

# MOLECULAR, CELLULAR & INTEGRATIVE NEUROSCIENCES PROGRAM COLORADO STATE UNIVERSITY

## REQUIREMENTS AND GUIDELINES FOR PH.D. STUDENTS

The Molecular, Cellular & Integrative Neurosciences (MCIN) Program is designed to help students become qualified to do research and teach in interdisciplinary neuroscience. In addition, graduate students should draw from the other educational offerings and from the cultural life of the University, not only for their own enjoyment, but so they can better meet all of their lifelong professional, social, and political responsibilities.

### I. Entrance Requirements

- A. Bachelor's degree from an accredited institution with an overall grade point average of 3.0 (B) or above.
- B. It is expected that undergraduate courses in organic chemistry, biochemistry, biology (including cell biology and/or physiology), physics and calculus, will have been completed. Advanced course work in biology, biophysics, biochemistry, molecular biology, chemistry and psychology would also be highly appropriate.
- C. Three letters of recommendation.
- D. The Graduate Record Examination (verbal, quantitative, analytical are required; a specialized subject is recommended).
- E. A completed Graduate Application Form
- F. Two official copies of undergraduate transcript(s)
- G. International applicants must provide scores from the TOEFL examination. A minimum score of 630 paper-based OR 267 computer-based is required.

### II. Stipend and Tuition

- A. Stipend - Information about the current level of available support is provided to each student when he/she begins graduate work in the Program, and again when the student transfers into the department of the chosen dissertation advisor. Every effort is made by that department to provide support. The student is expected to devote all of his/her time to the pursuit of a degree, and outside jobs are discouraged. Support by University funds is generally limited to six years.
- B. Tuition - Tuition charges for graduate students vary from year to year, and there is considerable differential between tuition charges for Colorado residents and non-residents. In most instances, tuition is paid for all Ph.D. students. Students who are US citizens or residents are encouraged to file the paperwork necessary to convert from non-resident to resident status in May of their first year. This conversion requires that students have initiated changes in their residency upon arrival in Colorado. Information on how to do this is available from the MCIN Program office.

### III. General Requirements of the Program

- A. Performance in Prescribed Courses - At the close of each semester of the first two semesters, the MCIN Admissions & Academics Committee (hereafter, AAC) will evaluate the performance of each new student. A student with a grade point average below 3.0 in formal course work (not including research, group study, independent study or seminar) will be placed on academic probation. Courses in which an incomplete grade was received must be made up within one year, and a grade of at least B (B=3.0) obtained. Students on academic probation are not allowed to hold Graduate Teaching or Research Assistantships. The support from the MCIN Program is usually in the form of a Graduate Research Assistantship.
- B. Performance in Laboratory Experiences B Students must perform a minimum of three laboratory rotations during the first two semesters (see Section IV.C.3). Performance in each rotation will be evaluated by the faculty member of that laboratory. A student must perform satisfactorily in laboratory rotations in order to continue on in a Ph.D. program. If a student wishes to perform a rotation in the laboratory of someone who is not a member of the MCIN faculty, such a rotation will be allowed only if the faculty member agrees to reimburse the MCIN program for the stipend and tuition costs proportional to the time spent on rotation in their lab.
- C. At the end of the second semester, students will select the department from which they wish to receive their Ph.D. degree. Students may select their dissertation advisor from among all members of that MCIN faculty, regardless of their departmental affiliation, provided the degree-offering department approves of the research topic for the Ph.D. In some instances where the degree-granting department is not the home department of the research advisor, assignment of a co-advisor from the home department will be necessary. The co-advisor will serve as a member of the Student Advisory Committee (hereafter SAC). Once a student has been accepted into a departmental graduate program at the end of the second semester, that student will abide by all the rules and guidelines of the selected department.

### IV. Procedures and Expectations for Earning a Ph.D. Degree

- A. University Requirements B A minimum of 72 credits beyond the baccalaureate is required. A Masters degree from an accredited college or university may be accepted for a maximum of 30 credits. A minimum of 32 credits must be earned at Colorado State University. At least 21 credits beyond the Masters degree must be in courses numbered 500 or above, which may include dissertation credits.
- B. Advising of New Students - MCIN graduate students will be advised by the AAC during their first year.
- C. MCIN Core Curriculum - The following courses are required by the MCIN Program and should be completed during a student's first year of study:

NB500 (1)	Cellular & Molecular Neurophysiology Readings
NB501 (2)	Cellular & Molecular Neurophysiology
NB502 (2)	Techniques in Neurosciences I
NB503 (3)	Developmental Neurobiology

- NB586 (1) Techniques in Neurosciences II
- NB505 (3) Neuronal Circuits, Systems and Behavior
- NB793 (1) Neuroscience Seminars (each semester for first year)
- NB795 (var) Independent Study (Laboratory Rotations)
- NB796 (1) Journal Club (or participation in one of the non-credit journal clubs)

1. Required core courses can be waived by the AAC if a student has completed an equivalent course with A/B grades within the previous three years. Request for waivers from these requirements will be reviewed by the AAC. Requests must be accompanied by a transcript and course description, and may require an oral and/or written exam to demonstrate proficiency. The student will be examined over the material in the waived course as part of the Oral Qualifying Examination (see section IV.D).
2. A student may take elective credits to carry a minimum of 15 credits per semester. These electives may also consist of core curriculum courses for the individual departments into which a student expects to transfer after the first year.
3. Laboratory Rotations (NB795) - All students are required to carry out rotations in a minimum of three different laboratories. The approximate schedule for the three rotations for fall entry students is: 1st rotation - beginning of Fall semester through November; 2nd rotation - November through February; 3rd rotation - March through end of Spring semester.
  - (a) Students are required to attend the annual MCIN departmental retreat. During the retreat, members of the faculty will give presentations to the new students on research opportunities in their laboratories in order to aid the students in selecting their laboratory rotations. Immediately following the retreat, students will submit a prioritized list of laboratories for their first rotation to the AAC. The AAC will then assign the rotation based upon the list and consultation with the faculty mentor and student. By mid-October, the students will submit to the AAC a prioritized list of laboratories for their second rotations and non-binding preferences for their third rotations. The prioritized list of laboratories for the third rotation must be submitted to the AAC by the end of January.
  - (b) Students should register for sufficient credits of NB795 each semester to reach a minimum of 15 total credits. International students should carry a total of 18 credits per semester. Graduate education is a full-time activity, and involves a high degree of experiential learning. It is expected students will devote an effort equal to at least 40h/wk, minus the hours spent in class, to their laboratory rotations and will participate fully in the efforts of the laboratory to which they are assigned. The student's motivation and research aptitude are a major criterion used by the faculty in the performance evaluations conducted at the end of the first year.
4. Grading Policy - Attendance is mandatory for all MCIN graduate classes. Unexcused absences may result in a lower grade being given,

at the discretion of the instructor. In courses such as NB793, NB795 and NB796, grades will be assigned by the faculty member involved. An average level performance will be graded as S (Satisfactory). An outstanding performance will be recognized by a grade of A. Performance that is unsatisfactory will be graded as U.

- D. Oral Comprehensive Qualifying Examination - All Ph.D. students are required to take an Oral Comprehensive Qualifying Examination at the end of their second semester. The purpose of the exam is to test each student's general knowledge of their first-year courses, as well as his/her ability to utilize this information to solve problems. If the incoming department does not have a requirement for an Oral Comprehensive Qualifying Examination, the AAC will conduct an exam on the MCIN core curriculum. If such an exam is offered by the student's selected department (see below) and the student is prepared to take this examination by virtue of having completed the core courses from their selected department, the AAC may waive this requirement. The AAC may enlist the help of other MCIN faculty in administering the examination. The examination will be held within two weeks of the end of the second semester.
- E. Performance Evaluation - Graduate student performance will be evaluated each year. The overall performance of each first-year student is evaluated by the AAC at the end of the Fall and Spring semesters. This evaluation will include a review of the student's academic record, participation in seminars, progress in laboratory rotations, and performance on the oral qualifying examination. Possible outcomes are: a) clear or conditional approval to transfer to a departmental Ph.D. program; b) transfer to a departmental M.S. program; c) transfer to a departmental MS program on academic probation (less than a 3.0 GPA), which is accompanied by loss of GTA or GRA support; or, d) dismissal from the graduate program. A student who is placed on academic probation must be re-evaluated by their home department at the end of the following semester for a decision as to his/her continuation in the program. Students transferred to an M.S. program may reapply to a Ph.D. program upon satisfactory completion of the M.S. degree, but acceptance is likely only with a strong recommendation from their M.S. advisory committee. All graduate course credits earned at CSU may be applied toward the 72-credit requirement for the Ph.D. degree.
- F. Selection of Departmental Degree Program - Students may select their Ph.D. degree program from among those offered by the departments represented by the MCIN Program faculty. Since background course requirements for admission into these programs vary among disciplines, a student accepted into the MCIN Program will be advised by the AAC when he/she first arrives on campus as to what, if any, remedial course work would be required for their transfer to each of the different Ph.D. programs. A student selecting a degree program in a department different from their dissertation advisor (see below), might be required to select a co-advisor from their degree-granting department.
- G. Selection of Dissertation Advisor - The selection of a dissertation advisor should be made by the end of the student's first year. Before substantial discussions between potential mentors and students take place, students will submit a prioritized list of possible mentors to the AAC. The AAC will mediate the distribution of students to the laboratories, verifying that appropriate support and space is available for each student in the program.

- H. Student Advisory Committee (SAC) - The selection of the SAC should be made within the first three months after selection of a degree granting department and dissertation advisor, and must comply with the guidelines of the department into which the student has transferred. All further requirements for the M.S. or Ph.D. degrees must comply with the Graduate Student Guidelines of the degree-granting department that are in force as of the date of the transfer of the student to that program. An example of what is typically required for students to complete the Ph.D. degree program is attached following Section V.

**Summary of Steps for Entry into Ph.D. Program      Normal Time of Completion**

A.	Application for Admission	Before arrival
B.	Performance Evaluation by AAC	End of first semester
C.	Oral Comprehensive Qualifying Examination	End of second semester
D.	Performance Evaluation by AAC	End of second semester
E.	Selection of Degree Granting Department	End of second semester
F.	Appointment of Research Advisor	End of second semester
<b>G.</b>	Selection of the SAC	Before the beginning of second year
<b>H.</b>	File Program of Study (GS-6 form)	No later than October 15 (2 <sup>nd</sup> year)

**V. Transferring to the Degree-Granting Department**

- A. MCIN will notify all member departments at the beginning of the academic year of the names of the new doctoral students accepted into the Program.
- B. Once a student and the AAC have determined the department into which the student will transfer (approximately May 1<sup>st</sup>), MCIN will send to that department the following:
  1. A memo with the name of the student requesting a department change
  2. GS Form 7 (signed by the student and the MCIN Director)
  3. A copy of the Personnel Action Sheet (“turn-around document”)
  4. A copy of the student’s file.
  5. When available, a report of the oral qualifying exam and first-year evaluation (An unsatisfactory first-year evaluation will result in withdrawal of the transfer documents and dismissal of the student from the graduate program.)
- C. MCIN will not pay for the student’s stipend after approximately May 15<sup>th</sup>. It is expected that the department into which the student is transferring will take the following steps:
  1. Start a new file for the student, which will include the MCIN file.
  2. Have the Department Head sign the student’s GS Form 7, and then forward the Form to the Graduate School for approval.
  3. Give the Personnel Action Data sheet to the departmental grant administrator, so arrangements may be made to pay the student from grant funds (Graduate Research Assistantship). After making the appropriate changes, this document will be forwarded to Human Resources.
  4. Make sure the student registers for Continuing Registration (CR-ON) for the summer semester, if the student has not registered to take a summer class for at least one credit.

## VI. General Procedures and Requirements for Completion of Graduate Degree

The exact procedures and requirements for completion of the graduate degree will vary depending on the Department into which the MCIN student transfers. The following covers some general requirements and steps that need to be taken in a typical department to complete the Ph.D. degree.

- A. Establishment of the SAC - The first meeting of the student with the members of his/her SAC should be held promptly after the student transfers to the new department. A GS-6 form listing a recommended course of study should be filed with the Graduate School no later than registration for the fourth semester in graduate school.
  1. Composition. The SAC will be composed of at least four members. This includes the student's advisor (who will serve as chair), at least two additional departmental faculty members, and at least one faculty member from outside the department.
  2. Appointment. The student, after consultation with his/her advisor, will select the SAC. If circumstances so warrant, later changes in the composition of the SAC can be made by filing a GS-9A Form.
  3. Responsibilities of the SAC. The SAC shall be responsible throughout the remainder of the student's graduate career for advice on the student's course work program and evaluation of progress therein. The committee will advise, counsel, and guide the student in the planning and execution of a research program.
  
- B. Evaluation of Student Progress - To assist the SAC in its evaluation of the student's progress in research, each student will meet annually with his/her SAC. This annual evaluation will consist of four elements:
  1. Written progress report. The report should briefly summarize the goals of the research; describe progress during the past year, emphasizing significant accomplishments and discussing problems encountered; indicate changes in direction which have occurred during the past year; and, outline the specific goals and approaches to be used in the coming year.
  2. Departmental research seminar. Graduate students are expected to present their research annually in a departmental seminar series.
  3. Meeting with the SAC. A copy of the written progress report must be given to members of the SAC, and may be given in conjunction with a student seminar. A meeting must be scheduled to discuss the progress report and the seminar, and to solicit guidance and suggestions from the SAC concerning the goals, methods, and evaluation of the research.
  4. Evaluation of performance in course work and research. The efforts expended in preparing for this annual progress report will be rewarded by the benefits of new perspectives and ideas for research and will greatly facilitate the writing of the dissertation. Students failing to provide their SAC members with a written progress report and failing to meet with their SAC every year will receive an unsatisfactory evaluation of their research. Persistent lack of progress may be grounds for dismissal from the Ph.D. program. Students who receive an unsatisfactory evaluation on their progress from their SAC must meet again with their SAC within 6 months and receive a satisfactory evaluation or they will be dismissed from the program. Should the SAC decide to recommend dismissal from the Ph.D. program, the student will be notified in writing. The

student will then have the opportunity to appeal this decision with their SAC and the Provost/Academic Vice President (see CRS 24-19-104) before a final decision is made and implemented. The student will be notified in writing by their SAC of this final decision.

- C. University Preliminary Examination for Admission to Candidacy for the Ph.D. -
1. All aspects of the Preliminary Examination are overseen by the departmental graduate committee. Students must file a GS-15 Form prior to taking the Preliminary Examination.
  2. The Preliminary Examination is administered by the SAC.
  3. The Preliminary Examination consists of two parts: 1) a written proposal describing the student's thesis research; 2) an oral examination. The written research proposal must follow the "Research Plan" format. The oral examination focuses on a defense of the student's research proposal and related areas, and may include general questions related to the neurosciences.
  4. Upon successful completion of the Preliminary Examination, the student qualifies as a candidate for the Ph.D. degree and must submit a GS-16 form to the Graduate School.
  5. The preliminary examination should be passed before the beginning of the seventh semester in the Ph.D. program. Graduate School regulations stipulate that: a) a candidate who fails the preliminary examination may be re-examined once, provided the Examining Committee approves; b) the re-examination must be held not earlier than two months following the first exam; c) failure to pass the second exam results in dismissal from the Ph.D. program; and, d) a student who is dismissed for this reason may apply for readmission to complete the M.S. degree. Students admitted with significant deficiencies may request to delay the preliminary examination.
- C. Teaching Experience - As part of a student's overall training, every student accepted into the MCIN Program is expected to teach. This teaching experience may vary according to departmental standards. Usually this obligation is fulfilled in the student's second and third year in residence by assisting in the teaching of undergraduate or graduate courses. For each semester the student teaches, he/she may register for an appropriate number of credits in Supervised College Teaching.
- E. Defense of Dissertation -
1. Eligibility. This examination cannot be held until two or more semesters have passed after satisfactory completion of the University Preliminary Examination and must take place within the time period prescribed by the Graduate School. The student must have completed a typed draft of the dissertation and submitted a copy thereof to each committee member at least two weeks prior to the examination. The thesis advisor must agree that the dissertation is of such quality and completeness as to warrant setting a date for the defense.
  2. Examining Committee. The SAC will be the examining committee, with the student's advisor serving as chair. The defense of dissertation, however, is open to the public and the chair has the prerogative of allowing non-SAC members to ask questions of the candidate.
  3. Procedures. The student will present a formal seminar concerning the dissertation research. Following the presentation, the committee will probe, in detail, the student's comprehension of, approach to, and solution of, the

dissertation research problem. The committee, in executive session, shall determine if the thesis and its defense were satisfactory. In the event of an unsatisfactory performance, the committee may allow re-examination once and may require the student to complete further work.

- F. Submission of Dissertation - After passing the Defense of Dissertation, the dissertation will be prepared in final form following all of the rules of the Graduate School for its preparation. The SAC shall examine and approve the dissertation in its final form prior to the submission of two unbound copies to the University Libraries no later than the end of the eleventh week of the graduation term for Fall or Spring semester and by the end of the fifth week of summer term. Five copies of the thesis are required: two for the University Libraries, two for the Department, and one for the adviser. The dissertation must be submitted to the University Libraries within two months of completion of the oral defense. Failure to meet this deadline without a written extension signed by the chair of the Department will result in dismissal from the Ph.D. program.

**Steps to Ph.D. Program After 1st Year**

**Normal Time of Completion**

<ul style="list-style-type: none"> <li>A. Research seminar and meeting of SAC</li> <li>B. Submission of preliminary exam proposal</li> <li>C. University preliminary exam (GS-15 &amp; 16 forms)</li> <li>D. Application for graduation (GS-25 &amp; 25A forms)</li> <li>E. Defense of dissertation (GS-23 &amp; 24 forms)</li> <li>F. Submit signed dissertation ready for binding: 2 copies to University Libraries, 2 copies to the Department, 1 copy to the advisor</li> </ul>	<ul style="list-style-type: none"> <li>Every year</li> <li>Usually by 7<sup>th</sup> semester</li> <li>After submission of proposal</li> <li>Beginning of semester in which student plans to graduate</li> <li>During the semester in which student plans to graduate</li> <li>Before the end of the 11<sup>th</sup> week of graduation term for Fall and Spring semester and by the end of the 5<sup>th</sup> Week for the summer session</li> </ul>
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Colorado State University does not discriminate on the basis of race, color, religion, national origin, sex, age, veteran status, or handicap. The University complies with the Civil Rights Act of 1964, related Executive Orders 11246 and 11375, Title IX of the Education Amendments Act of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, Section 402 of the Vietnam Era Veteran's Readjustment Act of 1974, and all civil rights laws of the State of Colorado. Accordingly, equal opportunity for employment and admission shall be extended to all persons and the University shall promote equal opportunity and treatment through a positive and continuing affirmative action program. The Office of Equal Opportunity is located in Room 314, Student Services Building. In order to assist Colorado State University in meeting its affirmative action responsibilities, ethnic minorities, women, and other protected classes are encouraged to apply and identify themselves.

**CHECK SHEET FOR COMPLETION OF PH.D. REQUIREMENTS**

NOTE: The student's responsibility is to complete all steps toward completion of the Ph.D. requirements.

	<u>Requirements</u>	<u>Normal Time of Completion</u>	<u>Date Completed</u>
1.	Performance Evaluation by Faculty	Following completion of 1 <sup>st</sup> year	_____
2.	Appointment of Student's Advisor	End of second semester, 1 <sup>st</sup> year	_____
<i><u>General Procedures and Time of Completion in Typical Graduate Programs</u></i>			
3.	Selection of the SAC	Beginning of 2 <sup>nd</sup> year	_____
4.	File Program of Study (GS-6 form)	Deadline, Oct. 15, 2 <sup>nd</sup> year (Fall entry) or Mar. 1, 2 <sup>nd</sup> year (Spring entry)	_____
5.	Progress Report	Starting 2 <sup>nd</sup> year, each year thereafter (usually following Fall seminar)	_____
	Progress Report		_____
	Progress Report		_____
	Progress Report		_____
	Progress Report		_____
6.	Comprehensive Oral Exam	End of 2 <sup>nd</sup> year	_____
7.	University Preliminary Exam (GS-15 & 16 forms)	By the 7 <sup>th</sup> semester	_____
8.	Application for Graduation (GS-25 & 25A forms)	Beginning of semester in which student plans to graduate	_____
9.	Defense of Dissertation (GS-23 & 24 forms)	Semester in which student graduates	_____
10.	Submit Dissertation	Before 11 <sup>th</sup> week of graduation term (Fall & Spring), 5 <sup>th</sup> week (Summer)	_____