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Welcome to the ASU School of Life Sciences graduate programs! This handbook is designed to guide students through their degree programs, and includes information about SOLS policies. All graduate students in the School of Life Sciences are required to read this handbook and to familiarize themselves with the formal program requirements in the ASU Academic Catalog and ASU Graduate College policies. If you have any questions, please ask your major advisor, program director, or the SOLS Graduate Office.

Communications

By university policy, we will communicate with you primarily through your ASU email address. This email address will be added to a mailing list (DL.WG.LA.SOLS.GRAD@asu.edu). We will also communicate with you individually via our general account (sols.grad@asu.edu). Please add both of these addresses to your list of safe contacts, set an automatic forward on your ASU email if necessary, and get into the habit of checking your email at least once each day so that you do not miss important emails or notices about critical deadlines, opportunities, and events. Most important information is also available on the Grad Programs CANVAS page.

Where to get help

In an emergency, dial 9-1-1

SOLS Grad Office
(SOLS.grad@asu.edu; LSA 181)
The SOLS Graduate Office is open from 8am to 5pm most weekdays. We offer academic advising, employee resources, and logistical support to SOLS graduate students and their mentors. If you have questions or concerns about anything at all related to your work as a graduate student, the SOLS Grad Office is a good place to start.

Program directors and grad AD

Each graduate program (e.g., Biology PhD) is managed by a Program Director(s) who oversees admissions, curriculum, and your academic progress. When you have questions about course requirements or your academic progress, your Program Director is the person to ask.

The SOLS Associate Director for Graduate Programs (Grad AD) represents the SOLS Director (who leads all of SOLS) in matters related to graduate students, and has final authority on most graduate student issues. The Grad AD coordinates across programs, supervises the SOLS Graduate Office, and is guided by advice from the Graduate Programs Committee (GPC, which includes one graduate student as a non-voting member).

Graduate student leaders

There are several organizations that represent SOLS graduate students and offer you an opportunity to take on a leadership role at ASU. The SOLS E-Board advocates on behalf of SOLS graduate students in discussions with SOLS leadership, and hosts several events including the weekly brown-bag and mental health series, and an annual retreat. The Microbiology Graduate Student Association (MGSA), the Graduate Association of Interdisciplinary Neuroscience Students (GAINS), Immunological Graduate Student Association and Graduate Partners in Science Education (GPSE) all also offer important opportunities.

The ASU Graduate and Professional Student Association (GPSA) represents graduate students across campus, and provides funding and leadership opportunities. You may also want to explore opportunities through the Graduate Women’s Association (GWA), the ASU SACNAS and AISES chapters, the Black Graduate Student Association, the Alliance of Indigenous Peoples, the American Indian Graduate Student Association and the many other ASU student organizations.

Other ASU offices and resources

For incidents involving violence or crimes, contact the ASU Police Department (cfo.asu.edu/police, 480-965-3456) or report a concern by calling the ASU Hotline (877-786-3385).

Student Advocacy and Assistance: (Dean of Students) - they will connect you to the right university and community resources to address personal and family illness, accidents, and critical incidents such as harassment and discrimination complaints.

Disability Resource Center: accommodations for students with disabilities.

Health Services: walk-in care at 451 E University. Students must register for health Insurance each semester through My ASU.

Graduate Wellness Resources: a one-page guide to Financial, Social, Emotional, and Physical Health and Wellness Resources for ASU Graduate Students was developed by the GPSA

Counseling Services: call 480-965-6146 to speak immediately to a counselor during the week, or 480-921-1006 after hours.

10 Best Practices in Graduate Student Wellbeing: proven ways to help graduate students better care for themselves under the increasing demands of graduate school

International students: current information and support relevant to students from other countries.

Sun Card: the Sun Card is Arizona State University’s official photo ID card. Students may upload a photo and either pick up the Sun Card in the Sun Devil Card Services.
Office or have the Sun Card delivered by mail. Students will be charged $25 for the card. A Sun Card is required to access some locations on campus.

**Parking and Transit Services:** Students can find information about parking permits and rules about parking at other campuses on the Parking and Transit Services webpage.

**Campus Amenities:** the hub of student life at the Tempe campus is the Memorial Union (MU). Students can find restaurants, live music, a gaming lounge, bank automated teller machines (ATM), and much more.

**ASU Libraries:** Students have access to the Hayden Library, the main library on campus, as well as the Noble Science Library and online article databases. Hayden Library also provides free creative equipment and tools through My ASU and manages the ASU Digital Repository.

### Part 2: University policies and resources

**Student code of conduct**

**Academic integrity**

[https://provost.asu.edu/academic-integrity/policy](https://provost.asu.edu/academic-integrity/policy)

All SOLS graduate students must adhere to the Arizona Board of Regents Student Code of Conduct and Arizona State University's Student Honor Code, and are expected to maintain high levels of academic integrity at all times. All ASU students are required to complete an online module on academic integrity (through My ASU), and will not be able to register for classes until it is complete.

SOLS does not tolerate academic dishonesty, and will take appropriate disciplinary actions if it is uncovered. We expect students to familiarize themselves with what constitutes violations to the ASU policies on academic integrity. Briefly, violations include but are not limited to: cheating on exams and assignments, plagiarizing, fabricating data or information, aiding academic integrity policy violations, and falsifying academic records. Please pay special attention to the definition of plagiarism to avoid unintentional mistakes, and discuss the topic further with advisors and instructors, as needed.

Allegations of academic dishonesty will be reviewed by Program Directors, the Grad AD and The College. Incidents that violate ASU’s Misconduct in Research Policy or the Student Academic Integrity Policy may also be reviewed by the Office of Knowledge Enterprise Development (KED). Possible sanctions can be quite serious, and include grade changes, dismissal from the program, and expulsion from the university.

**Diversity and inclusion**

SOLS graduate programs are committed to fighting racism and fostering inclusion within our community. SOLS graduate students can learn more about these issues through the ASU [To Be Welcoming](https://provost.asu.edu/academic-integrity/policy) curriculum.

**Discrimination complaints (Title IX)**

ASU and SOLS are committed to providing an environment that is free from discrimination, harassment or retaliation. Any complaints of discrimination or harassment in employment, educational programs, or activities may be filed with the [Office of Equity and Inclusion](https://provost.asu.edu/academic-integrity/policy) (OEI) for investigation and resolution. Most SOLS supervisors (including faculty, Program Directors, and Grad Office staff) are required to report any suspected violations of this policy, and are thus not free to discuss potential issues confidentially. However, any employee or student may visit with OEI’s staff to discuss any concern confidentially without fear of jeopardizing job or academic standing.

**Research involving human and animal subjects**

All ASU theses and dissertations that involve research with human or vertebrate animal subjects must include a statement indicating that the research has been formally approved by the appropriate university body. Students must check with their major advisors well in advance to ensure compliance with university regulations as it pertains to the collection of research data involving human and animal subjects.

ASU’s Office of Research Integrity and Assurance coordinates campus-wide efforts to maintain ethical principles and compliance with research regulations. All ASU research involving human subjects must be approved by an University Human Subjects [Institutional Review Board](https://provost.asu.edu/academic-integrity/policy) (IRB) before data collection or recruitment of subjects is initiated. All ASU research involving live vertebrate animals must be reviewed and approved by the [Institutional Animal Care and Use Committee](https://provost.asu.edu/academic-integrity/policy) (IACUC) before obtaining animals or collecting data.

**Life science ethics program**

Students, faculty and staff are frequently faced with challenging ethical issues involved with research and innovation. As a student in our school, you will find [unique opportunities](https://provost.asu.edu/academic-integrity/policy) to explore the societal and ethical implications of life sciences research and education.

**Registration and enrollment**

Students register for classes through My ASU. If a student cannot register, they may have a registration hold on their account, which would be noted in My ASU. In My ASU, the student can click on the hold title and a box with additional information about the hold will appear, including information on resolving it.

**Drop/add deadline**

The Academic Calendar lists specific dates and deadlines for each semester. SOLS will consider requests to drop
courses past the drop/add deadline on a case-by-case basis. Otherwise, a withdrawal will result in a “W” grade, which may negatively impact students receiving student loans. Contact sols.grad@asu.edu to fill out an Enrollment Change Request form to add a class after the deadline.

Students who wish to change their status to be considered Arizona residents for lower tuition rates will have to work with the University Registrar to see if they qualify and to learn what paperwork and procedures are necessary.

Continuous enrollment
To remain in their programs, SOLS graduate students must be continuously registered for a minimum of 1 graduate credit hour in every fall and spring semester (usually xxx 592/792). Summer registration is required for students starting in the summer term, taking examinations, completing culminating experiences, conducting a doctoral prospectus, defending theses or dissertations, or graduating from the degree program.

Students who fail to enroll in any semester (not including summer unless under these circumstances) will be dropped automatically by the Grad College, and have to re-apply and be re-admitted to continue working towards a degree. Students can apply for a formal waiver of the continuous enrollment requirement or a leave of absence (up to 2 semesters). These must be formally approved by the major advisor, program director, SOLS Grad AD and the Graduate College before the semester for which the waiver or leave is requested.

Parental, medical and other leaves
Graduate students in TA or RA positions who have completed at least one year of academic service may be eligible for up to 12 weeks of paid parental leave for the birth or adoption of a child.

Those who experience serious illness or injury should consult with their faculty advisors and the SOLS Graduate Office (sols.grad@asu.edu) to explore their options, which may include incomplete grades, a complete withdrawal from classes, a medical/compassionate withdrawal with tuition refund, a waiver of the continuous enrollment requirement, or a Leave of Absence.

International students should contact the International Students and Scholars Center (ISSC) before submitting a withdrawal form, since this will most likely have an impact on their visa status.

Part 3: Tuition and graduate positions
All PhD students admitted to a SOLS graduate program receive a promise of five years of funding, including salary, health insurance and tuition remission sufficient to cover the required minimum of 84 credit hours. Students who need funding after those five years may also receive financial support, but often have lower priority (see below).

MS students are offered financial support on a case-by-case basis.

Tuition, fees, and residency
Students can estimate tuition and fee costs online. The cost of tuition and fees is set by the Arizona Board of Regents and is subject to change. Each semester, students are responsible for paying several mandatory student fees, and any special course fees. Additional expenses include the admissions application fee, immunizations, student ID card, textbooks, convocation regalia and the graduation application fee.

Types of positions
Graduate positions are usually half-time jobs (0.5 FTE), requiring 20 hr/week of work in either teaching or research. Pay is distributed biweekly (every other Friday). The Graduate College TA/RA handbook describes other relevant policies.

Both Teaching Assistant (TA) and Research Assistant (RA) positions are heavily subsidized and include salary, health insurance, and full tuition remission (up to 18 credit hours/semester). Graduate Service Assistant (GSA) positions provide only a stipend (no tuition waiver or health insurance), but may have a higher pay rate.

Teaching Assistants (TAs) work with faculty and instructors in the classroom, while gaining valuable opportunities to learn and practice teaching skills. A typical TA teaches two or more laboratory sessions each semester or assists with grading and discussion sections in writing-intensive courses. TA assignments are based on the school’s needs, faculty requests, student interests, and previous experience. First-time TAs must complete specialized training, including extra requirements for online courses and international students (see below).

Research Assistants (RAs) are funded through research or training grants. Students in these positions usually work closely with their faculty mentors on scientific research.

Graduate Service Assistants (GSAs) share the same types of job responsibilities as TAs or RAs, differing only in the details of compensation (pay rate and tuition). GSA1 positions are typically assigned to advanced SOLS PhD students, whereas GSA2 positions are intended primarily for MS students or for students who are not working towards SOLS degrees. Students in GSA positions are billed directly for tuition and health insurance, and do not receive a waiver of these costs.

Requesting and getting a paid position
In the middle of each semester, the SOLS Graduate Office sends an email asking graduate students to respond if they would like to be considered for an assistantship in the upcoming semester. Positions fill quickly, so students who do not respond by the deadline may not receive funding in that semester.
 Shortly afterwards, the SOLS Graduate Office sends out offer letters to individual students to notify them of their hiring appointments (usually by Dec. 15 for the Spring semester and Aug. 1 for the Fall semester). Signing and returning an offer letter indicates final acceptance of the position, and that acceptance cannot be reversed without a formal petition to the SOLS Graduate Office. Petitions must include a letter from the student’s major advisor explaining the reasons for a change, and will be granted only in special circumstances. Petitions to reverse an agreement may not be granted if a suitable substitute for the vacated position cannot be found.

**TA eligibility and assignment priorities**

Students who hold a TA position must:

- Register each semester for a minimum of 6 hours of approved graduate coursework. We strongly encourage TAs who have not already taken the full complement of credit hours required for the degree (84 for PhD, 30 for MS) to enroll for 18 hours each semester (courses and research) to take full advantage of the tuition benefit.
- Make satisfactory progress towards their degree. Students who are on academic probation or who do not receive a “satisfactory” score on their annual progress reports may receive lower priority or become ineligible for future TA assignments.
- Complete appropriate training, including:
  - The Graduate Assistant Training Program. This includes pre-orientation modules for all students, and specialized training for teaching assistants.
  - SOLS orientation and TA training, offered at the start of each fall semester.
  - BIO 530, Scientific Teaching, or equivalent.
- In addition, international students must:
  - Pass the SPEAK test at ASU with a score of 55 or above, obtain a score of 26 or higher on the speaking section of the iBT (TOEFL), obtain a score of 8 or higher on the speaking portion of the IELTS test, or become certified through the ITA Teacher Training Course.
  - Have an appropriate visa status

Students will be assigned to TA positions with the following priorities:

**First priority (TA or GSA1):**
- PhD students within the 5-year funding guarantee, working with a major advisor whose primary faculty appointment is in SOLS.

**Second priority (typically GSA2 or GSA1):**
- SOLS PhD students with major advisors whose primary faculty appointment is in SOLS, but who are beyond the 5-year funding guarantee. Students who have not received previous TA support may be given priority.
- SOLS PhD students with major advisors whose primary faculty appointment is not in SOLS, but who have contributed substantively to SOLS undergraduate teaching, collaborative grants or research initiatives.
- Students who have not received previous TA support have priority.
- SOLS MS students with major advisors whose primary faculty appointment is in SOLS.

**Third priority (GSA2):**
- ASU graduate students in programs not administered by SOLS and who are working with a major advisor whose primary faculty appointment is not in SOLS.

**Teaching and research assistant training**

All SOLS students hired into job positions must complete:

- The Graduate Assistant Training Program. This includes pre-orientation modules for all students, and specialized training for teaching assistants.
- SOLS orientation and TA training, offered at the start of each fall semester.
- BIO 530, Scientific Teaching, or equivalent.

New international TAs must also:

- Attend International student orientation. This training is offered at the start of each fall semester.

**TA responsibilities and performance review**

TA work assignments begin before the first week of classes each semester, and end after the completion of grades, inventory, laboratory cleanup, and other final activities. The professor or laboratory coordinator in charge of the course will assign and supervise all TA activities, including course-specific meetings to coordinate those activities. Any necessary absences from teaching duties must be arranged individually and in advance with that supervising faculty member. TAs are generally expected to hold 2 office hours/week and to respond within 24 h to email or phone communications.

Faculty, lab coordinators and students evaluate each teaching assistant at the end of every semester or summer session. These materials and additional information from TA supervisors may be reviewed as part of the annual progress report.

**Part 4: Earning your degree**

Below are general requirements for a graduate degree in the ASU School of Life Sciences. Each degree program also has specific requirements that are described below. SOLS graduate students must also abide by policies and requirements set by the ASU Graduate College.

**General admissions requirements**

SOLS graduate students must have earned a bachelor’s
or master's degree in biology or a related discipline from a regionally accredited institution with a minimum 3.0 GPA. Applicants must also submit several documents including official transcripts, personal statement, curriculum vitae, letters of recommendation, and the results of language tests (for international students).

**Pre-admission and transfer credits**
Students may be able to include a maximum of 12 credit hours completed before admission (at ASU or another institution) towards their degree. Requests to do so must be submitted through iPOS, and must be approved by the program director, Grad AD, and the Graduate College.

**Program duration**
Full-time SOLS graduate students should aim to complete a MS degree within 2 years (maximum of 6 years allowed) and a PhD within 5 years (4 years, if the student enters with a previous MS, maximum of 10 years). Any exceptions

### Graduate program milestones and deadlines

<table>
<thead>
<tr>
<th>Degree</th>
<th>Appoint major advisor</th>
<th>Pass oral and written comprehensive exams (PhD only)</th>
<th>Completion and defense of Research Prospectus (PhD only)</th>
<th>Target date for final thesis or dissertation defense</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal Behavior PhD</td>
<td>Year 1 Fall</td>
<td>Year 3 Fall</td>
<td>Year 3 Fall</td>
<td>Year 5 or 6</td>
</tr>
<tr>
<td>Biology PhD</td>
<td>Year 1 Spring</td>
<td>Year 3 Fall</td>
<td>Year 3 Fall</td>
<td>Year 5 or 6</td>
</tr>
<tr>
<td>Biology and Society PhD</td>
<td>Year 1 Spring</td>
<td>Year 3 Spring</td>
<td>Year 3 Spring</td>
<td>Year 5 or 6</td>
</tr>
<tr>
<td>Environmental Life Sciences PhD</td>
<td>Year 1 Fall</td>
<td>Year 3 Fall</td>
<td>Year 3 Fall</td>
<td>Year 5 or 6</td>
</tr>
<tr>
<td>Evolutionary Biology PhD</td>
<td>Year 1 Fall</td>
<td>Year 3 Spring</td>
<td>Year 3 Spring</td>
<td>Year 5 or 6</td>
</tr>
<tr>
<td>History &amp; Philosophy of Science PhD</td>
<td>Year 1 Spring</td>
<td>Year 3 Spring</td>
<td>Year 3 Spring</td>
<td>Year 5 or 6</td>
</tr>
<tr>
<td>Microbiology PhD</td>
<td>Year 1 Fall</td>
<td>Year 2 Spring</td>
<td>Year 3 Spring</td>
<td>Year 5 or 6</td>
</tr>
<tr>
<td>Neuroscience PhD</td>
<td>Year</td>
<td>Year 3 Spring</td>
<td>Year 3 Spring</td>
<td>Year 5 or 6</td>
</tr>
<tr>
<td>Biology MS</td>
<td>Year 1 Fall</td>
<td>NA</td>
<td>NA</td>
<td>Year 2 Spring</td>
</tr>
<tr>
<td>Biology and Society MS</td>
<td>Year 1 Fall</td>
<td>NA</td>
<td>NA</td>
<td>Year 2 Spring</td>
</tr>
<tr>
<td>Microbiology MS</td>
<td>Year 1 Fall</td>
<td>NA</td>
<td>NA</td>
<td>Year 2 Spring</td>
</tr>
<tr>
<td>Molecular and Cellular Biology MS</td>
<td>Year 1 Fall</td>
<td>NA</td>
<td>NA</td>
<td>Year 2 Spring</td>
</tr>
<tr>
<td>Plant Biology and Conservation MS</td>
<td>Year 1 Fall</td>
<td>NA</td>
<td>NA</td>
<td>Year 2 Spring</td>
</tr>
</tbody>
</table>
to these limits must be formally approved by the program director, the SOLS Grad AD and the Graduate College.

Interactive plan of study (IPOS)
The interactive plan of study (IPOS, available via My ASU) lists all the classes the student plans to take to complete the degree and indicates who is on the student's supervisory committee. SOLS graduate students must submit their first iPOS for approval by the end of the first year. Once it has been approved, students should update their iPOS at the start of each semester, making changes as needed. Please contact sols.grad@asu.edu for help.

Major advisors and supervisory committees
The major advisor and supervisory committee provide guidance in research, administer the PhD comprehensive examinations and defense of the research prospectus (PhD only), and direct and evaluate the final thesis or dissertation. All SOLS graduate students must identify their major advisor and supervisory committee, complete a mentoring compact, and add advisor and committee to their iPOS before the end of the first year in their program.

Many students choose their major advisors as part of the admissions process, while others complete rotations or coursework first. The major advisor must be a member of the ASU Graduate Faculty, endorsed to chair or co-chair a committee in the student's degree program. All SOLS tenure-track faculty members can serve as major advisor. Others may need to be formally nominated and approved by the ASU Graduate College.

Major advisors at partner institutions (e.g., Mayo, BNI) typically co-chair supervisory committees, working closely with an ASU co-chair.

Changing a major advisor is possible, but should be preceded by conversations with the new and previous advisors, program director and Grad AD. Please note that funding guarantees described in admission offer letters often depend on whether the major advisor has a primary appointment in SOLS. If the new advisor is not a SOLS faculty member, the five-year PhD-funding offer may be withdrawn. Students who lose a major advisor have one semester to identify a new advisor. If a new major advisor cannot be found after one semester, the student is placed on academic probation and is not eligible for most forms of funding (see below).

All SOLS graduate students and their advisors must complete a mentoring compact within the first year. A template for the mentoring compact is available on the Grad Programs Canvas site, which outlines roles and responsibilities in the mentor-mentee relationship. All SOLS graduate students must complete, sign and submit the mentoring compact to sols.grad@asu.edu within one month of identifying a major advisor. For most SOLS students, this will be before Fall Break, but all students must submit the signed mentoring compact before the end of the second semester. Students and their major advisors are encouraged to revisit their mentoring compact each year as part of the annual progress report (see below).

Supervisory committees are chaired or co-chaired by the major advisor and include 2-4 other faculty members (see Part 6 for individual program requirements). As explained above, chairs and co-chairs of the supervisory committee must be members of the ASU Graduate faculty, endorsed to chair or co-chair committees in the student's graduate program. In addition, at least 3 members of a PhD supervisory committee must be members of the ASU Graduate Faculty, and at least 50% of the committee must be members of the program's graduate faculty. Most programs have additional requirements. Adding a supervisory committee member who is not a member of the ASU or the program's graduate faculty may be possible, but requires additional approvals.

Annual committee meeting and progress report
Each year, SOLS graduate students complete a progress report, which is then comprehensively reviewed by the major advisor, Program Director, and Grad AD. Requests for extensions should be made directly to the Grad AD, and are granted rarely. The annual progress report is used to inform decisions such as nominations for fellowships, funding priority, and academic status including probation and dismissal. Students receiving any rating other than “Student is making timely progress toward degree” will be provided with additional details on the issues that must be corrected, with specific milestones and timeline that must be met to avoid being placed on SOLS academic probation.

In addition, SOLS graduate students must meet with their supervisory committees at least once each year. This annual committee meeting requirement is waived only for students conducting rotations in their first year. The major advisor typically leads the meeting, which begins with the student presenting a brief (10-15 min) oral synopsis of their progress and a timeline of future plans, including research, coursework, and exams. The committee asks questions and provides feedback. At the end of the meeting, the student leaves briefly while the committee discusses assessment of the student’s progress. When the student returns, the supervisory committee shares the outcome of their deliberations with the student, including the strengths and weaknesses of the research and any recommendations for changes in the timeline or plan of study.

Comprehensive exams and the prospectus defense (PhD degrees only)
All SOLS PhD students demonstrate their ability to integrate knowledge of their research area and their potential to conduct an original research project by completing oral and written comprehensive exams, plus a research prospectus. Usually these are done
simultaneously, and all SOLS programs require that the comprehensive exams and prospectus be successfully completed by the end of the third year.

As soon as the supervisory committee has agreed to a date for the comprehensive exams and/or prospectus presentation, the student must notify sols.grad@asu.edu of the proposed date and request a comprehensive review of Program and Graduate College requirements.

Students must be in good academic standing, with a full committee and an approved iPOS to be able to take the exams and defend a prospectus. After the exams, the SOLS Graduate Office distributes an electronic form to all supervisory committee members to document the outcome of each of three parts: 1) oral comprehensive exam, 2) written comprehensive exam, and 3) prospectus defense.

A Master’s in Passing (MIP) may be awarded to PhD students in any SOLS program after they advance to candidacy. To be eligible, the student must not have applied credits from a previous Master’s degree to their PhD iPOS. MIP degrees are awarded only at the end of the semester. To obtain an MIP, the student should contact sols.grad@asu.edu to confirm eligibility and to obtain detailed instructions.

Grievances and appeals

Graduate students wishing to appeal a grade or to report a grievance against another student, an instructor or supervisor should begin by conferring informally with that individual. The student may also want to seek guidance from their major advisor or Program Director. If informal discussions do not resolve the problem, the student may appeal to the Grad AD. The Grad AD is likely to confer with the instructor, supervisor, or Program Director, and may bring the grievance to the attention of the SOLS Director in an effort to resolve the situation. In nearly all cases, the grievance is successfully resolved by these discussions, and does not go beyond this level. In the rare instances when the matter is not yet resolved, the student may consult with a representative from The College Dean’s office (CLASDean@asu.edu) to proceed with a formal grievance to The College.

Completing the degree

At the beginning of the semester of the MS thesis or PhD dissertation defense, the student should read through the ASU Graduate College guide to completing your degree. In brief, students must:

1. Register for at least one credit hour, even when defending during the summer.
2. Meet with the supervisory committee (4 months before for PhD, 2 months before for MS) to finalize plans.
3. Apply for graduation (through the My ASU graduation tab). There is a very strict deadline.
4. Schedule the public defense (through My ASU). The defense must be a public event.

About one month before the defense, the student should:

1. Submit their thesis or dissertation to their major advisors and supervisory committees for scientific review.
2. Submit their thesis or dissertation for format review through iPOS. The rules for formatting are specific and rigid. Use the Graduate College formatting tool. Note that although students may include up to three published papers in their final thesis/dissertation, these must be merged with the rest with consistent style and final, compiled reference section.
3. Complete the “Survey of Earned Doctorates” (PhD only).
4. Register for commencement (via My ASU) and rent or purchase academic regalia at ASU’s Bookstore.

Announce the public defense by emailing a document to the SOLS Graduate Office including the following:

- Date, time and place of the defense
- Title of the dissertation/thesis
- Names of all supervisory committee members, including chairs and co-chairs
- Abstract
- Photo or illustration related to the defense (optional)

At and after the defense

The first part of the defense is a public presentation of the thesis or dissertation research. After the public defense, the supervisory committee will examine the student and judge whether the student’s dissertation and performance in the oral defense are sufficient to award the MS or PhD degree. Each committee member will receive an email with link to report their individual decision to the Graduate College.

After the defense, the student must:

1. Revise the thesis/dissertation and submit to the major advisor for final approval. Most students are asked to make revisions. Once revisions are complete and approved, the major advisor will issue a Final Pass on the electronic Pass/Fail form.
2. Upload the final document to ProQuest. Once revisions are complete, and the Pass/Fail form has been fully approved, you will receive approval from the Graduate College to submit the final document to ProQuest.
3. Attend commencement (optional).
4. Leave a forwarding address. Return any keys to the SOLS facilities office, clean out office and lab space, and give mail-forwarding information to the SOLS.
Part 5: Satisfactory progress, probation and dismissal

SOLS satisfactory academic progress
To maintain satisfactory progress towards the degree, SOLS graduate students must:

5. Maintain a minimum of 3.00 GPA (cumulative, overall graduate, and iPOS). If any of the three GPAs fall below 3.00, the student will be immediately placed on academic probation by the Graduate College.

6. Enroll for at least one credit hour in every Fall and Spring semester (“continuous enrollment”).

7. Satisfy all requirements for the degree program by the deadlines. This includes identifying a major advisor, forming an approved supervisory committee, passing comprehensive/prospectus exams, and defending the thesis or dissertation.

8. Each year, hold a committee meeting and complete the SOLS annual progress report and receive a final rating of “Student is making timely progress toward degree.”

9. Work closely with a major advisor. Students who do not have a major advisor after the first year will be notified in writing that they have one semester to find a new one. Students who fail to reach an agreement with a new major advisor after this period will be placed on academic probation.

Students who are not making satisfactory progress will be asked to discuss their individual situations with their major advisors and Program Directors. Some students may also receive a written warning from the Grad AD with specific requirements to be met by stated deadlines. If those deadlines are not met, the student is likely to be placed on SOLS academic probation (see below) or be recommended to the Graduate College for dismissal from their program.

SOLS academic probation
SOLS academic probation is a strong warning that the student’s status in the program is in jeopardy unless corrective action is taken. Students may be placed on SOLS academic probation for academic dishonesty or unsatisfactory progress. For example, a student who does not meet major program deadlines, such as the required date of the oral comprehensive exam, may be placed on academic probation. Students on SOLS academic probation are not eligible for many opportunities including scholarships, travel awards, TA and RA positions. After one semester of probation, students will return to a status of satisfactory progress (if they complete requirements in a timely way) or be recommended for dismissal. SOLS academic probation affects a student’s status within SOLS but is not reported to the Graduate College and so does not appear on their ASU transcript or permanent academic record.

Students being placed on SOLS academic probation are notified in writing. The probation letter includes a list of requirements and explains the consequences of not meeting those requirements by the specified deadlines. Students who are unable to fulfill a requirement by its deadline may request an extension by submitting a petition in writing to the Grad AD. The petition must

- Explain extenuating circumstances as to why the requirement cannot be met.
- Describe what has been done and what will be done to get back on track.
- Give the date(s) as to when the requirement will be completed.
- Include a letter of support from the student’s major advisor.

The Grad AD will consult with the Program Director and others, and will notify the students once a decision is made about the extension.

Dismissal
SOLS may recommend to the Graduate College that a student be dismissed from the program in several situations including:

Provisional admission:
At the end of each semester, the Graduate College reviews the progress of students who were admitted provisionally. If a student has met the conditions described in the admissions offer letter, the provisional admission hold will be removed from their records. If a student has not met those conditions, the Graduate College will dismiss the student from the program, with no possibility of appeal.

Admission with deficiencies:
At the end of each semester, SOLS reviews students who were admitted with academic deficiencies. If a student has completed the requirements described in the admissions offer letter, the Grad AD will send a letter to the student confirming that the student is now in good academic standing. If a student has not successfully met the requirements, the Grad AD will send a letter alerting the student that they will recommend to the Graduate College that the student be dismissed and offering the student an opportunity to appeal this decision (as described below).

Unsatisfactory progress:
If a student on academic probation does not meet the requirements specified in their probation letter by the stated deadlines, they may be subject to dismissal. The Grad AD will send a letter alerting the student that they will recommend to the Graduate College that the student be dismissed and offering the student an opportunity to
appeal this decision (as described below).

**Academic integrity policy or student code of conduct violations:**
Students who are determined to have seriously violated the Academic Integrity Policy or Student Code of Conduct may be subject to dismissal. SOLS abides by the extensive College-wide policies and procedures for reporting and addressing such incidents.

Before recommending dismissal, the Grad AD will send the student a letter notifying them of their decision, and offering the student an opportunity to appeal the decision. The student will then have 10 business days to request an extension of the probationary period. To appeal the SOLS decision to recommend dismissal, the student must submit a written letter to the Grad AD 1) explaining the extenuating circumstances as to why the requirements were not met, 2) describing what has been done and what will be done to get back on track, 3) giving the date(s) as to when the requirement will be completed, and 4) including a letter of support from the student’s major advisor. On receiving an appeal, the Grad AD will share the appeal with the student’s program director and obtain their written recommendation. The Grad AD will then form a committee of SOLS program directors to review all of the associated materials, including previous student progress reports, major advisor and Program Director recommendations. That committee will make a final decision on the SOLS recommendation.

If the student does not submit a SOLS appeal, or if that appeal is not successful, the Grad AD will send a letter recommending dismissal to The College. The College will review the relevant documentation including any appeals, and decide whether to forward the recommendation for dismissal to the Graduate College or to return the materials to SOLS with a recommendation of new stipulations and deadlines. If The College forwards the recommendation for dismissal to the Graduate College, the materials will go to the Dean of the Graduate College, who makes the final decision about dismissal.

**Part 6: Individual program requirements**

**Animal behavior PhD**

**Supervisory committee**
- Is selected by the end of the 2nd semester.
- Must have at least 5 members (the major advisor and at least 4 others).
- Composition needs to be approved by the Animal Behavior Program Executive Committee.
- One member may be from outside ASU but will need to be approved by the Animal Behavior Program Executive Committee.

**Program of study**
- 84 hours required, minimum GPA = 3.0.
- 8 credit hours of core courses: ANB 601 (4 credit hours) to be taken in the 1st or 2nd semester, and ANB 602 (1 credit hour) to be taken four times during the Program of Study.
- 64 credit hours of elective courses, omnibus courses and research, selected in consultation with the supervisory committee (e.g., ANB 784, Doctoral Internship; ANB 790, Doctoral Reading and Conference, ANB 792 Research).
- Exactly 12 credit hours of ANB 799 Dissertation.

**Comprehensive exams and research prospectus**
To be completed before the end of the 5th semester.

**Research prospectus**
These exams (oral and written comprehensive exams & prospectus defense) consist of the defense of a proposal and subsequent questions from the supervisory committee on the broader context of the proposed research.

Within one month of receiving the research prospectus, committee members should send any suggestions for improvement of the prospectus to the student and advisor. Once these changes are incorporated into the prospectus and before the exam can be held, each committee member must, in writing, indicate to the student’s advisor that the prospectus is ready to defend.

**Comprehensive exams and prospectus defense**
These exams (oral and written comprehensive exams & prospectus defense) consist of the defense of a research proposal and subsequent questions from the supervisory committee on the broader context of the proposed research.

At the beginning of the exams, the student may choose to give a 15-20 min presentation on their research plan. This part is open to a general audience of faculty, as well as to the supervisory committee. Questions from the committee in closed session should then focus on the prospectus and the student's general knowledge of their research and teaching discipline.

There are several allowable outcomes of the exam:
- **Pass** – Satisfactory performance on both the written and oral components.
- **Postponed decision** – Unsatisfactory performance on one or both components, but with an explicit plan and deadlines for dealing with the deficiencies by rewriting the prospectus, retaking the oral or written exams, or both.
- **Failure** – Unsatisfactory performance on both the written and oral components.

**Dissertation defense**
Typically completed within five to six years.
**Biology PhD**

**Supervisory committee**
- Is selected by the end of the 2nd semester.
- Must have at least 4 members (the major advisor and at least 3 others).

**Program of study**
- 84 hours required, minimum GPA = 3.0.
- 3 or 4 credit hours of core course: BIO 614 Biometry or BIO 620 Research Prospectus Writing.
- 68-69 credit hours of elective courses. Minimum of 5-6 credit hours of seminars or classes at the 400, 500, 600 or 700 level. No more than 3 of these credit hours may be taken at the 400 level. The remaining credit hours are BIO 792 (Research).
- At least 30 credit hours must be completed after admission to the Biology PhD program.
- Exactly 12 credit hours of BIO 799 Dissertation.

**Comprehensive exams and research prospectus**
To be completed before the end of the 6th semester (target = 4th or 5th semester).

**Research prospectus and written comprehensive exam:**
- Synthesizes current ideas in the student’s area of research interest.
- Must follow the guidelines of an appropriate funding agency (e.g., NSF or NIH).
- Should show sufficient breadth and depth in the research area to be suitable for submission to a national funding agency, although actual submission and approval is not a criterion for successful completion of this requirement.
- Must be approved by supervisory committee before the oral comprehensive examination.

**Oral comprehensive exam**
- This is a defense of the written research prospectus.
- Tests the depth and breadth of knowledge in the major area, particularly in the research area of the student.
- Failing the comprehensive examination is considered final.

**Dissertation defense**
Typically completed by the end of the 10th semester.

**Biology and society PhD (concentration in biology)**

**Supervisory committee**
- Is typically selected by the end of the 4th semester; must be selected at least one semester before the prospectus defense.
- Must have at least 4 members (the major advisor and at least 3 others).

**Program of study**
- 84 hours required, minimum GPA = 3.0.
- 3 or 4 credit hours of core course: BIO 614 Biometry or BIO 620 Research Prospectus Writing.
- 68-69 credit hours of electives.
  - 30 credit hours of restricted electives:
    - 9 credit hours of seminars or classes fulfilling the requirements of the track of study selected. See SOLS webpage for track course options.
    - 9 credit hours of additional courses related to the life sciences. Any courses offered under one of the SOLS prefixes (BIO, ELS, EVO, HPS, MCB, MIC, and PLB) or any courses taught by faculty members in the Biology and Society faculty group fulfill the requirement. In general, the courses should be ‘x of science or biology’ rather than just ‘x’ (e.g. ‘history of biology’ rather than ‘modern American history’).
    - 12 credit hours of BIO 792 Research.
  - 38-39 credit hours of free electives:
    - Additional research, seminars, and readings courses.
    - No more than 6 credit hours at the 400 level.
    - Exactly 12 credit hours of BIO 799 Dissertation.

Four different tracks of study are available, although with permission of the program students may also develop plans of study that incorporate elements of several tracks.

**Sample restricted electives I: bioethics, policy, and law (BPL) track**
- 3 hours – Ethics, as related to life sciences
- 3 hours – Science policy
- 3 hours – Law, as related to science or technology

**Sample restricted electives II: biology education research (BER) track**
- 3 hours – Quantitative methods or statistics
- 3 hours – Learning, educational, or psychological theory
- 3 hours – Discipline-based education research

**Sample restricted electives III: ecology, economics, and ethics of the environment (4E) track**
- 3 hours – Ecology
- 3 hours – Environmental or natural resource economics
- 3 hours – Environmental ethics or environmental policy

**Sample restricted electives IV: history and philosophy of science (HPS) track**
- 3-6 hours – History of science
- 3-6 hours – Philosophy of science

**Comprehensive exams and research prospectus**
To be completed before the end of the 6th semester (target = early in the 4th semester).
Students must meet with their committees to discuss a draft research prospectus before formal defense of the research prospectus.

The written research prospectus must contain, at a minimum, a description of the research question and its significance, a detailed work plan for data collection, analysis, and writing, and a complete bibliography.

The goal of the written research prospectus and its oral defense is for the committee to ascertain whether the candidate has an adequate grasp on the scholarly literature relevant to the project and is ready to start researching and writing the dissertation.

Failure is considered final except under extraordinary circumstances.

**Dissertation defense**
Typically completed in the 8th - 10th semester; must be completed by the end of the 12th semester.

**Biology (complex adaptive systems science)**

**PhD**

See requirements for Biology PhD.

**Environmental life sciences PhD**

**Supervisory committee**

- Is selected by the end of the 2nd semester.
- Must have at least 4 members (the major advisor and at least 3 others).
- Must be interdisciplinary, with at least two ELS units represented.
- Composition must be approved by the ELS Executive Committee.

**Program of study**

- 84 hours required, minimum GPA = 3.0.
- 3 credit hours of core course ELS 501 to be taken in the 1st semester.
- 69 credit hours of additional courses, including:
  - At least 6 credit hours selected from different broad categories. Successful completion of each course includes a synthetic paper in the subject area.
  - Earth Sciences (e.g., geology, hydrology).
  - Organismal Biology (e.g., physiology and behavior).
  - Evolutionary Biology (e.g., population genetics).
  - Ecology/ecosystems/biogeochemistry
  - Sustainability/Social/Policy.
- At least 3 credit hours in quantitative/modeling/statistics.
- Additional ELS-approved courses or omnibus courses (ELS 784, Doctoral Internship; ELS 790, Doctoral Reading and Conference, ELS 792 Research).
- No more than 6 credit hours at the 400 level.
- Exactly 12 credit hours of ELS 799 Dissertation.

**Comprehensive exams and research prospectus**
To be completed before the end of the 4th or 5th semester.

**Research Prospectus and written comprehensive exam:**
A detailed description of the rationale and experimental plan of the dissertation, in NSF-grant style, should be submitted to the graduate committee at least two months before the scheduled oral exam date. Students will be engaged in dissertation projects that explicitly involve interdisciplinary research and will be evaluated on it. The Supervisory Committee will judge how well the student’s research proposal is designed and justified. Within one month of receiving the Research Prospectus, committee members should approve the Prospectus as “ready to defend” and send any suggestions to the student. All committee members must indicate that the prospectus is “ready to defend” before the oral comprehensive exam is held.

**Oral comprehensive exam:**
The oral comprehensive exam consists of the defense of the research proposal and subsequent questions from the supervisory committee on the broader context of the proposed research. At the beginning of the exam, the student should give a 15-30 minute presentation on his or her research plan. Questions from the committee should then focus on the prospectus and the student’s general knowledge of their research and teaching discipline. Failure is considered final except under extraordinary circumstances.

**Dissertation defense**
To be completed by end of 8th or 10th semester.

**Evolutionary biology PhD**

**Supervisory committee**

- Is selected by the end of the 2nd semester.
- Composition must be approved by the EVO Executive Committee.

**Program of study**

- 84 hours required, minimum GPA = 3.0.
- 9 credit hours of core courses including:
  - EVO 601 (3 credit hours): to be taken by the end of the 2nd semester.
  - EVO 610 (2 credit hours): to be taken by the end of the 2nd semester.
  - BIO 614 (4 credit hours): Biometry, to be taken by the end of the 4th semester.
- 54 credit hours of additional courses, including:
  - At least three courses (9 credit hours) selected from approved EVO elective courses.
The remaining credit hours should be filled either from the list of EVO electives or EVO omnibus courses (EVO 784, Doctoral Internship; EVO 790, Doctoral Reading and Conference, EVO 792 Research), and completed by the end of the 6th semester.

- No more than 6 credit hours at the 400 level.
- Exactly 12 credit hours of EVO 799 Dissertation.

**Comprehensive exams and research prospectus**

To be completed before the end of the 6th semester.

**Research prospectus and written comprehensive exam:**

A detailed description of the rationale and experimental plan of the dissertation, in NSF-grant style, should be submitted to the graduate committee at least two months before the scheduled comprehensive exam date. Students will be engaged in dissertation projects that explicitly involve interdisciplinary research and will be evaluated on it. The Supervisory Committee will judge how well the student’s research proposal is designed and justified. Within one month of receiving the Research Prospectus, committee members should approve the Prospectus as “ready to defend” and send any suggestions to the student. All committee members must indicate that the prospectus is “ready to defend” before the oral comprehensive exam is held.

**Oral comprehensive exam:**

The oral comprehensive exam consists of the defense of the research proposal and subsequent questions from the supervisory committee on the broader context of the proposed research. This exam is open to the supervisory committee only. At the beginning of the exam, the student should give a 20-25-minute presentation on his or her research plan. Questions from the committee should then focus on the prospectus and the student’s general knowledge of their research and teaching discipline. Failure is considered final except under extraordinary circumstances.

**Dissertation defense**

To be completed by end of the 10th semester.

**History and philosophy of science PhD**

**Supervisory committee**

- Is typically selected by the end of the 4th semester; must be selected at least one semester before the Prospectus defense.
- Must have at least 5 members (the major advisor and at least 4 others).

**Program of study**

- 84 hours required, minimum GPA = 3.0.
- 6 credit hours of core courses including:
  - 3 credit hours of HPS 620, Research Prospectus Writing.
  - 3 credit hours of HPS 615, Biology and Society Lab.
  - 30 credit hours of restricted program electives, including:
    - 6 credit hours of history of science.
    - 6 credit hours of philosophy of science.
    - 3 credit hours of history of philosophy.
    - 3 credit hours of value theory.
    - 3 credit hours of advanced logic or other advanced methods.
    - 9 credit hours of approved courses in philosophy, history, or the life sciences.
  - 12 credit hours of HPS 792 Research.
  - 24 credit hours of free electives:
    - Additional research, seminars, and readings courses.
  - Exactly 12 credit hours of HPS 799 Dissertation.

**Comprehensive exams and research prospectus**

To be completed before the end of the 6th semester.

- Students must meet with their committees to discuss a draft research prospectus before formal defense of the research prospectus.
- The written dissertation prospectus must contain a description of the research question and its significance, a detailed work plan for data collection, analysis, and writing, and a complete bibliography.
- The goal of the written research prospectus and its oral defense is for the committee to ascertain whether the candidate has an adequate grasp on the scholarly literature relevant to the project and is ready to start researching and writing the dissertation.
- Failure is considered final except under extraordinary circumstances.

**Dissertation defense**

Typically completed in the 8th - 10th semester; must be completed by the end of the 12th semester.

**Microbiology PhD**

**Supervisory committee**

- Is selected by the end of the 3rd semester.
- Must have at least 4 members (the major advisor and at least 3 others).
- Chair or co-chair must be a member of the School of Life Sciences (SOLS) Microbiology faculty.

**Program of study**

- 84 hours required, minimum GPA = 3.0.
- 3 credit hours of MIC 501 Foundations in Microbiology.
- BIO 610 (1 credit hour) Intro to Responsible Conduct of Research (not effective until Fall 2021).
- 69 credit hours of electives comprised of MIC 792
Research, seminars and journal clubs.

- Exactly 12 credit hours of MIC 799 Dissertation.

**Comprehensive exams and research prospectus**

**Comprehensive exam**
To be taken at the end of the 4th semester but before the start of the 5th semester.

The comprehensive exam is evaluated by a committee composed of at least four faculty members. The chair of this committee must not be the student's major advisor, but can be any other member of the SOLS Microbiology faculty. Usually at least one member of the committee should be from outside SOLS.

Each student can choose between two options for the comprehensive exam. In Option A (research proposal-based exam), the student proposes three research topics not directly related to the dissertation, and the exam committee chooses one of these. The student then has 4 weeks to write a research proposal based on these ideas, without the help of their major advisors or peers. The committee provides written comments on the proposal, and the student then has 1-4 more weeks to prepare for the oral examination. In Option B (Knowledge-based exam), the exam committee chooses the research topics and prepares a written exam that can be completed within a 2-day period. If the student passes the written component of the exam, the oral component is scheduled (within 4 weeks). With approval of the comprehensive exam committee, the exam can be retaken once.

**Research prospectus**
Competed prior to the beginning of the 7th semester.

The Supervisory Committee will determine the specific format of the Research Prospectus, which typically includes (a) an introduction broadly describing the research problem, (b) specific aims, and (c) text pertinent to each aim describing approaches that will be taken to achieve the aims. Figures should be included where relevant, and the Prospectus should include a bibliography.

**Dissertation defense**
Completed in the 8th semester for students with MS or 10th semester for students with BS.

**Molecular and cellular biology PhD**

**Supervisory committee**
- Is selected by the end of the 2nd semester.
- Must have at least 4 members (the major advisor and at least 3 others).
- At least 2 members must be MCB chair-eligible faculty.

**Program of study**
- 84 hours required
- 9 credit hours of core courses including:
  - MCB 555, 6 credit hours (team taught): membrane biology, neurobiology, signal transduction, bioimaging and molecular-based disease.
  - MCB 556, 3 credit hours: gene regulation, developmental biology, microbiology and immunology; reading the scientific literature and scientific writing and oral presentation.

- Exactly 12 credit hours of electives, including MCB 792 Research taken in all years.
- Additional Requirements (12 credit hours):
  - MCB 701 Seminar taken every semester (at least 8 credit hours).
  - BIO 543 Molecular Genetics or equivalent genetics course if an equivalent course was not previously taken (3 credit hours).
  - BIO 610 Responsible Conduct of Research 1 credit, offered spring. Take in Year 1 or 2 (1 credit hour).

**Comprehensive exams and research prospectus**

**Comprehensive Exam and Prospectus Defense**
To be completed before the end of the 4th semester.

- Student prepares two abstracts of two potential proposals.
- The abstracts should be submitted to the Chair of the Comprehensive Exam Committee, who is a Supervisory Committee member, but not the student's major advisor.
- The exam committee will select one of the abstracts for the student to prepare for written comprehensive exam suggested time frame is within four weeks. The oral exam should take place after that (suggested time frame within two weeks).
- Written research proposal should be in NIH NRSA 7-page format based on a hypothesis driven problem that is not an ongoing project in the laboratory.
- In addition, the student must write and defend a very brief Prospectus of their research.

**Detailed research proposal**
Before the end of 3rd year, students must write and present to their committees a detailed description of their proposed dissertation research.

- Plans for dissertation research should be presented at a supervisory committee during the third year.
- A brief written description of the dissertation research plan should be distributed to the committee and orally presented at the committee meeting.

**Dissertation defense**
Completed in the 7th semester for students with MS or 9th semester for students with BS.
Neuroscience PhD

Supervisory committee

- Is selected by the end of the 2nd semester, unless a special extension is granted if the student does not choose either of their two rotation supervisors as major advisor. In this case, the student is expected to complete a third rotation and to form the committee as soon as possible after completing that rotation.
- Must have at least 4 members (the major advisor and at least 3 others).

Program of study

- 84 hours required, minimum GPA = 3.0.
- 10 credit hours of core courses, with grade of “B” or better. These must be completed before taking the comprehensive exams.
  - 6 credit hours of NEU 555 Topic: All Semester Modules.
  - 4 credit hours of NEU 556 Human Systems Neuroscience.
- Other requirements, with grade of “C” or better:
  - NEU 558 Neuroscience Journal Club (at least 3 credit hours).
  - NEU 591 Neuroscience Research Seminar (at least 3 credit hours).
  - BIO 610 (1 credit hour) Intro to Responsible Conduct of Research (not effective until Fall 2021).
  - Students must enroll in either NEU 558 or 591 each spring and fall semester that they are in the program.
- 56 credit hours of electives or research:
  - At least 4 credit hours of Professional Development courses.
  - NEU 792 Research hours (taken each semester).
  - Additional credits will be comprised of specialized disciplinary courses chosen in consultation with the mentor and advisory committee, and taken with “C” grade or better.
- Exactly 12 credit hours of NEU 799 Dissertation.

Sample courses for a first-year student:

Fall semester

- NEU 556 Topic: All Semester Modules (6 credit hours).
- NEU 558 Neuroscience Journal Club (1 credit hour).
- NEU 792 Research (2 credit hours).

Spring semester

- NEU 556 Human Systems Neuroscience (4 credit hours).
- NEU 591 Neuroscience Research Seminar (1 credit hour).
- NEU 792 Research (1 credit hour).
- BIO 598 Bioethics (4 credit hour).

Laboratory rotations (first year):

- Rotations to be planned by the student and their major advisor (or Program Director, if the major advisor has not yet been identified).
- Minimum of 2 rotations each for a minimum of 7 weeks each within the 1st year.
- Students are strongly encouraged to perform their rotations at more than one of the units that participate in this interdisciplinary program (SOLS, Math, Psychology, Biomedical Engineering, Speech and Hearing Sciences, Barrow Neurological Institute, T-GEN, or the University of Arizona College of Medicine – Phoenix).
- At the end of each rotation, the student will write a short report describing the rotation, and include this as part of their annual progress report.

Comprehensive exams and research prospectus

To be completed during the 2nd year; must be completed before the end of the 6th semester.

- Includes a written proposal of the dissertation research (Research Prospectus), take-home exam questions formulated by the supervisory committee, and an oral examination. Students are expected to have a broad understanding of areas that pertain to their research, in-depth knowledge of the literature that directly relates to their research, and the ability to communicate and formulate ideas about research.
- The exam begins with the student submitting his/her Research Prospectus in the form of a pre-doctoral NIH (NRSA) or NSF proposal to the supervisory committee. The Prospectus should be based on the student’s remaining two to three years of research and training. Proposed hypotheses should be supported by preliminary results. Individual supervisory committees have the option to require a more expanded background section than that allowed in the pre-doctoral NIH and NSF proposals.
- Within 1 week of receiving the Prospectus, each committee member will submit 1-2 exam questions to the major advisor, who will then compile the questions to comprise the take home exam. Students choose 2 of the questions to be answered in writing within a day or two (e.g., 24-48 hours after receiving the questions). The answers to both questions should be a total of 6-10 pages (11pt Arial font, double-spaced, and including figures, as needed).
- The oral portion of the exam takes place 1-2 weeks later. During this exam, the student presents their Research Prospectus to their supervisory committee, which then uses the Prospectus and the written answers to the exam questions as a springboard for questioning students about their research plans and the implications of the work to the broader scientific field.
- The evaluation of the student will follow immediately
after the oral portion of the exam and will be based on overall performance on the three exam components (Prospectus, written exam questions, and oral exam). At the discretion of the committee, students may be required to address minor deficiencies in order to receive a pass. Failure is considered final.

**Dissertation defense**
Typically completed within 5-6 years, but must be completed by the summer after the 7th year.

**Biology MS**

**Supervisory committee**
- Is selected by the end of the 1st semester.
- Must have at least 3 members (the major advisor and at least 2 others).

**Program of study**
- 30 hours required.
- At least 1 credit hour of participatory seminar appropriate to area of study (XXX 591 or 791).
- 9-15 credit hours of electives in Biology, such as additional seminars or Reading and Conference (BIO 590).
- 8-14 credit hours of BIO 592 Research.
- Exactly 6 credit hours of BIO 599 Thesis.

**Research prospectus**
- Completed by middle of 2nd semester.
- Submitted to, discussed with and approved by Supervisory Committee.

**Thesis defense**
Completed by end of 4th semester.

**Biology and society MS (concentration in biology)**

**Supervisory committee**
- Is selected by the end of the 2nd semester.
- Must have at least 3 members (the major advisor and at least 2 others).
- Half or more of the committee members must be members of the Biology & Society graduate faculty.

**Program of study**
- 30 hours required, minimum GPA = 3.0.
- At least 9 credit hours of core courses fulfilling the requirements of the track of study selected (see below for examples). These seminars combine to provide broad, basic competency in biology and society.
- At least 9 credit hours of additional courses related to the life sciences (including no more than 6 credit hours of 400-level courses). This supporting coursework provides expertise in the particular research area. Any courses offered under one of the SOLS prefixes (BIO, ELS, EVO, HPS, MCB, MIC, and PLB) or any courses taught by faculty members in the Biology and Society group fulfill the requirement. In general, the courses should be ‘x of science or biology’ rather than just ‘x’ (e.g. ‘history of biology’ rather than ‘modern American history’).
  - At least 6 credit hours of BIO 592 Research.
  - Exactly 6 credit hours of BIO 599 Thesis

Four different tracks of study are available, although with permission of the program students may also develop plans of study that incorporate elements of several tracks.

**Sample restricted electives I: bioethics, policy and law (BPL) track**
- 3 hours – Ethics, as related to the life sciences
- 3 hours – Science policy
- 3 hours – Law, as related to science or technology

**Sample restricted electives II: biology education research (BER) track**
- 3 hours – Quantitative methods or statistics
- 3 hours – Learning, educational, or psychological theory
- 3 hours – Discipline-based education research

**Sample restricted electives III: ecology, economics and ethics of the environment (4E) track**
- 3 hours – Ecology
- 3 hours – Environmental or natural resource economics
- 3 hours – Environmental ethics or environmental policy

**Sample restricted electives IV: history and philosophy of science (HPS) track**
- 3-6 hours – History of science
- 3-6 hours – Philosophy of science

**Research prospectus**
- Completed by middle of the 2nd semester.
- Discussed with and approved by Supervisory Committee.

**Thesis defense**
Completed by end of 4th semester

**Microbiology MS**

**Supervisory committee**
- Is selected by the end of the 1st semester.
- Must have at least 3 members (the major advisor and at least 2 others).
- Chair or co-chair must be a member of the School of Life Sciences (SOLS) Microbiology faculty.
- All supervisory committee members must be approved members of the ASU Graduate Faculty.
- If a student is doing research with a non-SOLS mentor,
they must have a SOLS microbiology faculty member serve as co-chair of the supervisory committee.

**Program of study**

- 30 hours required, including no more than 6 credits of 400-level courses.
- MIC 501 Foundations of Microbiology (3 credit hours), taken during 1st semester.
- 3 credit hours of research seminars and journal clubs, to be taken in both years.
- 9 credit hours of electives, including graduate courses appropriate to the research area and approved by the supervisory committee.
- 9 credit hours of Research (MIC 592), taken during first three semesters.
- Exactly 6 credit hours of MIC 599 Thesis, taken during last semester of 2nd year.

**Sample schedule:**

**Fall semester – 1st year**
- MIC 501 (3 credits).
- Elective course appropriate to the research area and approved by the supervisory committee (3 credits).
- Research seminars and/or journal club (1 credit).
- MIC 592 Research (3 credits).

**Spring semester – 1st year**
- Elective course (3 credits).
- Research seminars and/or journal club (1 credit).
- MIC 592 Research (3 credits).

**Fall semester – 2nd year**
- Elective course (3 credits).
- Research seminars and/or journal club (1 credit).
- MIC 592 Research (3 credits).

**Spring semester – 2nd year**
- MIC 599 Thesis (exactly 6 credits).

**Research prospectus**

Completed by middle of 2nd semester.

**Thesis defense**

Typically completed by end of 4th semester; required by end of 5th semester.

**Plant biology and conservation MS**

**Supervisory committee**

- Is selected by the end of the 1st semester.
- Must have at least 3 members (the major advisor and at least 2 others).
- Students are encouraged to seek out members of the Desert Botanical Garden research and conservation staff as potential committee members.

**Program of study**

- 30 hours required, including no more than 6 credits of 400-level courses.
- 3 credit hours of PLB 502 Perspectives in Plant Biology (only taught every other fall).
- At least 3 credit hours of PLB 592 Research.
- 1 credit hour of PLB 591 Seminar.
- Up to 17 credit hours of electives including Fieldwork (PLB 583), Internship (PLB 584), Special Topics (PLB 598, BIO 598), Readings and Conference (PLB 590).
- Exactly 6 credit hours of PLB 599 Thesis.

**Research Prospectus**

Completed by middle of 2nd semester.

**Molecular and cellular biology MS**

**Supervisory committee**

- Is selected by the end of the 1st semester.
- Must have at least 3 members (the major advisor and at least 2 others).
• Discussed with and approved by Supervisory Committee

**Thesis defense**
Completed by end of 4th semester.

**Accelerated bachelor of science/master of science**
Accelerated degree programs (4+1) are available in: Biology, Biology and Society, Microbiology and Molecular and Cellular Biology. The requirements are the same as for the associated MS degrees, except that up to 12 credit hours may be shared between the BS and MS degrees.

**Sample program of study (BS in Biological Sciences/MS in Biology)**

**Undergraduate (BS)**
Semesters 1-6 (90 bachelor’s hours)
- Courses towards Bachelor of Science in biological sciences (e.g., Neurobiology, Physiology and Behavior).
- Semester 7 (14 bachelor’s hours including 6 toward master’s)
- Undergraduate courses (4).
- BIO 455 Introduction to Comparative Genomics (3).
- BIO 435 Research Techniques in Animal Behavior (3).
- BIO 522 Populations: Evolutionary Ecology (3).
- Participatory seminars appropriate to area of study (1) (e.g. BIO 591).

Semester 8 (16 bachelor’s hours including 6 toward master’s)
- Required undergraduate courses (9).
- BIO 465 Neurophysiology (3).
- BIO 524 Ecosystems (3).
- Participatory seminars appropriate to area of study (1) (e.g. BIO 591).

Semester 9 (Biology MS)
- 1 credit hour of participatory seminar appropriate to area of study (BIO 591 or ANB 602).
- BIO 592 Research or BIO 590 Reading and Conference (8).

Semester 10 (Biology MS)
- BIO 599 Thesis (6).
- BIO 592 Research or BIO 590 Reading and Conference (3).

**Computational life sciences (graduate certificate)**

**Program of study**
- 16 credit hours required.
- 1 credit hour of core coursework:
  - BIO 611 Current Topics in Responsible Conduct of Research (RCR) In Life Sciences.
- 15 credit hours of elective courses chosen from this list of elective options.

**Environmental communication and leadership (graduate certificate)**

**Program of study**
- 15 credit hours required.
- BIO 578 Environmental Leadership and Communication (3 credit hours).
- 12 credit hours of elective courses, with no more than 3 credit hours of 400-level courses.
  - At least 3 credit hours in Policy and Management courses.
  - At least 3 credit hours in Communication courses.
  - At least 3 credit hours in Leadership courses.

**Evolutionary medicine (graduate certificate)**

**Program of study**
- 15 credit hours required.
- 3 credit hours of core courses chosen from this list:
  - 3 credit hours of anthropology restricted electives chosen from this list:
    - ASB 510 Health: Social and Biocultural Theories.
    - ASB 503 Medical Anthropology.
  - 3 credit hours of biology restricted electives chosen from this list:
    - BIO 545 Populations: Evolutionary Genetics.
    - EVO 601 Principles of Evolution.
  - 3 credit hours of approved elective courses not already taken for required core coursework.
    - BIO 571 Evolutionary Medicine Capstone (3 credit hours).

**Scientific teaching in higher education certificate (graduate certificate)**

**Program of study**
- 17 credit hours required.
- 6 credit hours of core courses including:
  - BIO 530 Scientific Teaching (2 credit hours).
  - BIO 531 Advanced Scientific Teaching (3 credit hours).
  - BIO 532 Recent Papers in Discipline-Based Education Research (1 credit hour).
- 6 credit hours of elective courses chosen from this list:
  - BIO 598 Topic: Biology Education Research (3 credit hours).
- COE 502 Introduction to Data Analysis (3 credit hours).
- COE 503 Introduction to Qualitative Research (3 credit hours).
- DCI 691 Advanced Pedagogy in STEM (3 credit hours).
- EDP 523 Educational Assessment (3 credit hours).
- EDP 540 Theoretical Views of Learning (3 credit hours).
- EDP 541 Motivating Students to Learn (3 credit hours).

- 2 credit hours of teaching experience:
  - BIO 584 Internship: Scientific Teaching in Higher Education (1-2 credit hours).
  - BIO 598 Topic: Advanced Study Practicum: Teaching Assistance (1-2 credit hours).
- BIO 593 Applied project (3 credit hours). This is the culminating capstone experience which can be a significant teaching experience, curriculum development, or discipline-based education research.

**Sample program of study**
- Year 1 Fall: BIO 530 Scientific Teaching.
- Year 1 Spring: BIO 531 Advanced Scientific Teaching.
- Year 2 Fall: BIO 532 Recent Papers in Discipline-based Education Research.
- Year 2 Spring: BIO 598 Biology Education Research.
- Year 3 Fall: EDP 540 Theoretical Views of Learning.
- Year 3 Spring: BIO 584 Internship + BIO 593 Applied Project