Graduate Programs
Student Handbook

Requirements and Procedures

2017-2018
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table of Contents</td>
<td>1</td>
</tr>
<tr>
<td><strong>General Information</strong></td>
<td>4</td>
</tr>
<tr>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>Graduate Programs Committee</td>
<td>4</td>
</tr>
<tr>
<td>Graduate Programs</td>
<td>4</td>
</tr>
<tr>
<td>Dual Degrees</td>
<td>5</td>
</tr>
<tr>
<td>Members of the PhD Graduate Faculty</td>
<td>5</td>
</tr>
<tr>
<td>New Student Mentors</td>
<td>5</td>
</tr>
<tr>
<td>Lab Rotations</td>
<td>5</td>
</tr>
<tr>
<td>Duration of Programs</td>
<td>5</td>
</tr>
<tr>
<td>Financial Support</td>
<td>6</td>
</tr>
<tr>
<td>Program Residency Requirement</td>
<td>7</td>
</tr>
<tr>
<td>Medical/Compassionate Withdrawal</td>
<td>7</td>
</tr>
<tr>
<td>Credit Hours per Semester</td>
<td>7</td>
</tr>
<tr>
<td>Absence Policy</td>
<td>7</td>
</tr>
<tr>
<td>Safety Seminars</td>
<td>8</td>
</tr>
<tr>
<td>Annual Poster Session</td>
<td>8</td>
</tr>
<tr>
<td>Academic Integrity</td>
<td>8</td>
</tr>
<tr>
<td>Student Responsibilities and Resources</td>
<td>8</td>
</tr>
<tr>
<td>Code of Conduct</td>
<td>9</td>
</tr>
<tr>
<td>Student Support/Resources</td>
<td>9</td>
</tr>
<tr>
<td><strong>Structure of Chemistry and Biochemistry Programs</strong></td>
<td>9</td>
</tr>
<tr>
<td>Supervisory Committee</td>
<td>9</td>
</tr>
<tr>
<td>Comprehensive Examination Committee</td>
<td>10</td>
</tr>
<tr>
<td>Advisor and Committee Selection</td>
<td>10</td>
</tr>
<tr>
<td>Interactive Plan of Study</td>
<td>10</td>
</tr>
<tr>
<td><strong>Master of Science in Biochemistry/Chemistry</strong></td>
<td>12</td>
</tr>
<tr>
<td>Outline of MS Program</td>
<td>12</td>
</tr>
<tr>
<td>Program Fees</td>
<td>12</td>
</tr>
<tr>
<td>Duration of Program</td>
<td>12</td>
</tr>
<tr>
<td>Supervisory Committee</td>
<td>13</td>
</tr>
<tr>
<td>Who can serve as Research Advisor, i.e. Chair of the Supervisory Committee?</td>
<td>13</td>
</tr>
<tr>
<td>Who can serve as Research Co-Advisor (optional)?</td>
<td>13</td>
</tr>
<tr>
<td>Who can serve as a Supervisory Committee Member?</td>
<td>13</td>
</tr>
<tr>
<td>Supervisory Committee Member Summary: (See Appendix C)</td>
<td>14</td>
</tr>
<tr>
<td>Course Requirements</td>
<td>14</td>
</tr>
<tr>
<td>Transfer Courses</td>
<td>14</td>
</tr>
<tr>
<td>Extracurricular Courses</td>
<td>15</td>
</tr>
<tr>
<td>Scholastic Requirements</td>
<td>15</td>
</tr>
<tr>
<td>Program Progression</td>
<td>15</td>
</tr>
<tr>
<td>Selecting a Research Advisor and Supervisory Committee</td>
<td>15</td>
</tr>
<tr>
<td>Annual Poster Session</td>
<td>16</td>
</tr>
<tr>
<td>Interactive Plan of Study</td>
<td>16</td>
</tr>
<tr>
<td>Technical Review</td>
<td>16</td>
</tr>
<tr>
<td>Master's Thesis</td>
<td>Steps Toward Graduation or Graduation Requirements</td>
</tr>
<tr>
<td>----------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Steps Toward Graduation or Graduation Requirements</td>
<td></td>
</tr>
<tr>
<td>- Apply for Graduation</td>
<td>- Schedule the Final Defense with the Supervisory Committee</td>
</tr>
<tr>
<td>- Announcement of the Master’s Final Defense</td>
<td>- Master’s Final Defense</td>
</tr>
<tr>
<td>- Documentation of Final Defense</td>
<td>- Thesis Submission</td>
</tr>
<tr>
<td>- The Awarding of the Degree</td>
<td></td>
</tr>
</tbody>
</table>

**Master of Science in Biochemistry (Concentration in Medicinal Chemistry) – Accelerated BS/MS Degree**

Outline of MS Program

- Program Fees
- Financial Support
- Duration of Program
- Course Requirements
- Extracurricular Courses
- Shared Courses
- Scholastic Requirements

Program Progression

- Selecting a Research Advisor and Supervisory Committee
- Annual Poster Session
- Interactive Plan of Study
- Applied Project
- Apply for Graduation
- Schedule Defense of the Research Portfolio/Applied Project
- Documentation of the Completion of Degree Requirements
- The Awarding of the Degree

**Doctor of Philosophy in Biochemistry/Chemistry**

Outline of PhD Program

Duration of Program

Supervisory Committee

Who can serve as Research Advisor, i.e. Chair of the Supervisory Committee?
Who can serve as Research Co-Advisor (optional)?
Who can serve as a Supervisory Committee Member?
Supervisory Committee Member Summary: (See Appendix D)
Comprehensive Examination Committee
Comprehensive Examination Committee Member Summary: (See Appendix E)

Course Requirements
Transfer Courses
Extracurricular Courses
Scholastic Requirements
Program Progression
Selecting a Research Advisor and Supervisory Committee ................................................ 30
Selecting a Comprehensive Examination Committee ......................................................... 30
Annual Poster Session ........................................................................................................ 30
Interactive Plan of Study (iPOS) ........................................................................................ 30
Comprehensive Examination ............................................................................................. 31
Written Part of the Comprehensive Examination ............................................................... 31
Oral Part of the Comprehensive Examination - “Oral Examination” .................................. 32
Results of the Comprehensive Examination ....................................................................... 33
Documentation of Comprehensive Examination Results .................................................... 33
Dissertation Prospectus ....................................................................................................... 33
Documentation for Reporting Results of Dissertation Prospectus ....................................... 34
Technical Review of the Dissertation .................................................................................. 34
Dissertation ......................................................................................................................... 34

Steps Toward Graduation or Graduation Requirements ......................................................... 34

Apply for Graduation ........................................................................................................ 34
Schedule the Final Defense with the Supervisory Committee ............................................. 35
Request to Delay Dissertation Publication ....................................................................... 35
Announcement of the PhD Final Defense .......................................................................... 36
Final Dissertation Defense ................................................................................................. 36
Documentation of Final Defense ....................................................................................... 36
Dissertation Submission ...................................................................................................... 36
The Awarding of the Degree .............................................................................................. 37

Requirements for the awarding of the Master’s Degree in Passing ........................................ 37
Paperwork Process for completing the Master’s Degree in Passing .................................... 37

Academic Standards ............................................................................................................. 38
Results of Lack of Satisfactory Progress ............................................................................ 38
Changing Research Advisor and/or Committee Members ................................................. 39

Research Advisor: ............................................................................................................ 39
Supervisory and Comprehensive Examination Committee Member: .............................. 39
Comprehensive Examination Committee Chair: ............................................................. 39
Absent Committee Member for the Final Defense .............................................................. 40

Responsibilities of Teaching Assistants .............................................................................. 40
General Chemistry ............................................................................................................ 40
Organic Chemistry ............................................................................................................. 40
Graders ................................................................................................................................. 40
Specialized Assignments .................................................................................................... 41

Parental Leave .................................................................................................................... 41
Continuous Enrollment - Leave of Absence ....................................................................... 41
Registration – Late Registration and Add/Drop .................................................................. 42

Appendix A .......................................................................................................................... 43
Appendix B .......................................................................................................................... 44
Appendix C .......................................................................................................................... 45
Appendix D .......................................................................................................................... 46
Appendix E .......................................................................................................................... 47
General Information

Introduction
The objective of this handbook is to outline the requirements set forth by the School of Molecular Sciences for graduate students enrolled in programs leading to the MS and PhD degrees. These requirements are established to enable students to progress through their program in a productive and timely manner. The graduate programs offered by the school are directed toward the attainment of excellence in chemistry and biochemistry as demonstrated by research accomplishment, coursework, and examination.

In addition to the requirements set by the School, students must follow those established by the Graduate College, which can be found in the Arizona State University Graduate Catalog.

Graduate Programs Committee
The School of Molecular Sciences Graduate Programs Committee (GPC) is responsible for the development of new programs and serves as the governing board for the school in determining program requirements. The committee is responsible for informing students of these requirements, reviewing petitions when program requirements cannot be met and resolving other matters that may be brought before the committee. The Graduate Programs Committee, with the assistance of the Graduate Programs Coordinator, monitors each student’s progress toward the completion of program requirements as stated in this handbook in an effort to maintain program consistency and encourage the awarding of the degree in a timely manner. The committee consists of School of Molecular Sciences tenured or tenure-track faculty who are assigned by the School Director and the Graduate Programs Coordinator. The faculty members represent the different research areas of study within the School. All members have a counting vote and meet as needed during the academic year.

Questions regarding these requirements and procedures may be referred to the Graduate Programs Coordinator, via email (smsgradadvising@asu.edu), by phone at (480) 965-4664 or in person in PSD 103. Current members of the Graduate Programs Committee can be found in Appendix A.

Graduate Programs
The School of Molecular Sciences offers the following graduate degrees:

Doctor of Philosophy in Chemistry
Doctor of Philosophy in Biochemistry

Master of Science in Chemistry (not admitting new students at this time)
Master of Science in Biochemistry (not admitting new students at this time)
Dual Degrees
The School of Molecular Sciences does not typically allow students to pursue other degrees in conjunction with a graduate degree in the School. Exceptions will be analyzed on a case by case basis by petition to the Graduate Programs Committee.

Members of the PhD Graduate Faculty
The Graduate Faculty model at ASU allows PhD programs to expand their PhD faculty membership to include faculty from other programs provided that they have the appropriate expertise. The members of the Graduate Faculty for the Chemistry and Biochemistry PhD degrees are listed on the Graduate College’s Graduate Faculty Directory. Each member’s endorsement is listed indicating the roles he/she can have on a student’s committee. All tenured or tenure-track faculty in the School of Molecular Sciences are endorsed to serve as the chair for student committees and are listed in the faculty directory. The distinction between tenured/tenure-track School faculty and external Graduate Faculty becomes important when addressing who can serve as chair or member of dissertation and examination committees for the different programs. Students need to check the specifics for their program of study. Selection of a committee chair from outside of the department can also impact funding status.

New Student Mentors
Each new student is assigned a Temporary Faculty Mentor who they will meet during the New Student Orientation/TA Training. The central role of the temporary Mentor is to assist the student in the selection of courses in a student’s first semester in his/her program and guide the student, if needed, in selecting an area of research. The new students will choose their Research Advisor before the end of the first semester. As soon as the student has chosen a Research Advisor, the Advisor takes over the responsibilities from the Mentor.

Lab Rotations
All first year graduate students must be active in a research lab, either through a lab rotation or advisor selection, within the first three weeks of their first semester in their program. A lab rotation is a “trial” period for the student to get a better understanding of current projects in a particular lab and how he/she might integrate within the group. A typical rotation is five weeks. The time can be extended or shortened upon mutual agreement of the research faculty and the student. Students are strongly encouraged to participate in lab rotations to ensure the selected lab provides a good fit for all parties and that potential research topics align with the student’s preferences.

It is advised that a new graduate student wait until he/she has heard several faculty talks during the CHM 501 New Student Seminar before submitting a request and should plan to do multiple rotations. Students should contact interested faculty directly to make arrangements to do a rotation. When the new student has determined the lab he/she will join and has the agreement of the research faculty member, he/she completes the Committee Selection Form.

Duration of Programs
Research is a major component of the chemistry and biochemistry graduate programs. Therefore, the length of time to complete a degree is dependent on the individual student’s progress in the laboratory as well as meeting other degree requirements, including coursework and total
semester hours in a program. The Research Advisor and the student’s Supervisory Committee evaluate and determine the completeness of a student’s research project as indicated in the program requirements that follow in this handbook.

**Financial Support**

The department provides financial support to PhD students enrolled in the Chemistry and Biochemistry programs, as indicated in the offer letter, by means of a Graduate Teaching Assistant, Graduate Research Assistantship or Fellowship. Specific information regarding the roles, responsibilities and university benefits of the TA/RA position can be found in the TA/RA Handbook maintained by the Graduate College.

Subject to available funding, students enrolled in the PhD degree programs are offered financial support for five years if they make satisfactory progress toward their degree, maintain good academic standing in the program, and receive satisfactory teaching evaluations. Support as a Graduate Teaching Assistant may be limited to eight semesters, i.e. four years. Financial support beyond the fifth year is contingent on approval from the student’s Research Advisor and Graduate Programs Committee.

Students enrolled in the MS degree in Chemistry, the MS degree in Biochemistry and the Accelerated BS/MS Biochemistry (Medicinal Chemistry) degree are not guaranteed financial support, unless explicitly outlined in the offer letter. Financial support is possible, but is contingent on approval from the student’s Research Advisor. Students in MS programs are not eligible for TA positions per guidelines set by the College of Liberal Arts and Sciences.

Students funded by the department or university may not hold additional employment of any kind.

Research Assistantships are contingent on funds available to research advisors and are awarded at their discretion. Graduate Assistants/Associates must meet program requirements and be enrolled in at least six credit hours – the Graduate Programs Committee recommends twelve credit hours. Students supported by a fellowship must meet the requirements specified by the fellowship.

Students who have been in the Chemistry/Biochemistry PhD Program for more than two years and have dropped to a Chemistry/Biochemistry Master’s Program will be given an additional two semesters of financial support to complete their Master’s Program. Support is contingent on available funding, satisfactory progress toward the degree, good academic standing in the program, and satisfactory teaching evaluations. Students who need more than the additional two semesters to complete their degree requirements may petition the Graduate Programs Committee for additional support. The Graduate Programs Coordinator can assist students with this process.

Please note: If English is not a student’s native language, he/she must pass the English language SPEAK Test to qualify for support as a teaching assistant. Full English Certification for TA positions must be obtained by the end of the student’s first year in the program. Students are required to demonstrate continued progress in English language skills each semester as determined by one of the following: improved SPEAK Test scores, TA evaluations or Department Instructional Committee.
**Program Residency Requirement**

Graduate students must be continuously enrolled from the first semester of enrollment in their program - Fall and Spring semesters. If a student is unable to attend, he or she must apply for a leave of absence. This includes students requesting medical (including the birth of a child) or military leave. Students complete the “Continuous Enrollment Doctoral” (for PhD students) or, “Continuous Enrollment Masters-Certificate” (for MS students) found on the Graduate College forms page. The completed form is submitted to the Graduate Programs Coordinator who will present the request to the Graduate Programs Committee. Unless extenuating circumstances exist, this petition should be submitted the semester prior to when the student is requesting the leave, but must be submitted to the Graduate College before the first day of classes of the semester in which the leave of absence is being requested. If the student’s need is immediate, the Graduate Programs Coordinator will work with the student to be sure the petition is expedited. The student will be notified of the decision or contacted if additional information is needed. If the petition is approved by the Graduate Programs Committee, the Graduate Programs Coordinator will submit the petition to the Graduate College for final consideration.

**Medical/Compassionate Withdrawal**

If a situation arises during the middle of the semester that will prevent the completion of coursework, you may choose to seek a Medical/Compassionate Withdrawal. This process is coordinated through the College of Liberal Arts and Sciences and information about the procedures can be found on their website. It is advised that you discuss the need to pursue this process with the Graduate Programs Coordinator prior to initiating to see if there are other options that might work as well, including discussing possible accommodations with course instructors and your research advisor.

**Credit Hours per Semester**

Students receiving funding as a Teaching Assistant or Research Assistant should enroll in 12 credit hours per semester during Fall and Spring semesters. Students with other funding (i.e. fellowship, scholarship, Fulbright, etc.) should register for as many hours as allowed by the funding agency. Summer session enrollment is contingent on the student’s financial support. Enrollment information will be sent to students by email at the beginning of summer registration. Registration for 12 credits per semester ensures that students achieve the required 84 credit hours in about 4 years.

Students must enroll in a 501 seminar each semester as indicated in their particular program. Students should not take more than two classes in addition to the 501 seminar in any semester so as to allow enough time for research. However, the student should discuss these recommendations with his/her advisor.

**Absence Policy**

Students supported on a Graduate Research Assistantship who desire to take time off during the winter holidays and summer months must have the approval of their research advisor. The decision to allow the leave is determined by the research advisor, based on the individual needs of the student and the research in progress. Paid vacation is not an employment benefit for Teaching/Research Assistantships. Students financially supported by a Graduate Teaching Assistantship should not plan to take time off during the semester in which they have an appointment. If a situation, such as an illness or an emergency occurs, the student must contact the professor who teaches the course and the TA Coordinator. Students assigned to a TA position
are required to attend TA meetings prior to the beginning of the semester and should contact the TA Coordinator for the anticipated dates of the pre-semester meetings.

**Safety Seminars**
The department maintains a high standard of safety in the teaching and research laboratories. Therefore, all graduate students are required to attend and complete Safety Seminars before beginning work in the laboratory. Initial training in the areas of Fire Safety and Prevention, Laboratory Safety and Hazardous Waste Management is mandatory for all students entering the program. Students working in research laboratories that use blood or other potentially infectious materials are also required to take training on Blood Borne Pathogens. Safety Training refresher courses are also required to be taken on a yearly basis.

**Annual Poster Session**
All students enrolled in Chemistry and Biochemistry Programs (with the exception of PhD students in their first academic year) are required to present a poster during the annual recruitment Visitation Weekend to maintain their position of good-standing in the program.

The poster session has several purposes:
- Primarily, it is a way of keeping committee members up to date with research progress
- Preparing a poster gives the opportunity to demonstrate how the research project fits in the bigger picture of the research field, and how the student would present his/her work to others. Learning how to properly present research is an important part of graduate education.
- The poster session is an important part of the School’s recruitment weekend, and serves as a vehicle to allow interaction between current students and prospective students.

**Academic Integrity**
Academic dishonesty will not be tolerated, and if uncovered, appropriate actions will be taken. Students are expected to familiarize themselves with what constitutes violations to the academic integrity policy. The provost maintains a detailed website, regarding the Academic Integrity policy. Briefly, violations include, but are not limited to: cheating on exams and assignments, plagiarism, fabricating data or information, etc. Students are encouraged to pay special attention to the definition of plagiarism so as to avoid unintentional mistakes, and discuss the topic further with their advisors and instructors if they are unclear on whether a particular action constitutes plagiarism. The Graduate College also maintains a website, devoted to preventing academic integrity issues that most often impact graduate students.

Allegations of academic dishonesty will be reviewed by the Graduate Programs Committee who will decide on the appropriate actions. This may include reporting the student to the College of Liberal Arts and Sciences and/or the Graduate College with a recommendation for dismissal from the program.

**Student Responsibilities and Resources**
As a student at ASU, you are responsible for abiding by all of the policies outlined in the Code of Conduct and are able to take advantage of the many resources that are available to students. The Dean of Students office is the unit under which most of the resources can be found. You are expected to comport yourself in a professional manner in all interactions at ASU, including the
lab, classroom, conferences, or while engaging in any official ASU business. Please also note the ASU Code of Conduct can extend to off-campus, non-student related activities as well.

**Code of Conduct**
The Student [Code of Conduct](https://eoss.asu.edu/codes) is the list of standards the University has set for all students. The list of prohibited conduct can be found in Section F. The [Student Rights and Responsibilities](https://eoss.asu.edu/str) office is the unit charged with investigating allegations of student misconduct, including but not limited to threatening or disruptive behavior, sexual misconduct and relationship violence, harassment, and weapons. If you observe any Code of Conduct issues you should take the issue to your supervisor, Instructor of record for TA related issues, or your Research Supervisor if observed in the lab. If you are not comfortable taking this to your supervisor, you can speak with the Graduate Programs Coordinator, the Chair of the Graduate Programs Committee, or the Associate Director for Academic Services.

**Student Support/Resources**
There are many resources and offices available to assist you during your time as a student. Many of the resources can be accessed through your [MyASU](https://eoss.asu.edu/myasu) and at the Dean of Students [Resources page](https://eoss.asu.edu/dos/resources). Some of the most commonly accessed services/resources are listed below.

- Career Services: [https://eoss.asu.edu/cs](https://eoss.asu.edu/cs)
- Counseling Services: [https://eoss.asu.edu/counseling](https://eoss.asu.edu/counseling)
- Disability Resource Center: [https://eoss.asu.edu/drc](https://eoss.asu.edu/drc)
- Health Services: [https://eoss.asu.edu/health?destination=health](https://eoss.asu.edu/health?destination=health)
- International Student Engagement: [https://eoss.asu.edu/student-engagement/international](https://eoss.asu.edu/student-engagement/international)
- International Students and Scholars Office: [https://students.asu.edu/international/issc](https://students.asu.edu/international/issc)
- Off-Campus Student Services: [https://eoss.asu.edu/offcampushousing](https://eoss.asu.edu/offcampushousing)
- OUT@ASU: [https://eoss.asu.edu/out](https://eoss.asu.edu/out)
- Parent and Family Resources: [https://eoss.asu.edu/parents](https://eoss.asu.edu/parents)
- Parking and Transit: [https://cfo.asu.edu/parking](https://cfo.asu.edu/parking)
- Pat Tillman Veterans Center: [https://veterans.asu.edu/](https://veterans.asu.edu/)
- Student Advocacy: [https://eoss.asu.edu/dos/srr/StudentAdvocacyandAssistance](https://eoss.asu.edu/dos/srr/StudentAdvocacyandAssistance)
- Students with Families: [https://eoss.asu.edu/students-families](https://eoss.asu.edu/students-families)
- Sun Devil Fitness: [https://fitness.asu.edu/](https://fitness.asu.edu/)
- University Technology Office: [https://uto.asu.edu/](https://uto.asu.edu/)
- Wellness: [https://eoss.asu.edu/wellness](https://eoss.asu.edu/wellness)

**Structure of Chemistry and Biochemistry Programs**

**Supervisory Committee**
Every graduate student enrolled in a Chemistry or Biochemistry graduate program is required to have a Supervisory Committee to support him/her in his/her research and evaluate the culminating experience. A detailed description of who can serve on the Supervisory Committee for the different Chemistry and Biochemistry Degrees are provided in the appropriate sections that follow.

This committee is responsible for the final evaluation of the applied project, master’s thesis or PhD dissertation and for determining if program requirements have been met for awarding the
degree. *Yearly meetings with the committee are optional, but recommended, and can be held as informal discussions.*

**Comprehensive Examination Committee**

In addition to a Supervisory Committee, students enrolled in the Chemistry and Biochemistry PhD Programs will have a Comprehensive Examination Committee. This committee determines if the student is able to integrate his/her knowledge in chemistry and/or biochemistry with his/her current or future research and has the potential to continue to achieve the level of performance expected of a PhD candidate. The student’s Research Advisor is not a member of the Comprehensive Examination Committee. Committee members consist of the remaining members of the Supervisory Committee, an additional faculty member selected by the student in conjunction with his/her Research Advisor and the Oral Exam chair who assigned by the Graduate Programs Committee. A description of who can be selected to serve on the Comprehensive Examination Committee is detailed in the PhD Programs sections of this handbook.

**Advisor and Committee Selection**

When a Research Advisor is selected (by the end of the first semester) the student completes the top portion of the Committee Selection Form including the Research Advisor section with the signature of the faculty member who will serve as the student’s Research Advisor. If the student has selected other Members of the Supervisory and Comprehensive Examination Committee, he/she turns in the completed form to the Graduate Programs Coordinator. If only the Research Advisor is selected, the student should submit a copy of the form to the Graduate Programs Coordinator. When the remaining Committee Members are selected (by the end of the second semester) the original form is completed and submitted to the Graduate Programs Coordinator. (Forms completed electronically should be submitted via email to the Graduate Programs Coordinator.)

Supervisory and Comprehensive Examination Committee Member selection is required by the end of the second semester.

The Graduate Programs Coordinator submits the Committee Selection Form to the Graduate Programs Committee for final approval and, for PhD students, to assign the Chair for the Comprehensive Examination Committee. The student and the Committee Members are sent an email notifying them of the final committee assignment.

Committee Members who are not tenured or tenure-track ASU faculty members may require additional paperwork and approval from the Graduate College. The Graduate Programs Coordinator will work with the student to fulfill this requirement.

**Interactive Plan of Study**

The Interactive Plan of Study (iPOS) is basically an agreement between the student and the school indicating the courses the student will take to complete the degree program requirements. It is not a transcript and is not used for employment purposes. The GPA calculated on an iPOS is used only to determine if a student has met the GPA requirement for the total semester hours required for his/her program. The iPOS must be approved by the Graduate College before a student can request to take the Comprehensive Examination, advance to candidacy and/or
graduate. The School of Molecular Sciences requires students to complete the iPOS once the Research Advisor has been selected and no later than the end of their second semester in the program. The process of completing and submitting the iPOS is done through MyASU. Instructions for completing the iPOS can be found on the Graduate College’s Plan of Study page. See Appendix C for an additional reference on completing the iPOS. The Graduate Programs Coordinator can assist students with the completion of the iPOS.
Master of Science in Biochemistry/Chemistry

The School of Molecular Sciences is not accepting applications for these degree programs.

Outline of MS Program

1st Semester
- Select Research Advisor
- Initiate Plan of Study (iPOS)
- 501 Seminar, Coursework, Research

2nd Semester
- Select Supervisory Committee
- Complete iPOS
- 501 Seminar, Coursework, Research

3rd Semester
- 501 Seminar, Coursework, Research
- Begin Thesis

4th Semester
- 501 Seminar, Coursework, Research
- Finalize Thesis
- Prepare for Graduation

Final Semester
- 2-6 months prior - hold Technical Review
- Apply for Graduation
- Schedule/Defend Thesis - Complete Revisions

Program Fees
Please note that there is a $300 Program Fee per semester for all students enrolled in Biochemistry MS Programs.

Duration of Program
The Master’s Degree is typically completed in two years; however, more time may be needed depending on the research project. According to the Graduate College’s requirements, the Master’s degree must be completed within six consecutive years – continuous enrollment in all Fall and Spring semesters is required. The count begins from the first semester of admission to the student’s program.
Students who have been in a Chemistry/Biochemistry PhD Program for more than two years and have dropped to a Chemistry/Biochemistry Master’s Program will be given an additional two semesters of financial support to complete their Master’s Program, contingent on available funding, satisfactory progress toward the degree, good academic standing in the program, and satisfactory teaching evaluations. Students who need more than the additional two semesters to complete their degree requirements may petition the Graduate Programs Committee for additional support. The Graduate Programs Coordinator can assist students with this process.

**Supervisory Committee**

The Supervisory Committee consists of the student’s Research Advisor, who is the student’s main mentor and Chair of the Supervisory Committee, and two additional tenured or tenure track faculty members. The student has the option of having two Research Advisors who serve as Co-Advisors (Co-Chairs) and may have more than the two required members.

**Who can serve as Research Advisor, i.e. Chair of the Supervisory Committee?**

- The Research Advisor must be selected from tenured or tenure track members of the Chemistry and Biochemistry PhD Graduate Faculty. A complete listing of the faculty members can be found on the Department website at: https://graduate.asu.edu/graduate-faculty.

**Who can serve as Research Co-Advisor (optional)?**

- Members of the Chemistry and Biochemistry PhD Graduate Faculty.
- ASU Tenured or tenure-track faculty members from a science-related field or engineering may serve as co-advisors with approval from the Graduate Programs Committee and the Graduate College. (Student should see the Graduate Programs Coordinator)
- Emeritus faculty.
- Non-tenure-track faculty members, research professionals or non-ASU professors or researchers may serve as co-advisors with approval from the Graduate Programs Committee and the Graduate College. The member must be actively engaged in research associated with the student’s research. (Students should see the Graduate Programs Coordinator.)

**Who can serve as a Supervisory Committee Member?**

- Members of the Chemistry and Biochemistry PhD Graduate Faculty.
- Tenured or tenure-track faculty members from a science-related field or engineering
- Emeritus faculty
- Non-tenure-track faculty members, research professionals or non-ASU professors or researchers may serve as a Member with approval from the Graduate Programs Committee and the Graduate College. The member must be actively engaged in research associated with the student’s research. (Student should see the Graduate Programs Coordinator)
- **Members cannot be directly involved in the student’s research.**

The Supervisory Committee serves as the Thesis Committee for MS students. Additional faculty or researchers can be added to the committee after the Plan of Study has been completed. Students, who want to add an additional Member, should see the Graduate Programs Coordinator.
Supervisory Committee Member Summary: (See Appendix C)
The Chair of the Supervisory Committee must be selected from faculty members from the Chemistry or Biochemistry PhD Graduate Faculty. Members can be Chemistry/Biochemistry PhD Graduate Faculty, Emeritus ASU faculty or a tenured or tenure-track faculty member in a science-related field or engineering with the approval of the Graduate Programs Committee. A non-ASU professor or researcher who is actively engaged in research associated with the student’s research may serve as a Member with approval from the Graduate Programs Committee and the Graduate College. The Supervisory Committee is composed of a Research Advisor (and Co-Advisor if appropriate) and two additional members (can have more than two). At least two Members of the Supervisory Committee (including the chair) must be tenured or tenure-track Faculty in the School of Molecular Sciences. Members cannot be directly involved in the student’s research. An eligible faculty member who is actively involved in the student's research may, with the approval of the advisor, act as a co-advisor.

Course Requirements
A total of 30 credit hours and a Master’s thesis are required and must include:

- Four 500 level courses (2-3 credit hours each)
  - One of the four courses may be taken outside the School of Molecular Sciences, but must be related to the student’s research and approved by the research advisor. (2-3 credit hours each)
  - A maximum of one 400 level course may be substituted for one required 500 level course. 400 level courses can only be taken with approval of the research advisor or mentor. (2-3 credit hours each)
- CHM 501 New Student Seminar for students entering in the Fall Semester
- CHM/BCH 501 each semester enrolled in the program (up to 4 semesters required)
- Research (CHM/BCH 592) is required for every semester the student is involved in research (total of 6 credits minimum)
- Six hours of Thesis (CHM/BCH 599) must be taken and included on the student’s Program of Study.
- The remaining hours can be filled by taking additional courses, 400 or 500 level (2-3 credit hours each), related to the student’s research, or additional research credit hours.

Note on Courses:
Students can take more than one 501 seminar per semester, but only one per semester is counted toward the total required.

The Graduate Programs Committee does not recommend taking more than two classes per semester in addition to the 501 seminar, so as to allow enough time for research. However, the student should discuss these recommendations with his/her Research Advisor.

A cumulative GPA of 3.0 or better must be maintained on a yearly basis

Transfer Courses
Courses taken as a graduate-non-degree student at ASU or at another university in the US or Canada that have not been counted toward a previous degree may be used toward the required number of courses and total semester hours needed for the MS degree. The courses must have been completed within three years prior to the admission to the student’s current program. A maximum of two courses may be used toward the four required courses for the Master’s Program. A minimum of two 500 level courses must be taken at Arizona State University. The Graduate College allows for up to 12 credits to counted as Pre-Admission Requirements. The
request is made by submitting a copy of the course(s) syllabus, a copy of the transcript (original transcript must be on file with the Graduate College) showing the final grade for the course(s) and a written request to the Graduate Programs Coordinator who will present it to the Graduate Programs Committee. The student will be sent an email informing him/her of the committee’s decision and instructions on how to proceed if the courses are approved.

Extracurricular Courses
Students interested in taking courses in addition to those included in their Plan of Study should obtain authorization from their research advisor regardless of the student’s source of financial support. This includes classes outside their field of study (e.g. business, languages, religion, art, recreation, etc.). Authorizations are required for each course, and should be sent to the Graduate Programs Coordinator. Students that enroll in extracurricular courses without approval are subject to loss of financial support from the advisor and/or the department.

Scholastic Requirements
The required GPA is 3.0 and is monitored on a yearly basis. A student whose GPA drops below 3.0 is not considered to be progressing in the program satisfactorily. Lack of progress in research is determined by the Research Advisor and is reported to the Graduate Programs Committee. An appointment will be made for the student to meet with a member of the Graduate Programs Committee to explain the circumstances for the deficiency. The committee member will discuss this meeting with other members of the committee and the student will be sent an email or letter reviewing the deficiency and what must be done to relieve the deficiency within a specified time period. Consequences of unsatisfactory performance are discussed in the Academic Standards sections of this manual and may include the following recommendations:

- The student is placed on academic probation until the deficiency is remedied
- Student is advised to find a different Research Advisor
- Student is advised to change the degree of their program (ex. MS instead of PhD)
- Recommendation that the student be dismissed from the program

However, if a student’s GPA falls below 2.0 at any time, the Graduate Programs Committee may ask the School Director to write a letter to the Graduate College recommending immediate dismissal from the current graduate program.

Program Progression
Selecting a Research Advisor and Supervisory Committee
Students are required to join a research group by the end of their first semester and form a Supervisory Committee by the end of the second semester. (See procedures in selecting a Research Advisor and Supervisory Committee described earlier in this section.) Early completion of both of these tasks is strongly encouraged. Students who are unable to meet these deadlines should contact The Graduate Programs Coordinator to discuss the circumstances as to why this requirement was not met. Based on the discussion, a meeting with the Graduate Programs Committee Chair may be scheduled or the student may be required to write a formal petition to the Graduate Programs Committee. Students who do not follow this procedure and do not meet the conditions that have been set for them are not progressing in their program satisfactorily and will be reported to the Graduate Programs Committee. Based on the committee’s decision, the student will receive an email or letter specifying a time period within
which the requirement must be met. Consequences for not completing the requirement are presented in the *Academic Standards* section of this manual.

**Annual Poster Session**
All students enrolled in the Chemistry and Biochemistry MS Program are required to present a poster during the annual Visitation Recruitment Weekend to maintain their position of good-standing in the program. This includes first-year students.

The purpose of the poster session:

- Primarily, it is a way of keeping committee members up to date with research progress
- Preparing a poster gives the opportunity to demonstrate how the research project fits in the bigger picture of the research field, and how the student would present his/her work to others. Learning how to properly present research is an important part of graduate education.
- The poster session is an important part of our recruitment weekend, and serves as a vehicle to allow interaction between our current students and prospective students.

**Interactive Plan of Study**
The Interactive Plan of Study (iPOS), as described in the *Programs Structure* section, needs to be completed by the end of the student’s first semester in residency. Revisions to the Plan of Study are easily made online and should be made on a yearly basis if needed. The Graduate Programs Coordinator can assist you with this. All courses included on the iPOS, including research and thesis, hours must be completed and show a grade before the MS Degree can be verified and posted by the Graduation Office.

**Technical Review**
Two to six months prior to the thesis defense, the student is required to meet with his/her Supervisory Committee to present the research he/she has accomplished so that the student may receive feedback on the direction of the research and suggestions for improving any areas of weakness. This review commonly consists of a 20 minute presentation prepared by the student on his/her research progress and a discussion on any manuscripts in preparation. The committee will question and advise the student to guide him/her in the completion of his/her degree. At the conclusion of the Technical Review, committee members should sign the Technical Review for Final Master’s Defense form. The form can be obtained from the Graduate Programs Coordinator. A final defense will not be approved for scheduling unless the signed form is on file with the Graduate Programs Coordinator.

**Master’s Thesis**
A Master’s Thesis, detailing the research accomplished at Arizona State University, is required as a demonstration of the student’s research technique and ability to draw conclusions from his/her data. It must include an introduction, description of the research and a discussion of the results. Each student is required to present the results of his/her thesis during a final oral defense.
Steps Toward Graduation or Graduation Requirements

Apply for Graduation
The Graduate College office has firm deadlines for graduation which all students must follow. Information on how to apply and follow the status of your application can be found on the Graduate College website: https://graduate.asu.edu/completing-your-degree. It is important to click on the link found on this website titled: “Graduation Deadlines and Procedures” for information on how and when to meet each deadline date.

There is a checklist on each student’s MyASU page in the My Programs and Degree Progress section that lists the items to be completed for graduation. It also shows the status of the student’s graduation application.

Schedule the Final Defense with the Supervisory Committee
Students contact the members of their Supervisory committee to determine the best date for the final defense. The date must meet deadlines set by the Graduate College. When the date and time have been established, the student should reserve a conference room for the defense. Conference rooms on the first floor of the Physical Science building are reserved in the main School of Molecular Sciences office – PSD 102.

A copy of the thesis must be submitted to each member of the Supervisory Committee at least two weeks prior to the final MS thesis defense. The document submitted should be a draft that has been reviewed by the advisor and is ready to defend. Minor revisions may be needed following the exam.

Schedule of Defense Form and Format Review – 10 Day Rule
Students must meet the Graduate College requirement of submitting a request to hold a final defense at least 10 working days before the planned defense. The Graduate College 10 Working Day Calendar must be used to determine the 10 days.

The student selects the “Defense” tab on his/her MyASU page and selects the option to schedule the defense.

The student must also submit the thesis document for format review to the Graduate College at least 10 calendar days prior to the scheduled defense date. The format must follow the Graduate College guidelines (https://graduate.asu.edu/format-manual). The Graduate College has designed a formatting tool to assist students with formatting the title page, table of contents, list of illustrations, acknowledgements, etc. The format tool and instructions for using it can be found at https://graduate.asu.edu/completing-your-degree under the “format” tab. It is suggested that the document is first completed and then cut and pasted into the formatting tool. If format revisions are required, students should make the necessary revisions and resubmit to the grad format office until format approval is received. Students should simultaneously complete format revisions and any revisions requested by the committee.

Request to Delay Thesis Publication
The student can request that the thesis document is not made public for a certain period of time in cases involving work of a sensitive nature. This decision should be made after consulting with the advisor or co-advisors. The request for a delay is referred to as an “embargo” and must be requested using the “Delaying Publication of Thesis/Dissertation (Embargo Status) form found at
https://graduate.asu.edu/forms. The student also indicates the need for an embargo when the final document is submitted to ProQuest.

**Announcement of the Master’s Final Defense**
An email announcement of the final defense is sent to all students, faculty and staff in the School of Molecular Sciences. Two weeks prior to the defense, the student must email the following information to the Graduate Programs Coordinator:

- Thesis title
- Abstract
- List of publications
- Name as it should appear
- Committee member names as they should appear
- Date, time, and location of defense.

The student may also request that the announcement be sent to other departments with related research interests.

**Master’s Final Defense**
The final defense of the thesis must take place by the deadline date specified by the Graduate College. It consists of a formal oral presentation of the student’s thesis, open to the public, followed by a closed session with the student and his/her Supervisory Committee. The closed session involves an in-depth questioning by the committee to verify the student’s knowledge of the research topic and its significance.

**Documentation of Final Defense**
When the student has passed the final defense, all members of the Supervisory Committee must sign the “Report for Master’s Thesis/Practicum Defense” form provided by the Graduate College to the Chair of the Supervisory Committee (Research Advisor). Section B of this form must be completed by the Supervisory Committee Chair indicating if revisions need to be made. The committee then indicates their decision and signs in Section C.

The signed form is submitted to the Graduate Programs Coordinator who submits the form to the Graduate College. If revisions are required, a copy is made and submitted to the Graduate College to verify the defense took place. The original is retained by the student or advisor. When all required revisions are completed, the Chair signs the bottom of the form, Section D, verifying final approval of the thesis document, and is then submitted to the Graduate Programs Coordinator for submission to the Graduate College.

**Thesis Submission**
When the student has successfully completed the final defense, the final revisions of the thesis document have been approved by the Supervisory Committee Chair and the document has format approval, the student submits the thesis to UMI/ProQuest for publication. (Description and procedure for this process can be found through the link on the student’s MyASU Defense tab.) The Graduate College format office reviews the final submission and, if there are no additional corrections, they will notify ProQuest the document has received final approval.
The thesis is uploaded to the digital repository of the library. Bound copies are no longer provided to the library. Students are not obligated to do so, but may purchase bound copies according to his/her needs – a copy for the research advisor, family members and/or a copy for the student’s own reference or library.

Students should be aware that ProQuest can sell the thesis document through a third party (like Amazon.com) and the student receives no compensation. There is a drop down menu on the ProQuest form that can be selected to indicate the student’s request that the document not be sold through a third party. It will not default to this – the student must select it.

The Awarding of the Degree
The degree is awarded when the student has accomplished the following:
- Satisfactorily completed required coursework with a cumulative GPA, Graduate GPA and Cumulative GPA of 3.0 or better
- Conducted research at ASU under the direction of a tenured/tenure track faculty member in the School of Molecular Sciences
- Written MS thesis approved by the Supervisory Committee
- Successfully presented and received a grade of “pass” on the final oral defense of the thesis
- Met all deadline dates and requirements as set by the Graduate College
**Master of Science in Biochemistry (Concentration in Medicinal Chemistry) – Accelerated BS/MS Degree**

This degree is only being offered as an Accelerated degree with an approved BS degree and applications for independent study are not being accepted.

**Outline of MS Program**

**Final Junior Semester**
- Identify Research Supervisor and Arrange Project
- Apply for Admission
- Select Supervisory Committee

**1st Semester (1st Senior Semester)**
- Complete Undergraduate Coursework
- Begin Graduate Coursework
- Research

**2nd Semester (2nd Senior Semester)**
- Complete Undergraduate Coursework
- Graduate Coursework and Research
- Apply for BS graduation

**3rd Semester (1st Graduate Semester)**
- Graduate Coursework and Research
- Submit iPOS

**4th Semester (Second Graduate Semester)**
- Graduate Coursework and Research
- Defend Applied Project
- Apply/Prepare for Graduation

This Master’s program is designed for students who are pursuing a Bachelor of Science degree in Biochemistry, Biochemistry (Medicinal Chemistry), Chemistry, or Molecular Biosciences and Biotechnology and want to improve their background in chemistry and biochemistry before entering professional schools of medicine, pharmacy and other health sciences. Emphasis is on organic chemistry, inorganic chemistry, and biochemistry with research encompassing chemical-biological relationships, mainly the relationship between molecular structure and biological activity or mode of action. It includes, but is not limited to the following:

- Design, synthesis, and biological evaluation of novel biologically active compounds and/or diagnostic agents.
• Molecular modifications of reported series that lead to a significantly improved understanding of their structure-activity relationships (SAR). Routine extensions of existing series that do not utilize novel chemical or biological approaches or do not add significantly to a basic understanding of the SAR of the series will normally not be accepted for publication.

• Molecular biological studies (e.g., site-directed mutagenesis) of macromolecular targets that lead to an improved understanding of molecular recognition.

• Structural biological studies (X-ray, NMR, CD, etc.) of relevant ligands and targets with the aim of investigating molecular recognition processes in the action of biologically active compounds.

• Molecular modeling and QSAR studies that provide fresh insight into the SAR of series that are of current general interest.

• Computational chemistry methods with demonstrated value for the identification or optimization of bioactive molecules.

• Effect of molecular structure on the distribution, pharmacokinetics, and metabolic transformation of biologically active compounds.

The department has established collaborations with researchers from the Mayo Clinic and the Barrow Neurological Institute to expand opportunities for seminars and mentoring.

**Program Fees**
Please note that there is a $300 Program Fee per semester for all students enrolled in Biochemistry MS Programs.

**Financial Support**
Students enrolled in the M.S. degree in Biochemistry with a Concentration in Medicinal Chemistry are not typically appointed as a Graduate Teaching Assistants due to the design of the program (i.e. they are not granted financial support for their graduate studies). However; they may be considered for such an appointment upon request of the student and with the support and approval of their Research Advisor - dependent on department need. Students will need to submit a TA application through the School of Molecular Sciences website for consideration.

Students funded by the department or university through a TA/RA may not hold additional employment of any kind.

**Duration of Program**
The medicinal chemistry program is designed as an accelerated program for students continuing their education in a professional program; therefore, students are expected to complete requirements within four semesters. Students who do not complete the program by the end of their fourth semester must petition the Graduate Programs Committee for an extension to complete the degree. The count begins from the first semester of admission to the program.

**Course Requirements**
A minimum of 30 credit hours and an applied project

- CHM 535 Medicinal Chemistry (3 Credits)
- Three additional 500-level or above courses related to the area of medicinal chemistry (2-3 credit hours each).
- One 400-level course may be substituted if it is determined by the research advisor to be appropriate. (2-3 credit hours)

- Four credit hours CHM/BCH 501 – CHM/BCH 591 Department Seminars (Not CHM 501 New Student Seminar) – 1 credit hour each. Any combination of the CHM/BCH 591 and CHM/BCH 501 can be taken to meet the total of 4 credit hours of seminar

- Six credit hours of BCH 592 Research (6 total credit hours)

- Two Credit hours of BCH 593 – Applied Project – To be taken as a capstone course

- Six credit hours of electives – can be additional research credits or 500-level courses (only one 400-level course can be counted on the iPOS)

A cumulative GPA of 3.0 or better must be maintained on a yearly basis

**Extracurricular Courses**

Students interested in taking courses in addition to those included in their plan of study should obtain authorization from their research advisor regardless of the student’s source of financial support. This also includes classes outside their field of study (e.g. business, languages, religion, art, recreation, etc.) Authorizations are required for each course, and should be sent to the Graduate Programs Coordinator. Students that enroll in extracurricular courses without approval are subject to loss of financial support from the advisor and/or the department and/or removal from the program.

**Shared Courses**

Courses taken as an undergraduate at ASU that have not been counted toward a previous degree or were taken in the final two semesters while admitted to the Accelerated BS/MS may be used toward the required number of courses and total semester hours needed for the M.S. degree with the approval of the Graduate Programs Committee, up to 12 hours total with up to 9 hours shared between the BS and MS degrees.

**Scholastic Requirements**

The required GPA is 3.0 and is monitored on a yearly basis. If a student’s GPA falls below 3.0, the Graduate Programs Committee may ask the School Director to write a letter to the Graduate College recommending immediate dismissal from the student’s current graduate program. Lack of progress in research is determined by the Research Advisor and is reported to the Graduate Programs Committee. An appointment will be made for the student to meet with a member of the Graduate Programs Committee to explain the circumstances for the deficiency. The committee member will discuss this meeting with other members of the committee and the student will be sent an email or letter reviewing the deficiency and what must be done to relieve the deficiency within a specified time period. Consequences of unsatisfactory performance are discussed in the Academic Standards section of this manual and may include the following recommendations:

- The student is placed on academic probation until the deficiency is remedied
- Student is advised to find a different Research Advisor
- Recommendation that the student be dismissed from the program

**Program Progression**

**Selecting a Research Advisor and Supervisory Committee**

Students select an advisor from a specified list of tenured or tenure-track faculty from the School of Molecular Sciences as identified on the Degree Information webpage and Pre-Application. Research Advisors must be selected at the time of application. A Co-Advisor and Members of
the Supervisory Committee may be selected from the list of faculty or researchers from the Mayo Clinic and the Barrow Neurological Institute or as specified in the Supervisory Committee section of this manual. Only the Research Advisor needs to be a tenured or tenure-track faculty member from the School of Molecular Sciences selected from the list provided.

Annual Poster Session
All students enrolled in the Biochemistry and Chemistry graduate programs are required to present a poster during the annual recruitment Visitation Weekend to maintain their position of good-standing in the program. This includes first-year students.

The purpose of the poster session:
- Primarily, it is a way of keeping committee members up to date with research progress
- Preparing a poster gives the opportunity to demonstrate how the research project fits in the bigger picture of the research field, and how the student would present his/her work to others. Learning how to properly present research is an important part of graduate education.
- The poster session is an important part of our recruitment weekend, and serves as a vehicle to allow interaction between our current students and prospective students.

Interactive Plan of Study
The Interactive Plan of Study, as described in the Program Structure section, should be completed by the end of the first semester in MS program.

Applied Project
The culminating experience is an applied project in the area of medicinal chemistry in which the student is required to prepare and defend a written research paper to his/her supervisory committee. This paper must be an original research paper written in publishable format by the student. There are two options.
- The research paper on the applied project must be at least 50 pages in length, double-spaced and typed in a 12 point font. The 50 page length can include the abstract, references list, and any tables or figures.
- The document can consist of a published, peer-reviewed, first-authored article in a scientific journal. (A conference proceedings paper CANNOT be used.) This article should be submitted with a 10-12 page introduction, summary and discussion. (Students who choose this option must show proof of publication or acceptance of the article.)

Apply for Graduation
The Graduate College has firm deadlines for graduation, which all students must follow. Information on how to apply and follow the status of your application can be found on the Graduate College website: https://graduate.asu.edu/completing-your-degree.

Schedule Defense of the Research Portfolio/Applied Project
Students should contact the members of their Supervisory committee to determine the best date for defending the Research Portfolio/Applied Project. The defense should be held no later than the last day of classes. When the date and time is established, a conference room should be reserved. Conference rooms on the first floor of the Physical Science building are reserved in the main office – PSD 102. An email must be sent to the Graduate Programs Coordinator with
the time and date of the exam so the “Report of Final Master’s Culminating Experience” form can be prepared and sent to the Research Advisor.

A copy of the written document must be submitted to each member of the Supervisory Committee at least two weeks prior to the final defense. The document submitted should be a draft that that was reviewed with the student and his/her advisor and ready to defend. Minor revisions may be needed following the exam.

**Documentation of the Completion of Degree Requirements**
The Student completes any necessary revisions to the applied project and the Supervisory Committee signs the “Report of Final Master’s Culminating Experience” form indicating that the student has “passed” the applied project requirement. The form is then submitted to the Graduate Programs Coordinator to obtain the final signature from the Head of the Academic Unit and reports the completion of the requirement to the Graduate College.

A final copy of the written document must be submitted to the Graduate Programs Coordinator and filed as part of the student’s academic record.

**The Awarding of the Degree**
The degree is awarded when the student has accomplished the following:
- Satisfactorily completed required coursework with a cumulative GPA of 3.0
- Conducted research at ASU under the direction of an approved tenured or tenure-track faculty member in the School of Molecular Sciences
- Successfully presented and received a grade of “pass” on the final master’s culminating experience
- Meet all deadline dates and requirements as set by the Graduate College.
**Doctor of Philosophy in Biochemistry/Chemistry**

**Outline of PhD Program**

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<tr>
<th>1st Semester</th>
<th>2nd Semester</th>
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<tbody>
<tr>
<td>Select Research Advisor</td>
<td>Select Supervisory and Oral Committee Members</td>
</tr>
<tr>
<td>Initiate Plan of Study (iPOS)</td>
<td>Complete iPOS</td>
</tr>
<tr>
<td>501 Seminar, Coursework, Research</td>
<td>501 Seminar, Coursework, Research</td>
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<tr>
<th>3rd Semester</th>
<th>4th Semester</th>
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<tr>
<td>501 Seminar and Research</td>
<td>501 Seminar, Coursework, Research</td>
</tr>
<tr>
<td>Complete 4th (at least) 500-level course</td>
<td>Schedule/Complete Oral Exam (deadline: Mar. 15/Oct. 15)</td>
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<tr>
<td>Begin preparation for Oral Exam</td>
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<th>5th-8th Semesters</th>
<th>Final Semesters</th>
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<tbody>
<tr>
<td>501 Seminar, Coursework, Research</td>
<td>2-6 months prior - hold Technical Review</td>
</tr>
<tr>
<td>Begin preparation of Dissertation</td>
<td>Apply for Graduation</td>
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<td></td>
<td>Schedule/Defend Dissertation - Complete Revisions</td>
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**Duration of Program**

Students in the PhD degree programs typically take four to six years to complete the program. The MS degree is not a prerequisite for the PhD program; however, students who enter the PhD program with a previously earned MS degree in Chemistry or Biochemistry may possibly complete their program in three to four years if they have achieved exceptional research accomplishments. The PhD degree must be completed within ten years from the time of initial enrollment. The graduation deadline can be found the iPOS and in MyASU under the My Programs section.
Supervisory Committee

The Supervisory Committee consists of the student’s Research Advisor, who is the student’s main mentor and Chair of the Supervisory Committee, and two additional tenured or tenure track faculty members. The student has the option of having two Research Advisors who serve as Co-Advisors (Co-Chairs) and may have more than the two required members.

The Graduate Faculty model at ASU allows PhD programs to expand their PhD faculty membership to include faculty from other programs provided that they have the appropriate expertise. The members of the Chemistry/Biochemistry PhD Graduate Faculty are listed on the Graduate College’s Graduate Faculty website. This list includes all members of the School of Molecular Sciences and some faculty from other programs. Some of these additional faculty may not be endorsed to chair, so students should always check with the Graduate Programs Coordinator. Graduate Faculty membership is by degree, and the approved Graduate Faculty are not the same for the Chemistry and Biochemistry PhD degrees as some faculty from outside the School may not be approved for both degrees. Contact the Graduate Programs Coordinator if you have questions.

Who can serve as Research Advisor, i.e. Chair of the Supervisory Committee?

- The Research Advisor must be selected from the Chemistry/Biochemistry PhD Graduate Faculty.
  - All tenured or tenure-track faculty of the School of Molecular Sciences are endorsed to chair for both Chemistry and Biochemistry PhD Degrees. (A complete listing of the faculty members can be found on the School website at: http://chemistry.asu.edu/graduate/facultyResearch.asp)
  - Most, but not all members of the Chemistry/Biochemistry PhD Graduate Faculty are endorsed to chair. Students should always check with the Graduate Programs Coordinator. If the selected Research Advisor does not have a tenure-home in the School of Molecular Sciences, additional paperwork will be required to verify the continuation funding. The funding guarantee outlined in the admission offer letter only applies if an advisor within the School of Molecular Sciences is selected.

Who can serve as Research Co-Advisor (optional)?

- Members of the Chemistry/Biochemistry PhD Graduate Faculty who are endorsed to chair may serve as Co-Advisors.
- Other tenured or tenure-track faculty members from a science-related field or engineering may serve as co-advisors with approval from the Graduate Programs Committee and the Graduate College.
- Emeritus faculty
- Non-tenure-track faculty members, research professionals or non-ASU professors or researchers may serve as a Co-Advisor with approval from the Graduate Programs Committee and the Graduate College. (Student should check with the Graduate Programs Coordinator)

Who can serve as a Supervisory Committee Member?

- Members of the Chemistry/Biochemistry PhD Graduate Faculty
- ASU tenured or tenure-track faculty members from a science-related field or engineering
- Emeritus faculty
Non-tenure-track faculty members, research professionals or non-ASU professors or researchers may serve as a Member with approval from the Graduate Programs Committee and the Graduate College. The member must not be actively engaged in research associated with the student’s research. (Student should see the Graduate Programs Coordinator)

Members of the committee (outside of Advisor/Co-Advisor) cannot be directly involved in the student’s research.

The Supervisory Committee serves as the Dissertation Committee for PhD students. Additional faculty or researchers can be added to the committee after the Plan of Study and/or the Comprehensive Examination has been completed. Students who want to add an additional Member should see the Graduate Programs Coordinator.

**Supervisory Committee Member Summary:** *(See Appendix D)*
The Chair of the Supervisory Committee must be selected from the Chemistry/Biochemistry PhD Graduate Faculty. Members can be Chemistry/Biochemistry PhD Graduate Faculty, Emeritus ASU faculty or a tenured or tenure-track faculty member in a science-related field or engineering with the approval of the Graduate Programs Committee and the Graduate College. A non-ASU professor or researcher who is actively engaged in research associated with the student’s research may serve as a Co-Advisor with approval from the Graduate Programs Committee and the Graduate College. The Supervisory Committee is composed of a Research Advisor (and Co-Advisor if appropriate) and two additional members (can have more than two). **At least two Members of the Supervisory Committee (inclusive of Advisor/Co-Advisors) must be tenured or tenure-track faculty in the School of Molecular Sciences.** Members cannot be directly involved in the student’s research. An eligible faculty member who is actively involved in the student's research may, with the approval of the advisor, act as a co-advisor.

**Comprehensive Examination Committee**
This committee determines if the student is able to integrate his/her knowledge in chemistry and/or biochemistry with his/her current or future research and has the potential to continue to achieve the level of performance expected of a PhD candidate. The student’s Research Advisor is not a member of the Comprehensive Examination Committee. Committee members consist of the remaining members of the Supervisory Committee, an additional faculty member selected by the student in conjunction with his/her Research Advisor and a faculty member assigned by the Graduate Programs Committee.

This committee is made up of:
- Chair – Assigned by the Graduate Programs Committee
- Members of the Supervisory Committee (not the Chair or Co-Chairs of the Supervisory Committee)
- A third faculty member selected by the student in agreement with the advisor
  - Chemistry/Biochemistry PhD Graduate Faculty Member
  - ASU tenured or tenure-track faculty member outside the department from a science related field or engineering
- An additional Member may be added – not required
  - Chemistry/Biochemistry PhD Graduate Faculty Member
  - ASU tenured or tenure-track faculty member outside the department from a science related field or engineering
  - ASU Emeritus faculty
Non-tenure-track faculty, research professional, non ASU professor or researcher who is actively engaged in research with approval of the Graduate Programs Committee.

**Comprehensive Examination Committee Member Summary: (See Appendix E)**

The Chair of the Comprehensive Examination Committee must be a Chemistry/Biochemistry PhD Graduate Faculty Member and is assigned by the Graduate Programs Committee. Members include the Members (not the Chair or Co-Chair) of the Supervisory Committee and a faculty member selected in agreement with his/her advisor to serve on the Comprehensive Examination Committee. This Member can be a Chemistry/Biochemistry PhD Graduate Faculty Member or a tenured or tenure-track faculty member in a science-related or engineering field. An additional Member can be added, but is not required. This Member can be a Chemistry/Biochemistry PhD Graduate Faculty Member or a tenured or tenure-track faculty in a science-related or engineering field or, with approval from the Graduate Programs Committee, can be a non-tenure-track faculty member, research professional or non ASU professor or researcher with the approval of the Graduate Programs Committee.

**Course Requirements**

- Six 500 level courses related to the student’s research (2-3 credit hours each)
  - Two of the six courses may be taken outside the School of Molecular Sciences, but must be related to the student’s research and approved by the research advisor. (2-3 credit hours each)
  - A maximum of two 400 level course may be substituted for two of the six required 500 level courses. 400 level courses can only be taken with approval of the research advisor or mentor. (2-3 credit hours each)
  - CHM 498, Chemical Terminology for International Students, and CHM/BCH 590 cannot be used as one of the course requirements, but can be used toward the total 30 semester hours
  - Four 500 level courses must be completed before taking the oral exam
- CHM 501 New Student Seminar for students entering in the Fall Semester
- CHM/BCH 501 each semester enrolled in the program (up to 8 semesters required)
- Research (CHM/BCH 792) is required for every semester the student is involved in research
- 12 semester credit hours of Dissertation (CHM/BCH 799).

*Note on Courses:*

Students can take more than one 501 seminar per semester, but only one per semester is counted toward the total required.

The Graduate Program Committee does not recommend taking more than two classes in addition to the 501 seminar for each semester, so as to allow enough time for research. However, the student should discuss these recommendations with his/her Research Advisor.

A cumulative GPA of 3.0 or better must be maintained on a yearly basis

**Transfer Courses**

Students enrolled in a PhD Program who have completed a master’s degree in a science related field may submit a request to the Graduate Programs Committee for permission to transfer 30 credit hours toward the PhD degree. Transfer credits will count toward the 84 total credit hours required but not toward the six required courses. Students with a MS degree from a university in
the United States or Canada may submit a request to the Graduate Programs Committee to reduce the number of required courses from six to four. The request is made by submitting a copy of the course(s) syllabus, a copy of the transcript (original transcript must be on file with the Graduate College) showing the final grade for the course(s) and a written request to the Graduate Programs Coordinator who will present it to the Graduate Programs Committee. The student will be sent an email informing him/her of the committee’s decision and instructions on how to proceed if the request is approved.

Courses taken as a non-degree student or at another university in the US or Canada **that have not been counted toward a previous degree** may be used toward the required number of courses and total semester hours needed for the PhD degree. The courses must have been taken within three years prior to the initial enrollment in the students current PhD Program. A maximum of 3 courses may be transferred for the PhD program. A minimum of three 500 level courses must be taken at Arizona State University. The request is made by submitting a copy of the course(s) syllabus, a copy of the transcript showing the final grade for the course(s) and a written request to the Graduate Programs Coordinator who will present it to the Graduate Programs Committee. The student will be sent an email informing him/her of the committee’s decision and instructions on how to proceed if the courses are approved.

**Extracurricular Courses**

Students interested in taking courses in addition to those included in their plan of studies should obtain authorization from their research advisor regardless of the student’s source of financial support. This also includes classes outside their field of study (e.g. business, languages, religion, art, recreation, etc.). Authorizations are required for each course, and should be sent to the Graduate Programs Coordinator. Students that enroll in extracurricular courses without approval are subject to loss of financial support from the advisor and/or the department.

**Scholastic Requirements**

The required GPA is 3.0 and is monitored on a yearly basis. A student whose GPA drops below 3.0 is not considered to be progressing satisfactorily in his/her program. Lack of progress in research is determined by the Research Advisor and is reported to the Graduate Programs Committee. An appointment will be made for the student to meet with a member of the Graduate Programs Committee to explain the circumstances for the deficiency. The committee member will discuss the results of this meeting with the committee and the student will be sent an email or letter reviewing the deficiency and what must be done to meet the specified requirements within a specified time period. Consequences of unsatisfactory performance are discussed in the Academic Standards section of this manual and may include the following recommendations:

- The student is placed on departmental academic probation until the deficiency is remedied
- The student is advised to find a different Research Advisor
- Recommendation that the student be dismissed from the program

However, if a student’s GPA falls below 2.0 at the end of any semester, the Graduate Programs Committee may ask the School Director to write a letter to the Graduate College recommending immediate dismissal from the graduate program.
Program Progression

Selecting a Research Advisor and Supervisory Committee
Students are required to join a research group by the end of their first semester and form a Supervisory Committee by the end of the second semester. (See procedures in selecting a research advisor and Supervisory Committee described earlier in this section.) Students who have not made a selection by the end of their first semester should contact The Graduate Programs Coordinator to discuss the circumstances as to why this requirement was not met. Based on the discussion, a meeting with the Graduate Programs Committee Chair may be scheduled or the student may be required to write a formal petition to the Graduate Programs Committee. Students who do not follow this procedure and/or continue to enroll in courses when the requirement has not been met are not progressing in their program satisfactorily and will be reported to the Graduate Programs Committee. Based on the committee’s decision, the student will receive an email or letter specifying a time period by which the requirement must be met. Consequences for not completing the requirement are presented in the Academic Standards section of this manual.

Selecting a Comprehensive Examination Committee
In addition to the Supervisory Committee, PhD students must also have a Comprehensive Examination Committee by the end of the second semester. (See procedures in selecting a research advisor and Supervisory Committee described earlier in this section.) This committee has the responsibility to evaluate the student’s progress in his/her program to determine if the student has the basis needed to continue research on a PhD level and to approve the dissertation proposal. Upon successful completion of the exam, the committee makes a recommendation to the Graduate College to admit the student to Candidacy to the PhD degree. Admission to doctoral candidacy verifies that the student has met the necessary requirements needed to continue the research initiated and complete the dissertation.

Annual Poster Session
PhD students (with the exception of PhD students in their first academic year) are required to present a poster during the annual Visitation Recruitment Weekend to maintain their position of good-standing in the program.

The purpose of the poster session:
- Primarily, it is a way of keeping committee members up to date with research progress
- Preparing a poster gives the opportunity to demonstrate how the research project fits in the bigger picture of the research field, and how the student would present his/her work to others. Learning how to properly present research is an important part of graduate education.
- The poster session is an important part of our recruitment weekend, and serves as a vehicle to allow interaction between our current students and prospective students.

Interactive Plan of Study (iPOS)
The Interactive Program of Study, as described in the Structure of Chemistry and Biochemistry Programs section and Appendix B, should be initiated after selecting a research advisor and must be completed by the end of the second semester in residency. Revisions to the Plan of Study are easily made online and should be made on a yearly basis if needed. The Graduate
Programs Coordinator can assist you with this. All courses included on the iPOS, including research and dissertation hours, must be completed and show a grade before the PhD Degree can be verified and posted by the Graduation Office. All courses included on the iPOS must be of grade C or better and the GPA for all courses included on the iPOS must be 3.0 or better.

**Comprehensive Examination**
All students in the PhD Programs must take the Comprehensive Examination to demonstrate their ability to integrate their knowledge of their research area and their potential to achieve the level of performance expected of a PhD candidate in chemistry and/or biochemistry. The examination is administered by the Comprehensive Examination Committee in the fourth semester of residency in the program. Students who began in the Fall Semester must complete their exam by **March 15 of their second year**. Students who began in the Spring Semester must complete the exam by **October 15 of their second year**. The examination cannot be scheduled during the summer months. Students must have completed at least four 500 level courses and three CHM/BCH 501 seminars before taking the exam.

The Comprehensive Examination consists of a written and oral component. The written portion is completed first and consists of two distinct reports on: 1) research completed by the student and 2) a proposal on an original research project. The written research report and research proposal must be given to all members of the committee for review at least two weeks before the oral portion of the examination. Late reports may not be accepted and if the date is missed, the committee may require the oral portion of the Comprehensive Examination to be rescheduled and the student could be placed on department academic probation. The oral portion of the examination, referred to as the “oral examination” is a two hour examination in which the student presents and defends his/her current research project and the original research proposal.

Students are encouraged to organize two to three practice sessions that serve as “mock” exams. Each session should be held with a different group made up of members of their research group and members from other related research groups.

Students contact each member of their Comprehensive Examination Committee to find a time convenient when all members can meet for the “oral examination”. It is the student’s responsibility to reserve a conference room and he/she must notify the Graduate Programs Coordinator of the date, time and location of the “oral examination”. The Graduate Programs Coordinator prepares the necessary documents and emails them to the Chair of the committee.

**Written Part of the Comprehensive Examination**
Preparation of the written research report and the original research proposal must adhere closely to the guidelines given below:

1. **Academic Dishonesty**
   Using another's words, ideas, materials or work without properly acknowledging and documenting the source constitutes plagiarism. This includes materials taken from books, websites, journals, grant proposals, etc. Plagiarism will not be tolerated and will be sufficient cause for failing the examination. The Graduate Programs Committee may decide to take further actions, including reporting the student to the Graduate College with a recommendation for dismissal from the program. For more information, please refer to the Academic Integrity section of the handbook (p. 8).
2. **English Language**
Reports should be written in good English. Students with weak writing skills are encouraged to visit the Writing Center ([https://tutoring.asu.edu/graduate](https://tutoring.asu.edu/graduate)) for support.

3. **Written Research Report**
The report should introduce the research project and describe the research accomplished by the student thus far. The report should be detailed enough to present the data in a coherent, clear and understandable fashion. An abstract, not to exceed one double-spaced page, should be prepared, stating the reasons for the work, the significant results, and the main conclusions. The length of the report, not including the abstract, should not exceed 15 double-spaced pages (12-point) including references, graphs, tables and figures. Figures must be included in the text. Students should use articles from journals of the American Chemical Society (e.g. JACS, Biochemistry, JPC, JOC, Analytical Chemistry) as a reference in the preparation of this report. Reports that do not follow these guidelines may be considered unsatisfactory.

4. **Written Original Research Proposal**
This report should comprise the student’s original research idea on a topic completely independent of the research project. The student must prepare a one-page abstract of the research proposal, with the research report abstract attached, and distribute it to the Oral Committee for approval prior to writing the detailed research proposal. This should be done at least 6 weeks prior to the oral portion of the exam.

The Original Research Proposal should contain the following five distinct parts, should be presented in the following order, and should not exceed 12 double spaced pages (12 point, excluding the abstract), including tables, references and figures:

a. **Specific aims:** In one-half page or less, a statement should present what the proposed research intends to accomplish.

b. **Background:** This section should summarize the current state of knowledge in the area, and include a short literature review and some of the remaining challenges/open questions.

c. **Significance:** This section should convincingly present the importance of the research to be undertaken.

d. **Project Execution:** The proposed experimental setup, the process of collecting data and obtaining results should be presented here.

e. **Interpretation and Discussion:** The analysis and interpretation of experimental results should be discussed in the context of the literature.

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**Oral Part of the Comprehensive Examination - “Oral Examination”**
During the oral part of the Comprehensive Examination, (“oral examination”), students are questioned in several areas relevant to their development as professional scientists. The successful candidate must clearly demonstrate:

- Mastery of basic concepts of chemistry/biochemistry
- Proficiency in the laboratory, as evidenced by the progress and productivity level achieved in research, including the ability to interpret data, draw conclusions and relate them to what has been established in the literature.
- An ability to read and comprehend the chemical literature concerning areas not directly related to the student’s own research.
The examination is divided into two oral presentations: 1) presentation of the student’s current research project and 2) presentation of the proposal of an original research topic. Following or during each presentation, the Comprehensive Examination Committee will ask the student detailed questions.

**Results of the Comprehensive Examination**
The Comprehensive Examination Committee will make one of the following recommendations at the conclusion of the Comprehensive Exam.

- **Pass:** Recommendation to admit to candidacy for the PhD degree.
- **Pass:** Recommendation that the student has passed at a level acceptable for an MS degree. Recommend student be allowed to pursue MS degree (Graduate Programs Committee will provide information on the requirements).
- **Fail:** Recommendation that student not be allowed to continue in the PhD program

**Documentation of Comprehensive Examination Results**
**Examination Successfully Completed:** Within 5 days of the successful completion of the exam, the Comprehensive Examination Committee Chair must submit the “Final Report of Doctoral Comprehensive Examination” form with the date of the exam and signatures of Comprehensive Examination Committee to the Graduate Programs Coordinator.

The Graduate Coordinator will obtain the signature of the Head of the Academic Unit and report the final results to the Graduate College. The student will receive written notification via email from the Graduate College indicating their official advancement to candidacy for the PhD degree.

**Examinations Requiring Revision:** If the Comprehensive Examination Committee decides that the exam must be extended before the outcome of the Comprehensive Examination can be determined, the Comprehensive Exam is held in abeyance for a period of time as specified by the Committee and resumed at a later time. The Committee Chair needs to do the following:

- Complete the “Comprehensive Examination Worksheet” and the “Memo to Student: Report on Comprehensive Examination” outlining a summary of the further work to be done, and/or the requirements to be met, with a date by which the requirement(s) need to be completed.
- Submit the worksheet and memo to the Graduate Programs Coordinator within 10 days of the exam. The student should also receive a copy of the summary.
- The Graduate Programs Coordinator will contact the student to verify that he/she has the information.

**Dissertation Prospectus**
The Dissertation Prospectus consists a of a one-page document outlining the work being proposed to be completed for the dissertation. The Dissertation Prospectus is prepared in conjunction with the Comprehensive Exam and will serve as an addendum to the Written Research report. The Prospectus should be submitted to the Comprehensive Exam Committee with the other Comprehensive Exam documents and separately to the Research Supervisor. The Prospectus is reviewed and approved by the Supervisory Committee, including the Research
Advisor, and is subject to questioning and exploration during the Comprehensive Exam if desired by the Advisory Committee members. The approval of the Dissertation Prospectus by the Advisory Committee and the Advisor along with the passing of the Comprehensive Exam will allow the student to proceed in the PhD program and focus on completing research associated with the PhD Dissertation. It should be noted that the Prospectus is just an initial plan, and will likely change as the research progresses and results shape the research direction. The Prospectus is meant to provide a snapshot of future research and ensure that the Supervisory Committee is supportive and has an opportunity to provide additional direction.

**Documentation for Reporting Results of Dissertation Prospectus**
Results of the Dissertation Prospectus will be reported on the “Final Results of the Dissertation Proposal/Prospectus” form. The Graduate Programs Coordinator will provide the form to the Research Advisor prior to the student’s Oral Exam. The Research Advisor will then forward the signed form to the other members of the Supervisory Committee for signature. Once signed by the Supervisory Committee members, the form should be returned to the Research Advisor, who will then return the form to the Graduate Programs Coordinator who will get the Head of Academic Unit signature. The form should be returned within 10 days of the Comprehensive Exam.

**Technical Review of the Dissertation**
Two to six months prior to the dissertation defense, the student is required to meet with his/her Supervisory Committee to present the research he/she has accomplished so that the student may receive feedback on the direction of the research and suggestions for improving any areas that may be problematic or incomplete. The student should prepare a ~20 minute presentation that outlines the work to be presented in the dissertation, including a summary of his/her research progress to date and a discussion of any work that is yet to be completed. The committee will question and advise the student to guide him/her in the completion of his/her dissertation and defense. At the conclusion of the Technical Review, committee members should sign the Technical Review for Final PhD Defense form. The form can be obtained from the Graduate Programs Coordinator. A final defense will not be approved for scheduling unless the signed form is on file with the Graduate Programs Coordinator.

**Dissertation**
The basic requirement for the PhD degree is for the candidate to demonstrate his/her competence to conduct independent, original research. The major research effort of the candidate will be embodied in the dissertation presented for the PhD degree. In order for the dissertation to be acceptable, it must contain new and unique contributions to scientific knowledge, publishable in primary research journals. Each student is required to present the results of his/her dissertation during a final oral defense.

The format of the dissertation must follow the Graduate College guidelines, [https://graduate.asu.edu/format-manual](https://graduate.asu.edu/format-manual). Examples of completed PhD dissertations are available in the university library.

**Steps Toward Graduation or Graduation Requirements**

**Apply for Graduation**
The Graduate College office has firm deadlines for graduation which all students must follow. Information on how to apply and follow the status of your application can be found on the
Graduate College website: https://graduate.asu.edu/completing-your-degree. It is important to click on the link found on this website titled: “Graduation Deadlines and Procedures” for information on how and when to meet each deadline date.

There is a check list on each student’s MyASU page in the My Programs and Degree Progress section that lists the items to be completed for graduation. It also shows the status of the student’s graduation application.

**Schedule the Final Defense with the Supervisory Committee**
Students contact the members of their Supervisory committee to determine the best date for the final defense. The date must meet deadlines set by the Graduate College. When the date and time have been established, the student should reserve a conference room for the defense. Conference rooms on the first floor of the Physical Science building are reserved in the main School of Molecular Sciences office – PS D 102.

A copy of the dissertation must be submitted to each member of the Supervisory Committee at least two weeks prior to the final PhD dissertation defense. The document should be a draft that has been reviewed by the advisor and is ready to defend. Minor revisions may be needed following the exam.

**Schedule of Defense Form and Format Review – 10 Day Rule**
Students must meet the Graduate College requirement of submitting a request to hold a final defense at least 10 working days before the planned defense through MyASU. The Graduate College 10 Working Day Calendar must be used to determine the 10 days.

The student selects the “Defense” tab on his/her MyASU page and selects the option to schedule the defense.

The student must also submit the thesis document for format review to the Graduate College at least 10 calendar days prior to the scheduled defense date. The format must follow the Graduate College guidelines (https://graduate.asu.edu/format-manual). The Graduate College office has designed a formatting tool to assist students with formatting the title page, table of contents, list of illustrations, acknowledgements, etc. The format tool and instructions for using it can be found at https://graduate.asu.edu/completing-your-degree under the “format” tab. It is suggested that the document is first completed and then cut and pasted into the formatting tool. If format revisions are required, students should make the necessary revisions and resubmit to the grad format office until format approval is received. Students should simultaneously complete format revisions and any revisions requested by the committee.

**Request to Delay Dissertation Publication**
The student can request that the dissertation document is not made public for a certain period of time in cases involving work of a sensitive nature. This decision should be made after consulting with the advisor or co-advisors. The request for a delay is referred to as an “embargo” and must be requested using the “Delaying Publication of Thesis/Dissertation (Embargo Status) form found at https://graduate.asu.edu/forms (instructions are also included in the Pass/Fail form). The student also indicates the need for an embargo when the final document is submitted to ProQuest.
**Announcement of the PhD Final Defense**
An email announcement of the final defense is sent to all students, faculty and staff in the School of Molecular Sciences. Two weeks prior to the defense, the student must email the following information to the Graduate Programs Coordinator:

- Dissertation Title
- Abstract
- List of Publications
- Name as it should appear
- Committee member names as they should appear
- Date, Time, and Location of Defense.

The student may also request that the announcement be sent to other departments with related research interests.

**Final Dissertation Defense**
The final defense of the dissertation must take place by the deadline date specified by the Graduate College. The defense consists of a formal oral presentation of the student’s dissertation, open to the public and approximately 45 minutes in length, followed by a closed session with the student and his/her Supervisory Committee. The closed session involves an in-depth questioning by the committee to verify the student’s knowledge of the research topic and its significance.

**Documentation of Final Defense**
When the student has passed the final defense, all members of his/her Supervisory Committee must sign the “Announcement and Report for Doctoral Dissertation Defense” form provided by the Graduate College to the Chair of the Supervisory Committee (Research Advisor). Section B of this form must be completed by the Supervisory Committee Chair indicating if revisions need to be made. The committee then indicates their decision and signs in Section C. When all revisions are completed, the Chair signs the bottom of the form – Section D – verifying final approval of the thesis document. Section D is completed only if revisions are required and after they have been completed.

The signed form is submitted to the Graduate Programs Coordinator who submits the form to the Graduate College. If revisions are required, a copy is made and submitted to the Graduate College to verify the defense took place. The original is retained by the student or advisor and then submitted to the Graduate Programs Coordinator for submission to the Graduate College once final revisions have been completed and the Chair has signed in Section D.

**Dissertation Submission**
When the student has successfully completed and passed the final defense, the final revisions of the dissertation document have been approved by the Supervisory Committee Chair, if required, and the document has format approval from the Graduate College, the student submits the dissertation to UMI/ProQuest for publication. (Description and procedure for this process can be found through the link on the student’s MyASU Defense tab.) The Graduate College format office reviews the final submission and, if there are no additional corrections, will notify ProQuest the document has received the final approval.
The dissertation is uploaded to the digital repository of the library. Bound copies are no longer provided to the library. Students are not obligated to do so, but may purchase bound copies according to his/her needs – a copy for the research advisor, family members and/or a copy for the student’s own reference or library.

Students should be aware that ProQuest can sell the dissertation document through a third party (like Amazon.com) and the student receives no compensation. There is a drop down menu on the ProQuest form that can be selected to indicate the student’s request that the document not be sold through a third party. It will not default to this – the student must select it.

**The Awarding of the Degree**

The degree is awarded when the student has accomplished the following:

- Satisfactorily completed required coursework with a cumulative GPA of 3.0 or better
- Conducted research at ASU under the direction of a tenured/tenure track faculty member in the School of Molecular Sciences or approved member of the Biochemistry/Chemistry PhD Graduate Faculty
- Written PhD dissertation approved by the Supervisory Committee
- Successfully presented and received a grade of “pass” on the final oral defense of the dissertation.
- Met all deadline dates and requirements as set by the Graduate College.

**Requirements for the awarding of the Master’s Degree in Passing**

Students who have achieved candidacy status in the PhD Program in Chemistry or Biochemistry by passing the Doctoral Comprehensive Examination are eligible to apply for the Master’s Degree in Passing (MIP). Students who hold an MS in Chemistry/Biochemistry degree from a regionally accredited U.S. institution or equivalent are eligible to apply for the master’s degree in passing only if no credit hours from this previously awarded degree have been counted towards the minimum credit hour requirement of the PhD in Chemistry/Biochemistry (currently 84 credit hours). Those who already hold an MS in Chemistry/Biochemistry degree from Arizona State University are not eligible to apply. Requirements include:

1. Successful completion of the oral and written parts of the Doctoral Comprehensive Examination required for all PhD students in Chemistry.
2. Prepare and successfully defend a written research portfolio to his/her supervisory committee. This portfolio must be an original research paper written by the student.
   a. The portfolio must be at least 50 pages in length, double-spaced and typed in a 12 point font. The 50 page length can include the abstract, references list, and any tables or figures.
3. The minimum time frame between the completion of the Master’s Degree in Passing and the Final Doctoral Dissertation Defense should be at least one year. (Exceptions can be made on a case by case basis by a petition to the Graduate Programs committee.)

**Paperwork Process for completing the Master’s Degree in Passing**

1. Students should inform the Graduate Programs Coordinator of their intent to pursue the Masters in Passing so that paperwork can be filed with the Graduate College, who will create a Master’s iPOS.
   a. The Plan of Study for the Master’s degree must include at least four 500 level courses (2 or 3 credits each), four CHM/BCH 501 seminars (1 credit each), and
14 credits of CHM 792 research. For the awarding of the master’s degree, students must meet the requirements of the Graduate College.

2. Students should submit a copy of their research portfolio to their Research Advisor six (6) weeks prior to the research portfolio defense for his/her advisor to review. The Supervisory Committee should receive a copy two (2) weeks before the defense.

3. The student presents and defends the Research Portfolio to his/her Supervisory Committee.

4. Committee Members sign the Report of Final Master’s Culminating Experience form provided by the Graduate Programs Coordinator. The form will be signed by the advisor and supervisory committee only after the successful defense of the research portfolio and after all revisions have been made to the satisfaction of all Committee Members.

5. The signed and completed Report of Final Master’s Culminating Experience form and a final copy of the completed research portfolio must be submitted to the Graduate Programs Coordinator who will then send a report to the Graduate College notifying them of the completed requirements.

6. Student will apply for graduation so the MS degree can be conferred.

**Academic Standards**

Students who meet program requirements as stated in each degree program description in this Student Handbook are considered to be in good academic standing. Students who are not able to fulfill a requirement by the timeline given need to submit a petition to the Graduate Programs Committee requesting an extension to complete the requirement. The petition must include the following information:

- Explanation of extenuating circumstances as to why the requirement cannot be met
- Presentation of a plan and/or outline describing what has been done and will be done to get back on track
- The date(s) as to when the requirement will be completed
- A letter of support from the student’s Research Advisor.

The petition in written form (can be done via email) is submitted to the Graduate Programs Coordinator who will bring it to the attention of the Graduate Programs Committee for review. The petition can be expedited if extenuating circumstances exist. Students will be notified of the committee’s decision by email or letter.

**Results of Lack of Satisfactory Progress**

Students who are not performing satisfactorily, as demonstrated by a GPA lower than that required for their program and/or are not meeting the time limits to meet program requirements will be sent a written notice from the Graduate Programs Coordinator on behalf of the Graduate Programs Committee explaining the deficiency and how it can be remedied. Based on the circumstances and the response from the student and his/her advisor, the student may be placed on Academic Probation or, in some cases, dismissed from the program.

If a student’s GPA falls below 2.0, the Graduate Programs Committee may ask the School Director to write a letter to the Graduate College recommending immediate dismissal from the student’s current graduate program.

**Academic Probation** imposed by the Graduate Programs Committee is not reported to the Graduate College or put on a student’s permanent academic record. The consequence of this probation can effect eligibility for financial support from the school. Students on academic
probation are given a written notice with a specified time limit to improve academic performance and/or meet program requirements. As a result of not meeting the requirements, the school may not offer a Graduate Assistant position for future semesters. In rare cases, Academic probation may be imposed by the Graduate College, which is separate from the School and could be reflected on the permanent academic record.

Program Dismissal occurs when a student has been given notice of poor performance and has not met the requirements given by Graduate Programs Committee to remedy the deficiency within the time limit given. The School Director may write a letter to the Graduate College recommending that the student be dismissed from his/her academic program. The student will be sent a written notice and given a period of 10 business days to request a meeting with the Graduate Programs Committee to discuss his/her situation prior to the submission of the Director’s letter to the Graduate College recommending the dismissal.

A recommendation for immediate dismissal of the student from his/her program may be submitted to the Graduate College as a result of a failed Comprehensive Examination, overall GPA below 3.0, poor performance in the laboratory (as determined by the student’s research advisor and in agreement with Graduate Programs Committee review) and/or lack of establishing a Research Advisor and initiating an appropriate research project.

Changing Research Advisor and/or Committee Members

Research Advisor:
Changing a Research Advisor is not encouraged, but if circumstances justify the need, it is allowable. The student should first talk with the Research Advisor to see if the problems can be resolved and discuss alternatives. If both agree that it is in the best interest of those concerned, a School of Molecular Sciences “Change of Advisor” form, which can be obtained from the Graduate Programs Coordinator, should be completed and submitted to the Graduate Programs Coordinator for presentation to the Graduate Programs Committee.

Supervisory and Comprehensive Examination Committee Member:
Changing a member or adding a member to the student’s Supervisory Committee or Comprehensive Examination Committee (with the exception of the Comprehensive Examination Chair) requires the completion of the School of Molecular Sciences “Change of Committee Member Form”. The form can be obtained from the Graduate Programs Coordinator. The completed form is submitted to the Graduate Programs Coordinator to present to the Graduate Programs Committee.

After a change has been approved at the school level by the Graduate Programs Committee, be it for a new advisor (Supervisory Committee Chair) or a new Supervisory Committee Member, the student must request the change on his/her Program of Study (iPOS) so the change can be reflected on the student’s official record.

Comprehensive Examination Committee Chair:
A request to change the Chair of the Comprehensive Examination Committee is submitted to the Graduate Programs Committee and is only approved if extenuating circumstances occur. If approved, the Graduate Programs Committee appoints a new Chair – The new Chair is not selected by the student or the student’s Research Advisor.
Absent Committee Member for the Final Defense

If a committee member is not able to attend a final defense, either in person or via videoconference, and all efforts of changing the time and date have not worked, the student should contact the Graduate Programs Coordinator as soon as possible. Please note that any and all changes to your Committee must be approved by the Graduate Programs Committee and the Graduate College.

Responsibilities of Teaching Assistants

Graduate Teaching Assistants are assigned different roles depending on the qualifications of the individual, the needs of the school, and the funding available each semester. The time commitment is estimated to be approximately 20 hours per week for a full-time (0.50 FTE) position and the assignment may include any of the following listed responsibilities. If the assigned duties consistently exceed 20 hours per week, the student should contact the Chair of the Teaching Assistant Committee and/or Graduate Programs Committee.

General Chemistry

General Chemistry TAs are typically assigned to teach four 2-hour laboratory sections or some combination of labs and recitation while also providing support for the lecture part of the course (the lab and lecture portions of the course are not separate courses as with other lab courses). Typical duties of a TA in this role include:

- Supervising guided inquiry lab experiments or recitation activities
- Enforcing safety policies
- Grading group lab reports and worksheets
- Holding weekly office hours in the LRC
- Periodically attending lecture sessions
- Attending weekly staff meetings
- Maintaining course grades for ~96 students per semester
- Optional duties may apply, but should not consistently exceed the 20 hours per week limit

Organic Chemistry

Organic Chemistry lab TAs are typically assigned to teach three 3-hour lab sections or some combination of labs and recitation. Typical duties include:

- Leading a discussion of lab principles
- Supervising lab experiments or recitation activities
- Enforcing safety policies
- Grading lab reports
- Running laboratory instruments
- Holding weekly office hours
- Attending weekly staff meetings
- Maintaining course grades for ~60 students per semester

To minimize prep time, every possible attempt is made to assign TAs to two sections of the same class.

Graders

Courses with large enrollment (50+ students) and no associated lab sections are typically assigned TAs to help with course management and grading. Graders are typically assigned
responsibility to multiple courses at once. Organic graders, for example, may be asked to assist with duties in many classes, including exam and lab report grading, development of materials, or running instrumentation. There are very few grading positions available and they are typically filled by TAs with special limitations (such as a physical handicap or language barrier) or TAs that have been assigned to only one section of a different course (to preclude them from teaching labs from two different courses). Please keep this in mind if you make a special request for this assignment.

**Specialized Assignments**
Additional TA assignments may be available in the following areas (depending on needs each semester).

- **Assistant Lab Coordinators:** provide support in running the General, Organic, and Biochemistry lab programs
- **NMR Facility TAs:** provide instrument support in the MRRC and H-Wing instructional labs
- **Setup TAs:** assist with the setup of experiments (typically in the upper-division Labs)
- **Stockroom TAs:** assist in the general and/or organic stockrooms with the preparation of student lab materials

Very few individuals are qualified to fill these positions, so they are most often recruited by the General Chemistry Coordinator.

Teaching Assistant contacts and coordinators are listed on Appendix F.

**Parental Leave**
According to ASU policy, ACD 710, graduate students with a full-time Graduate Assistant appointment (FTE of .50 or more) who have completed at least one academic year of service are eligible for up to six weeks of paid parental leave for the purpose of recovery from childbirth and/or to care for and bond with a newborn or newly adopted child. The student must maintain a minimum enrollment of 6 credit hours in accordance with the TA/RA appointment during the semester the student is requesting the paid leave of absence. The amount of coverage within the six week period is affected by the dates of the appointment and students should contact the Benefits Office of Human Resources – Leaves and Disabilities with any questions.

If you have held a TA or RA appointment and are claiming a maternity/paternity benefit, there are additional forms that are required by Human Resources. Students should contact the School of Molecular Sciences Human Resources Office in PS D 203 for additional information.

**Continuous Enrollment - Leave of Absence**
It is a Graduate College requirement for all graduate students to be continuously enrolled every Fall and Spring semester from the first semester of enrollment to the completion of their program. Therefore, if a student wishes to take time off from the program, a formal request for a leave of absence must be submitted to the Graduate College. The request must be submitted to and approved by the Graduate College, no later than the first day of classes of the semester of the leave. The student completes the Graduate College form, “Maintain Continuous Enrollment: PhD” or “Maintain Continuous Enrollment: Masters and Certificate) found on their website: https://graduate.asu.edu/forms/. The student will need to complete the form, provide a reason for
the non-registration, and obtain the signature of the Research Advisor/Committee Chair and submit the form to the Graduate Programs Coordinator. The Graduate Programs Coordinator will present the request to the Graduate Programs Committee, obtain the signature of the Head of the Academic Unit and deliver the request to the Graduate College for final approval. Students may request to maintain continuous enrollment without course registration for a maximum of two semesters during their entire program.

**Registration – Late Registration and Add/Drop**

Students who miss the deadline to register for classes or to add/drop a course may incur a late fee. Students need to check the university academic calendar for registration dates - [http://students.asu.edu/academic-calendar](http://students.asu.edu/academic-calendar).

A course that is dropped online past the deadline date will result in a grade of “W” on the student’s transcripts.

Students needing to make a change to their enrollment after the Drop/Add deadline should see the Graduate Programs Coordinator to obtain an Enrollment Change Form (commonly referred to as the Late Add form).
Appendix A

Graduate Programs Committee
2017-2018

Chair
Peter Williams pw@asu.edu (480) 965-8188

Members
Giovanna Ghirlanda giovanna.ghirlanda@asu.edu (480) 965-6645
Alexander Green alexgreen@asu.edu (480) 727-7060
Wei Liu w.liu@asu.edu (480) 727-6452
Yuval Mazor yuval.mazo@asu.edu (480) 965-3221
Xu Wang xu.wang.4@asu.edu (480) 727-8256
David Nutt (staff) david.nutt@asu.edu (480) 965-4664
Appendix B

Interactive Plan of Study (iPOS) Reference for Chemistry and Biochemistry Programs

The iPOS is an agreement between the student and the School of Molecular Sciences, the College of Liberal Arts and Sciences and the Graduate College outlining how the requirements needed for his/her degree will be met. It is not sent to prospective employers.

While completing the iPOS, keep in mind that it is a “plan” for completing your program requirements and changes, most likely, will need to be made as you progress through your program. Students should discuss course requirements with their Research Advisor and follow the guidelines outlined in the appropriate degree section in the Graduate Programs Handbook.

PhD students are required to submit the iPOS by the end of their second semester. Students are encouraged to begin discussing courses with the Research Advisor as early as possible. The iPOS should include CHM/BCH 501 for each semester enrolled (up to eight semesters), at least six courses (2-3 credits each), twelve hours of Dissertation (BCH/CHM 799), and research hours (CHM/BCH 792) to bring the total semester hours to at least 84. Student should enroll in research credits every semester for which they are conducting research.

MS students are required to submit the iPOS by the end of their first semester. It should include CHM/BCH 501 for each semester enrolled (up to four semesters), at least four courses (2-3 credits each) as described in the student handbook, six hours of Thesis (CHM/BCH 599) and research hours (CHM/BCH 592) for every semester in which research is performed. The total semester hours required is 30.

Courses completed from a university other than ASU, can be selected as transfer courses; however, they must be courses that were approved by the Graduate Programs Committee and an original transcript must be on file with the Graduate College.

While completing the iPOS, you will need to project courses for several years, and you may not know what courses you want to take or are available. Students are encouraged to speak with their Research Advisor regarding courses. In addition, students can review the course offerings from previous semesters to see what courses have been offered previously as most courses are offered on some sort of rotation, either every fall or spring or every other fall or spring. Remember, you can make changes to the iPOS even after a course is taken. The Graduate Programs Coordinator can assist with both identifying available courses and submitting the iPOS.

When the iPOS is complete:
- Student submits the iPOS for initial review by the Graduate Programs Coordinator.
- The Graduate Coordinator will submit the iPOS to the Research Advisor for approval.
- When approved the Graduate Programs Coordinator will present the iPOS to the Associate Director or Graduate Program Committee Chair for final approval, and if approved, forward it to the Graduation Office and the Graduate College for processing and final approval.

When Changes are needed: If the change is for the number of research hours taken in a semester or for a change in the 501 seminar taken, the advisor does not need to sign off. If it is a change in courses taken, ask your advisor to send an email to the Graduate Programs Coordinator verifying that the change was approved.
Appendix C

MS Chemistry and Biochemistry Programs

Supervisory Committee

Research Advisor + Members = Supervisory Committee

(Advisor and Student Agreement) (Chosen by Student and Research Advisor)

MS Program

The research advisor is the Chair of the Supervisory Committee. He/she should be a Member of the Chemistry/Biochemistry Graduate Faculty. A list of the members of the chemistry and biochemistry programs is available at: http://graduate.asu.edu/gradfaculty.

Members can be Chemistry/Biochemistry PhD Graduate Faculty, Emeritus ASU faculty or a tenured or tenure-track faculty member in a science-related field or engineering with the approval of the Graduate Programs Committee. A non-ASU professor or researcher may serve as a Member with approval from the Graduate Programs Committee and the Graduate College. The Supervisory Committee is composed of a Research Advisor (and Co-Advisor if appropriate) and two additional members (can have more than two). **Members cannot be directly involved in the student’s research.**

**At least two Members of the Supervisory Committee must be tenured or tenure-track faculty in the School of Molecular Sciences.**
Appendix D

PhD Chemistry and Biochemistry Programs

Supervisory Committee

Research Advisor + Members = Supervisory Committee

(Advisor and Student Agreement) (Chosen by Student and Research Advisor)

PhD Program

The research advisor is the Chair of the Supervisory Committee. He/she should be a Member of the Chemistry/Biochemistry PhD Graduate Faculty (http://graduate.asu.edu/gradfaculty). Note that some members of the graduate faculty who are not from the School of Molecular Sciences are not endorsed to chair, so students should always check with the Graduate Programs Coordinator.

Members can be Chemistry/Biochemistry PhD Graduate Faculty, Emeritus ASU faculty or a tenured or tenure-track faculty member in a science-related field or engineering with the approval of the Graduate Programs Committee. A non-ASU professor or researcher may serve as a Member with approval from the Graduate Programs Committee and the Graduate College. The Supervisory Committee is composed of a Research Advisor (and Co-Advisor if appropriate) and two additional members (can have more than two). Members cannot be directly involved in the student’s research.

At least two Members of the Supervisory Committee must be tenured or tenure-track faculty in the School of Molecular Sciences.
Appendix E

PhD Chemistry and Biochemistry Programs

Comprehensive Examination Committee

The Chair of the Comprehensive Examination Committee must be a member of the Chemistry or Biochemistry PhD Graduate Faculty and is assigned by the Graduate Programs Committee.

Members include the two Members (not the Chair or Co-Chair) of the Supervisory Committee and a faculty member selected in agreement with his/her advisor to serve on the Comprehensive Examination Committee. This Member can be a Chemistry/Biochemistry PhD Graduate Faculty Member or a tenured or tenure-track faculty member in a science-related or engineering field.

An additional Member can be added, but is not required. This Member can be a Chemistry/Biochemistry PhD Graduate Faculty Member or a tenured or tenure-track faculty member in a science-related or engineering field, or, with approval from the Graduate Programs Committee, a non-tenure-track faculty member, research professional, or non ASU professor or researcher.
Appendix F

**TA Contacts and Coordinators**

<table>
<thead>
<tr>
<th>Name</th>
<th>Office</th>
<th>Email</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dr. Ron Briggs</strong></td>
<td>PSH-235</td>
<td><a href="mailto:ronbriggs@asu.edu">ronbriggs@asu.edu</a></td>
<td>480-965-1905</td>
</tr>
<tr>
<td>Coordinates all TA assignments and hiring, makes TA assignments for all courses (except for the Organic and Biochemistry courses) and runs the General Chemistry Program.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Dr. Ian Gould</strong></td>
<td>PSD-109</td>
<td><a href="mailto:igould@asu.edu">igould@asu.edu</a></td>
<td>480-965-1989</td>
</tr>
<tr>
<td>Coordinates the Organic Chemistry laboratory program and is responsible for TA assignments in the Organic Chemistry courses.</td>
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<tr>
<td><strong>Dr. Scott Lefler</strong></td>
<td>PSH-236</td>
<td><a href="mailto:slefler@asu.edu">slefler@asu.edu</a></td>
<td>480-727-8282</td>
</tr>
<tr>
<td>Coordinates the Biochemistry laboratory program and is responsible for TA assignments in the Biochemistry courses.</td>
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<tr>
<td><strong>David Nutt</strong></td>
<td>PSD-103</td>
<td><a href="mailto:david.nutt@asu.edu">david.nutt@asu.edu</a></td>
<td>480-965-4664</td>
</tr>
<tr>
<td>Coordinates the SMS graduate programs (including TA offer letters and orientation).</td>
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<tr>
<td><strong>Chad McAllister</strong></td>
<td>PSH-137</td>
<td><a href="mailto:chad.mcallister@asu.edu">chad.mcallister@asu.edu</a></td>
<td>480-965-4158</td>
</tr>
<tr>
<td>Manages TA office hours in the Learning Resource Center (LRC).</td>
<td></td>
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<tr>
<td><strong>Theresa Shin</strong></td>
<td>PSD-203</td>
<td><a href="mailto:theresa.shin@asu.edu">theresa.shin@asu.edu</a></td>
<td>480-965-7082</td>
</tr>
<tr>
<td>Manages the hiring paperwork and payroll processes.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>John Crozier</strong></td>
<td>PSG-106</td>
<td><a href="mailto:jcrozier@asu.edu">jcrozier@asu.edu</a></td>
<td>480-965-5492</td>
</tr>
<tr>
<td>Oversees all safety measures and ensures compliance in all classes and labs.</td>
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</tr>
<tr>
<td><strong>Beatriz Smith</strong></td>
<td>PSH-233</td>
<td><a href="mailto:beatriz.smith@asu.edu">beatriz.smith@asu.edu</a></td>
<td>480-965-2726</td>
</tr>
<tr>
<td>Coordinates new TA training and manages the general chemistry laboratories.</td>
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</tbody>
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