

UNIVERSITY of
HOUSTON

COLLEGE OF PHARMACY

**PhD Concentration in
Pharmaceutical Health Outcomes and Policy**

*A Graduate Program of Excellence to Develop Leaders in
Pharmaceutical Health Outcomes and Policy*

**Graduate Student Policies
and Procedures Handbook**



AUGUST 2021

Pharmaceutical Health Outcomes and Policy (PHOP)

The Pharmaceutical Health Outcomes and Policy (PHOP) concentration in the Pharmaceutical Sciences doctoral degree program at the University of Houston College of Pharmacy offers a learning and research environment that combines the collaborative opportunities of the Texas Medical Center's world-class healthcare and scientific community with the academic resources and award-winning faculty at Houston's only Carnegie Institute-designated Tier One public research university.

Pharmaceutical Health Outcomes and Policy consists of pharmaceutical practice and policy research, a multidisciplinary field that examines cost, access, and quality of pharmaceutical care from clinical, sociobehavioral, economic, organizational and technological perspectives. Traditional and innovative areas of pharmaceutical health outcomes research include pharmacoepidemiology, pharmacoconomics, comparative effectiveness research, patient-centered outcomes research, and translational research.

The PHOP concentration offers structured learning and experiences in health care systems, health care quality, health behavior, biostatistics, multivariate analyses, research methods and design, pharmacoepidemiology, and pharmacoconomics. Elective courses such as secondary data analyses, multilevel modeling, patient-reported outcomes, and risk adjustment provide advanced learning experiences, along with the opportunities to participate in grant proposal writing and teaching and research practicums.

Graduate courses in business administration, psychology, and economics are available from the other departments at the University of Houston. Texas Medical Center academic institutions, such as the University of Texas Health Science Center (UTHealth) and Rice University also provide additional coursework to provide well rounded graduate training in pharmaceutical health outcomes and policy.

Within the college's Department of Pharmaceutical Health Outcomes and Policy, our nine faculty members come from a range of backgrounds, including pharmacoepidemiology, practice-based research, public health, biostatistics, and sociobehavioral and administrative pharmacy. Among our faculty are recipients of awards and/ or research grants from such organizations as the National Institutes of Health, the Agency for Healthcare Research and Quality, and the PhRMA Foundation. The college and individual faculty members have collaborative relationships with numerous colleagues and institutions throughout the Texas Medical Center (TMC), offering abundant opportunities for multidisciplinary research. Currently housed in the College of Pharmacy's beautiful new home on the UH main campus,, Health & Biomedical Sciences Building 2 since January 2018, PHOP faculty and students enjoy access to over 157,000 square feet of state of the art research and education facilities.

Pharmaceutical Health Outcomes and Policy graduates are in high demand. Welcoming its first students in 2009, the UH College of Pharmacy's PHOP doctoral program maintains contact with over 100 master's and PHD alumni in the pharmaceutical industry, healthcare consulting groups, healthcare organizations, and academia.

Rajender R. Aparasu, Ph.D., FAPhA
Department Chair

Michael L. Johnson, Ph.D.
Department Vice Chair
Chair, Graduate Education

Melissa Nieto
Graduate Academic Advisor

TABLE OF CONTENTS

1. Course Requirements for PhD	Page 5
2. Example of Coursework Plan	Page 6
3. Course Descriptions	Page 8
a. Departmental Courses	Page 8
b. Elective Courses	Page 9
c. Non-Departmental Elective Courses	Page 11
4. Policies and Procedures	Page 13
a. Probation and Dismissal Rules	Page 13
b. Initial Research Rotations	Page 13
c. PhD Advisor (Major Advisor)	Page 13
d. Developing the PhD Plan	Page 14
e. Dissertation Research	Page 14
f. Monitoring of Graduate Student Progress	Page 14
g. Authorship and Publication	Page 15
h. Dissertation Committee	Page 15
i. Comprehensive Exams	
i. Written Comprehensive Exam	Page 16
ii. Oral Comprehensive Exam and Dissertation Proposal	Page 17
j. Graduation Process	Page 18
i. The Dissertation Defense	Page 18
ii. Submission of the Dissertation Document	Page 19
1. Guidelines for Preparing the PhD Dissertation	Page 19
k. Graduate Student Grievance Procedures	Page 19
l. College of Pharmacy Graduate Studies Committee Policies	Page 20

- a. Initial Research Rotation Form
- b. Faculty Mentor Selection Form
- c. PhD Degree Plan Form
- d. Comprehensive Exam Selection Form
- e. Dissertation Proposal Approval Form
- f. Dissertation Approval Form
- g. Example of Dissertation Flyer
- h. Example of First Three Pages of Dissertation Document
- i. Guidelines for the Dissertation Format

COURSE REQUIREMENTS FOR PHD CONCENTRATION in Pharmaceutical Health Outcomes and Policy (PHOP)

The student must complete a minimum of 75 Cr. Hrs. for the PhD degree. All core and elective requirements must be met with hours completed in residence or approved transfer hours. Transfer hours must be approved. Refer to Transfer Credit Request Form. A minimum cumulative grade point average of 3.00 (A= 4.00) must be maintained in all graduate level courses required for the PhD degree in order to obtain the advanced degree from the College of Pharmacy.

Required Credit Hours:

The curriculum focuses on all areas of Pharmaceutical Health Outcomes and Policy

	Credit Hours
Health Outcomes Core	9
Research Methods Core	9
Statistical Analysis Core	9
Electives	18
Seminar	6
Dissertation Research	23
Dissertation Defense	1
 Minimum required for graduation	 75

A minimum of 18 hours of elective coursework is required of which 9 hours should be 7000 level or higher.

EXAMPLE OF COURSE WORK PLAN FOR FULL-TIME STUDENTS (Four-year Program)

<i>First Year Fall Semester</i>	<i>Credit Hours</i>
PHCA 7305 Social and Behavioral Determinants and Theory in PHOP	3cr
PHCA 7308 Biostatistics and Experimental Design	3cr
PHCA 7340 Data Analytics for PHOP	3cr
PHCA 6180 Seminar	1cr

<i>First Year Spring Semester</i>	
PHCA 7320 Introduction to Health Systems and Policy	3cr
PHCA 7307 Epidemiologic Methods and Research Design	3cr
PHCA 7301 Regression Analysis and Methods	3cr
PHCA 6181 Seminar	1cr

First Year Summer Semester

Students must identify their PhD major advisor before the fall semester of second year begins and develop their PhD study plan. Students may apply for an internship or register for courses.

Total First year ***20cr***

<i>Second Year Fall Semester</i>	
PHCA 7306 Pharmaceutical Health Outcomes and Quality	3cr
PHCA 7316 Pharmacoepidemiology	3cr
Elective Course	3cr
PHCA 7180 Seminar	1cr

<i>Second Year Spring Semester</i>	
PHCA 7330 Advanced Pharmacoeconomics	3cr
Elective Course	3cr
Elective Course	3cr
PHCA 7181 Seminar	1cr

Second Year Summer Semester

Students may apply for an internship or register for courses.

Students should prepare to take their written comprehensive exams during the beginning of the Fall or Spring Semester of their 3rd year after core course requirements are met.

Total Second year ***20cr***

Third Year Fall Semester

Elective courses or PHCA 8x98 Dissertation Research	8cr
PHCA 8180 Advanced Seminar	1cr

Third Year Spring Semester

Elective courses or PHCA 8x98 Dissertation Research	8cr
PHCA 8181 Advanced Seminar	1cr

Third Year Summer Semester

Students may apply for an internship or register for courses.

Students should be progressing on dissertation research and preparing for Area of Emphasis exam and dissertation proposal defense for Fall.

Total Third Year 18cr

Fourth Year Fall Semester

Elective courses or PHCA 8x98 Doctoral Dissertation Research	8cr
PHCA 8180 Advanced Seminar	1cr

Fourth Year Spring Semester

Any elective courses or PHCA 8x98 Doctoral Dissertation Research	8cr
PHCA 8199 Doctoral Dissertation Defense	1cr

Total Fourth Year 18cr

Total minimal credits hours anticipated for the four year full time student 76cr

*Note: Students will be required to enroll in seminar every semester. Exceptions generally are not granted for full time students, but may be waived in final semester of reduced course load. Students may also graduate early if they have completed all the minimum requirements for the program. Students cannot exceed 99 credit hours of PhD courses. Although students are required to take the minimum course work for didactic and dissertation courses, it is up to the student's faculty mentor and the dissertation committee to approve the final coursework plan, based on the student's performance. Students that have not completed a MS with a thesis in Pharmaceutical Health Outcomes and Policy should consult with their advisor about registering for PHCA 6396: Masters Project and complete a publishable research project under their faculty mentor before proceeding with the comprehensive exams.

COURSE DESCRIPTIONS

DEPARTMENTAL COURSES

PHOP Core Courses

PHCA 7305: Social and Behavioral Determinants and Theory in PHOP

Cr. 3. (3-0). Prerequisites: graduate standing or consent of instructor. Introduces the concept of social and behavioral determinants in pharmaceutical health outcomes with an understanding of research topics and theory. Emphasis will be on historical, social and behavioral issues pharmacists have faced and the role of pharmacy managers in health care systems. The course will be a case-based discussion approach with pre-assigned reading material.

PHCA 7306: Pharmaceutical Health Outcomes and Quality

Cr. 3. (3-0). Prerequisites: PHCA 7305, graduate standing or consent of instructor. Focuses on practice, policy, and research issues in pharmaceutical health outcomes and quality of pharmaceutical care.

PHCA 7320: Introduction to Health Systems and Policy

Cr. 3. (3-0). Prerequisites: PHCA 7305 and PHCA 7306, graduate standing or consent of instructor. The course will be broken up into three modules covering topics related to providers of healthcare, payers of healthcare, and patients receiving healthcare. This graduate-level course will have a longitudinal Health Policy Analysis project to be presented, reviewed, and submitted under the guidance of the course coordinating faculty member.

Research Methods Core Courses

PHCA 7307: Epidemiologic Methods and Research Design

Cr. 3. (3-0). Prerequisites: PHCA 7308, graduate standing or consent of instructor. Principles of epidemiologic research methods and applications to address current clinical problems in pharmaceutical health outcomes research. Included are fundamentals of epidemiologic research design, quantitative and qualitative methods, computer applications, design of survey questionnaires, and proficiency in evaluating health policy interventions.

PHCA 7316: Pharmacoepidemiology

Cr. 3. (3-0). Prerequisites: graduate standing or consent of instructor. This course focuses on epidemiological principals with application to pharmacy. The course introduces concepts, methods, and nomenclature in pharmacoepidemiology and its applications to current public health problems.

PHCA 7330: Advanced Pharmacoeconomics

Cr. 3. (3-0). Prerequisites: PHCA 7316 and PHCA 7307, graduate standing or consent of instructor. The course is designed to prepare upper doctoral students to the branch of economics that uses cost-benefit, cost-effectiveness, cost-minimization, cost-of-illness and cost-utility analyses to compare pharmaceutical products and treatment strategies. Students will learn principles, methods and applications of economic analysis for drug therapy, pharmacy services, and pharmaceutical health policy evaluations, economic model building, and conduct an advanced pharmacoeconomic project of their own suitable for publication.

Statistical Analysis Core Courses

PHCA 7340: Data Analytics for PHOP

Cr. 3. (3-0). Prerequisites: graduate standing or consent of instructor. The course is designed to introduce doctoral students to computer data analytic topics and techniques to analyze large health care databases using SAS and R. Topics include big data in the US healthcare system, fundamental and advanced SAS and R programming, and issues related to conceptual approach to data analysis including causal inference vs. data mining. The course will prepare students with essential skills for advanced coursework and dissertation research.

PHCA 7308: Biostatistics and Experimental Design

Cr. 3. (3-0). Prerequisites: graduate standing or consent of instructor. Applications of experimental design techniques and statistical methods in healthcare and pharmacy, including topics such as hypothesis testing, contingency tables, correlation, regression, and analysis of variance.

PHCA 7301: Regression Analysis and Methods

Cr. 3. (3-0) Prerequisites: PHCA 7308, graduate standing or consent of instructor. Applications of multiple regression methods, regression diagnostics, variable selection, model building strategies, and assessment of model fit in pharmacy research with emphasis on linear, logistic, and proportional hazards regression.

Seminar Core Courses

PHCA 6180:6181:7180:7181: Seminar in Pharmaceutical Health Outcomes and Policy

Cr. 1. (1-0). Prerequisites: graduate standing or consent of instructor. Review and evaluate recent advances in PHOP literature and the pharmacy profession.

PHCA 8180:8181 Advanced Seminar in Pharmaceutical Health Outcomes and Policy

Cr. 1. (1-0). Prerequisites: graduate standing or consent of instructor. Review and assessment of recent advances in PHOP literature and research.

Dissertation Courses:

PHCA 8198:8298:8398:8698: Doctoral Dissertation Research

Cr. 1, 2, 3, 6 per semester. Prerequisites: consent of instructor. Doctoral Dissertation Research.

PHCA 8199: Doctoral Dissertation Defense

Cr. 1 per semester. Prerequisite: consent of instructor. Doctoral Dissertation Defense.

ELECTIVE COURSES

Departmental Elective Courses

PHCA 6310: SAS Applications in Statistics

Cr. 3. (3-0). Prerequisites: graduate standing or consent of instructor. Practical experiences in conducting statistical analysis using the SAS statistical package to analyze, evaluate, and report data.

PHCA 7312 SAS Programming for Healthcare Data

Cr. 3. (3-0). Prerequisites: consent of instructor. Beginning and intermediate SAS statistical applications and programming techniques, including subsetting and merging datasets, arrays, iterative loop, SQL and macro programming.

PHCA 7313: Pharmacoeconomics

Cr. 3. (3-0). Prerequisites: graduate standing or consent of instructor. This course focuses on the economic methods used in evaluating drug therapy decisions. The course will cover the tools needed to assess the costs and outcomes of medications and pharmacy services. Emphasis will be on disease-state management issues with examples from pharmaceutical outcomes research.

PHCA 7310:7610 Research Practicum

Cr. 3, 6 per semester. Prerequisites: graduate standing and consent of instructor. A structured research internship experience in the pharmaceutical or healthcare industry.

PHCA 7311: Teaching Practicum

Cr. 3. (3-0) Prerequisites: graduate standing and consent of instructor. A structured academic environment experience to prepare and teach lectures in an undergraduate course with the guidance of a professor.

PHCA 8311: Proposal Development

Cr. 3. (3-0) Prerequisites: graduate standing and consent of instructor. Applications of grant writing skills to develop and submit a proposal using the NIH format.

PHCA 8311: Advanced Teaching Practicum

Cr. 3. (3-0) Prerequisites: graduate standing and consent of instructor. A structured academic environment experience to develop and teach lectures in a graduate course under the guidance of a professor.

PHCA 8301: Behavioral Theories in Pharmacy and Health

Cr. 3. (3-0). Prerequisites: PHCA 7305 and PHCA 7306, graduate standing or consent of instructor. Discuss and appraise models and theories in pharmaceutical health outcomes research.

PHCA 8302: Advanced Research Design

Cr. 3. (3-0). Prerequisites: PHCA 7316 and PHCA 7307, graduate standing or consent of instructor. Review and evaluate advanced study design and analytical issues in pharmacy and health outcomes research with focus on scientific issues in conducting quasi-experimental and longitudinal study designs.

PHCA 8303: Multivariate Analysis

Cr. 3. (3-0) Prerequisites: PHCA 7308 and 7301, graduate standing or consent of instructor. Advanced statistical techniques for handling multiple dependent and independent measures in pharmacy

administration research such as factor analysis, multiple discriminant analysis, MANOVA, cluster analysis, canonical correlation, and structural equation modeling.

PHCA 8305: Risk Adjustment of Health Care Outcomes

Cr. 3. (3-0) Prerequisites: graduate standing or consent of instructor. Interpret and apply patient risk factors, the Donabedian model, administrative and clinical data sources, comparisons across providers, propensity scoring, and estimating the effect of interventions in observational studies.

Non-departmental elective courses

There is a wealth of elective courses available to our students within UH as well as institutions in the Texas Medical Center, such as the UT School of Public Health. Elective courses recently taken by our students are listed below. All non-departmental elective course enrollments must be approved by the Faculty mentor and Graduate Academic Advisor. See graduate catalogs from UH and UTSPH for full course listings.

UH (<http://publications.uh.edu/content.php?catoid=30&navoid=11455>)

UTSPH (<https://sph.uth.edu/academics/course-information/catalogs/SPH%202018-2020%20Final%20Draft3%20-%20WEBSITE.pdf>)

Enrollment in non-departmental courses is not guaranteed. Please check the current course catalog for availability, and allow 7 to 10 business days for enrollment approvals.

Within UH

ECON 6465: Econometrics

Cr. 4. (3-1). Prerequisites: graduate standing and consent of instructor. Statistical tools needed to understand and execute empirical economic research. Topics include linear regression, instrumental variables estimation, limited dependent variable models and panel data methods. Emphasis will be on applying econometrics to real-world problems.

ECON 6485: Microeconomic Analysis

Cr. 4. (3-1). Prerequisites: graduate standing and consent of instructor. Fundamentals of market and individual choice analysis emphasizing empirical analysis in a business setting. Analysis of domestic and international markets and individual choice, including the theoretical study of the relationships within and between individuals, organizations, and the international economy.

ECON 6340: Health Economics

Cr. 3. (3-0). Prerequisites: ECON 6465 and ECON 6485 or consent of instructor. Economic analysis of health care. Topics include the value of health, the demand of health care, health insurance markets, managed care and the Medicare and Medicaid programs.

MARK 7371: Pricing Strategy

Cr. 3. (3-0). Prerequisites: graduate standing and consent of instructor. Pricing concepts and analytic tools for maximizing profitability.

MARK 8349: Multivariate Methods in Marketing (Fall only)

Cr. 3. (3-0). Prerequisites: graduate standing and consent of instructor. Multivariate data analysis techniques for marketing research.

PHLS 8306: Health Psychology Research, Prevention, & Interventions

Cr. 3. (3-0). Formerly/same as EPSY 8306. Prerequisites: none. Introduction to the field of health psychology, with an emphasis on research, prevention, and interventions focused on biological, environmental, and cultural determinants of the development and progression of health disorders.

PSYC 7305: Structural Equations in Psychological Analysis

Cr. 3. (3-0). Prerequisites: PSYC 6300 and PSYC 6302 or consent of instructor. Estimation, testing, and assessment of fit using LISREL are examined for path analytic, confirmatory factor, and latent variable models.

Within UT School of Public Health

PHD 1431: Tools and Methods for Systematic Reviews and Meta-Analysis

Cr. 2. This intensive short-course is designed to introduce students to best practices, resources, and methods for systematic reviews and meta-analyses, and to guide students through the steps of a systematic review. The course uses examples from a wide variety of completed reviews as well as exercises and readings. The format includes face-to-face (in-person/ITV) and online exercises, readings, and recorded lectures. (A STATA-based lab experience in meta-analysis has been added to the course.) Course resources and materials are available throughout the semester to assist students in applying them to a Integrative Learning experience or dissertation. Students who expect to continue with their own reviews and to receive further support and instruction should enroll in independent study with Dr. Mullen and Ms. Vonville. Students who wish to enroll in the meta-analysis module only should enroll for PHD 1861. Prerequisites: PH 1700 or consent of the instructor and PHM 2610 or equivalent.

PH 1835: Statistical Methodology in Clinical Trials

Cr. 3. This course covers the use of current statistical methodology in the design, execution, and analysis of clinical trials. Some of the topics include basic study design, randomization, sample size issues, data analysis issues, and interim monitoring. Prerequisites: PH 1700 and calculus, or the consent of instructor.

PH 2860 Advanced Design Analysis Methods in Epidemiology

Cr. 3. This course primarily covers topics related to study design and appropriate data analysis using advanced techniques. At the core, the faculty will discuss basic and generalized regression models for binary (logistic), continuous (linear), and count (Poisson) outcomes; multivariate data reduction techniques, such as factors analysis and Principal Component Analysis; longitudinal models; analysis of clustered data; and select data mining methods. Whenever possible, the faculty will illustrate how to carry out data analyses in SAS or STATA or other suitable statistical packages.

PHD 3810 Health Policy in the United States

Cr. 3. This course teaches students to appraise health policy in the United States and evaluate its strengths and weaknesses. Principal policy-making institutions, processes, and ideas that shape health policy at the federal level will be assessed and criticized.

PH 3915 Methods for the Economic Evaluation of Health Programs

Cr. 3. This course covers the concepts and methods for the economic analysis of healthcare decision alternatives. Topics will include cost-benefit, cost-effectiveness and cost-utility analysis, and other methods of decision analysis. It emphasizes the application of these methods to the evaluation of alternative health programs.

PHD 3926 Health Survey Research Design

Cr. 3. This course presents the methods for designing and conducting health surveys. Emphasis will be placed on problem conceptualization, measurements, and questionnaire design in the context of a total survey design framework. Examples of face-to-face, telephone, mail, and Internet surveys will be presented. Prerequisites: PHM 1690 and PHM 2610 or equivalents.

POLICIES AND PROCEDURES

Overview of Program Timeline

Successful completion of the PHD requires completion of didactic education coursework, comprehensive examinations, and dissertation research. A suggested timeline with milestones for consistent progression of a full-time student on a 5-year program is provided below.

PLEASE NOTE that not all students will progress the same; individual students may vary and complete some milestones sooner, whereas others may take longer. Faculty mentors, the graduate academic advisor, Assistant Dean for Graduate Programs, and Graduate Education Committee will monitor all progress.

Year 1	Core Coursework and Faculty Mentor Selection	
Fall	Core Coursework Begin Initial Rotations	
Spring	Core Coursework Complete Initial Rotations Intensive Rotation Sign-up (May 1)	
Summer	Complete Intensive Rotation Faculty Mentor Selection Final (August 1)	<u>Faculty Mentor Selection Form Due</u> <u>Degree plan due</u>
Year 2	Core Coursework, Research with Faculty Mentor	
Fall	Core Coursework	
Spring	Core Coursework	
Summer	Internship (Optional)	
Year 3	Comprehensive Exam, Research with Faculty Mentor, Elective coursework	
Fall	Written Comprehensive Exam*	
Spring	Elective coursework	
Summer	Internship (Optional)	
Year 4	Dissertation Committee, Area of Emphasis Exam, Begin Dissertation Research	
Fall	Dissertation Committee formed	<u>Dissertation Committee Form Due</u>
Spring	Area of Emphasis Exam Dissertation Proposal Defense	
Summer	Dissertation research Internship (Optional)	
Year 5	Dissertation Work and Graduation	
Fall	Dissertation research	
Spring	Dissertation Defense	
Summer	Dissertation Upload Final Degree Plan Graduation	

* May be taken in Spring of Year 3 depending on Core Coursework completion

Probation and Dismissal Rules

1. Every graduate student must maintain a 'B' average or 3.00 GPA throughout the PhD program curriculum. Failure to do so will automatically put the student on probation for the following semester. Once on probation, the student has one semester (Fall or Spring) to improve their grades, after which if their GPA is still below 3.00, the student may have to withdraw from the program. Students who are on probation and who show improvement in course grades, may petition for an extension to the Department Graduate Education Committee.
2. Graduate students are allowed to receive 'C' grades in no more than 8 semester credit hours (SCH) throughout the PhD program. Students will be automatically put on probation upon receipt of their second 'C' grade and will be withdrawn from the program upon receipt of another 'C' grade that adds to the total of 8 or more SCH.
3. In addition, the student will be automatically put on probation if they receive a grade below a 'C' in any core course. Individuals who receive a grade below 'C' have one semester to improve their grades. Students who are on probation and who show dramatic improvement in course grades may petition for an extension to the Department Graduate Education Committee.
4. Additionally, students receiving a grade below 'C' in any core course will be required to repeat the course during its next offering. A student with a D, F, or I as the most recent grade in a graduate level course for a degree plan will not be eligible for graduation.

Initial Interviews and Intensive Research Rotations

PhD students will need to identify a faculty member to be their primary mentor throughout their program and dissertation research. To identify a mentor, PhD students will meet with faculty for initial interviews to learn the research interests of all faculty members in the department. These should start in the Fall and finish early in Spring semester of the first year of study. PhD students will submit the Initial Research Rotation Form to the Graduate Education Committee by the last day before Spring Break (approximately March 15). A list of faculty who are able to take new students as advisees will be provided by April 1. Students will choose at least 2 faculty for rotation and complete an Intensive Research Rotation sign-up sheet provided by the Graduate Advisor (Melissa) by April 15. Intensive Research rotations last approximately one month, and may be conducted concurrently with more than one faculty member. Students will be notified of their rotation assignments by May 1. Students must complete their rotations by July 15. Final decisions with signed Faculty Mentor Selection Form must be provided to the Graduate Education Committee by August 1 before the start of the second year.

PhD Dissertation Committee Chair (Faculty Mentor)

After selection of the permanent mentor, the student will be primarily monitored by their faculty mentor. All academic and research decisions should be discussed and approved by the faculty mentor prior to any action being taken. Faculty mentor signatures are required on all official university documentation and requests. PhD students should meet regularly with their mentor over the course of their program.

In the event the student is unable to work satisfactorily with the chosen faculty mentor, the student

may attempt to find another mentor as long as the student is not on academic probation. The Graduate Education Committee will assist the student in either resolving the problem or identifying another mentor. However, documentation of repeated notifications to the student to correct deficiencies in performance without evidence of appropriate action by the student to correct these deficiencies may result in the student's dismissal from the graduate program.

Developing the PhD Plan

Each student must submit an official degree plan for approval. The degree plan formally declares your degree objective, and the specific courses that you will be required to complete as part of your degree program. You will develop your proposed degree plan in consultation with your mentor and the GAA. Students and mentors are recommended to use the PhD Degree Plan form (see appendix). Students should use the PhD degree plan form to develop an initial degree plan which must be approved by your advisor and the Graduate Education Committee one year after enrolling in the PhD program. A copy of the initial degree plan will be provided to the student and the faculty mentor. All changes to the degree plan should be signed by the student and the faculty mentor. A completed final degree plan, approved by your mentor and committee members, must be submitted during the semester the student intends to graduate. The PhD degree plan form should be used and the area indicating final plan should be checked. This document should be submitted no less than 60 days prior to applying for graduation (see University of Houston Academic Calendar).

Dissertation Research

Research activities in the doctoral program may focus on a number of major categories in issues related to Health Outcomes and Policy, for example; Pharmacoeconomics, Pharmacoepidemiology, Health Services Research, Management and Marketing, Patient Behavior, Pharmaceutical Care, Health Systems Operations, and Information Systems in Health Care. It is expected that the students will utilize the time before completing their comprehensive exams to conduct sufficient original literature review to write a NIH-style dissertation proposal (detailed below). The quantity of research expected for the dissertation should be sufficient for at least two publications, and should be sufficiently complete as judged by the PhD mentor and the dissertation committee to produce an acceptable dissertation document. The dissertation is intended to demonstrate that the student can conceive, conduct, analyze, interpret and present the results of a scientific study to the academic community. The student will be expected to master research techniques, learn to critically evaluate the scientific literature, have a firm grasp of what is involved in a sound, independent research project, assemble intelligently the research results and present and defend it in a manner suitable for presentation to the scientific community.

Monitoring of Graduate Student Progress

The student's faculty mentor, graduate academic advisor, PHOP Graduate Education Committee and the Assistant Dean for Graduate Programs all monitor the academic and research progress of the student, as well as to ensure compliance with departmental policy and procedures.. Where areas of concern or problems are identified, the student will be informed and a plan developed to overcome deficiencies or problems. The student will be requested to check in with the GAA once each long semester for progression monitoring.. The GAA will be the first point of contact regarding all administrative processes.

Authorship and Publication

All research conducted by a student while at the University of Houston must be in compliance with all regulations for the conduct of scientific research that are applicable for all faculty and students at the University of Houston. These include: research ethics, research compliance, and Committee for Protection of Human Subjects (CPHS) approval. See <http://www.research.uh.edu/Home/Division-of-Research/Research-Services/CPHS.aspx> for more information.

Students are strongly encouraged and expected to present their research at local, regional, national and international scientific meetings, and to publish their original research in peer-reviewed scientific and medical journals. It is highly recommended that students discuss authorship requirements with their faculty advisor or course coordinator prior to initiating any research work that could be published.

Dissertation Research

All dissertation research is expected to be published. Faculty will work with the students to encourage and assist them in submitting high quality research to peer-reviewed journals for publication. The Chair of the Dissertation Committee will discuss authorship and publication plans with the student and committee members at the first full meeting of the dissertation committee. The student is required to submit two manuscripts based on their dissertation research to peer-reviewed journals prior to dissertation defense. The student will not be allowed to defend the dissertation until this requirement is met.

Dissertation Committee

All students are required to form a doctoral dissertation committee, composed of at least five members. The Chair of the Committee (faculty mentor) must hold a doctoral degree and be a full-time tenured or tenure track faculty member in the Department of Pharmaceutical Health Outcomes and Policy. Two additional committee members must hold a PhD and be full-time tenured or tenure-track faculty members in the Department of Pharmaceutical Health Outcomes and Policy. Two other committee members should be selected, one of which must be outside the department. The advisor and student must complete the Dissertation Committee Form (see appendix). Once formed, the Dissertation Committee must meet at least once per long semester. The occurrence of these meetings is monitored by the GAA and the Chair of the Committee.

The required representation of the committee is provided below:

- a) A chairperson – The chair is the faculty Mentor and should be a full-time tenured (tenure track) faculty member in the Department of Pharmaceutical Health Outcomes and Policy.
- b) A full-time tenured (tenure track) faculty member in the Department of Pharmaceutical Health Outcomes and Policy who is requested by the student and approved by the committee chair.
- c) A full-time tenured (tenure track) faculty member in the Department of Pharmaceutical Health Outcomes and Policy who is requested by the student and approved by the committee chair.
- d) A faculty member from outside the Department of PHOP who holds an appropriate doctoral degree to assist the student with the area of research.
- e) An additional member from within or outside the university that holds the appropriate doctoral

degree to assist the student with the area of research.

Comprehensive Exams

Students must take and pass written comprehensive exams before taking the oral comprehensive exam^[TD1]_[JML2]. The student should discuss with the faculty mentor when it is best to take the exams.

Written Comprehensive Exam

All students will be required to pass written comprehensive exams before starting their dissertation research. The objectives of these exams are to ensure that students are proficient in the core and specific areas of their research. The written exam consists of two tests: Core and Area of Emphasis. The Core exam^[MJ3] will include PHOP and Statistics/Research Methods tests; the PHOP test is a 4 hour exam and the Statistics/Research Methods test is a 6 hour exam with questions written by the course-offering faculty. Students will be required to pass each Core test with a minimum of 80% competency^[TD4] to be considered to have passed the core exam. Students will be eligible to take the Core Exam after completion of all courses in the core curriculum. The Core Exam will be offered during the first few weeks of the fall and spring semesters, provided there are at least two students meeting qualifications and seeking to take the exam. If only one student is seeking to take the exam for a given semester, the student must petition in writing to the Graduate Education Committee of PHOP for approval to take the exam. It is the student's responsibility to inform the Chair of the Graduate Education Committee and the GAA of their intent to take the Core Exam, at least one month prior to the upcoming exam.

The Area of Emphasis^[MJ5] test is a 4 hour exam^[MJ6] and the student's dissertation committee will provide questions for the exam. The faculty mentor is responsible for the development and administration of the Area of Emphasis test, which will be an open book exam. Students will be required to pass the test with a minimum of 80% competency to be considered to have passed the Area of Emphasis Exam. Students will be eligible to take the Area of Emphasis Exam after completion of all minimum elective requirements (18cr, with 9cr at 7000 level) AND after having formed the complete dissertation committee in the semester prior to taking the exam.

Students that do not pass a specific test must retake the exam after a sufficient remediation supervised by the faculty mentor. If the student is unsuccessful in mastering the material after the second attempt, the student will be recommended to withdraw from the Pharmaceutical Sciences program. The student along with the faculty mentor may petition the Graduate Education Committee to allow the student to take it the third time only after developing a new coursework plan. Students may have to take certain courses before attempting the exam a third time. This third attempt will be the final opportunity for the student to qualify to conduct the dissertation. Failure to pass the exam during this third and final attempt will result in automatic expulsion from the program.

Oral Comprehensive Exam and Dissertation Proposal Defense^[AS7]_[JML8]

All students are required to write a proposal of their dissertation project and successfully defend it before their Dissertation Committee before dissertation research can begin. The written proposal is required to follow the NIH R01 12-page format.

All students will be required to take an oral comprehensive exam. This exam is expected to be completed within one year of the completion of the written comprehensive exams. The oral exam will be conducted during the student's dissertation proposal defense by the student's dissertation committee. Students are encouraged to register for the proposal development course and develop their dissertation proposal. During the oral comprehensive exam, students will be expected to conduct a proposal presentation for their dissertation research topic. During this proposal defense [TD9][JML10], students will be tested on the proposal as well as topics in health outcomes, statistics/research methods, and the students selected area of emphasis. Students that pass the oral comprehensive exam will receive an official communication indicating so by their faculty mentor and can proceed with their dissertation research. This communication should be forwarded to the Department Chair. Those that do not pass the oral comprehensive exam will be provided a second opportunity. If the student is not able to defend the proposal a second time, the student will have a third and final opportunity. If the student cannot adequately defend a proposal on the third attempt, the student will be expelled from the Pharmaceutical Sciences PhD program. The student's faculty mentor will communicate all information to the student and the Department Chair during these proceedings.

Although there are no set criteria for the format of the proposal defense the following format is suggested. At least one week before the scheduled defense, the written proposal must be circulated to the Dissertation Committee. It is strongly suggested that the contents of the written proposal have been thoroughly discussed with committee members prior to this step. The proposal defense can take place in a private meeting between the student and the committee members. Although there is no set structure or guidelines for this meeting, the student and/or major advisor can use the following information to guide the meeting. The defense will begin with a brief (approx. 30-45 min) presentation by the student that summarizes the research study and the proposal. The committee may examine the student to understand the student's knowledge regarding the research topic at this time. This examination will focus on the research project proposed by the student but will not be restricted to the project. The committee may also examine the student on relevant information related to the research project such as the literature in the area of the research project and any relevant information from prior course work that the student has completed. At the conclusion of the defense the committee will make their recommendation. This will be:

- 1) Acceptance of the proposal without modification. In this case the student will proceed with the proposed study as outlined in the proposal.
- 2) Acceptance of the proposal with modification. In this case the committee will make specific recommendations for modification of the proposal that must be incorporated into a revised draft of the proposal.

Rejection of the proposal. **Rejection of the proposal may result from a judgment of the committee that the proposal is inadequately developed and needs more work. In this case the student will be instructed to re-submit the proposal to the committee. The students would be instructed as to what areas require improvement and another defense would be scheduled no later than three months after the initial defense.**

Graduation Process

Students should consult with their faculty mentor when they are ready to graduate from the PhD program. It should be noted that although an example of coursework plan and graduation process is

provided, each student in the PhD program will be unique and may have a different set of courses and the expected time to graduate. All students are strongly encouraged to be in constant communication with their Graduate Academic Advisor (GAA).

Dissertation Defense Process

Information regarding University guidelines regulating dissertation deadlines and submissions can be found at the following: Graduate School Guidelines for Dissertation (<http://publications.uh.edu/content.php?catoid=22&navoid=6031>)

Students must successfully defend their dissertation before their dissertation committee. Two manuscripts based on the student's dissertation must have been submitted to peer-reviewed journals prior to scheduling the dissertation defense. The student must submit a reasonably well-polished and well-proofed copy of the full dissertation document to the mentor and all the committee members at least 2 weeks prior to defense. Information regarding College guidelines regulating dissertation deadlines and process can be found at the following: <http://www.uh.edu/pharmacy/about-us/policies-and-procedures/>

The student is expected to post an announcement of the dissertation defense at least 7 days prior to the date of the defense. The announcement should contain the student's name, dissertation title, mentor's name, location, date, time of the defense, and indicate that it is a dissertation defense (See example in appendix). As procedure, students are requested to forward an electronic copy of the dissertation defense flyer to the Graduate Academic Advisor who will forward it to all faculty and students in the graduate program.

The defense must have an open public session and a closed session with the committee. The public portion should be presented as a seminar with ample time provided for discussion of the findings by the attendees (usually 45-60 minutes, and 15 minutes for questions). The mentor should lead the defense with an introduction and coordinate the question and answer session. It should be noted that all questions regarding a defense should be addressed and adequate time provided so that the student can defend the dissertation. All graduate students in the program are required to attend each departmental dissertation defense.

Submission of Dissertation Document

The College of Pharmacy uses an electronic thesis/dissertation submission process using the Vireo Thesis & Dissertation Submission System. See the following link for detailed instructions: <http://www.uh.edu/graduate-school/current-students/thesis/>

The student must follow all dates published by the University of Houston in the Academic Calendar for applying for graduation, and for submitting the approved dissertation signed by the student, mentor, committee, and Dean. The student must apply for graduation and pay a graduation-processing fee. Typically, this deadline is at the beginning of the semester that the student wishes to graduate. It is the student's responsibility to check with their advisor and apply accordingly. The Graduate Academic Advisor will assist the student in electronic submission.

Guidelines for preparing the PhD Dissertation

The format for the dissertation is at the discretion of the Faculty Mentor and Dissertation Committee. Two format options are available: a chapter-book style or Journal Manuscripts in publishable form (see Appendix). The Manuscript Dissertation format requires at least 3 manuscripts.

The graduate student must submit the required dissertation documents in electronic format. All dissertations should have original signatures of the mentor, committee members and the Dean of the College of Pharmacy. The signature page must be submitted to the GAA for placement in the student file, and not be included in the electronic copy for submission. The electronic submission should be submitted to the Texas Electronic Library via Vireo system by 4:00 p.m. on or before the deadline published by the University of Houston. Please note that to achieve this requirement, students should consider the time it takes for the dissertation defense, corrections after the defense, and finalization of the manuscript for upload. Students can upload their dissertation to the Vireo Thesis & Dissertation Submission System using the following link: <https://uh-etd.tdl.org/>. Accordingly, the student should plan to apply for graduation and the date for the dissertation defense. If the dissertation document is not submitted and approved on time, students will have to postpone their graduation and register for the next semester. The faculty mentor or chair of the dissertation committee has the primary responsibility to evaluate the dissertation content.

Graduate Student Grievance Procedures

Grievances resulting from relationships between students and faculty (courses or otherwise) should be handled according to the university-wide procedure described in the Graduate Catalog. The following points are particular to this program: The student should first attempt to resolve the grievance with the faculty member. If an acceptable solution cannot be agreed upon, the grievance should be presented in writing along with supporting documentation to the Department Graduation Education Committee. This formal grievance must state when the student discovered the issue, describe the grievance, provide evidence to support the grievance, and indicate the desired resolution. The formal grievance must be filed no later than 30 days from the point in time when the grievant had knowledge or should have had knowledge of the problem being grieved.

The Chair of Department Graduation Education Committee will initially mediate the grievance and arrive at a decision acceptable to both parties within 10 working days. The Department Chair, who will be advised of the situation before the resolution is finalized, shall also accept this resolution. If an acceptable resolution cannot be reached by, the committee chair, a formal meeting with committee will be held to recommend a resolution to the Department Chair. The Chair may accept the recommendation of the committee, return the grievance to the faculty for further consideration, or resolve the grievance in another manner. The Department Chair must make a decision within 10 working days of receiving the written committee recommendation, notifying all parties of the decision in writing. A written record of the entire process (including the original grievance filed, all responses and evidence, and the final report of the outcome) will be kept on file in the department.

In the event that either party involved in the grievance is dissatisfied with the outcome of this process, that party may file a formal written appeal with the College of Pharmacy Graduate Studies Committee. The College Graduate Studies Committee is composed of 5 college faculty members and two graduate students, all of whom have voting rights. This committee will have 10 working days to take action on the appeal as described above and forward their recommendation to the Graduate Dean or the Dean of

the College of Pharmacy. The Dean may accept the recommendation of the Graduate Studies Committee, return the appeal to the Graduate Studies Committee for further consideration, or resolve the appeal in another manner. The Dean must make a decision within 10 working days of receiving the Committee's recommendation, notifying all parties of the decision in writing. If either party involved is dissatisfied with the outcome of the College process, they may petition for a University level review as described in the graduate catalog. (Please check the University Graduate Student catalog or website for an updated copy)

College of Pharmacy Graduate Studies Committee Policies

The College of Pharmacy Graduate Studies Committee has recently adopted college wide policies related to graduate education. These include: Transfer Credit Policy, Academic Standard Policy, Responsible Conduct Research Policy, and others. A copy of the policy and procedures governing graduate students in the college of pharmacy can be found at <http://www.uh.edu/pharmacy/about-us/policies-and-procedures/>

APPENDIX CONTENTS

Initial Research Rotation Form

Faculty Mentor Selection Form

Transfer Credit Request Form

PhD Degree Plan

Dissertation Committee Selection Form

Comprehensive Exam and Proposal Approval Form

Dissertation Approval Form

Example of Dissertation Defense Flyer

Example of the first three Pages of the PhD dissertation Sample Chapter- Book

Dissertation Formats

UNIVERSITY of
HOUSTON

COLLEGE OF PHARMACY

PhD in PHOP

*A Graduate Program of Excellence to Develop Leaders
in PHOP Research*

Initial Research Rotation Form

Students are expected to meet with all faculty members in PHOP and understand their research work during the first semester. Students are expected to take a proactive approach to ensure adequate interaction with faculty during the first semester. It is recommended that the student meet and discuss with each faculty at least twice. This will help students select a permanent faculty advisor responsible for overseeing selection of course work, research, and completion of the PhD dissertation. Students are to obtain the signature of the faculty they have met during the first visit. The completed form indicating that a student has met all faculty members should then be provided along with the major advisor selection form to the faculty the student selects as the major advisor. The completed form should be provided to the Director of Graduate Studies.

Student Name and Signature/date

Faculty Name and Signature/date

Faculty Name and Signature/date

Faculty Name and Signature/date

Faculty Name and Signature/date

Faculty Name and Signature/Date

Faculty Name and Signature/date

Faculty Name and Signature/date

Faculty Name and Signature/date

UNIVERSITY of
HOUSTON

COLLEGE OF PHARMACY

PhD in Pharmaceutical Health Outcomes and Policy

*A Graduate Program of Excellence to Develop Leaders in
Pharmaceutical Health Outcomes Research*

Faculty Mentor Selection Form

Date: _____

This is to inform that I _____ have selected

Dr. _____ as my faculty mentor for my PhD program.

I have met with the respective faculty member and we have mutually agreed on this decision.

Student Name and Signature

Faculty Name and Signature

(Both student and faculty signatures are required.)

Received by: _____

Chair, Graduate Education Committee, Department of
Pharmaceutical Health Outcomes and Policy

A copy of this document will be provided to both, the student and the faculty advisor.

UNIVERSITY of **HOUSTON**

COLLEGE OF PHARMACY

PhD in Pharmaceutical Health Outcomes and Policy

A Graduate Program of Excellence to Develop Leaders in Pharmaceutical Health Outcomes Research

PhD Transfer Credit Request Form

Student Name/Signature: _____ **PS ID#:** _____

PhD track: _____ **Semester 1st Enrolled:** _____ **Anticipated Graduation Date:** _____

Transfer Credit: The student may transfer up to 9 Cr. Hrs. of graduate coursework completed at another institution. A maximum of 18 Cr. Hrs. of graduate coursework may be transfer if the student completed the MS in Pharmacy Administration program at UH. Only courses with a grade of 'B' or above will be considered for transfer. Courses with S/U grade will not be transferred. All transfer credits should be approved by the Department Chair and abide by the credit transfer policy for the College and the University. Please see the above transfer credit policy prior to requesting transfer credit.

Courses requested to be transferred

Course Numbe	Course Title	Credit Hrs	Date Complete	Grade
Total Hours Requested				

Faculty mentor
Name: _____
Date: _____

Signature: _____

Comments: _____

Chair, Graduate Education Committee, PHOP: _____ **Date:** _____

Approved/Disapproved: Comments: _____

PhD in Pharmaceutical Health Outcomes and Policy

PhD Degree Plan

Student Name: _____

Course Number	Course Title	Credit Hrs	Semester Completed or Expected	Grade
---------------	--------------	------------	--------------------------------	-------

PHOP Core

PHCA 7305	Social and Behavioral Determinants and Theory in PHOP	3		
PHCA 7306	Pharmaceutical Health Outcomes and Quality	3		
PHCA 7320	Introduction to Health Systems and Policy	3		

Research Methods Core

PHCA 7316	Pharmacoepidemiology	3		
PHCA 7307	Epidemiologic Methods and Research Design	3		
PHCA 7330	Advanced Pharmacoeconomics	3		

Statistical Analysis Core

PHCA 7308	Biostatistics and Experimental Design	3		
PHCA 7301	Regression Analysis and Methods	3		
PHCA 7340	Data Analytics for PHOP	3		

Seminar Courses

PHCA 7180	Seminar	1		
PHCA 7181	Seminar	1		
PHCA 7180	Seminar	1		
PHCA 7181	Seminar	1		
PHCA 8180	Advanced Seminar	1		
PHCA 8181	Advanced Seminar	1		

Dissertation Courses

PHCA 8x98	Doctoral Dissertation Research (minimum18)	23		
PHCA 8199	Doctoral Dissertation Defense	1		

Elective Courses (minimum 18 Cr. Hrs. required of which 9 Hrs. should be 7000 level or above)

UNIVERSITY of
HOUSTON

COLLEGE OF PHARMACY

PhD in Pharmaceutical Health Outcomes and Policy

*A Graduate Program of Excellence to Develop Leaders in
Pharmaceutical Health Outcomes Research*

Dissertation Committee Selection Form

Date: _____

Student's Full Name _____

Anticipated Field of Research _____

By signing we have agreed to serve as dissertation committee members for the above mentioned student. The names and affiliation of the Committee Members should be indicated below.

	Committee Members	Affiliation of Member	Accepted (signature)
1.	_____	_____	_____
	Committee Chair		
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____

Received and approved by: _____

Chair, Graduate Education Committee, Department of
Pharmaceutical Health Outcomes and Policy

A copy of this document will be provided to both, the student and the faculty advisor.

UNIVERSITY of
HOUSTON

COLLEGE OF PHARMACY

PhD in Pharmaceutical Health Outcomes and Policy

*A Graduate Program of Excellence to Develop Leaders in
Pharmaceutical Health Outcomes Research*

Comprehensive Exam and Proposal Defense Approval

Student's Full Name _____

This is to inform that the above mentioned student has successfully completed:

Date:

Written Comprehensive Exam _____

Area of Emphasis Exam _____

Dissertation Proposal Defense _____

Dissertation Title: _____

Received and approved by: _____

Chair, Graduate Education Committee, Department of
Pharmaceutical Health Outcomes and Policy

A copy of this document will be provided to both the student and the faculty advisor.

UNIVERSITY of
HOUSTON

COLLEGE OF PHARMACY

PhD in Pharmaceutical Health Outcomes and Policy

*A Graduate Program of Excellence to Develop Leaders in
Pharmaceutical Health Outcomes Research*

Dissertation Approval Form

Date: _____

Student's Full Name _____

Dissertation Title _____

This is to inform that the above mentioned student has completed all requirements of the dissertation and has received approval to proceed with uploading of the dissertation to the Vireo Thesis & Dissertation Submission System

Approved by Committee Chair: _____

Received and approved by: _____

Chair, Graduate Education Committee, Department of
Pharmaceutical Health Outcomes and Policy

A copy of this document will be provided to the student and the faculty advisor.

UNIVERSITY of
HOUSTON

COLLEGE OF PHARMACY

DISSERTATION DEFENSE

Department of Pharmaceutical Health Outcomes and Policy

ALL FACULTY AND STUDENTS ARE INVITED

DISSERTATION TITLE

Student's name

PhD in Pharmaceutical Health
Outcomes and Policy Candidate
College of Pharmacy

University of
Houston

Advisor: **Advisor's Full Name**

When: Month, Day, Year

Where: College of Pharmacy Health 2 Building, Room

XXX Time:

The first three pages for the PhD dissertation

Copy Authorization

In presenting this dissertation in partial fulfillment of the requirement for an advanced degree at the University of Houston, I agree that the Library shall make it freely available for inspection. I further state that permission for extensive copying of my dissertation for scholarly purposes may be granted by my major advisor, Dean of my academic division, or by the University Librarian. It is understood that any copying or publication of this dissertation for financial gain shall not be allowed without my written permission.

Signed: _____
(Students Full Name)

Dated: _____

DISSERTATION TITLE

by

NAME OF STUDENT

A dissertation submitted in partial fulfillment of the
requirement for the degree of

DOCTOR OF PHILOSOPHY IN
PHARMACEUTICAL HEALTH OUTCOMES AND POLICY

University of Houston
College of Pharmacy

Month 20XX

DISSERTATION TITLE

To the Faculty of the University of Houston, College of Pharmacy:

The members of the committee appointed to examine the dissertation of _____ find
it satisfactory and recommend that it be accepted on _____.

Committee Chair, (Full Name)

Committee Member, (Full Name)

Committee Member, (Full Name)

Committee Member, (Full Name)

Committee Member, (Full Name)

Dean, (Full name)

GENERAL GUIDELINES FOR DISSERTATIONS

A. Title of Dissertation

A dissertation is a valuable resource for others only if it can be located easily. Modern retrieval systems use the words in the title and sometimes a few other descriptive words to locate a dissertation document. Avoid oblique references, and be sure to use word substitutes for formulas, symbols, superscripts, subscripts, Greek letters, and so on. A good rule is to use a maximum of thirteen words for a title.

B. Page Numbers

Each page in the dissertation document, except the title page, should be assigned a number. The following plan of page numbering is required:

1. For the preliminaries, use small Roman numerals (i,ii,iii,iv, etc.). The Roman numerals should be placed at the bottom center.
2. For the remainder of the work--including text, illustrations, appendices, and bibliography--use Arabic numerals (1, 2, 3, 4, etc.). Each page must be numbered. Use of letter suffixes such as 10a, 10b should be avoided. The numbering begins with 1 and runs consecutively to the end of the document. All page numbers should be centered at the bottom. If the description of an illustration is too long to be placed on the same page, it should be placed on the previous page--not on an unnumbered page.
3. If there are more volumes than one, each volume should contain a title page duplicating the title page of the first volume. If the volumes are separate entities, it would be well to identify them further as Volume I, II, etc. The numbering may follow consecutively from one volume to another, or begin with Arabic 1 at each new title page. A maximum of 500 pages can fit in one volume.

C. Margins

1. Left - 1 "
2. Right - 1"
3. Top - 1"
4. Bottom - 1"

D. Reference List

Several citation styles are available like American Psychological Association (APA), Modern Language Association (MLA), American Medical Association (AMA), and Chicago Manual Style (Turabian) to accommodate the diverse areas and needs of researchers in Pharmaceutical Health Outcomes and Policy (<http://guides.lib.uh.edu/citationhelp>). In general, the journals will dictate the type of referencing style that is to be used for manuscripts. Since all dissertation work will be published in journals, students are required to pick one referencing style and use it throughout the dissertation.

E. Font Style

The document must be typed in an easily readable 12-point font, double-spaced. The recommended fonts are Times Roman, Arial, Cambria, Calibri, Palatino, Georgia, and Helvetica.

SAMPLE FORMAT FOR CHAPTER-BOOK

A. Order

The dissertation document must include the following items in the order listed:

1. Blank sheet of paper at the beginning of each copy submitted
2. Copy Authorization Page –All bound copies should have original signature of the student
3. Title Page - Must show the month and year of graduation
4. Signature Page – All copies must have the original signatures of the committee and the dean of the college
5. Acknowledgments - (Preface or Forward); Optional
6. Dedications – Optional
7. Abstract Page – Include the dissertation title on this page followed by the abstract
8. Table of Contents, List of Tables, List of Figures, List of Acronyms
9. Text
10. Appendix
11. References

B. Text

Although there is no fixed number of pages for the text, it is recommended that the text not exceed a maximum of 500 pages.

It is required that the text chapters be arranged in the following format:

1. **Chapter I: Introduction**
This chapter is the short summary of the dissertation which ends with the statement of the problem that will be evaluated in the research (5-10 pages)
2. **Chapter II: Background/Literature Review**
A comprehensive literature of the research being conducted (30-60 pages)
3. **Chapter III: Background/Theory**
A comprehensive description of the theory or the model that will be tested in the research (30-60 pages)
4. **Chapter IV: Methodology**
A comprehensive description of all methods used in the study (40-70 pages)
5. **Chapter V: Results**
Include all results tested in this study (30-60 pages)
6. **Chapter VI: Discussion**
This chapter should include a discussion of all findings, implications of these findings, limitations of the study, future study recommendations, and conclusions. (40-60 pages)

Note: The pages in parenthesis are only recommendations; there are no limitations on the page numbers.

C. Reference List

For citations in the text, give the author's name and the year of publication (e.g. Last Name, 2000; Last Name and Last Name, 2010; Last Name et al., 2015). In the list of references, entries should be arranged alphabetically by author and not numbered. All authors' names should be given. The list of references should contain, in sequence, the following information: authors' names and initials, complete title of the cited article, title of the journal in which the article appeared, year of publication, volume number of the journal, issue and pagination.

SAMPLE FORMAT FOR MANUSCRIPT DISSERTATION

A. Order

The document must include the following items in the order listed:

1. Blank sheet of paper at the beginning of each copy submitted
2. Copy Authorization Page –All bound copies should have original signature of the student
3. Title Page - Must show the month and year of graduation
4. Signature Page – All copies must have the original signatures of the committee and the dean of the college
5. Acknowledgments - (Preface or Forward); Optional
6. Dedications – Optional
7. Table of Contents – all sections with page numbers including Appendices, if any
8. Background and Introduction
9. Manuscript 1
10. Manuscript 2
11. Manuscript 3
12. Conclusions
13. Appendices (optional)

B. Dissertation (sections 8-13)

Section 8: Background and Introduction (min 5 pages)

Background of research problem including literature review of clinical problem and current scientific knowledge, gap in research knowledge to be addressed by this study, overall study design and analytical approach including any overarching conceptual, theoretical or mathematical models being implemented. This section can include and be expanded as needed from the written dissertation proposal. This section should also introduce the 3 manuscripts with coherent presentation of how these manuscripts address the proposed objectives.

Section 9-11: Journal Manuscripts

Full manuscript #1 formatted to meet specifications of journal for submission, eg. (Abstract, Introduction/Background, Methods, Results, Conclusions, and References) with all required supporting material including figures, tables, etc.. Journal must be identified and cited in PubMed.

Full manuscript #2 formatted to meet specifications of journal for submission, eg. (Abstract, Introduction/Background, Methods, Results, Conclusions, and References) with all required supporting material including figures, tables, etc.. Journal must be identified and cited in PubMed.

Full manuscript #3 formatted to meet specifications of journal for submission, eg. (Abstract, Introduction/Background, Methods, Results, Conclusions, and References) with all required supporting material including figures, tables, etc.. Journal must be identified and cited in PubMed.

Section 12: Conclusions (min 5 pages)

Final statements discussing the overall study conclusions and implications for future research, clinical practice and pharmaceutical health policy. This section could take the form of an Executive Summary, including brief restatements of the overall research problem and models implemented, where findings are related back to study hypotheses, models, and implications are clearly articulated for future research, practice and policy.

Section 13. Appendices (optional as needed) Provide title for each and include in Table of Contents