TEXAS TECH UNIVERSITY
HEALTH SCIENCES CENTER™

Jerry H Hodge School of Pharmacy

Pharm. D. Student Honors in Research

Program Manual

2024

TABLE OF CONTENTS

I. PROGRAM DESCRIPTION

DESCRIPTION: The Honors in Research Program is a series of research activities performed under faculty mentorship and conducted in addition to the regular PharmD curriculum. Completion of the Honors in Research Program will be recognized at graduation by designation of "Honors in Research" on the diploma. Faculty from the Jerry H. Hodge School of Pharmacy (SOP), or health science professionals from outside the School (e.g., preceptors in associated hospitals or clinics) may serve as mentors. The program has two principal tracks, Basic Sciences (Track 1) and Clinical Sciences (Track 2).

ELIGIBILITY:

a. To be eligible, students must carry a cumulative GPA of at least 85 and have no course failures while enrolled at the School of Pharmacy.
b. Students will apply to the SOP Research Council by March 1st of their first or second year. Applications shall include: Application form (see **Appendix 1**, available as fillable pdf) & Personal statement describing why the applicant wants to participate in the Honors in Research Program
c. The SOP Research Council will review applications and student's transcript (obtained by Student Affairs) and notify applicants by April 1st.

RETENTION REQUIREMENTS:

In order to stay enrolled in the Honors Program, students must maintain a minimum G.P.A. of 85, have no course failures, and have no honor code violations. Additionally, the student must identify a mentor and submit a research proposal to the SOP Research Council for approval by August 1st, between their second and third year.

COMPLETION REQUIREMENTS

Students in the Honors Program must complete all of the following at least 4 weeks prior to graduation in order to graduate with the honors distinction:

1. Cumulative G.P.A. of 85 or higher
2. No course failures
3. No honor code violations
4. Complete training for IRB or IACUC protocols, when required for project
5. Complete two research assignments (detailed below)
6. Attend 16 research seminars (detailed below)
7. Complete a capstone project (detailed below)
8. Give an oral presentation of their final capstone project results (detailed below)
9. Show evidence of a peer-reviewed poster presentation, final written manuscript, or manuscript publication of their capstone project
10. Submit a copy of the poster or manuscript to the SOP Research Council

II. PROJECT OVERVIEW

Goals:

1. To apply the scientific research process and the various components (e.g., hypothesis testing, data collection, evaluation, data analysis, data critique) of research methodology to investigate and answer a research question related to the field of pharmacy.
2. To provide an experience that enables the students to integrate and apply concepts or information learned in previous courses (e.g., pharmacology, medicinal chemistry, pharmaceutics, pharmacokinetics, study design, biostatistics, drug information, therapeutics).
3. To foster collaboration and teamwork among students and the project mentor.
4. To encourage dissemination of project results at scientific meetings and through publications.
5. To provide value to pharmacy/pharmaceutical sciences research or advanced pharmacy practice experience (APPE) sites and contribute to the advancement of the profession.

Objectives: Upon completion of the project the student will be able to:

1. Identify a problem or situation relevant to pharmacy/pharmaceutical sciences research that merits further study.
2. Describe a study design to address the identified problem or issue.
3. Prepare a project proposal
4. Conduct the research project
5. Write a report describing the study and the results in a manner suitable for presentation and publication
6. Demonstrate an understanding of the scientific research process and its application to answering a hypothesis/question

III. RESEARCH ASSIGNMENTS

Students are required to complete **two research assignments**. The purpose of this requirement is to further develop skills in literature evaluation, research writing, and/or laboratory techniques. Any class that is part of the pharmacy curriculum may be a source/inspiration for the extra research assignments. The student must first obtain approval from the course team leader and discuss and agree on a research assignment. Examples of research assignments include:

1. Write a literature-based paper (term paper) on any topic of mutual interest; ideally at least one of the research assignments will focus on the background evidence-based literature associated with the chosen Capstone research project.
2. Complete a small focused laboratory project in conjunction with research personnel (e.g. development of an assay, a cell culture study, data analysis, etc.).

With respect to minimum expectations for time spent, the duration during the initial phase of the project depends on the prior experience of the student (e.g., having a BS degree that involved substantial benchwork, survey field work, or computational statistics). In general, between 8 and 12 weeks may be necessary to acquire basic laboratory skills (e.g., weighing, pipetting, sterile techniques for cell culture,

basic operation of a microscope) and practice-based research skills. Requirements will vary according to the individual project and will be defined by the faculty/Principal Investigator mentor. Consequently, the research assignment may extend beyond the end date of the course.
Additionally, any research intensive elective such as an Independent Study "Special Topics" Elective can qualify towards the requirement for the research assignments. In some cases, advanced classes in the graduate program may be taken as electives that will satisfy these requirements. This latter case requires prior discussion with and approval from the SOP Research Council.

When the student has completed each assignment, he/she should submit a signed copy of the Research Assignment Report Form (**Appendix 2**) to their mentor and the Associate Dean of Sciences.

IV. RESEARCH SEMINARS

Students are required to attend 16 research seminars before they graduate. The purpose of this requirement is to expose students to different research areas, methods, and emerging trends. Any research seminar given by one of the Science departments, the Graduate School, the School of Medicine, or faculty candidates will qualify. Additionally, research seminars given at other institutions (e.g. University of Texas Southwestern Medical School) to which TTUHSC faculty and students have access will also qualify. Grand rounds may qualify as research seminars provided that they are at least 40 minutes in length, research studies are discussed, and were attended during the student's P1-P3 years. Grand rounds attended during P4 year for academic credit, seminars that review a disease topic or therapy without review of evidence-based literature, or seminars/grand rounds which are counted towards IPPE requirements will not count towards honors program requirement. In addition, the Research Council will be hosting a series of research-based seminars focused on development of research skills, which count towards the hours required for the program. These will start in fall of each year at the beginning of the semester.

Students are required to document attendance at these seminars using the "Seminar Tracking" form (**Appendix 3**).

V. CAPSTONE PROJECT

The purpose of this requirement is to enable students to pursue special research interests with individualized mentoring from their faculty mentor. Students are responsible for identifying their research mentors. Typically, the capstone projects will build on the prior research assignments. Faculty and non-faculty pharmacist preceptors are eligible to be research mentors, however, for non-faculty mentors, students must submit a written request to the SOP Research Council for approval.

The student should develop a project outline (approximately 2 pages) and a tentative timeline using the templates in **Appendix 4** and **5.** It is expected that the student will work on this project over the course of about 2 years and it will culminate in presentation of his/her research findings at a peer-reviewed conference or manuscript submission for publication. A copy of the manuscript or poster and written report should be submitted to the SOP Research Council. It is highly recommended (in particular for

projects involving bench research) that students take advantage of the 6-week P3 elective option (2 SCH) and/or the two, 6-week, P4 APPE options (6 SCH each) to complete their research for academic credit within the SOP curriculum.

ORAL PRESENTATION

The student will present his/her final Capstone project results at an Honors in Research Program regularly scheduled monthly meeting, departmental seminar, Research Days or Student Research Week at the TTUHSC School of Pharmacy/TTUHSC or at another time by appointment, based on student, mentor, and Honors in Research Program faculty availability. The departmental seminars should be through the faculty mentor's department and should be coordinated with the help of the mentor. The student's mentor must attend the seminar and send a memo to the SOP Research Council and Associate Dean of Sciences, indicating that it was successfully completed. Additional forums for the oral presentation may include talks/seminars/platform presentations at peer-reviewed conferences, provided that the student has obtained prior approval from the SOP Research Council and the mentor is present to evaluate the presentation. Note that poster presentations alone do not count towards the oral presentation requirement.

VI. PROJECT MENTOR RESPONSIBILITIES

The project mentor is the designated faculty member or health professional as defined above who has agreed to supervise and help facilitate a research project. The project mentor is not expected to do the bulk of the work. The projects conducted by the students should ideally be of value to the project mentor and to the institution/practice site. Project mentors and students can explore any reasonable question or issue related to pharmacy. Students may also approach potential mentors with ideas for a project.

The following are general responsibilities of project mentors:

1. Be familiar with the project requirements and objectives for students (Refer to Sections II to IV).
2. Review the student's project proposal (See Appendix 2) and anticipated timelines (Appendix 3) for completion and provide suggestions for improvements, if necessary.
3. If applicable, ascertain if institutional review board (IRB) on human or animal research is required and make certain that everyone is in compliance with HIPAA regulations for human research.
    a. Be familiar with criteria for IRB submissions at your institution. If the study involves human or animal subjects, then appropriate IRB or IACUC review and approval is required. You need to obtain IRB or IACUC approval from TTUHSC. In addition, if your site/institution has an IRB, you will also need to obtain their approval before you can start your project. For questions, please contact the SOP Research Council for guidance. Review the study protocol to be submitted to the IRB or IACUC for approval.

    b. Notify students of IRB or IACUC approval and time to start data collection. Note: For studies involving human subjects or information about specific patients or their medical records, students may NOT begin data collection until IRB approval is obtained.
4. Actively communicate with students to determine the progress and status of the project. At the start of the project, discuss with students roles, expectations and proposed order of authorship on presentations/publications.
5. Communicate with and notify the SOP Research Council of any problems as needed.
6. The student's Mentor will notify the committee in writing each semester that the student is making acceptable progress.
7. For the Capstone project, review the draft of the corresponding manuscript or poster and final report.
8. Notify the student of project completion. Project completion is defined as a finished project, in your hands, that requires no further editing.
9. Provide oversight as students disseminate results via poster presentation and/or manuscript publication.

APPENDIX 1.

Honors in Research Program Application 2024

Please fill out this form completely and return it by email to: SOPHonorsResearchProgram@ttuhsc.edu. You are also required to submit your CV, personal statement on why you want to apply for a research-focused program and transcripts by March 1, 2024. You are required to be in good academic and professional standing in order to apply for the program.

General Information:

Name	
Email Address	
Campus	
Gender	
Age	
Current GPA	
Race	
Ethnicity	
Undergraduate Degree	
Undergraduate Institution(s)	
Undergraduate Field(s) of Study	
Graduate Research Experience	

Preferred Track in Honors Research Program:

___ **Track 1** Basic Sciences - Capstone requires commitment of at least 5-10hrs/wk** for a sustained period to accomplish a meaningful independent investigator-initiated project and learn laboratory techniques required)*

**work on a basic sciences project as part of a 'minor assignment' usually does not require this type of time commitment*

___ **Track 2** Clinical Sciences - typically retrospective or database-focused research; potentially could be prospective education or other research depending on the mentor; most mentors are pharmacy practice faculty.

Areas of Practice Interest (choose up to 3):

___Academia

___Basic Science (lab research) ** minimum weekly time commitment

___Clinical Areas

___ Cardiology (HTN, HF, CAD, ACS, Afib, Anticoag, etc.)

___Critical Care

___ Endocrinology (diabetes, thyroid, etc.)

___ General Internal Medicine (pulmonary, toxicology, GI, renal, hepatic, nutrition)

___ Geriatrics

___ Hematology/oncology

___ Infectious Diseases

___ Pediatrics

___ Pharmacoepidemiology

___ Pharmacoeconomics

___ Pharmacogenetics/Pharmacogenomics

___ Health Services Research (e.g., Patient Safety; Quality of Care)

___ Health Education and Health Promotion (e.g., Patient Education, Clinician Education)

___ Other

Career Goals:

In 5 years, I hope to:

Potential mentors you are interested in working with:

(Note: your Capstone research project mentor should be ideally located on the same campus you are deployed to for P3 year but depends on project type & data availability; your mentors for "minor assignments" can be from any campus and are typically completed in the P2 year)

If you are already working with a professor or researcher, please indicate their name here:

Personal Statement regarding why you are interested in research, why you want to apply for the Honors in Research Program and what you hope to gain from the experience:

APPENDIX 2.

SCHOOL OF PHARMACY HONORS IN RESEARCH PROGRAM
RESEARCH ASSIGMENT REPORT SHEET

Course Number and Title:

Project Period or Date Course was Completed:

Brief Description of the Assignment (in the space available be specific in describe the mutually acceptable project; for example, a 5-page, typed, double-spaced library research paper on a topic of mutual interest, including a least 10 references):

Course Faculty Date	Honors Student Date

Attachment: a copy of the assignment

APPENDIX 3.

SCHOOL OF PHARMACY HONORS IN RESEARCH PROGRAM
RESEARCH SEMINAR ATTENDANCE SHEET

STUDENT NAME:_____

Date	Seminar Title & Presenter	Forum (e.g. Dept Seminar, Grand Rounds, etc.)	Faculty Coordinator Signature

APPENDIX 4. Project Approval Form & Proposal Template

1. Student Information:

Name:
Anticipated Graduation (month/year):

2. Proposed Project Title:

3. Faculty Mentor/Mentor Information

Name:
Address:
Phone Number:
Email Address:

_____ _____

Faculty Mentor Signature Date

By signing this form, the faculty mentor has agreed to the project topic and will serve as the project mentor for the students involved in the research project.

4. Study Design Proposal

Presentation style: use 1.5 line space or double space, Arial font size 11, 1 inch margin (top, bottom, left, right), page number at upper right corner. Proposal (from item 1 through item 7) should be approximately 2 pages in length.

NOTE: You will need information gathered from a preliminary literature review to draft this study proposal.

1. Title

Include a title that represents your research; it should be descriptive, succinct, and non-biased.

2. Hypothesis and Objective(s) or Specific Aims

List the primary objective and hypothesis that you will be addressing in your study.

3. Background and Significance

Describe what is already known through review of the literature that you have searched and identify the knowledge gap and rationale for your proposed study. In particular, indicate how

this extends current research in this area through addressing a research question that is not yet fully answered. The literature review does not need to be exhaustive, but should be organized and argued to support why and how the proposed research will be conducted.

4. Research Design and Methods

Describe the study design (e.g., cross-sectional, case-control, group-comparison, longitudinal, experimental, etc.) that you will employ.

Specify who your subjects or participants are. Indicate where, when, and how subjects will be recruited. Briefly describe the consent process. List both inclusion and exclusion criteria for study subjects.

State the observation or intervention methods. State sample size number proposed in your study; explain how the number estimate is obtained. Describe your plans for data collection method (e.g., via paper survey forms, websites, computerized tablets, PDAs, blood or urine samples, etc.). Indicate measure and/or instrument you propose to use for your study.

State the primary outcome endpoint for your study. Indicate the type of outcome variable (e.g., mean BP change) and the type of data (e.g., continuous variable), and the respective statistical procedures for analyzing those outcome measure.

5. References

Attach a bibliography of all references cited in your proposal. Use the AJHP reference format for bibliographic citations unless otherwise required by your project mentor. Include a minimum of 4 to a maximum of 10 citations.

6. Anticipated timeline for project completion

Attach a table with timelines (actual dates) for conducting the study (see Appendix 2), starting from the anticipated date for when the project topic and project mentor will be determined to when the final paper/poster is approved by the project mentor.

7. Role of Student(s)

If this will be a group project, briefly describe the proposed role and contribution of each student individually to the research project.

For Student Research Project Committee USE ONLY (Circle One)

APPROVE **REVISE AND RESUBMIT** **DISAPPROVE**

Comments/Explanation:

APPENDIX 5. Tentative Timeline for Student Joining the Program in the P1 Year

(Modifications required as appropriate for later start dates in P2)

YEAR 1: P1 Spring Live Sessions: Introduction to Research & Research Projects

Session	Topic
1 - January	Essential skills/training: human subjects protection/HIPAA/safety Semester homework: CITI training, lab safety training
2 - February	Conceiving and developing a research question; Reviewing existing literature for potential gaps
3 - March	Setting research goals & timelines for completion
4 - April	How to conduct a proper Pubmed search & How to use Endnote

YEAR 1: P2 Fall Live Sessions: Research Protocols / Study Methodology

Session	Topic
5 - August	Developing a research protocol – study design, methodology, inclusion/exclusion criteria, data endpoints/outcomes
6 - September	Developing an appropriate data collection sheet/ Excel
7 - October	Reporting guidelines
8 - November	IRB submission process, defining authorship/contributorship, IRIS / CRI pre-check process, study amendments / closure

YEAR 1: P2 Spring Live Sessions: Data Collection & Management

Session	Topic
9 - August	Intro to databases; Tips for data collection, data checks
10 - September	Identifying and controlling bias in research, confounding variables, strategies to optimize data quality
11 - October	Research data manipulation/data management in Excel; data scrubbing
12 - November	Drafting a manuscript: Introduction and Methods sections

YEAR 2-3: P3/P4 Fall Live Sessions: Research Proposals / Methodology

Session	Topic
1 - August	All students: research project pitch presentations for vetting Statistical analysis
2 - September	All students: research project pitch presentations for vetting Results interpretation/ building graphs & tables
3 - October	Drafting title, abstract sections
4 - November	Creating a platform research presentation & poster presentations; Preparing/presenting research for an audience: how to prepare for questions

YEAR 2-3: P3/P4 Spring Live Sessions:

Session	Topic
5 - January	Journal selection, journal article submission process, peer review process
6 - February	Drafting results, discussion, conclusions for a research manuscript
7 - March	All students: Capstone platform presentations
8 - April	All students: Capstone platform presentations

Approximate Time Commitment for Research Activities*

Project component	Suggested Minimum Time to Allocate for
Topic and project advisor determined	1 month
Submit project approval form and research proposal for review and approval by the Student Research Project Committee	
Completion of training course for the protection of animal or human research subjects (if applicable)	3-6 months
Review of the literature	
Research question, study population, design, & data collection methods determined	
IRB or IACUC Research Plan, Consents, application pages, etc. written and submitted; revisions based on IRB/IACUC review feedback incorporated and resubmitted until approved	
Data collection	3-6 months
Data analysis	3 months
Write final report (note multiple drafts will be necessary) A draft written final report must be received by your project advisor by March 1st of the P4 year at the latest	
Final Paper and Poster reviewed and approved by project advisor	
Final Paper and Poster submitted to SOP Research Council	
Capstone platform presentation	

*** Consult with your project mentor as deadlines vary by project**