



THE UNIVERSITY OF ARIZONA®

GRADUATE STUDENT HANDBOOK

GRADUATE PROGRAM IN:

***HEALTH AND
PHARMACEUTICAL OUTCOMES***

Updated August 10, 2020

This handbook outlines the philosophy of and requirements for the graduate degrees offered in the Health and Pharmaceutical Outcomes (HPO) track within the Pharmaceutical Sciences Graduate Program at The University of Arizona. It is intended to be used as a resource to understand the requirements for obtaining a graduate degree. This handbook should be used in conjunction with the General catalog and the Graduate College policy site. The requirements of the graduate program in the HPO track outlined herein are under the authority and consistent with the rules and guidelines set forth by the Graduate College of the University. Some of the curricular requirements in this handbook exceed those stated in the Graduate College Catalog. Students must meet the more stringent requirements contained in this handbook. Certain general University regulations and specific HPO track degree requirements are only outlined in this document; consult the current Graduate College website for policies and guidelines set forth by the Graduate College and Graduate Council: <https://grad.arizona.edu/new-and-current-students> or view University Graduate Policies on the catalog: <https://catalog.arizona.edu/policy-audience/graduate>.

Attainment of a graduate degree in the HPO track requires outstanding scholarship and demonstration of distinguished research leading to a thesis and/or dissertation that contributes significantly to the general fund of knowledge in the discipline. The degrees are never granted solely as certification of faithful performance of a prescribed program of studies. All degree requirements must be fulfilled. Therefore, the requirements for these degrees are also outlined in this Handbook.

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1.0 INTRODUCTION

The Pharmaceutical Sciences Graduate Program track in Health and Pharmaceutical Outcomes (HPO) has courses of study leading to the Master of Science and Doctor of Philosophy degrees. Research opportunities and the strong multidisciplinary nature of the program provide students with a highly interactive approach to research and education in HPO.

MS Degree in the Health and Pharmaceutical Outcomes Track

The growth in the biotechnological and pharmaceutical sectors has created a demand for well-trained scientists who provide technical expertise that evaluates medication therapy and pharmacy services in the context of its benefits, risks, and costs. The MS program provides rigorous scientific training similar to that taking place in the PhD track but with different academic requirements and less extensive research training. The average time to graduation is less than three years. Many MS graduates pursue pharmaceutical industry or managed care careers, which involve activities such as working at the project development, design, and management level, assisting in product development, and marketing.

PhD Degree in the Health and Pharmaceutical Outcomes Track

The objective of the PhD track in Health and Pharmaceutical Outcomes is to impart advanced scientific knowledge relevant to the field of study and to provide training opportunities in conducting state-of-the-art approaches in research. Successful candidates will meet the requirements for a career as an independent researcher in academia, industry, consulting or government.

1.1 Background

Health and Pharmaceutical Outcomes was called the Economics, Policy and Outcomes Program for several years until spring 2017. This is an applied field of study that uses knowledge and analytical approaches from a variety of foundational disciplines (e.g., economics, epidemiology, finance, medicine, pharmacy, public-policy, education, statistics) to evaluate health technologies (pharmaceuticals, electronic prescribing, electronic health records and health information exchanges). The primary focus of research in Health and Pharmaceutical Outcomes is to improve health and healthcare delivery at the patient, health plan, and population level through the appropriate use of pharmaceuticals or pharmacy services. Studies range in scope, but include areas such as cost-benefit/cost-effectiveness analysis, comparative effectiveness research, patient safety and quality improvement research, health disparities analysis, drug-drug interaction analysis, health technology assessment, meta-analysis, quality-of-life assessment, disease management and drug use evaluation. A myriad of study designs, outcomes, and techniques are used for research in this field; the ultimate goal is to better inform health care executives, physicians, and decision makers at all levels of government regarding the value of pharmaceuticals and the impact of policy decisions that affect the utilization of and payment for medications.

Since its emergence in the 1980s, there have been rapid advances in the field of Health and Pharmaceutical Outcomes, characterized by evolving standards and techniques, growth in the number of studies conducted, and use of health technology assessment by governmental agencies in the United States and abroad. This program of study provides students with a firm basis to further intellectual inquiries that contribute to the development of standards, techniques, and policy.

The expanded role of Health and Pharmaceutical Outcomes in the health-related sciences is evidenced by the increased need for highly trained professional personnel (PhD, MS, MD-PhD, PharmD-MS, PharmD-PhD degrees). This need is reflected in the number of positions available in research-teaching-service areas of health professional schools (e.g., medicine, pharmacy, public health), university graduate and undergraduate programs, pharmaceutical and chemical industries, managed care organizations, state and federal government research and regulatory agencies, local, state, and federal healthcare financing, and delivery entities (e.g., Medicaid, Medicare).

The Pharmaceutical Sciences Graduate Program track in Health and Pharmaceutical Outcomes at The University of Arizona is oriented toward state-of-the-art techniques as applied to pharmaceutical economics, drug safety, quality of life, policy, and the medication use process. Students are expected to master a variety of fundamental disciplines and apply the resulting knowledge and skills in the development of a comprehensive research plan.

2.0 THE GRADUATE PROGRAM ORGANIZATION

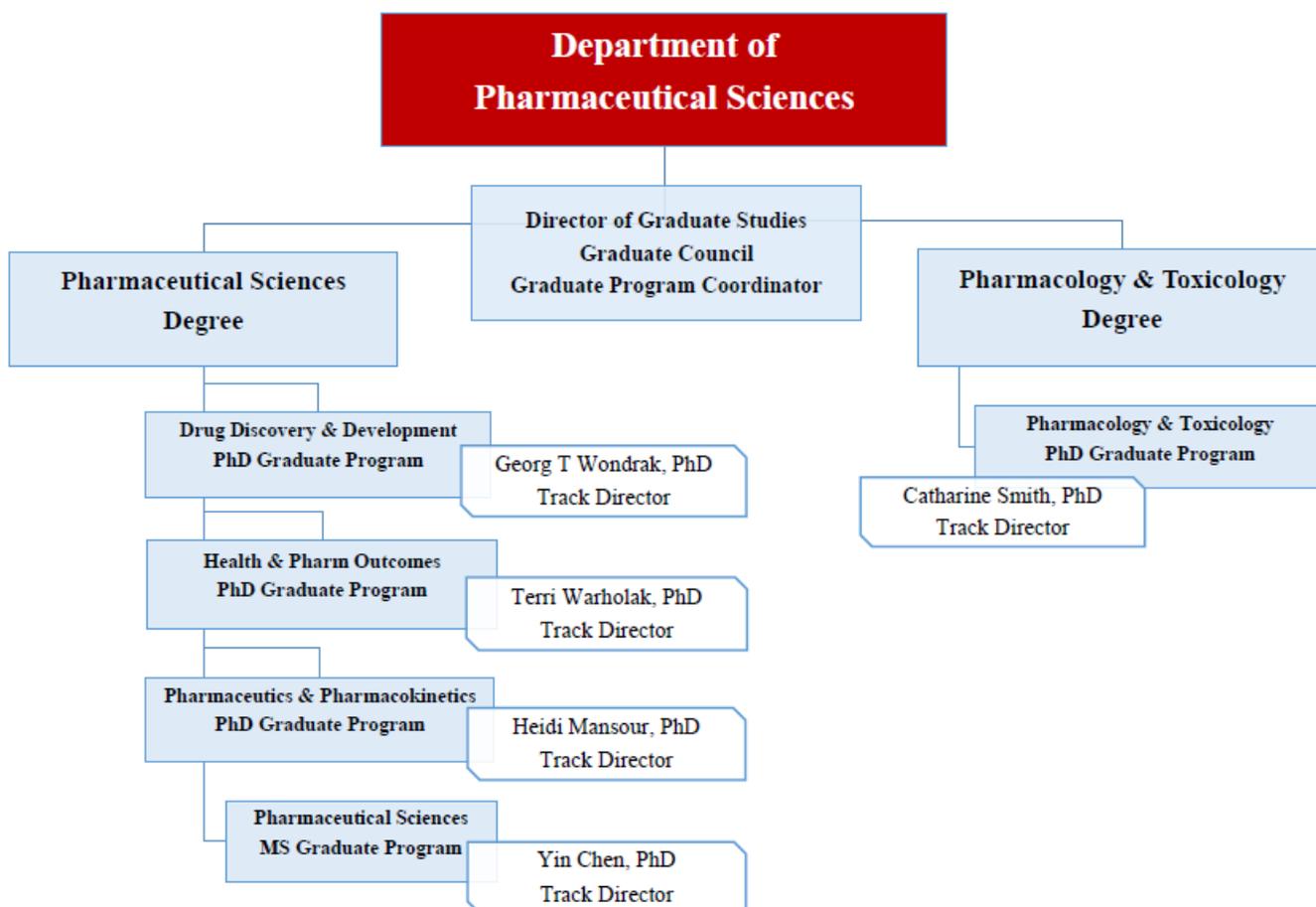
2.1 Philosophy and Goals

The major objective of the Graduate Program track in Health and Pharmaceutical Outcomes is to train students to become scientists with broad expertise in the foundational disciplines as well as specific knowledge and skills in one or more focused areas. It is also expected that graduates of the program will have an opportunity to acquire effective teaching skills, along with the ability to present research findings in both oral presentations and print media. Evaluations of student performance are the responsibility of the faculty and, more generally, the Graduate Council.

2.2 Graduate Council in the Department of Pharmaceutical Sciences for Graduate Programs

The Graduate Council in the Department of Pharmaceutical Sciences for Graduate Programs in the College of Pharmacy is comprised of one voting faculty member from each of the program tracks, one non-voting program coordinator, and a non-voting graduate student representative from each program track. The Council formulates policies and coordinates activities of the graduate program for all disciplines within the College of Pharmacy, including the Health and Pharmaceutical Outcomes track. This council is charged with the overall evaluation of graduate student performance and makes final decisions concerning applicants for admission to the program. The student representatives are not included in the evaluation of student performance or admitting students into the program.

The Council is also charged with overseeing all curriculum matters. A chart of the organizational structure of the graduate tracks that are housed within the College of Pharmacy is shown below.



2.3 Graduate Program Track Executive Committee

The Graduate Program Track Executive Committee is composed of voting faculty members from the Health and Pharmaceutical Outcomes track and one non-voting program coordinator. The committee is charged with overseeing development of curriculum, evaluation of students, admissions, and determining policy within the track.

Name	Phone	Email	Room
Dr. Terri Warholak Program Track Director	520-626-4240	warholak@pharmacy.arizona.edu	Drachman Hall B307D
Dr. Marion Slack	520-626-1099	slack@pharmacy.arizona.edu	Drachman Hall B307H
Dr. Ivo Abraham	520-626-4425	abraham@pharmacy.arizona.edu	Drachman Hall B306H
Dr. Rhys Axon	520-621-5961	Axon@pharmacy.arizona.edu	Drachman Hall B306G

2.4 Graduate Student Representatives

A graduate student representative is elected by the graduate students in the Health and Pharmaceutical Outcomes track for a two-year-term. The representative serves as an official liaison between the students and faculty in the track. The representative is responsible for organizing graduate student participation in Program endeavors, as well as serving on Program committees in an advisory capacity. The graduate student representative also shares service on the Graduate Council with the student representatives of other program tracks. The student representative is not included in the evaluation of student performance or admitting students into the program. Each student should seriously consider his/her choice for the graduate student representative(s) in order to maintain an effective student voice in Program issues.

2.5 Participating Faculty

The following is a list of faculty with whom students may pursue their research:

Ivo Abraham, BS, MS, PhD, Professor

Clinical outcomes and effectiveness research, variability in (drug-centric) treatment regimens in patient outcomes

D. Rhys Axon, MPharm, MS, PhD, Assistant Professor

Chronic disease management, pharmacy education, research design, and social & administrative pharmacy

Marion Kimball Slack, PhD, Professor Emeritus

Research design, public health, and methodological studies

Terri Warholak, PhD, RPh, CPHQ, FAPhA, Professor

Quality improvement, medication safety, psychometrics

3.0 PHYSICAL RESOURCES AND FACILITIES

3.1 Research Space

The Graduate Program track in Health and Pharmaceutical Outcomes is located in the College of Pharmacy on the Health Sciences Center campus at the University of Arizona. Faculty members are also invited to be investigators in the Center for Health Outcomes and PharmacoEconomic Research (HOPE Center), which is also located within the College of Pharmacy.

3.2 Equipment Resources

The graduate track in Health and Pharmaceutical Outcomes provides dedicated office space for each student and also supplies shared desktop computers for writing and conducting analyses. In addition, graduate students have full access to a variety of College resources, including high-speed black and white printers, color printers, and large format poster software and printer. Access to the University's library systems is accessible through the Internet including on-line access to most medical, pharmacy, health services, and pharmaco-economic journals.

3.3 Library Resources

The University of Arizona takes pride in the outstanding quality of its libraries. UA Libraries are made up of the Main Library, Science-Engineering Library, Fine Arts Library, and Health Sciences Library and they hold extensive collections of periodicals, monographs and special collections.

The Health Sciences Library <http://ahsl.arizona.edu/> is located at the Arizona Health Sciences campus. It is the largest, most comprehensive health sciences library in Arizona. In addition to its holdings of pertinent health sciences periodicals and monographs, the library provides an excellent array of valuable services including bibliographic searches, librarian consults, and research support. The Health Sciences Library provides access to essential medical information, and specialized databases such as Embase, the world's largest database of drug information. Librarians participate as instructors in the curriculum of the health sciences colleges, and work in partnership with researchers and clinicians to advance health information literacy. The library also provides spaces for small group collaboration and quiet study.

3.4 Human Subjects

The protection of human subjects is an integral component of modern research in Health and Pharmaceutical Outcomes. Graduate students MUST become familiar with human subject protection and other relevant laws (e.g., HIPAA) and regulations. All students are REQUIRED to complete Conflict of Interest at: <https://uavpr.arizona.edu/COC> and obtain certification of human subject training during the first semester of graduate study. Please visit the Office for the Responsible Conduct of Research at: <https://rgw.arizona.edu/research-compliance/rcr> and view their Research Integrity Program: <https://rgw.arizona.edu/compliance/research-integrity-program>.

3.5 Center for Health Outcomes and PharmacoEconomic Research (HOPE Center)

Established in 1986, the Center collaborates with researchers, academic institutions, health care organizations, and pharmaceutical firms worldwide. Research activities include cost-effectiveness analysis, quality-of-life assessment, pharmaceutical policy analysis, drug-use evaluation and more. The mission of the Center for Health Outcomes and PharmacoEconomic Research is to conduct quality research, disseminate information, and provide training and service programs to enhance the application of economic and effectiveness measures to the practice of health care and the management of health systems. The vision of the Center for Health Outcomes and PharmacoEconomic Research is to become a premier source of information, training, and collaborative research in assessing the effectiveness of health care interventions.

4.0 GENERAL INFORMATION

4.1 Student Outcomes

Learning Outcome*	Assessment Strategy*
Develop testable research hypotheses.	Exams in PhSc 543 Proposal in PhSc 513 Project in PhSc 621 Exams and paper in PhSc 611 Comprehensive examinations
Design and evaluate studies that incorporate economic methodologies (e.g., cost-effectiveness analysis, cost-benefit analysis) for the evaluation of medical technologies.	Exams and proposals in PhSc 513 Exams and project in PhSc 621 Comprehensive examinations
Develop and evaluate data collection tools (e.g., questionnaires) to assess patient-reported outcomes associated with disease and/or its treatment.	Exams and papers in PhSc 612 Comprehensive examinations
Describe the ethical considerations required in research involving human subjects.	Exams in PhSc 543 Comprehensive examinations Completion of CITI Program Participation in HIPAA training
Develop and evaluate analytical plans for testing the statistical significance of research findings.	Comprehensive examinations Exams in PhSc 543 Proposal in PhSc 513 Project in PhSc 621
Prepare a proposal aimed at obtaining research funding.	Oral comprehensive examination
Demonstrate the ability to conduct a research project from inception to completion.	MS Thesis PhD Dissertation
Clearly articulate the methods, findings, and implications of research projects via oral presentations.	Presentations in PhSc 596e Peer-reviewed presentations at scientific and/or professional meetings
Clearly articulate the methods, findings, and implications of research projects via written reports.	Published manuscripts in peer-reviewed scientific or professional journals
Demonstrate the ability to fulfill the roles required in an academic position, including teaching, research, and service activities.	Teaching assistantships PhSc 611 PhSc 596e
Possess a knowledge base and skill set that leads to employment and success in chosen career.	Job offers/Initial position Career advancement

*The requirement of six units of PhSc 699 (Independent Study) provides PhD students with individualized research experiences that facilitate attainment of many of the above learning outcomes and serve as assessment opportunities.

4.2 Student Responsibilities

The Graduate Program track in Health and Pharmaceutical Outcomes stresses the following issues of the utmost importance. Students are to conduct their research in an ethical manner; fraud related to the creation of false data or the theft of others' work will not be tolerated by this Program. Students should keep their data in a format acceptable to the research advisor and be prepared to turn over their records to the Graduate Program at any time. The student is expected to complete the required and elective coursework in a timely manner in order to comply with Graduate College time limitation policy. To view the Graduate College time limitation policy:

<http://grad.arizona.edu/gsas/degree-requirements/important-degree-dates-and-deadlines>

4.3 Orientation and Immediate Steps

All new students are required to attend the Graduate College and College of Pharmacy Orientations held prior to the first day of classes, regardless of funding source for their studies. In addition, it is recommended that students complete the "Immediate Steps" after receiving admission to the graduate program at:

<https://www.pharmacy.arizona.edu/academics/graduate-programs/current-students/newly-admitted-students>

4.4 Individual Health Insurance through Campus Health Services

Students who are hired as a Graduate Assistant/Associate (GA) are eligible to receive individual health insurance through Campus Health Services <https://www.health.arizona.edu/>. The student's admission paperwork must already have been submitted to the Graduate College before they are able to enroll. Even though the charges for health insurance show up on your student account, the university will off-set the charge later. You will not be responsible for health insurance costs.

Health insurance coverage for the fall semester begins the Monday prior to the beginning of classes, and continues until the beginning of the spring semester. Coverage for the spring semester starts at the beginning of the spring semester and continues through the summer. New students must register for health insurance when registering for courses on-line through the UAccess. Continuing students who were enrolled in student health insurance in the previous semester will be automatically re-enrolled. Once you have enrolled in the plan, your coverage cannot be canceled, even if you resign or are terminated as a GA. If you resign or are terminated from your NOA during the period of coverage, you will be personally responsible for the payment of the remaining coverage.

4.5 Creating a UA NetID and College of Pharmacy Email/Computer Account

All UA students are required to set up a UA email account (free to UA students), but first a UA Net ID must be established. The instructions on the UITS website <https://netid.arizona.edu/> will walk you through establishing your UA NetID, and then your email account. Students in the College of Pharmacy will also have a College of Pharmacy computer and email account created for them. The College of Pharmacy email will be the primary email account. Students should forward their UA email to their College of Pharmacy account so they only have to check one email account and not both.

After the UA student has created a UA Net ID, the student may access the University of Arizona UAccess Student Center System, also known as GradPath. Deadlines for the submission of paperwork pertaining to doctoral programs, as well as all forms, are available online through GradPath and can be accessed from: <https://uaccess.arizona.edu/>

4.6 Financial Support

All Master's students are self-pay. Financial assistance in the form of research assistantships or traineeships is available to all PhD students admitted into the Program. In the first year, each PhD student will serve as a teaching assistant. In subsequent years students will be financially supported by faculty grants and contracts. Assignment of students to grants is completed by mutual consent of the faculty member and the student. Students are also encouraged to apply for individual predoctoral fellowships from sources outside the University. Appointments as research assistants provide remission on tuition and health insurance as well as a stipend.

4.7 GRADUATE ASSISTANT/ASSOCIATE STIPEND LEVELS AND BENEFITS

FISCAL	50% FY	TUITION WAIVER FALL/SPRING	100% FALL/SPRING REGISTRATION REMISSION	STUDENT INSURANCE FULL YEAR
Graduate Assistant II And beyond	\$27,000	\$20,127	\$11,938	\$2,725

4.8 Graduate Assistantships (GA)/Associateships

Please refer to the Graduate College GA Hiring Manual for complete details regarding your GA.

<http://grad.arizona.edu/funding/ga>

First-year directly admitted PhD students in the College of Pharmacy will be partially supported by College TA funds. Students will be assigned TA duties in their first year based on course needs. The limited TA funds will be allocated based on the number of direct admits, and the support from the TA fund to a student will be evenly distributed throughout the academic year.

TA assignments in the College of Pharmacy are designed to provide students opportunities to gain experience and communication skills that will bolster their CV. Typical TA positions devote up to 20 hours per week to teaching. TA assignments are made prior to the start of the semester by the Assistant Dean of Academic Affairs and Assessment (Dr. Warholak), who will match students to courses based on course needs as well as student schedule and interests. Assigned classes will be from the professional (PharmD) classes in the Pharmacy Practice.

Your tasks as a TA will vary from professor to professor, but typically include holding office hours, grading assignments and exams, proctoring exams, maintaining the gradebook or other administrative duties. Often times, most College of Pharmacy professors are open to having you give lectures if you wish to practice your teaching skills, but this is not required. Work with your TA supervisor and/or professor to confirm your responsibilities, schedule, and ask for her/his feedback.

All TA's need to complete the following online training (self-paced modules) through <http://d2l.arizona.edu> and receive a passing score: Title IX, Conflict of Interest, FERPA, TATO.

4.9 Tax Information

Students should be aware of current tax laws which impact salaries or stipends from graduate teaching/research assistantships, fellowships, and stipends. Contact the IRS at (800) 829-1040 and ask for the scholarship/fellowship publication or visit the IRS forms/publications website at <https://www.irs.gov/forms-instructions>

Graduate students, who are in Graduate Assistant/Associate positions, must be enrolled at least half-time status in order to qualify for exemption from FICA taxes. (Rev. Proc. 98-16.) ***To be exempted from FICA taxes, graduate students will need to be enrolled a minimum of 6 units during the fall and spring semesters, and in at least 3 units during Summer I and II.***

4.10 Registration

Registration is accomplished through the University of Arizona UAccess Student Center System. UAccess Student Center can be accessed from <http://www.uaccess.arizona.edu>. Contact the Graduate Program office for registration of courses that are not open to web registration.

4.11 Minimum Registration Requirements for Students NOT Receiving Funding

Each student who is associated with the University in any capacity that utilizes University facilities or faculty time during any academic semester must be registered: <https://grad.arizona.edu/policies/enrollment-policies/continuous-enrollment>. This includes any semester during which a preliminary or final examination is scheduled. The minimum enrollment allowed per semester (fall and spring) for students enrolled in the Graduate College is three (3) graduate units, except for students who have met all their coursework and thesis or dissertation requirements; they may take only one (1) unit.

MS students should enroll for thesis PHSC 910. Such registration may be used concurrently with other courses to reach the required three (3) unit minimum enrollment for academic semesters. Although only a maximum of six (6) units of PHSC 910 may be claimed for credit on a student's Plan of Study, the student may enroll for as many units as needed to complete the thesis.

PhD students who have completed all the degree course requirements but have not completed the comprehensive examination should enroll for Research (PHSC 900). After completion of the comprehensive examination PhD students should enroll for dissertation (PHSC 920). Although a minimum of eighteen (18) units of PHSC 920 is required, the student may enroll for as many units as needed to complete the dissertation.

4.12 Research/Teaching Assistants Minimum Registration

All graduate students in the Graduate Program track in Health and Pharmaceutical Outcomes who are supported by or through the University/faculty are considered to be full-time students. All full-time students are expected to enroll for some combination of coursework, research, or independent study that results in thirteen (13) units of credit for each academic semester. Students completing their degree in an academic semester may register for (6) units of credit ONLY ONCE. If the degree is not completed (13) units of credit will be required during an academic semester.

4.13 Scientific Meetings

As part of the educational process, students in training will be encouraged to attend national scientific meetings as travel support permits. Priority for travel support will be given to students presenting communications at national meetings. Students should discuss participation in meetings and travel support with their Research Advisors. Students may also apply for travel funds to the Graduate Programs Office. The Program Office requires a travel budget and a copy of matching travel funding.

4.14 Academic Probation

Students who have a cumulative grade-point average of less than 3.0 will be placed on academic probation. Students on probation are required to meet with their major advisor, discuss the steps to be taken to remediate the problem(s) that led to the probationary status, and devise a written plan of action to be submitted to the Graduate Track Director. After the first semester a student completes with a cumulative GPA less than 3.0 they will be allowed to register for one additional semester. The student will be blocked from registering after that unless their cumulative GPA reaches 3.0 at the end of the second consecutive semester of probation. **Students whose GPA is below 3.0 for two consecutive semesters will be disqualified from their program.** Disqualification results in the student being blocked from registration. Students may apply for readmission to a degree program after they have achieved a cumulative grade point average of at least 3.0 through additional graduate coursework (no more than twelve (12) credits taken as non-degree may count toward the degree). Such a request must be supported by the program track director and the associate dean for research and Director of Graduate Studies.

4.15 Satisfactory Academic Progress

Students are required to demonstrate satisfactory academic progress toward degree completion. In addition to maintaining a minimum 3.0 grade-point average, students enrolled in the graduate degree program are required to demonstrate satisfactory academic progress toward degree completion. The Program's policies on what constitutes satisfactory academic progress are listed below.

Minimum Grades in a Required Course - Students must receive a grade of "B" or better in all core courses. A student who receives a grade of "C" or less in a required course must repeat that course. Students failing to obtain a "B" or higher in a required course that is repeated must petition the graduate program faculty to remain in the program. The decision to allow the student to continue in the program requires a majority approval of the program faculty, with two negative votes sufficient for termination.

Student Evaluation – The program faculty committee annually evaluates each student on the basis of accomplishments in formal courses and performance in other areas of the Program including research as well as attendance and participation in seminars. Satisfactory performance in courses and research are required. **Failure to meet performance criteria in any of these areas is grounds for recommendation of dismissal from the Program.**

Annual Reports - All students will submit an annual report via the Graduate Student Index at: <https://gradstudent.pharmacy.arizona.edu/> **on or before June 1st**. The Annual Report must be approved and signed by the Track Director (first year students) or the Major Advisor (all other students). Annual Reports are required for each year students matriculate in the program.

Sponsorship - By June 15 the program faculty make a determination if each first-year student will be sponsored for the following year (based on performance criteria). This determination will be assessed yearly thereafter. Poor performance in assigned duties may result in the loss of sponsorship. Sponsorship decisions after the first year are made by the student's major advisor and or the Director of Graduate Studies.

Advancement to Candidacy - By the end of their third year in residence, students are evaluated for Advancement to Candidacy at the time of their comprehensive examination. If performance is substandard, the program faculty may recommend a probationary period, withdraw program sponsorship, seek dismissal, or may request the student fulfill the requirements for a Master's degree and not continue on for the PhD. The program faculty will evaluate overall student performance in the Program to date. If performance has been deemed satisfactory by the faculty, approval will be granted.

Dissertation/Thesis Committee Meetings - All students are required, after the formation of a dissertation/thesis committee, to have at least one committee meeting per year while in the program. Students will be responsible for submitting a final signed copy of the Committee Report to the Annual Report in the Graduate Student Index. The Committee Report Form can be obtained from Pharmacy Graduate Student Page >Progress Information > Exam Dates, Defense Dates, Graduation Date <https://gradstudent.pharmacy.arizona.edu/>

Completion Timeline – Each College of Pharmacy graduate track will include a table of completion of degree requirements in their student handbook, which is posted on the College of Pharmacy graduate programs Website.

Notification of Failure To Meet Academic Progress Guidelines

When it is determined by the graduate track faculty that a student is not meeting academic progress, the student will receive written notification with a clear statement of what he/she must do and a date by which such actions must be completed. The Graduate College will receive a copy of the letters of unsatisfactory progress. Students who fail to remediate by the deadlines specified may be dismissed from the program. Students will be given an opportunity to appeal or rebut.

Appeals Process

If a student wishes to appeal any of the requirements mentioned above, the appeal should be made in writing to the director of the student's research track (Health and Pharmaceutical Outcomes). The appeal will be reviewed by the entire program faculty and may include a collective meeting with the student. A decision to accept the appeal of the program faculty will be based on a majority vote. The program faculty may place additional requirements/deadlines on the student as a prerequisite for continuing in the program.

Students who wish to appeal the decision of the program faculty must submit an appeal in writing to the Director of Graduate Studies in the College of Pharmacy.

Students can find information on the Graduate College's Summary of Grievance Types and Responsible Parties at <https://grad.arizona.edu/policies/academic-policies/summary-grievance-types-and-responsible-parties>.

4.16 MS Completion Suggested Guidelines

YEAR	TIME-FRAME GUIDELINES
YEAR 1 and Summer	<ul style="list-style-type: none"> • Submit Responsible Conduct of Research Statement (GradPath) • Complete Deficiency Coursework (if applicable) • Complete First Year Core Coursework • Selection of Major Advisor • Form Thesis Committee • Begin Thesis Research • Present Seminar
YEAR 2 and Summer	<ul style="list-style-type: none"> • Complete Second Year Core Coursework • Present Seminar • Submit Master/Specialist Plan of Study to GradPath • Present and defend thesis research proposal • Thesis Research (register for a minimum of 3 units in that given semester) • Submit Master's Specialist Committee Appointment Form (GradPath) • Pass Final Examination (Thesis Defense) • Graduate Programs Office submits Completion of Degree Requirements in UAccess
YEARLY	<ul style="list-style-type: none"> • Complete Annual Report (on or before June 1) https://gradstudent.pharmacy.arizona.edu/ • Attend Weekly Seminar Program • Thesis Research Advisory Committee Meeting form found at https://gradstudent.pharmacy.arizona.edu/ • Students supported by or through the University are expected to enroll for 13 units of credit each academic semester and 1 unit each summer session

4.17 PhD Completion Suggested Guidelines

YEAR	TIME-FRAME GUIDELINES
YEAR 1 And Summer	<ul style="list-style-type: none"> • Submit Responsible Conduct of Research Statement (GradPath) • Complete first year core coursework • Begin research projects with faculty • Present in graduate Seminar • Select thesis committee and commence with MS research project
YEAR 2	<ul style="list-style-type: none"> • Continue research • Complete second year core coursework • Complete thesis research • Present in graduate Seminar both semesters • Present research at national or international meeting(s) • Submit Plan of Study (GradPath) • After taking 33 units of core-coursework, students will begin preparation towards PhD candidacy with the completion of an MS Thesis if not previously completed.
YEAR 3	<ul style="list-style-type: none"> • Completed all or almost all of minor course requirements • Completed all or almost all of core course requirements • Submit Comprehensive Exam Committee Appointment Form (GradPath) • Pass minor comprehensive exam • Assemble dissertation committee • Present research at national or international meeting(s) • Pass major written and oral comprehensive examinations
YEARS 4 and 5	<ul style="list-style-type: none"> • Submit Doctoral Dissertation Committee Appointment Form (GradPath) • Initiate development of PhD research • Present and defend research proposal to dissertation committee • Submit Announcement of Final Oral Defense (GradPath) • Present and pass final examination (Dissertation Defense) • Present research at national or international meeting(s) • Identify employment opportunities
YEARLY	<ul style="list-style-type: none"> • Receive at least a B letter grade in all core courses • Attend weekly seminar • Complete Annual Report (on or before June 1) https://gradstudent.pharmacy.arizona.edu/ • Students supported by or through the University are expected to enroll for 13 units of credit each academic semester and one unit each summer session

4.18 CHILD CARE SUBSIDIES AND FAMILY FRIENDLY INFORMATION

The Graduate College is dedicated to promoting and strengthening family relationships. Many resources have been designed to help graduate students balance and manage family, work, and school.

- Graduate Assistant/Associate Parental Leave at <https://grad.arizona.edu/funding/ga/benefits-appointment>
- Temporary Alternative Duty Assignments (TADA) for Teaching Assistants/Associates at <https://grad.arizona.edu/funding/ga/temporary-alternative-duty-assignments-graduate-assistantsassociates>
- Extension of Time to Degree Policy at <https://grad.arizona.edu/policies/academic-policies/extension-time-degree>
- Life & Work Connections - Child and Elder Care Resources <https://lifework.arizona.edu>

5.0 MS PROGRAM

5.1 Coursework Requirements

The Graduate College requires a minimum of 30 units of graduate credit. The Graduate Program track in Health and Pharmaceutical Outcomes requires at least 33 units. At least half of the units must have letter grades assigned (i.e., A, B, C, etc.). A 3.0 grade point average must be maintained. Probation will result if a student's GPA falls below 3.0. Students are responsible for knowing and understanding the contents of the catalog they are following and are strongly encouraged to read the UA's student responsibility policy at: <https://catalog.arizona.edu/policy/student-responsibility-degree-requirements>

Required Courses for MS in Health and Pharmaceutical Outcomes

PHSC 513	Health Technology Assessment (I)	3
PHSC 543	Health Services Research Methods	3
PHSC 611	Pharmaceutical Education Research	3
EPID 573a	Basic Principles of Epidemiology	3
EPID 573b	Epidemiologic Methods	3
BIOS 576a	Biostatistics in Public Health	3
BIOS 576b	Biostatistics for Research	3
Electives	(Approved by major advisor)	4
PHSC 596e	Student Seminar	2
PHSC 910	Thesis	6
TOTAL REQUIRED		33

5.2 MS Course of Study: Health and Pharmaceutical Outcomes

<u>Fall Semester – First Year</u>		<u>Units</u>	<u>Total</u>
PHSC 543	Health Services Research Methods	3	
EPID 573a	Basic Principles of Epidemiology	3	
BIOS 576a	Biostatistics in Public Health	3	
PHSC 513	Health Technology Assessment	3	
PHSC 596e	Graduate Seminar	1	13
<u>Spring Semester – First Year</u>			
PHSC 611	Pharmaceutical Education Research	3	
Elective		4	
EPID 573b	<u>Epidemiologic Methods</u>	3	
BIOS 576b	Biostatistics for Research	3	
PHSC 596e	Graduate Seminar	1	14
<u>Fall Semester – Second Year</u>			
PHSC 910	Thesis	3	3
PHPM 617 (optional) (Required-PhD level)	Advanced PH Policy (optional)	(3)	
PHSC 596e	Graduate Seminar	(1)	
PHSC 900	Research	(9)	
<u>Spring Semester – Second Year</u>			
PHSC 910	Thesis	3	3
PHSC 596e	Graduate Seminar	(1)	
PHSC 900	Research	(9)	
		Total Required Units	33

5.3 Seminar

Students must register for seminar PHSC 596e each semester. Although only two units of seminar count toward the MS degree study plan, students must attend and participate in seminar each semester they are enrolled.

5.4 Major Advisor

The MS student must choose a major advisor near the end of the first year (i.e., April). By the conclusion of their first semester in residence, it is recommended that students meet with the graduate program faculty to assist in the selection of the major advisor.

5.5 Student Evaluation

On behalf of the Graduate Program, the Program track faculty evaluates each student on the basis of accomplishments in formal courses and performance in other areas of the Program including attendance and participation in seminars as well as performance on research projects. Satisfactory performance in courses and research is expected. **Failure to meet performance criteria in any of these areas is grounds for dismissal from the Program.**

5.6 Annual Reports

Each student is required to submit an Annual Report to Graduate Progress *Index*: <https://gradstudent.pharmacy.arizona.edu> **on or before June 1**. An email notice will be sent out from the Program Office to students at least one month prior to the Annual Report due date which will include an attachment of the Annual Committee Meeting form for the student to fill out present to their Advisor during their annual committee meeting.

The Annual Report must be approved and signed by the Program Track Director (first year students) or the Major Advisor (all other students). The Program Track Director reviews and approves all reports after they have been submitted to the Index. Annual Reports for every year matriculating in the program are mandatory.

The Graduate Program Track Committee may determine eligibility for future support after the first year. Second year students are evaluated for satisfactory progress towards the MS or PhD degree. If performance is substandard, the Graduate Program Track Committee may recommend a probationary period, withdraw program sponsorship, seek dismissal, or other appropriate action.

The Annual Report documents committee meeting(s) held, abstracts and papers published, seminar and report presentations, honors, outside funding, and a succinct and lucid summary of research progress.

The Annual Report must be approved by the Graduate Council. **Students who do not meet this deadline will receive a one-time letter requesting the information be provided immediately or the student will be dropped from the Program for failure to meet Program degree requirements.**

5.7 Time Limitation

All requirements for the master's degree must be completed within 6 years. Time-to-degree begins with the earliest course to be applied toward the degree, including credits transferred from other institutions. Coursework more than 6 years old is not accepted toward degree requirements.

5.8 Transfer Coursework Credit

No more than 20% of the minimum number of units required for a master's degree can be transferred from other accredited institutions (e.g., if a Master's degree requires 30 units, then no more than 6 units can be transferred from another university). Such transfer credit can be applied to an advanced degree only upon satisfactory completion of deficiencies as prescribed by the Program track committee. Transfer of credit toward an advanced degree will not be made unless the grade earned was A or B, and unless it was awarded graduate credit at the institution where the work

was completed. Grades of transfer work will not be used in computing the student's grade-point average. Students who wish transfer courses must submit an evaluation of transfer credit via GradPath before the end of their first year of study.

5.9 Plan of Study

In conjunction with his/her major advisor, each student is responsible for developing a Plan of Study as early as possible during the first year in residence, to be submitted in GradPath no later than the third semester in residence.

Provisional Graduate Status must be converted to Regular Graduate Status and all deficiencies must be satisfied before the Plan of Study is approved.

The Plan of Study identifies: (1) courses the student intends to transfer from other institutions; (2) courses already completed at The University of Arizona which the student intends to apply toward the graduate degree; and (3) additional course work to be completed to fulfill degree requirements. The Plan of Study must have the approval of the student's major advisor, Graduate Program Track Committee, and Assistant Dean for Research and Graduate Affairs in the College of Pharmacy, before it is submitted to the Graduate College.

5.10 MS Committee Members

MS committees consist of at least three (3) members. At least two (2) members must be tenure-track faculty at the rank of Assistant Professor or higher, and two must be faculty members in the major field. Tenure-track faculty with appointments in the academic unit of the major must direct or co-direct all MS theses. Permission is required from the Program Track Committee if a student's Major Advisor holds an Associate Faculty membership.

5.11 Thesis Committee Meetings

The Thesis Committee will meet with the student at least once a calendar year (June 1 - May 31) to review progress in coursework and research. The student will be responsible for preparing a thesis proposal which will outline the background and objectives, review of the relevant literature, and research design and methods (i.e., the first three chapters) of the proposed thesis project. The student will present the proposal to the Thesis Committee at a private seminar. The Thesis Committee will be helpful in focusing the objectives of the proposed thesis as well as limiting the scope. It is strongly recommended that the student meet with the advisory committee shortly before scheduling the final defense. **You must indicate in your Annual Report the date of your annual committee meeting.**

5.12 Manual for Format and Writing Thesis

Graduate College website: <http://grad.arizona.edu/gsas/dissertations-theses/dissertation-and-thesis-formatting-guides>

Note: The Health and Pharmaceutical Outcomes Track only accepts the traditional MS thesis format (i.e., the paper option is not acceptable for the MS).

5.13 Scheduling Thesis Defense

Student's scheduling their MS thesis defense should first contact the Graduate Programs Office. The student will also be required to provide a format correct draft copy of the thesis to the MS Thesis committee at least fourteen (14) working days before the examination date.

5.14 Thesis Defense

The student is expected to present and defend the first three chapters before preceding to data collection analyses etc. All five chapters will be orally defended as part of the final exam. A written thesis is required. After submission of the thesis, the student must defend it during an oral examination. Preparation of the written thesis follows the Graduate College rules, (**Student's Manual for Theses and Dissertations** which is available on the Graduate College website:

<https://arizona.app.box.com/v/grad-gsas-thesisformat> Note: The Health and Pharm Outcomes Track only accepts the traditional MS thesis format (i.e., the paper option is not acceptable for the MS)

The oral examination is administered by the student's three (3) member advisory committee.

The results of the examination must be reported in UAccess GradPath within ten (10) working days. A candidate who fails a final oral examination may, upon the recommendation of the major department, will be granted a second examination. The results of the second oral examination are final.

The Completion of Degree Requirements must be received by graduate student academic services (GSAS) upon completion of the examination. Note that the department should **not** hold the Completion of Degree Requirements until all requirements are due: items such as current grades, thesis, can remain to be completed. A student completing a master's thesis (with enrollment in course number 910) is required to [archive the thesis](#) upon final approval of the thesis committee. The thesis will be added to the University of Arizona Campus Repository and to the national archive of dissertations and theses maintained by ProQuest/UMI. There is no charge to the student for archiving the thesis.

5.15 Formal Documentation

Three (3) forms must be completed during the interval in which the work for the MS degree is in progress.

Annual Report - submitted to the Program office on or before June 1 of each year.

Plan of Study - must be submitted no later than the third semester in residence.

Completion of Degree Requirements - is completed after the examination by the Graduate Program Office.

6.0 PhD PROGRAM

NOTE: Students entering the PhD Program without a completed pre-PhD Masters thesis must complete a MS thesis in HPO before proceeding to the PhD. The qualifier process has been eliminated.

For PhD students, the major advisor and dissertation committee will help the student plan an educational program in which coursework is completed as quickly as possible. Because of individual interests or conflicts in scheduling, the guidelines below present a recommended sequence of coursework. Some courses may not be offered every year. Consequently, in the absence of prerequisites, the student should enroll in courses when available to prevent delays in completing studies.

6.1 Core Courses for PhD track in Health and Pharmaceutical Outcomes

REQUIRED COURSES

MAJOR

PHSC 513	Health Technology Assessment	3
PHSC 543	Health Services Research Methods	3
EPID 573a	Basic Principles of Epidemiology	3
BIOS 576a	Biostatistics in Public Health	3
PHSC 596e	Student Seminar (1 credit/semester until defense)	4
PHSC 699	Independent Study	6
EPID 573b	Epidemiologic Methods	3
BIOS 576b	Biostatistics for Research	3
BIOS 576d	Data Management and the SAS Programming Language	3
PHPM 617	Advanced Health Policy Analysis (or equivalent 507/574)	3
PHSC 612	Patient-Reported Health Outcomes	3
	Elective/Minor	25
PHSC 920	Dissertation	18
PHSC 900	Research (as needed to fulfill 13 units per semester)	

TOTAL REQUIRED:

80

6.2 Course of Study PhD Health and Pharmaceutical Outcomes

<u>Fall Semester –</u>		<u>Units</u>	<u>Total</u>
PHSC 543	Health Services Research Methods	3	
EPID 573a	Basic Principles of Epidemiology	3	
BIOS 576a	Biostatistics in Public Health	3	
PHSC 596e	Graduate Seminar	1	
PHSC 513	Health Technology Assessment	3	
PHSC 699	Independent Study	3	
			16
<u>Spring Semester –</u>			
BIOS 576b	Biostatistics for Research	3	
PHSC 596e	Graduate Seminar	<u>1</u>	
PHSC 699	Independent Study	3	
EPID 573b	Epidemiologic Methods	3	
	Elective, Minor or Optional	6	
PHSC 611 (Optional)	Theory and Practice in Pharmacy Education		
PHSC 621a (Optional)	Applied Health Technology Assessment		
			16
<u>Fall Semester –</u>			
BIOS 576d	Data Management and the SAS Programming Language	3	
PHSC 596e	Graduate Seminar	<u>1</u>	
	Elective or Minor	8	
			15
<u>Spring Semester –</u>			
PHSC 612	Patient-Reported Health Outcomes	3	
PHPM 617	Advanced Health Policy Analysis (or equivalent)*	3	
PHSC 596e	Graduate Seminar (Max 4 for Plan of Study)	<u>1</u>	
	Elective or Minor	8	15
<u>Fall Semester –</u>			
PHSC 900	Research	(12)	
PHSC 596e	Graduate Seminar	(<u>1</u>)	
<u>Spring Semester –</u>			
PHSC 920	Dissertation	9	
PHSC 596e	Graduate Seminar	(1)	
PHSC 900	Research	(3)	9
<u>Fall Semester-</u>			
PHSC 920	Dissertation	<u>9</u>	
PHSC 596e	Graduate Seminar	(1)	
PHSC 900	Research	(3)	9

All graduate students in the Graduate Program track in Health and Pharmaceutical Outcomes who are supported by or through the University/faculty are considered to be full-time students. All full-time students are expected to enroll for some combination of coursework, research, or independent study that results in a minimum of thirteen (13) units of credit for each academic semester (Fall/Spring). Once required coursework is completed, students should continue enrolling in dissertation, research and seminar units until final oral examination is accomplished. *All courses listed for the PhD course of study, with the exception of those with credits indicated in parentheses, will be included in the Plan of Study.*

6.3 Seminar PHSC 596E

These seminars are presented by the students, faculty and invited speakers in the Graduate Program. Seminars are an opportunity for students to practice presentation skills and to update the faculty and students on their research progress. **Students are required to register for PHSC 596E each Fall and Spring Semester unless excused by the course coordinator.** Grades (Pass/Fail) are calculated based on presentation and attendance, and other criteria as specified by the course instructor.

6.4 Minor Requirements

One minor is required. Students may choose from among the following approved minor list. Other options will be considered but must be approved individually by the Program Track Committee and Program Track Director.

6.5 Suggested Minor Programs for Health and Pharmaceutical Outcomes Majors

1. **Epidemiology**
2. **Educational Psychology**
3. **Marketing**
4. **Biostatistics**
5. **Economics**
6. **Health Policy**
7. **Informatics**
8. **Multidisciplinary**

6.6 Minor in Health and Pharmaceutical Outcomes

A minor in the *Health and Pharmaceutical Outcomes* track within the Pharmaceutical Sciences graduate program is available to PhD students in other departments at the University of Arizona. The minor in this area requires a total of 15 units of course work. At the completion of the course work, a four-hour written comprehensive examination must be successfully completed.

The course of study for the minor includes core courses plus an additional course from Public Health.

PHSC 513	Health Technology Assessment	3
PHSC 612	Patient-Reported Health Outcomes	3
PHSC 621a	Applied Health Technology Assessment	3
PHSC 543	Health Services Research Methods	3
PHSC 611	Theory and Practice in Pharmacy Education	3

6.7 Transfer of Coursework

Graduate credit earned at other approved institutions, if accepted by the major department and the Graduate College and grade was A or B, may be counted toward the requirements of this degree, but will not be calculated in The University of Arizona GPA. All required units of credit must be at the 500-level or above at The University of Arizona (or, in the case of transfer units, their equivalent at other institutions). At least one half the units used on the Doctoral Plan of Study must be in courses in which regular grades (A, B, C) have been earned. A minimum of 12 units of regular grades taken at The University of Arizona are required to establish a University of Arizona GPA.

Credit for correspondence courses or extension work obtained at other institutions will not be accepted for graduate credit.

Students who wish to use transfer credit must first submit the transfer request form to the Graduate College (GradPath Forms) before the end of their first year of study. This allows the Graduate College to evaluate the transfer credit while the transcripts are still in the Graduate College and ensures that students will know early in their studies whether or not the credits are acceptable. The Graduate College evaluation simply determines whether or not the courses are eligible for transfer; the Health and Pharmaceutical Outcomes Graduate Track Committee will still decide which courses should be part of the Program of Study. ***Any core course requested for transfer to the committee will require a foundational knowledge assessment by the instructor.***

6.8 Grades Listed in Plan of Study

Students must receive a grade of "B" or better in all major courses. A student who receives a grade of "C" or less in a major course must repeat that course. A student may petition to have this repeat requirement waived; a waiver can be granted only with the written approval of the course instructor and the Graduate Committee. A grade of "C" or less in a major course constitutes grounds for dismissal from the Graduate Program.

6.9 Major Advisor and Oral/Dissertation Committee

Prior to the selection of a major advisor, the student must become familiar with the research interests of the faculty. Students should meet individually with the faculty whose research is of particular interest or potential interest. Additional familiarity is gained through research and class projects.

After these preliminary meetings, the student decides with whom he/she would like to do his/her research. After consultation with, and agreement of the faculty member, the student must communicate this decision at: <http://gradstudent.pharmacy.arizona.edu/> to the Program Track Director before the end of the Spring Semester during the first year. Faculty and graduate students should avoid making commitments earlier than April or May of the first year. The major advisor must be a tenure track or tenure equivalent full faculty member in the Program. In the event that the research project is carried out under the direction of an individual who is not a member of the Program Faculty, a co-director from the Program Faculty must be appointed. Also, in the event the research project is carried out under the direction of an associate faculty member, permission from the Program Track Committee is required. Upon agreeing to supervise a student, it is incumbent upon the student's major advisor to provide financial support through a research assistantship.

The Oral / Dissertation committee consists of three members from the Program faculty and one or two from the minor field, with a total of at least four members. The committee is chaired by the major advisor. The major advisor discusses membership of the dissertation committee with the student. The functions of the committee are to:

- advise the student on his or her doctoral program with regard to coursework and research,
- administer written and oral comprehensive examinations, and
- administer the dissertation defense.

The committee will meet with the student at least once a calendar year and as necessary to review progress in coursework and research. The student will be responsible for presenting and defending their research proposal, which will consist of a private seminar to the dissertation committee which outlines the background, preliminary data, goals, and study methods of the proposed research. The committee will assist the student in focusing the objectives of the proposed research. It is strongly recommended that the student meet individually with members of the committee if necessary while conducting the research if unexpected problems or issues arise and before scheduling the final defense. **The students must indicate in his or her Annual Report the date(s) of the committee meeting(s).**

6.10 Annual Reports

Each student is required to submit an Annual Report on or before June 1 via the Graduate Student Index at: <http://gradstudent.pharmacy.arizona.edu/>

The Annual Report must be approved and signed by the Program Track Director (first year students) or the Major Advisor (all other students). The Program Track Director reviews and approves all reports after they have been submitted to the major advisor. Annual Reports for every year matriculating in the program are mandatory. The Graduate Program Track Committee may determine eligibility for future support after the first year. Second year students are evaluated for satisfactory progress towards the MS or PhD degree. If performance is substandard, the Graduate Program Track Committee may recommend a probationary period, withdraw program sponsorship, recommend dismissal to the Graduate College, or other appropriate action. If courses are repeated, both grades will count in the cumulative GPA.

The Graduate Track Director approves the annual reports for each student. Satisfactory performance in formal courses, seminars, research and other areas of the Program is required. **Failure to meet performance criteria in any of these areas is grounds for recommendation of dismissal from the program.**

The Annual Report will list courses taken and grades received, committee meeting(s) held, abstracts and papers published, seminars and report presentations, honors, outside funding, and a succinct and lucid summary of research progress.

Students who do not meet this deadline will receive a one-time letter requesting the information be provided immediately or the student will be dropped from the Program for failure to meet Program degree requirements.

6.11 Plan of Study

The Plan of Study identifies (1) courses the student intends to transfer from other institutions; (2) courses already completed at The University of Arizona which the student intends to apply toward the graduate degree; and (3) additional course work to be completed to fulfill degree requirements

In conjunction with his/her major advisor, each student is responsible for developing a Plan of Study as early as possible during the first year in residence. The Plan of Study must have the approval of the student's major advisor, Graduate Program Track Committee, and Program Chair before it is submitted online in GradPath to the Graduate College.

Provisional Graduate Status must be converted to Regular Graduate Status and all deficiencies must be satisfied before the Plan of Study is approved.

6.12 Comprehensive Examination

The Comprehensive Examination consists of two parts: **A)** the written examination, and **B)** the oral examination. The comprehensive exam is scheduled after the student has completed all of required courses. Students must complete the comprehensive examination within three (3) years from admission to the PhD Program. Failure to comply is grounds for dismissal from the Program. See College of Pharmacy Program Requirements:

<https://www.pharmacy.arizona.edu/academics/graduate-programs/current-students/program-requirements> for additional information.

Each student's dissertation committee serves as the comprehensive examination committee. When the student thinks he/she is ready to schedule oral exams he/she should:

- 1) Discuss the proposed timeline with his/her major professor. If the student is not ready for the oral exam it is the major professor's responsibility to let the student know that. Once the proposal is approved, the student can then set the date with the other committee members.
- 2) Work with his/her committee members to select a date and time for the Oral Defense.
- 3) Once that date/time is determined, the student should see the Graduate Programs Office to schedule a room and to submit the Oral paperwork with the Graduate College and
- 4) Send out the reports from the written open-book data analysis; the second written open-book assignment and a confirmation of the Oral defense date and time to the committee.

A. Written Examination

The written portion of the examination consists of three parts:

- 1) Three closed-book examinations, each lasting approximately four hours. The content areas include but are not limited to: health technology assessment, research methods and statistics, and an area of interest as determined by the student's Major Advisor in consultation with the student. Question for the written exam can be derived from ANY topic covered in the in ANY component of ANY of the required classes. Those who teach Health and Pharmaceutical Outcomes classes will develop exam questions. Use of notes, references, Internet, books, or other materials is strictly forbidden unless specific permission is granted by the faculty responsible for writing and grading the assigned section. The written examination should be scheduled no later than 3 months after the student has completed didactic coursework listed on his/her plan of study.
- 2) A written report based on a data analysis assignment to be completed within a 14-day time period using any references or materials except another student's or living individual. The student will be provided a research question, data dictionary, and data set to answer the research question(s). The student will be expected to identify the correct observations of interest, identify and conduct any data cleaning or recoding, select the appropriate statistical test, and report and interpret the findings of the statistical analysis.
- 3) A second open-book assignment with the topic to be determined by the faculty of the Program to be completed in a 28-day time period. This assignment will consist of an original research paper with the topic to be selected by program faculty. Examples of topics include: 1) conduct a systematic review of a narrowly defined research question; 2) draft a policy paper on a contemporary issue; 3) critique existing research and develop a mini-proposal to address the same research question. These are examples. Other types of questions may be given to the student depending on the student's interests and coursework. *See Oral Exam Written Report example.*

B. Oral Examination

The oral examination must be started no later than 1 month after successfully passing the written examination described directly above. At the Oral defense, the student will present the results from (2) and (3) to the committee and answer questions from the committee. The first component of the oral exam will consist of the presentation and defense of the data analysis and second open book assignment. The presentation should include no more than 25 slides and be no more than 30 minutes long. The student should be ready to answer questions after the presentation.

All students should also be expected to answer questions related to any component of their coursework as well as deficiencies identified in the written examination and areas of interest specified by the student. The line of questions can include all aspects of the graduate program. Students should be prepared to discuss topics, methods, and procedures necessary to be an independent researcher in the field of Health and Pharmaceutical Outcomes. At the conclusion of the oral examination the committee will make a determination of the student's performance.

Outcomes of the Comprehensive Examination

Three outcomes are possible: 1) pass; 2) fail – with recommendations for additional study and re-examination; and 3) fail – dismissal from the program. Each of the five committee members shall vote via secret ballot. Failure of the oral exam is denoted by at least two committee members indicating a failed performance. If the student fails the examination with recommendation for additional study, the earliest the exam may be repeated is 90 days. Students who fail an oral exam may be ineligible for funding, as the discretion of the student's Major Advisor. The student must also submit a Graduate Path form.

See <https://grad.arizona.edu/gsas/degree-requirements/doctor-philosophy#comprehensive-exam> for additional information.

6.13 Failure of the Second Attempt of the Oral Comprehensive Examination

Students who fail a second attempt of the oral comprehensive examination are automatically dismissed from the PhD Program.

6.14 Advancement to Candidacy

When the student has an approved doctoral Plan of Study on file, has satisfied all course work, language, and residence requirements, and passed the written and oral portions of the Comprehensive Examination, he or she will automatically advance to candidacy. The Candidacy fee and the dissertation processing fee will be assessed when the student passes the Oral Comprehensive Exam.

After passing the Oral Comprehensive Exam, the student is required to submit the **Dissertation Committee Appointment** Form via GradPath. The Final Oral Defense Examination should be scheduled at least one month in advance to submit the form via GradPath. Deadlines for the submission of paperwork pertaining to doctoral programs, as well as all forms, are available online from the Graduate College Website: <http://grad.arizona.edu/>

6.15 Dissertation

Preparation of the written dissertation follows the Graduate College formatting guides at: <http://grad.arizona.edu/gsas/dissertations-theses> When the dissertation is written, the candidate submits a copy to each member of his/her committee.

Note: A Dissertation project cannot be a previously completed project and data collection/analysis cannot be started until after the student's proposal defense.

After a student has successfully completed his/her written and oral examinations, he/she may begin dissertation research. The student must prepare and submit a proposal to his/her dissertation committee for approval. The proposal must contain the problem to be studied, specific objectives, a review of the pertinent literature, theoretical framework, research procedures to be used, suggested method of analysis, estimated cost, and a tentative timetable (Chapter 1 and Chapters 2,3,4 through Methods if using format option 1 or the first three chapters if using format option 2). Planning the research program begins in meetings with the Major Advisor and the Dissertation, Committee. The Committee reviews the goals and experimental approaches summarized by the candidate, particularly in relation to the objectives set out in the dissertation proposal and helps formulate and approve any changes or new plans deemed appropriate. At this time, it may become necessary to increase the frequency of Dissertation Committee meetings. The candidate is expected to fulfill specific goals recommended by the Committee. The student is expected to present and defend the proposal before proceeding to data collection analyses etc. All five chapters will be orally defended as part of the final exam.

Dissertation format option #1 - "Three manuscript" option for the PhD

The general format is as follows:

Chapter 1 - Which should include:

- Introduction to the issue
- What previous research has examined the issue
- Major findings from previous research
- Limitations of previous research
- Unresolved issues or unanswered questions
- Study Purpose (i.e., what's left to do in this area or where is the gap)
- Study Objective(s) and/or Hypothesis(es) – Note: The Correct way to write a hypothesis statement: There is no difference between X and Y with respect to Z
- Theoretical model
 - Describe the model or models most relevant to the issue
 - Provide justification for selection of this particular model
 - Discuss limitations using a particular model in studying the issue of interest
- Overview of study design and methods
- Limitations of the study
- Abbreviations

Chapter 2 – Manuscript 1 for Dissertation Objective 1:

- Should be publication ready and formatted for a journal agreed upon by the committee.

- Note that the introduction portion of the manuscript can be taken from Chapter 1. The introduction should include: Statement of goals, purpose, aims, and hypotheses
- The methods section should include:
 - Data Source
 - Eligibility criteria
 - Study Design
 - Human Subjects
 - Sample size
 - Data Collection Tool/Data Dictionary [if tool was developed specifically for this study, describe the development process here]
 - Be sure independent and dependent variables are clearly identified and defined
 - Data Analysis—Be sure to clearly connect data analysis to specific hypotheses and variables
 - Limitations anticipated with methodological approach
- Results should be in-line with journal requirements, but typically includes the characteristics of study subjects and results for each hypothesis tested. Additional results can be included as appendices.
- Discussion should include:
 - How does this study fit in with what is already known in the area?
 - What are the most important findings?
 - How do the findings support or fail to support the theoretical framework?
 - Study implications
 - Limitations
 - Future research recommendations
 - Conclusions

Chapter 3: Manuscript 2 for Dissertation Objective 2:

- Should include all items listed for Manuscript 1 above

Chapter 4: Manuscript 3 for Dissertation Objective 3:

- Should include all items listed for Manuscript 1 above

Chapter 5 – Summary

- Will wrap all three chapters together and will include results of formal hypothesis testing

For the proposal: The student would need to produce Chapter 1 (in total) and Chapters 2, 3, and 4 (through Methods)

Dissertation format option #2 – Dissertation Proposal

Chapter 1: Introduction

Should include the following:

- Definition of the problem or topic (i.e., what is the problem)
- Background (i.e., what’s been done in this area)
- Statement of the Problem (i.e., why is this problem important)
- Theoretical framework (i.e., What theory will be used and why it could provide insight into this problem)
- Study Purpose (i.e., what’s left to do in this area or where is the gap)
- Study Objective(s) (i.e., to fill some portion of the gap identified above)
- Hypothesis(es) – Note: The Correct way to write a hypothesis statement: There is no difference between X and Y with respect to Z
- Abbreviations

Chapter 2: Literature Review

Should include the following:

- Literature review
 - Introduction to the issue
 - What previous research has examined the issue

- Major findings from previous research
- Limitations of previous research
- Unresolved issues or unanswered questions
- Theoretical model
 - Describe the model or models most relevant to the issue
 - Provide justification for selection of this particular model
 - Discuss limitations using a particular model in studying the issue of interest

Chapter 3: Methods

Should include the following for each dissertation objective:

- Methods
- Statement of goals, purpose, aims, and hypotheses
- Data Source
- Eligibility criteria
- Study Design
- Human Subjects
- Sample size
- Data Collection Tool/Data Dictionary [if tool was developed specifically for this study, describe the development process here]
- Be sure independent and dependent variables are clearly identified and defined
- Data Analysis—Be sure to clearly connect data analysis to specific hypotheses and variables
- Limitations anticipated with methodological approach

Chapter 4: Results

Should include the following:

- Selection of study participants (if analysis of second data)
- Demographics of study participants
- Results by Hypothesis
 - Include diagnostic evaluation of models after principle findings are discussed
- Summary of Findings by Hypothesis: Reject or Fail to Reject – in a Table

Chapter 5: Discussion

Should include the following:

- Discussion
 - How does this study fit in with what is already known in the area?
 - What are the most important findings?
 - How do the findings support or fail to support the theoretical framework?
- Study implications
- Limitations
- Future research recommendations
- Conclusions

6.16 Final Examination

Upon the completion of the dissertation, the candidate is to submit to a Final Oral Defense Examination form in GradPath. A student must be in good academic standing to schedule the defense. The examination focuses on the dissertation itself but can include general questioning related to the field(s) of study within the scope of the dissertation.

The exact time and place of this examination must be scheduled with the graduate student academic services (GSAS) at least 7 working days in advance. Schedule a meeting with the Graduate Coordinator at least one month prior to your defense to fill out the required forms via GradPath. The student should print out two (2) dissertation approval pages and bring them to the defense. It is expedient to get all signatures at the defense.

The dissertation director presides over the examination. There is no minimum time limit for the Final Oral Examination, but the entire proceedings may not exceed three hours. Members of the committee must be present for the entire examination.

6.17 Limitation on Time Spans

The PhD degree with a major in Health and Pharmaceutical Outcomes usually requires approximately 4 to 5 years of education beyond the baccalaureate degree. As interests and coursework for each student differs, the time required for his or her completion cannot be predicted accurately, more time may be required for completion of degree requirements. Students who enter the Program with advanced degrees (MS) should complete the requirements for the PhD degree in less than three (3) years.

Note: Master's students are expected and required to complete their coursework and graduate within six years from the date of the first course on their plan of study. Students who do not meet these time limits are required to petition for an extension of time to complete degree. Master's students whose coursework is more than six years old may be required to take additional coursework. Doctoral students are expected to complete their degrees within five years after passing their comprehensive exams. Students who do not meet these time limits are required to petition for an extension of time to complete degree. Doctoral students who do not finish their degrees within five years of passing their comprehensive examination may be required to re-take their exams.

The Graduate Council has instructed that petitions for time-limitation waivers should only be entertained under circumstances that are judged to be extraordinary and extenuating.

6.18 Timetable, Formal Documentation, and Deadline Dates

The following forms and deadlines are required by the Program Office and Graduate Student Academic Services. All forms must be submitted in GradPath: <http://grad.arizona.edu/gsas/degree-requirements>

(MS/PhD) Responsible Conduct of Research Statement – After completing research preparation training through UAccess Learning, proceed to GradPath in UAccess and confirm your training and understanding of the code of ethics.

(MS/PhD) Plan of Study - In conjunction with his/her major advisor, each student is responsible for developing a Plan of Study as early as possible during the first year in residence, to be submitted to the Graduate College no later than the third semester in residence.

(MS) Master's Specialist Committee Appointment Form— *required for every master's or specialist student* whether or not that student has a committee.

(MS) Master's/Specialist Completion Confirmation Form — submitted by department Graduate Coordinator on behalf of the student to initiate final Graduate College degree audit.

(PhD) Results of the Oral Comprehensive Examination – The committee chair is responsible for submitting the Results of Oral Comprehensive Exam form in GradPath.

(PhD) Dissertation Committee Appointment form - After satisfactory completion of the Comprehensive Examination, the Dissertation Committee Appointment form is completed, and must be submitted no later than six (6) months before the Final Defense Examination (Dissertation Defense) is scheduled. The Program recommends submitting the Committee Appointment form immediately following completion of the Oral Comprehensive Examination.

(PhD) Announcement of Final Oral Defense Examination - Announcement of Final Oral Examination form must be filed with the Graduate Student Academic Services office no later than 7 working days prior to the defense.

PhD Checklist – After the final defense has been completed, refer to the Checklist for Finishing Your Doctoral Requirements.

APPENDIX A

It is the duty of the advisor and the student that these forms are obtained and completed by the respective deadline. Forms can be obtained from the following link: <http://gradstudent.pharmacy.arizona.edu/>

I. College of Pharmacy Graduate Programs Forms

- a. Pre-doctoral Time-line of Training (In your Welcome packet)
The Graduate Program Coordinator will meet with the graduate student to review the forms and required timelines of the program.
- b. Student Annual Committee Report
For every annual committee meeting the following form needs to be completed and signed by every committee member. Form at: <http://gradstudent.pharmacy.arizona.edu/>
- c. Annual Progress Report
For every year, an Annual Progress Report has to be completed by the student, then reviewed and signed by the advisor, followed by submission to the Track Director. Submission must occur by June 1st using the following link <http://gradstudent.pharmacy.arizona.edu/>
- d. Written Comprehensive Examination Results Form (Written Comprehensive Portion)
A student must obtain signatures from their committee once the research proposal has been approved. Form at: <http://gradstudent.pharmacy.arizona.edu/>
- e. Student Outcomes Assessment Form
Members of the Comprehensive Exam Committee will fill out this form after the Oral Examination, and use it only as a measurement for the outcomes and not for the purpose of grading the Oral Comp Exam. The student will take one form for each committee member to the Oral Exam (included in the Oral Exam Packet from the Graduate Programs Office).