# THE UNIVERSITY OF RHODE ISLAND

**Interdisciplinary Neuroscience-BS** Effective Fall 2023
120 Credits Total

- **General Ed Courses (40 cr)**

**Page 1** Class of 2027

**ABOUT THE INTERDISCIPLINARY NEUROSCIENCE BS DEGREE:**
The B.S. program in interdisciplinary neuroscience will provide students with foundational knowledge of the nervous system including a broad array of areas such as development of the nervous system, brain structure and function, cellular and molecular biology, neuropharmacology, neuroethics, research methods, as well as knowledge of neurodegenerative disease and psychological/psychiatric disorders. The undergraduate program offers three major options (tracks): a B.S. degree with a major in Clinical Neuroscience from the College of Health Sciences, a B.S. degree with a major in Molecular Neuroscience from the College of Environment and Life Sciences, and a B.S. degree with a major in Neuropharmacology from the College of Pharmacy. The option for different neuroscience majors is unique and makes this URI major truly distinct with regard to undergraduate education. Please note students may only earn a Neuroscience degree in one track due to the overlapping of preparation and core courses needed for the major.

**GENERAL EDUCATION GUIDELINES:** General education is 40 credits. Each of the twelve outcomes (A1-D1) must be met by at least 3 credits. A single course may meet more than one outcome but cannot be double counted towards the 40 credit total. At least one course must be a Grand Challenge (G). No more than twelve credits can have the same course code (note- HPR courses may have more than 12 credits). General education courses may also be used to meet requirements of the major or minor when appropriate.

| General Education Credit Count | | | | |
|---|---|---|---|---|
| At least 40 cr., No more than 12 credits with the same course code. (Note: Not all boxes need to be filled to add to 40 credits) | | | | |
| **Course** | **Cr.** | | **Course** | **Cr.** |
| BIO101 | 3 | | | |
| BIO103 | 1 | | | |
| BIO 102 | 3 | | | |
| BIO 104 | 1 | | | |
| CHM101 | 3 | | | |
| COM100 | 3 | | | |
| MTH103 (n/a if placed in MTH131) | 3 (or N/A) | | | |
| MTH131 | 3 | | | |
| WRT104 OR 106 | 3 | | | |
| PHY 111 | 3 | | | |
| PHY 185 | 1 | | | |
| PSY 113 | 3 | | | |
| | | | | |
| | | | | |
| | | | Total Gen Ed credits | ≥ 40 |

| General Education Outcome Audit | |
|---|---|
| | **Course** |
| **KNOWLEDGE** | |
| **A1.** STEM CHM101, MTH 103, MTH131 | BIO101, 103 |
| **A2.** Social & Behavioral Sciences | PSY 113 |
| **A3.** Humanities | |
| **A4.** Arts & Design | |
| **COMPETENCIES** | |
| **B1.** Write effectively | WRT104 or 106 |
| **B2.** Communicate effectively | COM100 |
| **B3.** Mathematical, statistical, or computational strategies | MTH103/131 |
| **B4.** Information literacy | WRT104 or 106 |
| **RESPONSIBILITIES** | |
| **C1.** Civic knowledge & responsibilities | COM100 |
| **C2.** Global responsibilities | |
| **C3.** Diversity and inclusion | |
| **INTEGRATE & APPLY** | |
| **D1.** Ability to synthesize | |
| **GRAND CHALLENGE** | |
| **G.** Check that at least one course of your 40 credits is an approved "G" course | |

# THE UNIVERSITY OF RHODE ISLAND

**Interdisciplinary Neuroscience-BS**
**Class of 2027**

- 120 Credits Total
- **Preparation Classes** (required for all Neuroscience tracks) (40-43 cr))

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| **Preparation Courses** (*these courses also fulfill 23-26 cr. of general education requirements) | **Course** | **Grade** | **Cr** | | **Semester** |
|---|---|---|---|---|---|
| General Biology *A1 | BIO 101 | | 3 | | FR F |
| General Biology Lab *A1 | BIO 103 | | 1 | | FR F |
| General Biology II *A1 | BIO 102 | | 3 | | FR SP |
| General Biology II Lab *A1 | BIO 104 | | 1 | | FR SP |
| Human Anatomy & Physiology I | BIO 220 | | 3 | | SOPH F |
| Human Anatomy and Physiology I lab | BIO 221 | | 1 | | SOPH F |
| Human Anatomy and Physiology II | BIO 222 | | 3 | | SOPH SP |
| Human Anatomy and Physiology II lab | BIO 223 | | 1 | | SOPH SP |
| General Chemistry I *A1 | CHM 101 | | 3 | | FR F |
| General Chemistry I Lab | CHM 102 | | 1 | | FR F |
| General Chemistry II | CHM 112 | | 3 | | FR SP |
| General Chemistry II Lab | CHM 114 | | 1 | | FR SP |
| Organic Chemistry I or Intro to Organic Chemistry** | CHM 227 or 124** | | 3 | Pre-Med students should take CHM 227 | SOPH F |
| Applied Precalculus I (if needed) and Applied Calculus I *A3 | MTH 103/131 | | 3 | | FR F OR SP |
| General Psychology, *A2 | PSY 113 | | 3 | | SOPH F OR SP |
| Communication *B2, C1 | COM 100 | | 3 | | FR F |
| Research Writing or Writing to Inform *B1, B4 | WRT 104 0R 106 | | 3 | | FR SP |
| Introduction to URI | URI 101 | | 1 | | FR F |
| **PREPARATION COURSES SUBTOTAL** | | | **40-43** | | |

* Course approved for General Education
**As noted above, Pre-Med or PreHealth students should take CHM 227. If students take CHM 124 first, they can count CHM 227 in their track courses.

**Interdisciplinary Neuroscience-BS**
**Class of 2027**

- 120 credits total
- **Core Classes** (required for all Neuroscience tracks) (31-36 cr)

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| **Core Courses** (*these courses also fulfill 4 credits of general education requirements) | **Course** | **Grade** | **Cr** | | **Suggested Semester** |
|---|---|---|---|---|---|
| Foundations of Neuroscience | NEU 101 | | 3 | | FR SP |
| Neuroscience Seminar | NEU 110 | | 1 | | SOPH Or JR F |
| Neuroethics and Diversity | NEU 210 | | 3 | | SOPH SP |
| Neuroscience Research Methods | NEU 262 | | 4 | | SOPH OR JR SP |
| Neuroscience Professional Development | NEU 230 | | 1 | | SOPH or JR F |
| Cellular & Molecular Neuroscience | NEU 301 | | 3 | | JR F |
| Developmental Neurobiology | NEU 310 | | 3 | | JR SP |
| Clinical Neuroscience | NEU 320 | | 3 | | JR F |
| Biostatistics OR Introductory Statistics | STA 307 or STA 308 | | 4 | | JR F or SP |
| General Physics I *A1, B3 | PHY 111 | | 3 | | SOPH F or SP |
| General Physics 1 Lab *A1, B3 | PHY 185 | | 1 | | SOPH F or SP |
| Experiential Neuroscience | NEU 410 or ITR 302 & 304 | | 1-6 | | SR F or JR SP |
| Neuroscience Journal Club | NEU 460 | | 1 | | SR F |
| **CORE COURSES SUBTOTAL** | | | **31-36** | | |

- ITR 302 & 304 will total 6 credits and cannot be taken for fewer credits. ITR approval is required by INP Director and Coordinator.
- NEU 410 can be taken for 1-6+ credits- varies on the hours worked in the lab/office setting.
- Either NEU 410 or ITR 302/304 will need approval from INP Administration. Emails will be sent out to students regarding the requirements and approval process.
- To transfer out of University College for Academic Success and enter the student's selected degree granting college, students must complete a minimum of 56 credits of the following courses with a 2.0 GPA average: BIO 101/103, BIO 102/104, BIO 220/221, BIO 222/223, CHM 101/102, CHM 112/114, CHM 124 or 227, PHY 111/185, MTH 103/131, PSY 113, COM 100, WRT 104 or 106, URI 101, NEU 101, NEU 110, NEU 210, NEU 262, and NEU 230.

**MOLECULAR NEUROSCIENCE MAJOR TRACK REQUIREMENTS**

- **Preparation and Core classes required**

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| **Molecular Neuroscience Major Course List: Choose 15 credits from the following list.** | | | | |
|---|---|---|---|---|
| Course Code | Course Name | Credits | Semester | Grade |
| CSC/DSP 310 | Programming for Data Science | 4 | | |
| CMB 311 | Biochemistry | 3 | | |
| CMB/BIO 352 | Genetics | 4 | | |
| CMB/BIO 341 | Cell Biology | 3 | | |
| BIO/CMB 437 | Fundamentals of Molecular Biology | 3 | | |
| CMB 460 | Experimental Approaches in Molecular and Cell Biology | 3 | | |
| CHM 227 | Organic Chemistry I | 3 | Required for pre-med. Can only be counted if student takes CHM 124 first. Otherwise, Prep course. | |
| CHM 228 & 226 | Organic Chemistry II & Lab | 5 | Required for pre-med | |
| PHY 112 | Physics II lecture | 3 | Required for pre-med | |
| PHY 186 | Physics II lab | 1 | Required for pre-med | |
| **Track Subtotal** | | **15** | | |
| | | | | |
| **Molecular Neuroscience Major Electives List: Choose a minimum of 3 credits from the following list.** | | | | |
| CMB 333 | Immunology and Serology | 3 | | |
| CMB 312 or 412 | Advanced Biochemistry Lab | 2 | | |
| CMB 320 | Computational Biology | 3 | | |
| CMB 353 | Genetics Laboratory | 1 | | |
| CMB 435 | Introduction to the Biology and Genetics of Cancer | 3 | | |
| CMB 482 | Proteins and Enzymes: Mechanisms of Disease | 3 | | |
| **Track Subtotal** | | **3+** | | |

**CLINICAL NEUROSCIENCE MAJOR TRACK REQUIREMENTS**

- **Preparation and Core classes required**

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| **Clinical Neuroscience Major Course List: Choose 15 credits from the following list.** | | | | |
|---|---|---|---|---|
| Course Code | Course Name | Credits | Semester | Grade |
| BPS 321 | Principles of Pharmacology and Autonomic Pharmacology | 3 | | |
| PSY 232 | Developmental Psychology | 3 | | |
| PSY 254 | Behavior Problems and Personality Disorders | 3 | | |
| PSY 301 | Research methods and Design in the Behavioral Sciences | 4 | | |
| PSY 381 | Physiological Psychology | 3 | | |
| PSY 385 | Perception | 3 | | |
| PSY 434 | Psychological Testing | 3 | | |
| HDF 357 | Family and Community Health | 3 | | |
| KIN 300 | Physiology of Exercise | 3 | | |
| PHY 112 & 186 | Physics II and lab | 4 | Required for pre-med. | |
| CHM 227 | Organic Chemistry I | 3 | Required for pre-med Can only be counted here if student takes CHM 124 first. Otherwise, Prep course. | |
| CHM 228 & 226 | Organic Chemistry II and lab | 5 | Required for Pre-Med | |
| **Track Subtotal** | | **15** | | |
| | | | | |
| **Clinical Neuroscience Major Electives List: Choose a minimum of 3 credits from the following list.** | | | | |
| CMB 210 | Biochemical Aspects of Nutrition and Physiology | 3 | | |
| CMD 494 | Autism and Pervasive Developmental Disorders | 3 | | |
| CMD 492 | Interprofessional Clinical Research of Neurological Disorders | 3 | | |
| BPS 313 | Principles of Medicinal Chemistry | 2 | | |
| BPS 401 | Pharmaceutical Pharmacology I | 3 | | |
| PSY 276G | ”High” Society: The Use of Psychoactive Drugs | 3 | | |
| PSY 460 | The Substance Troubled Person | 3 | | |
| PHP 336G | Exploring Interdisciplinary Healthcare Solutions for Opioid Use Disorder | 3 | | |
| PHP 405 | Epidemiology in Health Care | 4 | | |
| PHP 555 | Advanced Neuropsychiatric Pharmacotherapy | 3 | | |
| **Track Subtotal** | | **3+** | | |

## NEUROPHARMACOLOGY MAJOR TRACK REQUIREMENTS

- **Preparation and Core classes required**

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| **Neuropharmacology Major Course List: Choose 15 credits from track requirements from the following list** | | | | |
|---|---|---|---|---|
| Course Code | Course Name | Credits | Semester | Grade |
| BPS 313 | Principles of Medicinal Chemistry | 2 | | |
| BPS 321 | Principles of Pharmacology and Autonomic Pharmacology | 3 | | |
| BPS 345 | Introduction to Pharmaceutical Research | 3 | | |
| BPS 401 | Pharmaceutical Pharmacology I | 3 | | |
| BPS 432 | CNS Drug Pharmacology and Medicinal Chemistry | 3 | | |
| BPS 442 | Pharmacogenomics and Pharmacogenetics | 3 | | |
| BPS/CMB 450 | Practical Tools for Molecular Sequence Analysis | 3 | | |
| CMB 311 | Biochemistry | 3 | | |
| CMB 426 | Structural Biochemistry | 3 | | |
| BIO/CMB 437 | Fundamentals of Molecular Biology | 3 | | |
| CMB 460 | Experimental Approaches in Molecular and Cell Biology | 3 | | |
| CHM 228 & 226 | Organic Chemistry II & Lab | 5 | | |
| **Track Subtotal** | | **15** | | |
| **Neuropharmacology Major Electives List: Choose a minimum of 3 credits from the following list.** | | | | |
| BIO 482G* | Evolutionary Medicine of Human Health and Disease | 3 | | |
| BME 281 | Biomedical Engineering Seminar II | 1 | | |
| BME 307 | Bioelectricity | 3 | | |
| BME 360 | Biomeasurement | 3 | | |
| BPS 201 | How Drugs Work | 3 | | |
| BPS/PSY 205G | The Challenged Brain | 3 | | |
| BPS 402 | Pharmaceutical Pharmacology II | 3 | | |
| BPS/PSY 436 | Psychotropic Drugs and Therapy | 3 | | |
| CMB 464 | Biochemistry of Metabolic Disease | 3 | | |
| CMB 482 | Proteins and Enzymes: Mechanisms of Disease | 3 | | |
| CMD 280G | The Real Reason for Brains | 3 | | |
| NEU 502 | Introduction to Neurobiology | 4 | | |
| NEU 503 | Introduction to the Neurosciences | 3 | | |
| PSY/NEU 381 | Physiological Psychology | 3 | | |
| PHP 336G | Exploring Interdisciplinary Healthcare Solutions for Opioid Use Disorder | 3 | | |
| PHP 405 | Epidemiology in Health Care | 4 | | |
| PHP 555 | Advanced Neuropsychiatric Pharmacotherapy | 3 | | |
| **Track Subtotal** | | **3+** | | |

**Interdisciplinary Neuroscience-BS**

**Class of 2027**

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## GENERAL CURRICULUM MAP*

*See previous pages for "Track" courses. Always consult academic advisor for long-term planning and course choices.

**Interdisciplinary Neuroscience Major**

| Freshman Fall | Credits | Freshman Spring | Credits |
|---|---|---|---|
| URI 101* | 1 | BIO 102/104 | 4 |
| BIO 101/103 | 4 | CHM 112/114 | 4 |
| CHM 101/102 | 4 | MTH 131 (if needed) | 3 |
| MTH 103 or 131 | 3 | NEU 101 (Foundations) | 3 |
| COM 100 | 3 | WRT 104 or 106 | 3 |
| | Total= 15 | | Total= 17 |

| Sophomore Fall | Credits | Sophomore Spring | Credits |
|---|---|---|---|
| PSY 113 | 3 | BIO 222/223 | 4 |
| CHM 124 OR 227** | 3 | NEU 210 Neuroethics | 3 |
| BIO 220/221 | 4 | NEU 262 Research Methods | 4 |
| PHY 111/185 | 4 | Gen Ed/Track/PHY 111/185 | 3/4 |
| NEU 110 Seminar | 1 | Gen Ed/Track | 3 |
| NEU 230 Pro Dev | 1 | ***Choose track*** | |
| | Total= 16 | | Total= 15-18 |

| Junior Fall | Credits | Junior Spring | Credits |
|---|---|---|---|
| NEU 301 Cellular | 3 | NEU 310 Neuro Dev | 3 |
| NEU 320 Clinical | 3 | STA 307 or 308 or Gen Ed | 3/4 |
| STA 308 or Gen Ed | 3/4 | ***or*** NEU 262 Research Methods | 4 |
| Gen Ed/Track | 3 | Gen Ed/Track | 3 |
| Gen Ed/Track | 3 | Gen Ed/Track | 3 |
| | Total= 15-16 | | Total= 16-18 |

| Senior Fall | Credits | Senior Spring | Credits |
|---|---|---|---|
| NEU 410 or ITR 302/304 | 1-6 | GenEd/Track | 3 |
| NEU 460 or GenEd/Track | 1-3 | Gen Ed/Track | 3 |
| Track or Elective | 3 | Track or Elective | 3 |
| Track or Elective | 3 | Track or Elective | 3 |
| Track or Elective | 3 | NEU 410 or ITR 302/304 | 1-6 |
| | Total= 13-18 | | Total= 13-18 |

* Will be taught by INP faculty
** Pre-Med students should take CHM 227. If student takes CHM 124 first, they can count CHM 227 in their track courses.

Exactly which electives students take in a track will depend on their career goals.
ITR 302-304 will total 6 credits. NEU 410 credit hours are determined by hours worked in lab.