

# Binghamton University Integrative Neuroscience Major Requirements

<http://www.binghamton.edu/integrative-neuroscience/index.html>

CORE (48 or 52 credit hours)

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Course Requirements	
PSYC 111 General Psychology	(need a C or higher to continue as an IN major)**
PSYC 243 Statistical Analysis and Design (M)	(need a C or higher to continue as an IN major)**
PSYC 344 Research Methods (W) *	
PSYC 362 Behavioral Neuroscience *	
BIOL 113 Intro to Cell & Molecular Biol	
BIOL 114 Intro to Organisms & Pops Biol	
BIOL 115 Intro Biology Lab	
Choose one of the following courses*:	<b>Due to significant content overlap, you will not receive credit for both PSYC 327 &amp; BIOL 375 (Harpur Rule)</b>
<ul style="list-style-type: none"> <li>• PSYC 327 Evolution and Behavior</li> <li>• BIOL 375 Animal Behavior - &amp;</li> </ul>	
CHEM 104 Intro to Chemical Principles I	OR CHEM 111 Chemical Principles <i>Pre-med and pre-health candidates should not take CHEM 111</i>
CHEM 105 Intro to Chemical Principles II	
CHEM 106 General Chemistry Lab	
CHEM 231 Organic Chem I	
CHEM 332 Organic Chem II	
Approved Integrative Neuroscience Seminar *	
<ul style="list-style-type: none"> <li>• Approved list changes each semester</li> <li>• 4 credit requirement: 1 approved PSYC 473 or BIOL 483 (4cr) or 2 approved BIOL 480 (2cr each)</li> </ul>	

**-Students must take the following courses in residence at Binghamton University (denoted by \*):** PSYC 344, PSYC 362, the approved seminar, one lab course, either PSYC 327 or BIOL 375, and 3 additional courses of the student's choosing.

\*\*Students are required to earn a C- or higher for all core courses (except PSYC 111 and 243) to count in the major (if matriculated fall 2014 or later).\*\*

-Due to significant overlap in course requirements, it is not possible to double major in Psychology, Biology, or Biochemistry and Integrative Neuroscience.

## ELECTIVES

Course	Course	Course Requirements
		MATH/CHEM/PHYSICS ELECTIVES 6 credits
		RELATED SUBJECTS ELECTIVES 4 credits
		TYPE A BIOLOGY ELECTIVES 4 credits
		TYPE B BIOLOGY ELECTIVES 4 credits
		PSYCHOLOGY ELECTIVES 6 credits

Note: Lab and Upper level requirements come from the above elective categories as long as they meet the criteria below.

		Three Labs (as indicated by & symbol) <ul style="list-style-type: none"> <li>• Must be 200-level or above, at least one in residence*</li> <li>• 4 credits of <i>approved</i> research can substitute for 1 of these</li> </ul>
		16 credits of Upper Level Electives <ul style="list-style-type: none"> <li>• Must be at or above 300-level</li> <li>• <b>Core courses do not count here. Courses can be core OR elective, NOT both.</b></li> <li>• 8 credits of research can count here (Integrative Neuroscience, Psychology, or Biology)</li> </ul>

\*\*Students are required to pass (earn a D or higher) for all elective courses to count in the major.\*\*

MATH/CHEM/PHYSICS ELECTIVES				
Course #	Name	cr	Attr	
CHEM 221	Analytic Chem	(4)	&	
CHEM 335	Org Chem Lab	(2)	&	
CHEM 434	Bioorganic Chem	(4)		
MATH 224 & 225	Calculus I (both classes)	(4)		
MATH 226 & 227	Calculus II (both classes)	(4)		
MATH 323	Calculus III	(4)		
CS 140	Programming w/ Obj.	(4)		
CS 240	Data Structures	(4)		
PHYS 121 or 131	Physics I	(4)		
PHYS 122 or 132	Physics II	(4)		

TYPE A or TYPE B BIOLOGY ELECTIVES				
Course #	Name	cr	Attr	
BE 340	Bioinformatics	(3)		
BIOL 251	Anatomy & Physiology I	(4)	&	
BIOL 252/347	Anatomy & Physiology II	(4)	&	
BIOL 324	Tissue Biology	(4)	&	
BIOL 332	Genetics	(4)		
BIOL 340	Genetics Lab	(4)	&	
BIOL 430	Animal Physiology	(4)		
BIOL 435	Human Genetics	(4)		
BIOL 441	Molecular Ecology	(2)	&	
BIOL 483I	Microbial Ecology	(4)		

RELATED SUBJECTS ELECTIVES				
Course #	Name	cr	Attr	
ANTH 111	Intro to Anthropology	(4)		
ANTH 168	Intro to Biological Anthropology	(4)		
ANTH 242	Biology, Culture, and Lifestyle	(4)		
ANTH 243	Medical Anthropology	(4)		
ANTH 244	Plagues, Culture, and History	(4)		
ANTH 248	Darwinian Medicine	(4)		
ANTH 333	Human Genetics	(4)		
ANTH 334	Comp. Aspects of Human Growth	(4)		
ANTH 335	Human Origins	(4)		
ANTH 336	Human Skeleton	(4)	&	
ANTH 337	Human Biological Variation	(4)		
ANTH 338	Intro to Primates	(4)		
ANTH 380H	Human Genetics	(4)		
ANTH 380N	Neuroanthropology	(4)		
ANTH 380R	Biomedical Anthropology & Health	(4)		
ANTH 380U	Health, Illness, and Evolution	(4)		
ANTH 428	Molecular Anthropology Lab	(4)	&	
BIOL 105	Evolution for Everyone	(4)		
CLAS 121	Science and Medical Terminology	(4)		
CS 100	Fund of Programming	(4)		
CS 105	Intro to Computing	(4)		
CS 110	Programming Concepts & Appli	(4)		
GEOG 422	Biogeography	(4)		
HIST 230	History of Medicine	(4)		
HIST 238	Sci & Tech in the Modern World	(4)		
HIST 286E	Premodern Medicine & Disease	(4)		
MATH 247	Introduction to Data Science	(4)		
PHIL 121	Methods of Reasoning	(4)		
PHIL 122	Elementary Logic	(4)		
PHIL 148	Medical Ethics	(4)		
PHIL 423	Phil of Science	(4)		
SOC 251	Deviant Behavior	(4)		

TYPE A BIOLOGY ELECTIVES				
Course #	Name	cr	Attr	
BIOL 304	Pre-Health Biochemistry	(4)		
BIOL 311	Principles of Cell Biology	(4)		
BIOL 313	Cellular Neurobiology	(4)		
BIOL 314	General Microbiology	(4)		
BIOL 318	Developmental Biology	(4)		
BIOL 319	Pre-Health Microbiology	(4)		
BIOL 329	Pre-Health Microbiology Lab	(2)	&	
BIOL/BCHM 401	Molecular Genetics	(4)		
BIOL 402	Immunology	(4)		
BIOL/BCHM 403	Biochemistry	(4)		
BIOL 405	Vertebrate Endocrinology	(4)		
BIOL 421	Microbiology Lab	(2)	&	
BIOL/BCHM 425	Molecular Biology Lab	(2)	&	
BIOL/BCHM 426	Biochemistry Lab	(2)	&	
BIOL 427	Cell Biology Lab	(2)	&	
BIOL 428	Functional Genomics & Proteomics	(4)	&	
BIOL 480 (BCMB)	Additional <b>Approved</b> Seminar	(2)		
Research	BIOL 297/495/496/497/498 with <b>BCMB</b> faculty (see advisor)			

PSYCHOLOGY ELECTIVES				
Course #	Name	cr	Attr	
PSYC 220	Developmental Psych	(4)	(S)	
PSYC 223	Behavior Disorders	(4)	(S)	
PSYC 330	Drugs and Behavior	(4)	(S)	
PSYC 350	Human Memory	(4)		
PSYC 351	Perception	(4)		
PSYC 352	Perception Lab	(4)	(C) &	
PSYC 355	Lab in Child Behavior (petition ICD)	(4)	&	
PSYC 356	Learning	(4)		
PSYC 357	Learning Lab	(4)	(C) &	
PSYC 358	Cognition	(4)		
PSYC 359	Cognition Lab	(4)	(C) &	
PSYC 360	Psychotherapy	(4)		
PSYC 363	Behavioral Neuroscience Lab	(4)	(C) &	
PSYC 385	Psychological Tests	(4)		
PSYC 406	Psycholinguistics	(4)		
PSYC 473	Additional <b>Approved</b> Seminar	(4)		
Research	PSYC 397/493/494/499 (see advisor)			

TYPE B BIOLOGY ELECTIVES				
Course #	Name	cr	Attr	
BIOL 351	Mechanisms of Evol	(4)		
BIOL 352	Marine Biology	(4)		
BIOL 355	Ecology (w/o Lab)	(4)		
BIOL 366	Paleobiology	(4)	&	
BIOL 371	Zoology	(4)	&	
BIOL 373	Ecological Princ & Appl	(4)	&	
BIOL 378	Macroevolution	(4)	&	
BIOL 379	Biology & Cons of Birds	(4)	&	
BIOL 437	Biostatistics	(4)		
BIOL 483N	Biostatistics with R	(4)		
BIOL 450	Ecol, Evol & Animal Beh	(4)		
BIOL 451	Current Topics in EvoS	(2)		
BIOL 452	Cultural Evol Theory	(4)		
BIOL 454	Beh Ecology of Primates	(4)		
BIOL 456	Evol and Human Beh	(4)		
BIOL 471	Tropical Marine Biol	(4)	&	
BIOL 472	Tropical Ecol & Conserv	(4)	&	
BIOL 475	Entomology	(4)	&	
BIOL 476	Population Ecology	(4)	&	
BIOL 480 (EEB)	Additional <b>Approved</b> Seminar	(2)		
Research	BIOL 297/495/496/497/498 with <b>EEB</b> faculty (see advisor)			

**Notes:**

- It is the student's responsibility to determine whether pre-requisites are needed for any courses
- Only PSYC 397 is taken pass/fail
- BIOL 451 (formerly BIOL 480S) can only count toward the Integrative Neuroscience major once (2007 Bulletin).
- & Indicates course can also fulfill the Lab requirement.

\*Psychology courses not listed above will not count as psychology electives