

**An Introduction to the
Graduate Programs
within the *Cellular and
Molecular Biology*
(CMB) Subprogram**

SoLS Research Faculty Affiliated
with the Cell and Molecular Biology
(CMB) Graduate Subprogram

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Required Courses for All Degrees:

- **Biol 701**—*Ethics in Scientific Research* (2 credits). Required for those students matriculating prior to the Fall 2017 semester.
- **Biol 702**—*Biology Graduate Core* (3 credits). Starting Fall 2018, all students must enroll in Biol 702 during their first semester.
- **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.

Core Courses Required for MS; PhD

- MS students must take at least ONE of the following.
- PhD Students must take THREE of the following.
 - **Biol 607**—*Molecular Biology* (3 credits)
 - **Biol 625**—*Genomics* (3 credits)
 - **Biol 645**—*Cell Physiology* (3 credits)
 - **Chem 772**—*Nucleic Acid Chemistry* (3 credits)
- Students may also use classes from this list (not already used to fulfill core requirements) as elective course requirements (see below).

Elective Courses for MS and PhD

- MS students may take TWO of the following electives.
- PhD Students must take THREE of the following.
- Core courses (see above) not used to satisfy core requirements may substitute as electives.
- Elective courses must be approved in advance by the student's Research Advisory Committee.
- The Research Advisory Committee may require the student to take specific courses, depending on the person's academic background and research objectives.

Elective Courses for MS; PhD

- **Biol 604**—*Principals of Neurobiology* (3 credits)
- **Biol 609**—*Virology* (3 credits)
- **Biol 611**—*Molecular Evolution* (3 credits)
- **Biol 616**—*Bioinformatics* (3 credits)
- **Biol 626**—*Plant Anatomy* (3 credits)
- **Biol 628**—*Biometry* (3 credits)
- **Biol 642**—*Principals of Plant Physiology* (4)
- **Biol 648**—*Endocrinology* (3 credits)
- **Biol 653**—*Immunology* (3 credits)
- **Biol 658**—*Stem Cells and Regenerative Biol* (3)
- **Biol 664**—*Bacterial Pathogenesis* (3 credits)
- **Biol 666**—*Developmental Biology* (3 credits)

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Elective Courses for MS; PhD (cont)

- **Biol 669**—*RNA Biology* (3 credits)
- **Biol 678**—*Cancer Cell Genetics* (3 credits)
- **Biol 680**—*Introduction to Biological Modeling* (3)
- **Biol 685**—*Microbial Genetics* (3 credits)
- **Biol 703**—*Biochemical Genetics* (3 credits)
- **Biol 711**—*Advanced Eukaryotic Genetics* (3)
- **Biol 714**—*Population Genetics* (3 credits)
- **Biol 786**—*Bioenergetics* (3 credits)
- **Biol 792**—*Advanced Topics in Cell & Molecular Biology*
(3 credits)
- **Chem 770**—*Protein Chemistry* (3 credits)
- **Chem 771**—*Metabolism and Energetics* (3)
- **Stat 691**—*Statistics for Scientists I* (3 credits)
- **Stat 692**—*Statistics for Scientists II* (3 credits)

Research Courses

- MS students must complete 15 credits of 700-level courses.
- PhD students must complete 30 700-level credits.
- 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).
 - **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

- MS students must take 4 credits of seminar-style courses (Biol 793, 796, or a combination thereof).
- PhD students must take 6 credits of seminar classes (Biol 793, 796, or combination thereof).
- **Biol 793**—*Advanced Topics in Life Sciences* (2 credits/semester; repeated for a maximum of 9).

Papers for this class are selected for their relevance to a specific topic determined by the instructor.

- **Biol 796**—*Graduate Seminar* (2 credits/semester; may be repeated for a maximum of 9).

Papers for this class are selected from a broad survey of the current literature.

Graduate Program Policies:

All Students

1. The online Graduate Catalog and the SoLS Graduate Handbook that was available at the time of matriculation will be the source for the enforced graduate policies for each student.
2. Each student must form a Research Advisory Committee within the first semester after matriculation.
3. Each student must meet with his/her Research Advisory Committee at least once during the calendar year, and submit a written report to the GOC.

Graduate Program Policies:

Master's 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:
 - Research Mentor (Chair)
 - Two SoLS Graduate Faculty
 - 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.

Graduate Program Policies:

Master's Students (cont)

3. Credits for the MS degree will be obtained from didactic classes at the 600 and 700 level.
4. MS students can take **Biol 702**— *Biology Graduate Core* (3 credits) during their first semester in the program.
5. MS students must take at least 4 credits of **Biol 793** or **Biol 796**—*Graduate Seminar-Style Classes*.
6. MS students must take 6 credits of **Biol 797**: *Thesis*. Students can enroll for more credits of Biol 797, but only six will count toward the degree.

Graduate Program Policies:

Master's Students (cont)

7. MS students must participate in **Biol 790**—*Research Colloquium in Life Sciences*. Students not enrolled must also participate each semester.
8. The student's Research Advisory Committee will determine the course of action and coursework for each individual MS student.
9. The MS within SoLS is a Research Degree:
 - Many credits will be earned in “research-orientated courses that include summer work.
10. Students must complete a written thesis and publicly defend their work.

Typical Timeline for the MS Degree:

Year 1 (Fall and Spring semesters):

Enroll in 6-9 credits each semester to fulfill course and research requirements.

- Biology Graduate Core (3 credits)
- Seminars (1-2 credits)
- Two didactic courses (6 credits)

Year 1 (Summer):

- Spend full time in the laboratory or field.
- Take research credits (3-6 credits)

Year 2 (Fall and Spring semesters):

- Finish Coursework (6 credits)
- Finish thesis credits & defend (6 credits)

Year 2 (Summer, if necessary):

- Finish thesis credits; defend.

Sample Program of Study: MS Student

	<u>Credits</u>
3 didactic courses at the 600- or 700-level	9
Biol 702—Biology Graduate Core	3
Biol 793/796—Graduate Seminars	4
Biol 789—Independent Study (Pre-thesis)	2
Biol 790—Research Colloquium	3
Biol 791—Research Lab. Discussions	3
<u>Biol 797—Thesis</u>	<u>6</u>
TOTAL	30

Graduate Program Policies:

Doctoral 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:
 - Research Mentor (Chair)
 - Two or three SoLS Graduate Faculty
 - 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

Graduate Program Policies:

Doctoral Students (cont)

2. Doctoral students are required to complete a minimum of 60 credit hours beyond the baccalaureate degree.
3. Credits for the PhD degree will be obtained from didactic classes at the 600 and 700 level.
4. PhD students must take **Biol 702**—*Biology Graduate Core* (3 credits) during their first semester in the program.
5. PhD students must take at least 6 credits of **Biol 793** or **Biol 796**—*Graduate Seminar-Style Classes*.

Graduate Program Policies:

Doctoral Students (cont)

6. PhD students are required to take **Biol 787**—*Post-Candidacy Assignment* (3 credits). One year after passing their comprehensive exam, each student is required to enroll in Biol 787. The culmination of this class is the approval by their Research Advisory Committee of a written “plan of action” for the completion of their dissertation.
7. 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.

Graduate Program Policies:

Doctoral Students (cont)

8. 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
9. The student's Research Advisory Committee will determine the course of action and coursework for each individual PhD student.
10. All PhD students are required to instruct **one** lab or discussion sections of a UNLV biology class.

Graduate Program Policies:

Doctoral Students (cont)

11. All PhD students must pass a comprehensive exam before being admitted to candidacy.
 - Most students take the comprehensive exam during the summer between their 4th and 5th semesters in the program.
 - The comprehensive exam is administered by a separate Examination Committee that must exclude the student's research mentor.
 - The exam consists of a written portion in the form of a mock research proposal and an oral defense of the work to the Exam Committee.

Graduate Program Policies:

Doctoral Students (cont)

12. The PhD within SoLS is a Research Degree:
 - Many credits will be earned in “research-orientated courses that include summer work.
13. Students must complete a written dissertation and publicly defend their work.

Timeline for the PhD Degree:

Year 1:

Enroll in 6-9 credits/semester to fulfill course and research requirements

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

Year 2:

- Try to finish didactic coursework requirements (6 credits/semester)
- Enroll or Participate in Research Colloquium
- Take and Pass Comprehensive exam over the summer.

Timeline for the PhD Degree (cont):

Year 3:

- Finish any didactic and seminar requirements.
- Finish up research-credit requirements.
- Pass Post Candidacy Assignment (Biol 787).
- Enroll in 6 credits/semester for research.
- Work full time on research project.
- Participate in Research Colloquium.

Years 4, 5, and 6:

- Enroll in 6 credits/semester for research or Dissertation.
- Participate in Research Colloquium.
- Work full time on research project.
- Write Dissertation and defend.

Sample Program of Study: PhD Student

	<u>Credits</u>
6 didactic courses at the 600- or 700-level	18
Biol 702—Biology Graduate Core	3
Biol 793/796—Graduate Seminars	6
Biol 789—Independent Study (Pre-thesis)	3
Biol 790—Research Colloquium	9
Biol 791—Research Lab. Discussions	6
Biol 787—Post Candidacy Assignment	3
<u>Biol 799—Dissertation</u>	<u>12</u>
TOTAL	60