

GIDP in Neuroscience Guide to Neuroscience (NRSC) Curriculum

NRSC Student Advisory Committee

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A. Overview

Year 1

- Complete core curriculum, take elective and minor courses.
- Complete three research rotations, 10 weeks each
- By the end of the year:
 - Select a mentor
 - Select committee members

Year 2

- Complete all course work
- Fulfill teaching requirement
- Select comprehensive exam committee members, schedule first committee meeting
- It is encouraged the student take the comprehensive exam by the end of year 2 to achieve “Advanced Candidacy” (passed both exams) before fall of year 3

Years 3-5

- Meet at least annually with thesis committee
- Complete dissertation work in subsequent years 3-5
- Write dissertation and defend thesis no later than by the end of year 5

B. Required credits

The Graduate College requires at least 63 units of graduate work, including major and minor coursework, rotation research (NRSC 700) and dissertation research (NRSC 920). The combination of major and minor coursework must total a minimum of 36 units; at least half of these units must be taken for letter grades.

- 36 units are required to become eligible for taking the comprehensive exam

8 units	Neuroscience core courses (NRSC 560 and 588)
5-6	Statistics, Writing, and Ethics courses
2	Neuroscience Colloquium (NRSC 695F)
9	Research rotations (NRSC 700)
3-6	Neuroscience elective courses (see Table 3)
9	Minor courses
≥ 36 units	(at least half of the units must be taken for a letter grade)
- Another 36 additional units are typically required to graduate (after reaching Advanced Candidacy). These can be derived from:
 - NRSC 900 Research (or additional research rotation)
 - NRSC 920 Dissertation research
 - NRSC 599/699 Independent study
- A total of 72 units is required for graduation
- Students must take a minimum of 12 units per semester in their first year. After their first year, students must be enrolled in 6 units each semester to meet minimum enrollment requirements.

NRSC students are expected to maintain an overall grade-point average of at least 3.0 (B) and to have no more than a total of 2 grades of C; failure to achieve such a record can result in conversion to non-degree status and dismissal from the program at any time.

C. Required courses (Table 1)

Students must achieve a grade of B or better in each of the core courses; failure to achieve a grade of B or better will result in probation, and possible dismissal from the Program and conversion to non-degree status.

Core curriculum courses are NRSC 588, NRSC 560, two semesters of NRSC 695F, one Statistics course, one Writing, and one Ethics course, and three research rotations (see below).

At least three research rotations (NRSC 700) must be completed in three different laboratories (10 weeks each). The first rotation can start earlier during the summer. A total of 9 units is recommended. After rotations, students should join a lab or add a 4th rotation.

TABLE 1: Core Coursework (* indicates required core courses)

Semester	Course	Units	Faculty coordinator
<i>Fall core</i>	*NRSC 588 Principles of Cell & Mol Neurobiology	4	Zinsmaier
	*NRSC 700 Research rotations	3-4	NRSC faculty
	*NRSC 695F Neuroscience Colloquium	2	Zinsmaier
	(NRSC elective or minor course to reach total \geq 12 units per semester)	varies	Faculty
<i>Spring core</i>	*NRSC 560 Systems Neuroscience	4	Fuglevand
	*NRSC 700 Research rotations	3-4	NRSC faculty
	*NRSC 695F Neuroscience Colloquium	2	Zinsmaier
	(NRSC elective or minor course to reach total \geq 12 units per semester)	varies	Faculty
<i>*Ethics</i>	SLHS 649 – Survival Skills and Ethics	3	Hoit (<i>spring</i>)
	MCB 695E – Science, Society, and Ethics	1	Mouneimne (<i>spring</i>)
<i>*Writing/Communications</i>	IMB 521 – Scientific Grantsmanship	2	Goodrum 2 nd year PhD students only (<i>spring</i>)
	SLHS 696a – Topics in Speech, Language, and Hearing Sciences	2	Plante (<i>fall 2020</i>)
	MCB 575 – Scientific Communications	3	Kacar, Horton, Enrolled in MCB 595A (<i>fall</i>)
<i>*Statistics</i>	Please see Table 2		

Statistics courses

At least two units of statistics are required. Students may choose from the list below, or request the NRSC Graduate Advisory Committee to have an equivalent course considered for meeting the requirement.

TABLE 2: Statistic Courses (* request instructor approval for enrollment)

Courses in statistics		Faculty	Offerings
EIS 513	Applied Biostatistics	An	4 units, fall
EPID 576B	Biostatistics for Research	Roe	3 units, spring
MATH 509C	Statistics for Research	Ekstrom	3 units, spring
PSY 507A*	Statistical Methods in Psychological Research	Staff	3 units, fall
PSY 507B*	Statistical Methods in Psychological Research	Staff	3 units, spring
PSY 510	Statistics Fundamentals	Cowen	3 units, fall
Other	by approval of the NRSC Program Graduate Advisor		3-4 units
For help choosing a stats course: https://gtas.arizona.edu/course-sequences			
Additional stats courses: https://stat.arizona.edu/coursework-degree-ms			

Teaching

Because teaching is an important element in academic careers in Neuroscience, supervised experience

in university-level teaching is considered essential. Each student is therefore required to serve as a Teaching Assistant for at least one semester during the first 3 years. Please contact Kirsten (kirstencq@email.arizona.edu) to arrange for teaching opportunities.

Registration information

Schedule of classes: see, [UAccess](#) website

On-line course registration: see, [UAccess](#) website

D. Neuroscience elective courses

Elective and required courses (Table 3) must add up to a minimum of 36 units (not including dissertation research and independent study). At least half of the 36 units must be taken for a letter grade (not pass/fail). Additional courses of interest that are not listed in Table 3 can be accepted after confirmation with the student's Advisory Committee or the Graduate Advisor. The Graduate College discourages cross-listing of classes, hence some of the courses listed in the table below do not carry the 'NRSC' prefix. Irrespective of the prefix, all these courses will be accepted as Neuroscience electives.

TABLE 3: Coursework for the Neuroscience electives. *Specific courses selected to fulfill the core requirements cannot also be counted as electives.*

Sem.	Course #	Title	Units	Instructor
Fall	CMM 518	Modern Genetics' to Fundamental Genetic Mechanisms: from Molecules to Genomes	3	Restifo/Ellis/Maggert
Fall	CMM 525A	Functional Human Histology	4	Elliott, Amerongen
Spring	CMM 565A	Fundamentals of Light Microscope and Electronic Imaging	3	Elliott
Fall	CMM 577	Principles of Cell Biology	4	Vercelli
Spring	CMM 595H	Problems in the Biology of Complex Diseases	2	Vercelli
Spring	CMM 695D	Human Genetic Disease Colloquium	3	Restifo
Spring	ECOL 573	Topics Behavioral Ecology	3	Papaj
Fall	ECOL 587L	Animal Behavior Lab	1	Papaj
Fall	ECOL 587R	Animal Behavior	3	Papaj
Fall	GENE 539	Methods Cell Biol. & Genomics	3	Galbraith
Fall/ Spring	GENE 670	Recent Advances in Genetics	2	Staff
Fall	INFO 521	Intro to Machine learning	3	Morrison
Spring	MATH 571B	Design of Experiments	3	An
Spring	MATH 585	Mathematical Modeling	3	Wang
Spring	MCB 546	Genetics & Molecular Networks	4	Tax, Buchan
Spring	MCB 582	Modeling Human Disease	3	Zarnescu
Fall/ Spring	MCB 595	MCB Journal Club	1-3	Tax
Spring	NRSC 572	Neurodevelopment in Action	3	Madhavan
Spring	NRSC 695D	Human Genetic Disease Colloq.	3	Restifo
Fall/ Spring	NRSC 599-057	Neuroscience and Audiology	1	Musiek

Fall/ Spring	PCOL 630 A/B	Cellular Communications & Signal Transduction	3	Smith
Fall	PHCL 530	Pain/Neuropharmacology	2	Vanderah
Fall	PHCL 601A	Pharmacology: General Principles	2	Staff
Fall	PSIO 503	Cellular & Molecular Physiology	6	Eggers
Fall	PSIO 572	Quant. Modeling of Biol. Systems	3	Secomb
Spring	PSIO 603A	Human Physiology	6	Staff
Spring	PSY 501A	Princip. Psychophysiology	3	Allen
Spring	PSY 501B	Psychophysiology Laboratory	3	Allen
Spring	PSY506A	Neural Encoding, Memory & Comprehension of Mam Brain	3	Cowen
Fall	PSY513	Drugs, Brain and Behavior	3	Cowen
Fall	PSY 595A	Cognition and Neural Systems Colloquium	1	Gomez
Fall	PSY 596E	Biopsychology	3	Figueroa

Students and faculty are welcome to consult with the Graduate Student Advisor to determine whether neuroscience-related courses that are not listed might be acceptable as electives.

E. Minor coursework for Neuroscience students (at least 9 units are required).

Predocutorial students can pursue a minor in any established program, as determined by the guidelines of the respective program. Alternatively, the student may choose a minor in Neuroscience option that offers a flexible curriculum tailored to the student's interests.

The minor should be selected in consultation with the dissertation advisor and must be approved by the NRSC Graduate Advisory Committee. Contact the NRSC Program Coordinator for a "[Statement of Minor](#)" form to submit for review and approval.

Examples of established programs for consideration include: Biochemistry, Cell Biology & Anatomy, Entomology and Insect Science, Immunology, Genetics, Molecular & Cellular Biology, Medical Pharmacology, Physiological Sciences, Psychology, Speech & Hearing Sciences, and others.

F. Minor in Neuroscience for graduate students in other programs (at least 9 units are required)

The minor in Neuroscience requires:

- passing one of the core course NRSC 560 **OR** 588 (4 units)
- and 5 additional units in courses that are cross-listed in NRSC. The NRSC Colloquium course NRSC 695f is valid for the minor.

The provided information may be subject to change with reasonable advance notice, as deemed appropriate by the Executive Committee of the Neuroscience GIDP.