

NEUROSCIENCE & COGNITIVE SCIENCE CURRICULUM

Catalog Year 2017-18

PLEASE NOTE: NSCS has different curriculum requirements depending on Catalog Year. Students in catalogs prior to 2017-18 have different requirements than those listed here and should consult the appropriate curriculum sheet. It should also be noted that both tracks require the same number of units, although the neuroscience track has more units required in the foundation and the cognitive science track has more units required in the core.

UNIVERSITY FOUNDATIONS & GENERAL EDUCATION

English Composition (two courses or one of honors)

ENGL 101 – First-Year Composition
 ENGL 102 – First-Year Composition
 or ENGL 109H - Honors Composition

Second Language

Second semester proficiency
 by credit or exam required

Mathematics

Requirement met with NSCS course work

Tier One General Education

Individuals and Societies (2 courses)
 Traditions and Cultures (2 courses)

Tier Two General Education

Arts (3 units)
 Humanities (one course)
 Individuals & Societies (one course)

Diversity Emphasis (Gender/Race/Class/Ethnicity/Sexual Orient./Non Western)

One undergraduate course must be taken from the Diversity Emphasis list; certain Tier One and Tier Two courses meet this requirement

NSCS FOUNDATION COURSES

Students will be **ELIGIBLE TO APPLY** to the full major when they have met the following requirements:

- Completed MCB 181R/L, CHEM 151, and PSY 101 or 150A1 (pre-req for NSCS 200). These courses must be completed before taking NSCS 200
- Completed or enrolled in calculus, statistics, CHEM 152 (neuro track), and LING 201 (cog sci track)
- Science GPA of at least 2.5
- Enrolled in NSCS 200

(Physics, organic chemistry [neuro track], NROS 311, & PHIL 241 may be completed before or after admission to the major)

Chemistry (4 units for cog sci; 12 units for neuro)

CHEM 151 – General Chemistry I (4)

Neuroscience Track Only

CHEM 152 – General Chemistry II (4)
 CHEM 241A – Organic Chemistry (3)
 CHEM 243A – Organic Chemistry Lab (1)

Biology

MCB 181R – Introductory Biology I (3)
 MCB 181L – Introductory Lab I (1)

Physics (4 units for cog sci; 8 units for neuro)

PHYS 102 – Introductory Physics I (3)
 PHYS 181 – Intro Lab I (1)
 or PHYS 141 – Intro Mechanics (4)

Neuroscience Track Only

PHYS 103 – Introductory Physics II (3)
 PHYS 182 – Intro Lab II (1)
 or PHYS 241 – Intro Elect & Magnetism (4)

Mathematics

MATH 122A&B – First Semester Calculus (5)
 or MATH 125 – Calculus I (3)

Statistics (choose one – MATH 263 recommended for pre-health students)

MATH 263 – Introduction to Statistics and Biostatistics (3)
 or PSY 230 – Psychological Measurement and Statistics (3)

Programming (other intro programming courses may be considered)

NROS 311 – Scientific Programming with MATLAB (3)

Philosophy

PHIL 241 – Consciousness and Cognition (3)

Cognitive Science Track Only

Linguistics

LING 201 – Introduction to Linguistics

NSCS GATEWAY COURSE (APPLY TO THE MAJOR WHILE ENROLLED)

Students typically apply to the NSCS major while enrolled in NSCS 200 and must successfully complete the course with a grade of B or higher to be officially admitted to the major. Admission to the NSCS major is competitive.

Course	Units	Typically Offered	Prerequisites
NSCS 200 – Fundamentals of Neuroscience & Cognitive Science	3	Spring	MCB 181R/L and PSY 101 or 150A1

NSCS MAJOR CORE COURSES (TAKE ONLY AFTER NSCS 200 HAS BEEN COMPLETED)

Course	Units	Typically Offered	Prerequisites
NROS 307 – Cellular Neurophysiology (<i>Honors section</i>)	3-4	Fall only	NSCS 200, MCB 181R/L, CHEM 151
NSCS 315B – Methods in Neuroscience	1	Fall only	NSCS 200
NSCS 315A – Methods in Cognitive Science	1	Fall only	NSCS 200
NSCS 320 – Issues and Themes in Cognitive Science	3	Fall only	NSCS 200, PSY 101 or 150A1
Neuroscience Track Only			
NROS 310 – Molecular & Cellular Bio of Neurons (<i>Honors section</i>)	3-4	Spring only	NSCS 200, MCB 181R/L, CHEM 151
NROS 418 – Fundamental Principles in Systems Neuroscience	3	Spring only	NSCS 200, NROS 307
Cognitive Science Track Only			
NSCS 344 – Modeling the Mind: Comp Models of Cognition	3	Spring only	Stats & Intro Programming
Take FOUR courses from at least three categories below			
COMPUTATIONAL METHODS			
CSC 483 – Text Retrieval and Web Search	3	Spring	CSC 345
ISTA 410 – Bayesian Modeling and Inference	3	Spring	ISTA 350, MATH 215, ISTA 311 or MATH 362 or ISTA 421
ISTA 450 – Artificial Intelligence	3	Spring	CSC 345
ISTA 455 – Applied Natural Language Processing	3	Fall	LING 388, ISTA 130
LING 439 – Statistical Natural Language Processing	3	Fall, Spring	LING 388, LING 438
MATH 485 – Mathematical Modeling	3	Spring	MATH 215 or 313, MATH 254 or 355 or 250B, MATH 422 or 454 or 456 or 475A
COGNITIVE PSYCHOLOGY (Each course is 3 units and requires PSY 101 or 150A1 as a pre-requisite)			
PSY 326 – Human Memory (Spring, Sum)	PSY 340 – Intro to Cognitive Development (Fall, Spring, Sum)		
PSY 329 – Sensation and Perception (Varies)	PSY 433 – Neuroeconomics (Fall)		
PSY 333 – Judgement and Decision Making (Spring)			
LINGUISTICS (Each course is 3 units and requires LING 201 as a pre-requisite)			
LING 300 – Introduction to Syntax (Fall, Spring)	LING 388 – Language and Computers (Spring)		
LING 315 – Introduction to Phonology (Fall, Spring)	LING 432 – Psychology of Language (Fall, Spring, Sum)		
LING 322 – Structure and Meaning of Words (Fall, Spring, Sum)	LING 449A – Biolinguistics (Spring)		
LING 341 – Language Development (Fall, Spring, Sum)			
PHILOSOPHY (Each course is 3 units and requires PHIL 241 as a pre-requisite)			
PHIL 346 – Minds, Brains and Computers (Fall, Spring, Sum)	PHIL 450 – Philosophy of Mind (Fall)		
PHIL 442 – Knowledge and Cognition (Fall)	PHIL 455 – Philosophy & Artificial Intelligence (Varies)		

NSCS SPECIAL LECTURE AND PROGRAM ASSESSMENT REQUIREMENTS

NSCS offers two special lectures each year, one on **Ethics** and one on **Science Policy**. NSCS students are required to attend at least one Ethics and one Science Policy lecture during their time in the NSCS program in order to graduate. Students who have not completed this requirement by the time they are ready to graduate will be required to complete a make-up assignment for each lecture that they missed. Students are also required to participate in a **Program Assessment** session after completion of the four common core courses: NROS 307, NSCS 315B, NSCS 315A and NSCS 320.

NSCS EMPHASIS ELECTIVES

Choose one emphasis from the options listed on the NSCS Emphasis Course List and complete 15 units from your selected emphasis. The NSCS Emphasis Course List can be found on the NSCS website. A maximum of 6 units of upper-division research, internship, preceptorship (max 3 units) or honors thesis credit can be applied to any emphasis. PLEASE NOTE: Some courses are listed in more than one area of the NSCS curriculum (ie: core and emphasis). The same course cannot be used to fulfill more than one requirement; separate courses must be taken to fulfill each requirement.

Cognition
Computation
Development and Aging
Language and Communication Science
Neurobiology
Philosophy of Mind
Thematic

Additional Graduation Requirements

(Minimum limits)

120 Total Units	42 Upper Division Units
2.0 Cumulative GPA	2.0 Major GPA
30 Units Taken at UA	18 NSCS Units Taken at UofA
18 of Final 30 Units Taken at UofA	
Mid-Career Writing Assessment (MCWA) Satisfied	