

# An Introduction to the Integrative Physiology (IP) Subprogram

## SoLS Research Faculty Affiliated with the Integrative Physiology (IP) Graduate Subprogram

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## Required Courses for All Degrees

- **Biol 701**—*Ethics in Scientific Research* (1 credit).  
Required class for all students in both degree programs.
- **Biol 790**—*Research Colloquium in Life Sciences*  
Students may take this course for credit (1-2 credits/semester for a maximum of 9 credits toward the degree), but all students (including non-enrolled) must participate each semester.

## Didactic Courses for MS and PhD

- MS students must take THREE from the following list.
- PhD Students must take SIX from the following list.
- The Research Advisory Committee will recommend courses to take, from this list or others, depending on the person's academic background and research objectives.

## Didactic Course Lists

- **Biol 604**—*Principles of Neurobiology* (3 credits)
- **Biol 616**—*Bioinformatics* (3 credits)
- **Biol 617**—*Biochemical Adaptations* (3 credits)
- **Biol 625**—*Genomics* (3 credits)
- **Biol 626**—*Plant Anatomy* (3 credits)
- **Biol 618**—*Biometry* (3 credits)
- **Biol 642**—*Principles of Plant Physiology* (4 credits)
- **Biol 645**—*Cell Physiology* (3 credits)
- **Biol 647**—*Comparative Animal Physiology* (3 credits)
- **Biol 653**—*Immunology* (3 credits)
- **Biol 655**—*Comparative Vertebrate Anatomy Lab* (2 credits)
- **Biol 658**—*Stem Cells and Regenerative Biology* (3 credits)
- **Biol 660**—*Microbial Physiology* (3 credits)
- **Biol 666**—*Developmental Biology* (3 credits)
- **Biol 681**—*Advanced Cell Biology* (3 credits)
- **Biol 702**—*Biology Graduate Core* (3 credits)
- **Biol 748**—*Environmental Physiology* (3 credits)
- **Chem 771**—*Metabolism and Energetics* (3)
- **Stat 691**—*Statistics for Scientists I* (3 credits)

## Research Courses

- MS students must complete **18 credits** of 700-level courses.
- PhD students must complete **24 credits** of 700-level credits (excluding Biol 799).

The following “research based” classes may be used to satisfy 700-level requirements.

- **Biol 789**—*Independent Graduate Study in Life Sciences* (1-3 credits/semester; may be repeated for a max. of 9 credits).
- **Biol 790**—*Research Colloquium in Life Sciences* (1-2 credits/semester; repeated for a maximum of 9 credits).
- **Biol 791**—*Research Laboratory Discussion in Life Sciences* (1-2 credits/semester; may be repeated for a maximum of 9 credits toward the degree). Can be taken to receive credit for participating in Mentor’s lab meeting.

### Seminar Requirements

- **Biol 796**—*Graduate Seminar in Life Sciences* or **Biol 793**—*Advanced Topics in Life Sciences*  
Students may take these courses for credit (1-2 credits/semester for a maximum of 9 credits toward the degree).

### Graduate Program Policies: All Students

- The online Graduate Catalog and the SoLS Graduate Programs Handbook that was available at the time of matriculation will be the source for the enforced graduate policies for each student.
- All students must form a Research Advisory Committee within the first semester after matriculation.
- All students must meet with his/her Research Advisory Committee at least once during the calendar year and submit a written report to the GOC.
- **Note:** A more thorough description of Graduate Program Policies is provided in the SoLS Graduate Programs Handbook.

### MS Students

1. MS students must form a Research Advisory Committee consisting of at least four experts in their field of study. A typical committee consists of:
  - Primary Research Mentor & Academic Chair (Note: these are not always the same person<sup>1</sup>)
  - Two SoLS Graduate Faculty (Should include the SoLS Academic Chair if the Primary Research Mentor’s primary appointment is not in SoLS)
  - Graduate College Representative who has official grad faculty status within another academic unit on campus
2. MS students must complete a minimum of 30 credit hours beyond the baccalaureate degree.
  - Credits for the MS degree will be obtained from classes at the 600 and 700 level.
  - MS students must take **Biol 701**— Ethics in Scientific Research (1 credit) during their first semester in the program and either attend the Ethics components of Biol 702 or complete UNLV RCR training.
  - MS students must take at least 4 credits of **Biol 796**—*Graduate Seminar* or **Biol 793**—*Advanced Topics in Life Sciences*.
  - MS students must take 6 credits of **Biol 797**—*Thesis*. Students can enroll for more credits of Biol 797, but only 6 will count toward the degree.
  - MS students must participate in **Biol 790**—*Research Colloquium in Life Sciences*. Students not enrolled must also participate each semester.
3. The student’s Research Advisory Committee will determine the course of action and coursework for each individual MS student.
4. The MS within SoLS is a Research Degree. Many credits will be earned in “research-oriented” courses that include summer work.
5. Students must complete a written thesis and publicly defend their work.

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<sup>1</sup> for clarification of these terms, see SoLS Graduate Programs Handbook

## Typical Timeline for the MS Degree

Enroll in a minimum of 6 credits each semester to fulfill course and research requirements.

Year 1:

- Ethics (1 credit)
- Seminars (2 credits)
- Colloquium (3 credits)
- Two didactic courses (6 credits)
- Research credits (3 credits)
- Spend full time in the laboratory or field over summer.

Year 2:

- Seminars (2 credits)
- Colloquium (2 credits)
- One didactic course (3 credits)
- Research credits (2 credits)
- Thesis credits (6 credits)
- Write and defend Thesis

## Sample Program of Study: MS Student

	<u>Credits</u>
3 didactic courses at the 600- or 700-level	9
Biol 701—Ethics in Scientific Research	1
Biol 793/796—Graduate Seminars	4
Biol 789—Independent Study (Pre-thesis)	3
Biol 790—Research Colloquium	4
Biol 791—Research Lab. Discussions	3
<u>Biol 797—Thesis</u>	<u>6</u>
<b>TOTAL</b>	<b>30</b>

## PhD Students

1. PhD students must form a Research Advisory Committee consisting of at least five experts in their field of study. A typical committee consists of:
  - Primary Research Mentor & Academic Chair (Note: these are not always the same person<sup>2</sup>)
  - Two or three SoLS Graduate Faculty (Should include the SoLS Academic Chair if the Primary Research Mentor's primary appointment is not in SoLS)
  - Graduate College Representative who has official grad faculty status within another academic unit on campus
  - Outside University Member, who must be granted conditional Grad Faculty status
2. Doctoral students are required to complete a minimum of 60 credit hours of graduate work.
  - Credits for the PhD degree will be obtained from classes at the 600 and 700 level.
  - PhD students must enroll in **Biol 701—Ethics in Scientific Research** (1 credit) during their first semester in the program and either attend the Ethics components of Biol 702 or complete UNLV RCR training.
  - PhD students are required/highly recommended to take **Biol 702—Biology Graduate Core** (3 credits) during their first semester in the program (waivers granted on an *ad hoc* basis from SoLS Grad Coordinator).
  - PhD students must take at least 6 credits of **Biol 796—Graduate Seminar** or **Biol 793—Advanced Topics**.
  - PhD students must participate in **Biol 790—Research Colloquium in Life Sciences** each semester even if they are not enrolled in the class for credit.
  - PhD students are required to take 12 credits of **Biol 799—Dissertation**. Students may enroll for more credits of Biol 799, but no more than 18 will count toward the degree.

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<sup>2</sup> for clarification of these terms see SoLS Graduate Programs Handbook

3. The student's Research Advisory Committee will determine the course of action and coursework for each individual PhD student.
4. All PhD students are required to instruct **two** lab or discussion sections of a UNLV biology class.
5. All PhD students must pass a comprehensive exam before being admitted to candidacy. PhD students are required to take this exam prior to the beginning of the sixth semester in their graduate program. The comprehensive exam is administered by the student's Research Advisory Committee, with their mentor serving as chair. The exam contains a written portion in the form of a mock grant proposal and an oral defense of the work.
6. The PhD within SoLS is a Research Degree. Many credits will be earned in "research-oriented" courses that include summer work.
7. Students must complete a written dissertation and publicly defend their work.

### Typical timeline for the PhD Degree

Enroll in a minimum of 6 credits/semester to fulfill course and research requirements.

Year 1:

- Biology Graduate Core (3 credits)
- Ethics (1 credit)
- Seminars (1-2 credits)
- Two didactic courses (6 credits)
- Enroll or Participate in Research Colloquium
- Spend full time in the laboratory or field over summer.

Year 2:

- Try to finish didactic courses (6 credits/semester)
- Enroll or Participate in Research Colloquium
- Spend full time in the laboratory or field over summer.

Year 3:

- Finish any didactic and seminar requirements.
- Take and pass the comprehensive exam before the **start** of the sixth semester.
- Finish research credit requirements
- Research credits (3 credits)
- Enroll or Participate in Research Colloquium
- Spend full time in the laboratory or field over summer.

Year 4-6:

- Enroll or Participate in Research Colloquium
- Research or Dissertation credits (6 credits/semester)
- Work full time on research project.
- Spend full time in the laboratory or field over summer, for summers prior to defense.
- Write and defend Dissertation.

### Sample Program of Study: PhD Student

	<u>Credits</u>
6 didactic courses at the 600- or 700-level	18
Biol 701—Ethics in Scientific Research	1
Biol 702—Intro to the Grad Core	3
Biol 793/796—Graduate Seminars	6
Biol 789—Independent Study (Pre-thesis)	6
Biol 790—Research Colloquium	8
Biol 791—Research Lab. Discussions	6
<u>Biol 799—Dissertation</u>	<u>12</u>
<b>TOTAL</b>	<b>60</b>