to reapply to the PhD program if they later wish to obtain the PhD degree from the Cognitive and Brain Sciences Program.

The M.A. and Ph.D. programs in Cognitive and Brain Sciences follow the general graduate school requirements as detailed in the University catalogue. Students should also obtain Form GSA-1 from the Graduate Dean’s office to review the prescribed steps and times in progressing toward an advanced degree. Students entering the Masters Degree program are expected to complete the degree within 2-4 years of the date of matriculation, and no later than 6 years from this date. Students entering the Ph.D. program are expected to complete the Ph.D. Degree within 4-6 years after matriculation (3-5 years for those students entering the program with a Masters Degree in Psychology), and no later than 8 years from this date. Note however that these absolute deadlines are those of the Graduate School. The deadlines for maintaining satisfactory progress in the Program are less lenient and are listed in the Section “Timeline for Completion” below.

Students who register for 9 credits or more are considered as full-time students. Graduate assistants on contracts are considered full-time students if they register for 6 or more credits. To remain in “good standing” all graduate students must register for at least 3 graduate-level credits during each fall and spring semester until graduation. There are no minimum registration requirements during the summer. However, graduate assistants with summer assignments must register for at least one graduate-level credit per regular summer session to be exempt from FICA.
Students are expected to earn A’s and B’s in graduate courses. A student whose overall graduate GPA falls below 3.0 is placed on probation, and if the overall GPA remains below 3.0 for two consecutive semesters, the student is dropped from graduate standing. A student may reapply for graduate standing by eliminating the existing grade-point deficiency and achieving an overall graduate GPA of at least 3.0. In the Cognitive and Brain Sciences Program, a grade of C in any course is sufficient cause for review of the student’s continuation in the program.

For the Masters Degree, students in the Cognitive and Brain Sciences Program are required to complete first year research project and a Masters thesis. The First-year Research Project is presented as a public talk at the end of the first year.

The advisory-examining committee for Masters degree candidates should be appointed and the program of study approved during the first year of study. The committee consists of at least three members of the graduate faculty. Two faculty members represent the student’s area of specialization (both do not necessarily have to be from the student’s department), and one faculty member is selected from the university “at-large.”

For the Ph.D. Degree, students are required to complete a doctoral dissertation and to have obtained a Masters Degree (either from the University of Nevada or from some other accredited institution). Each student must secure an advisor – a program member who agrees to serve as Chair of the advisory-examining committee for the student’s M.A. thesis or doctoral dissertation – by the end of the first semester of graduate work at UNR. All theses and dissertations must be chaired or co-chaired by a regular faculty member of the program. The form specifying the advisor should be completed and filed with the Chair of the Cognitive and Brain Sciences Program. Students should also select a dissertation committee relevant to their topic of research. For doctoral candidates the committee must consist of at least five members of the graduate faculty: the committee Chair (advisor), at least two graduate faculty members from Psychology, at least one graduate faculty member in a field related to the student’s major area of concentration, and at least one graduate faculty member representing the University “at large.” This committee must approve the student’s program of studies, accept the proposal for the thesis or dissertation, and conduct the final oral examination. The path to the PhD includes two steps of qualification, 1) the masters comprehensive exams must be passed at the qualifying level for the PhD, 2) the PhD proposal and oral must be passed to the satisfaction of the PhD committee. These steps are described in more detail below.

Students are expected to participate in events sponsored by the Cognitive and Brain Sciences Program including but not limited to attendance at: colloquia, first-year research presentations, theses and dissertation defense presentations, program meetings, and orientations.
MASTERS THESIS

A Masters Thesis is supervised by a faculty member in the Cognitive and Brain Sciences, and is evaluated by a second faculty reader in the CBS Program and one faculty outside of the Department of Psychology. Thesis research must be approved by the Institutional Review Board at the University of Nevada, Reno, prior to data collection. Students are encouraged to present their theses at a professional meeting or conference, and to submit their work for publication. For the completed thesis a 1st authored publication submitted or accepted for publication can be substituted for the standard thesis; in this case the submitted thesis can optionally include an introductory chapter.

For both theses and dissertations the defense will start with a public 1-hour talk on the applicant’s research, for faculty and graduate students in the program and for the committee. This talk should be treated as a “job talk” in which the student highlights the importance and significance of the work for an informed but general audience. The committee will meet afterward with the student for the oral exam.

Students successfully completing a Masters thesis and the prescribed coursework earn a Masters degree on the way to the doctorate. Students do not automatically receive a Masters degree upon completing coursework and thesis, however. They must apply for graduation and submit the necessary documents to the Graduate School.

DOCTORAL DISSERTATION

The doctoral dissertation is supervised by a faculty member in the Cognitive and Brain Sciences. Four additional faculty members, including two members from outside the Department of Psychology, constitute the dissertation committee. Doctoral dissertations must be approved by the Institutional Review Board at the University of Nevada, Reno prior to the collection of data of any kind. This approval is contingent upon the approval of the student’s dissertation proposal.

Dissertation proposals will be in the form of the research proposal portion of an NIH grant application (e.g. NRSA) and should include a literature review and discussion of the proposed research questions and the methods and design that will be used to address them. Proposals must be defended and approved by the student’s PhD committee prior to the start of data collection and at least one semester prior to the date of the final defense of the dissertation. The completed dissertation can include published or submitted papers in peer-reviewed journal articles as chapters, and at least one section of the dissertation must include material submitted or accepted for publication in the stand-alone format of a publication. The published/submitted work must be drawn from the dissertation proposal, and both the proposal and defense are subject to committee approval.

Dissertations are typically proposed, completed, and defended during the student’s final 2 years in the program. The dissertation defense is open to the public, and it is the student’s obligation to post a department-wide notice of the defense two weeks prior to its occurrence. After the public presentation, the student and the committee will retire for the question period and the evaluation. Dissertation proposal meetings and defenses may not be conducted in the absence of a member of the dissertation committee without prior approval of the committee members.
Students are encouraged to present their dissertations at a professional meeting or conference and to submit their dissertation for publication.

**CURRICULUM**

**M.A. Credit Requirements:**

M.A. students in the Cognitive and Brain Sciences Program are required to complete a set of 5 Foundation courses in appropriate subject areas and a set of 3 Methods courses. Students entering with an M.A. may substitute equivalent graduate courses from another institution to satisfy parts of this requirement. The applicability of transfer credits is determined by the program faculty and requires approval by the program director.

Students earning a Masters Degree must complete a minimum of 30 credits of acceptable graduate course work (courses with grades of “C” or lower will not be counted) as approved by the student’s advisory-examining committee and the Cognitive and Brain Sciences Program Director. Students may also be required to complete a 3 credit course in teaching skills offered through the Excellence in Teaching Program. These credits cannot be used toward the 30 credit requirement for the M.A. degree in the program. The graduate school requires that all students in good standing must maintain a minimum GPA of 3.0. At least 21 graduate credits must be earned in on-campus courses at UNR. Six credits are required for Masters Thesis Research (Psy 797), and a minimum of 18 credits of course work must be taken at the 700-level. Specific requirements are described in the next section.

In addition, students are required to enroll in at least 1 but not more than 3 credits of Psy 795 to prepare for the Comprehensive Exams (see below).

In order for students to qualify for a Teaching Assistant position, they must enroll in GRAD 701. This short course should be taken prior to performing any teaching or Teaching Assistant duties and is usually offered during the student orientation period prior to the start of the Fall Semester. There are no credits earned for enrollment in this course.

The Graduate School does not have a foreign language requirement for the Masters Degree or the Doctoral degree.

**Ph.D. Credit Requirements:**

A minimum of 72 credits is required for the Ph.D. Degree. At least 48 credits must be in course work (courses with grades of “C” or lower will not be counted), as approved by the student’s advisory-examining committee and the Cognitive and Brain Sciences Program Director. Students are required to take 24 credits for dissertation research (Psy 799). A student may apply up to 24 credits with grades of B or better from post-baccalaureate graduate studies in Psychology toward the doctoral degree. A minimum of 30 of the 48 credits of course work must be at the 700 level. Since not all 600-level psychology graduate courses will be accepted for the M.A. or Ph.D. degrees, students need advance approval for any 600-level courses taken in psychology, and for any graduate courses taken in related disciplines outside of psychology. The advance approval must come from the Cognitive and Brain Sciences Program faculty. As noted above, students may also be required to complete a 3 credit course in teaching skills offered through the Excellence in Teaching Program. These credits cannot be used toward the 72 credit requirement for the Ph.D. degree in the program. Specific course requirements for Ph.D. candidates are described in the next section.
**Course Requirements:**

The graduate program in Cognitive and Brain Sciences is research oriented, and all graduate students are expected to be involved in research. Students are encouraged to participate in research with faculty, with other students, and independently. Students may register for Graduate Research (Psy 752 with a maximum of 6 credits and Individual Reading (755), with a maximum of 9 credits. These credits can be used to fulfill degree requirements. The following courses are required and constitute the Cognitive and Brain Sciences Core Courses.

1. **Foundation Courses.** All students are required to complete 5 700-level seminars in the different substantive areas of Cognitive and Brain Sciences represented by the program faculty. These courses are designed to provide background and breadth in different topical areas of the field and to prepare students for the comprehensive exam. To ensure breadth and adequate preparation for the exam each course should be taken from a different faculty member to meet this requirement, and the sequence should be completed within the first two years.

   Current examples of these courses (as of Fall 2010) include:
   
   - Psy 709: Comparative Sensory Neuroscience
   - Psy 720: Sensation and Perception
   - Psy 721: Advanced Psychophysiology
   - Psy 729: Human Memory

   Topical seminars are also offered through the following course numbers which can also be taken to satisfy the 5-course foundation requirement:
   
   - Psy 761 or 762: Contemporary Issues in Psychology (maximum of 6 credits each)
   - Psy 763: Special Topics in Cognitive and Brain Sciences (maximum of 9 credits)

   Students may substitute one seminar course from outside the program as part of their 5-course foundation requirement. The substituted course must be approved by both the student’s advisor and program director. An individual faculty member can provide only one section of the MA comprehensive exam. Thus if a foundation course is substituted then the outside instructor must be willing to contribute and grade one section of the MA comprehensive exam based on their subject area.

2. **Methods Courses.** This 2-course sequence is designed to provide students with the tools they need to actually carry out their research. All students are required to take the following two courses as part of their program of study:

   - Psy 706: Intermediate Statistics 1
   - Psy 627: Applications of Computer Programming
In addition to these courses students must also complete at least one further lab-oriented methods or statistics course. Current examples of these courses (as of Fall 2006) include:

Psy 707: Intermediate Statistics II (or Math 757)
Psy 710: Experimental Design
Psy 780: Advanced Human Psychophysiology Lab

Psy 761-763 (special topics) courses may also be used to satisfy the requirement for the 3rd Methods course if they are taught as a lab-based methods course.

Students entering UNR with an M.A. in psychology or with acceptable graduate work from another accredited institution may have appropriate transfer courses substitute for specific courses in the core. Decisions on transfer course equivalents to required courses are made by the Cognitive and Brain Sciences Program faculty.

Comprehensive and qualifying exams:

A. The M.A. Comprehensive Examination shall be taken at the end of the Spring semester during the second year of study. Students failing to complete this requirement will undergo a review by the CBS faculty and will remain ineligible to teach summer classes. For students entering UNR without a Masters degree, the same examination serves as an M.A. Comprehensive and as the first stage of qualifying for the PhD as described above. However, a higher score is required for passing at the Ph.D. qualifying level. Students can pass this examination at two levels: Terminal M.A. or both M.A. Comprehensive and Ph.D. Qualifying. The Ph.D. Qualifying Examination must be passed before a student can be admitted to candidacy for the doctoral degree.

This examination is designed to assess the student’s familiarity with basic areas in Cognitive and Brain Sciences. The exam is given on two successive days during the Spring Semester, with each session lasting around 6 hours. The exam will include 5 topical areas administered by the program faculty and would normally correspond to the areas represented by the 5 Foundation courses the student has elected to take.

Areas covered on the exam may include but are not limited to:

- Perception
- Memory
- Cognition
- Psychophysiology
- Cognition
- Cognitive Neuroscience
• Neuropsychology
• Evolutionary Psychology

Students should consult the Director of the Cognitive and Brain Sciences Program for more details concerning the examination for any given year. Each question on the exam is scored on a 5-point scale. The student must average 3.0 to qualify to the Ph.D. program and a minimum of 2.75 to pass at the terminal M.A. level. A student who does not pass on the first try may discontinued from the program, or may, on approval of the division faculty, be given one opportunity to retake the entire exam on the next occasion it is administered. The following interpretations of the grading scale are used (although a 5-point scale is normally used, a reader may assign a score of “0” for “no response” or a totally irrelevant answer):

5 – Excellent: best or nearly best possible answer
4 – Very Good: more than sufficient quality to pass
3 – Acceptable: Minimum level for passing at the Ph.D. qualifying level
2 – Un satisfactory: quality of answer falls short of the minimum passing standard
1 - Failure – answer below expectations for graduate students

B. The graduate school requirement for passing a written PhD qualifying exam is satisfied by the successful completion of the Masters comprehensive exams and the PhD dissertation proposal. The defense of the proposal fulfills the oral portion of the PhD qualifying exam.
RESEARCH

Lab Participation

Research experience is accomplished through participation in the student’s advisor research lab. All faculty members have active, ongoing research programs and students are expected to participate in laboratory experiences in connection with these labs throughout their entire training. Regular attendance at primary (and secondary, if applicable) lab meetings is mandatory.

Students participate in an individual faculty member’s lab as their primary lab placement. Students are expected to join a laboratory as a first course of action once they arrive at UNR. Students who enter the program without an advisor will be assigned one to facilitate the initiation of a research project. Participation in a lab occurs by mutual agreement between the student and faculty member.

Students may also request to participate in research in other labs if they should desire.
Timeline for Completion

Students will be expected to progress through the program by the following deadlines; failure to meet any deadline requires a program review and director approval and may result in probationary status and loss of funding.

Overview per year:

<table>
<thead>
<tr>
<th>Expected Timeline</th>
<th>Deadline</th>
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<tbody>
<tr>
<td><strong>Year 1:</strong></td>
<td></td>
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<tr>
<td>1. Select advisor, register name with the CBS grad chair</td>
<td>1. 1st semester</td>
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<tr>
<td>2. 1st year presentation at the end of the year.</td>
<td>2. End of second semester</td>
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<tr>
<td><strong>Year 2:</strong></td>
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<tr>
<td>1. Comprehensive Masters exam in the spring</td>
<td>End of 4th semester</td>
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<tr>
<td>2. Submit Masters thesis</td>
<td>*No summer teaching without Masters degree</td>
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<tr>
<td>3. 2nd year/Masters presentations</td>
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<td><strong>Year 3:</strong></td>
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<tr>
<td>1. PhD proposal defense &amp; presentations – Spring</td>
<td>End of 8th semester</td>
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<tr>
<td><strong>Year 4:</strong></td>
<td></td>
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<tr>
<td>1. Conduct dissertation research</td>
<td>End of 12th semester (6-year plan)</td>
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<tr>
<td>2. PhD talk &amp; private defense – Spring</td>
<td></td>
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EVALUATION OF PROGRESS

Yearly Reports/Evaluation-

1. Student Report - At the end of each year students will submit a report form describing what has been accomplished that year.

2. Advisor Review – Each advisor will write a letter indicating whether the person is making: Excellent, Satisfactory, or Unsatisfactory progress in coursework and research.
   a. Two years of Unsatisfactory progress could be grounds for dismissal.
   b. Students will not be allowed to proceed to PhD candidacy unless satisfactory progress is made.

CONFLICT RESOLUTION/ACADEMIC DISCIPLINE

One of the outstanding characteristics of the program is its collegial atmosphere. A conscious effort is made to maintain this valuable quality. It is expected that conflicts between students and faculty will invariably occur involving issues of education, task expectations, and interpersonal differences. One of the difficulties in resolving conflicts is the power differential between faculty and students. Every effort is made to treat students as junior colleagues, thus reducing the power differential and leading to more openness and candor. The development of holistic relationships, i.e., going beyond narrow academic roles - between faculty and students - increases the amount of interpersonal interaction and reduces the distance between students and faculty. Students are encouraged to work out conflicts among themselves and with faculty in order to enhance the overall learning atmosphere. Within the structure of the program, a process has been developed to deal with conflicts, particularly between faculty and students.

The steps are as follows:

- Conflict is recognized by either party involved.
- Attempts are made by the two parties involved to resolve the conflict with as much direct communication as possible, or at least to mutually recognize that a conflict exists.
- If the conflict cannot be resolved, the two parties involved will select one student and one faculty member (who are not involved) to serve as negotiators in the conflict.
- A meeting is held with the two parties, the two negotiators, and the Director of Clinical Training. Meetings will continue until the conflict is resolved.

The Affirmative Action Office is also available on campus to ensure that you have the right to an education and to work and advance in employment on the basis of merit, ability, and potential without fear of discrimination. Their web site states, “Our office monitors all equal opportunity compliance efforts in hiring, interviewing, recruiting, and selection procedures. We are also responsible for hearing employee and student grievances and for investigating complaints.” For more information about the Office of Affirmative Action you can call 784 1547. They are also responsible for issues involving sexual harassment. The program views such behavior as unethical, offensive and illegal.