Pharmacy Research Elective
(PHA 5901/5902/5905/5906/5907)
Available Fall, Spring & Summer Semesters
Variable Credit Hours (1-3)

Course Purpose:

The purpose of this course is to introduce students to the scientific method and the process of research by participation in supervised pharmacy-related research. This opportunity will also allow the student to explore career opportunities in research. The student will participate in research under the direction of a College of Pharmacy faculty member. The student may also work closely with a graduate student or postdoctoral associate who is performing research supervised by a College of Pharmacy faculty member.   It is expected that the exact format of the research experience will vary depending on the faculty, the type of research, and the student's prior research experience. In some cases students may be participating in research conducted by more senior students, postdoctoral associates or graduate students; in other cases students may work independently on a project.   In all cases, this course is expected to develop the student's knowledge of research methods and skills in inquiry-based thinking and self-directed learning as well as allow the student to practice hands-on research skills, data collection, analysis and presentation.

Course Faculty and Office Hours

Course Coordinator: Maureen Keller-Wood, Ph.D.
Email: kellerwd@cop.ufl.edu
Office: HPNP 4332-Room A
Phone: 352-273-7687
Office Hours: By appointment

Course Faculty:
Prior to registering for the course, the student must identify a faculty member who agrees to serve as the instructor/mentor. Please see **Appendix A** for faculty who can fulfill this role.

Academic Coordinator
N/A

This Course Will Prepare You to Perform the Following Activities:

1. Form clinical/practice-related questions and retrieve evidence to advance patient care. (**EPA B1).**
2. Demonstrate soft-skills in daily practice including interprofessional team collaboration (e.g., interpersonal communication, professionalism, cultural sensitivity, innovative mindset). (**EPA D1).**
3. Demonstrate responsibility for personal and professional development. (**EPA D3).**

Course-Level Objectives

Upon completion of this course, the student will be able to:

1. Describe the research being conducted by the faculty member who will supervise the learning experience.
2. Identify the research hypothesis that is ongoing in the work of the faculty member and other research lab team members.
3. Understand the regulatory aspects of the conduct of research.
4. Evaluate literature by conducting a literature review and readings related to a research question/problem identified during prior discussions with the faculty member.
5. Practice performing selected research methods and data collection.
6. *Accurately record any research performed.*
7. Communicate research reports by orally presenting their work.
8. Collaborate as a team member in the laboratory.
9. Demonstrate responsibility, safety, and ethics in all research activities.

Pre-Requisite or Co-Requisite Knowledge and Skills

Completion of year 1 in the Doctor of Pharmacy program including all milestones.

Approvals for Registration

In order to register for this course, the student must:

- Identify a faculty member who will serve as a research mentor and identify a project
- Use Pharm Academic to identify Research elective.
- Complete **College Research Elective Form**
  This form will ask what type of research you are performing.
  This form will require information on your mentor, your project and the type of study you are completing. In order to complete this form, you will need to know if your project involves any animal use, and any use of either human subject data or any human tissues, contact, etc. You should also know if the project itself has prior IACUC or IRB approvals associated with it.
  The form will be routed to both compliance and student affairs staff to assure that you can be registered for the class.
  Please be sure to complete this form by the date stipulated prior to the registration deadline for the semester.

In most instances the research elective will require completion across the entire semester rather than the 2-week elective block that is part of the Pharm.D. curriculum. Therefore, the Associate Dean for Student Affairs will also approve registration of all students for this course.

Students must complete all necessary compliance (IACUC/IRB) requirements before the START of the project.

Credit Hours

The following table lists the minimum time the student must spend in the laboratory during the semester based on the number of credit hours. In addition to the laboratory time, the student is expected to complete outside study such as readings and preparation of written and verbal reports.

Credit Hours	Laboratory Hours per week (per semester)	Outside Study (per semester)
1	3 (48)	2 (32)
2	6 (96)	4 (64)
3 (AVAILABLE ONLY IN SUMMER)	9 (144)	6 (96)

Course Outline

See Appendix A for the responsibilities of students and the faculty member.

Week	Instructor	Related Learning Objective	Topic/Learning Activities
Before COP registration deadlines			Meetings with faculty member and other lab team members to learn about the research being conducted in the laboratory and possible research problems/questions the student may explore. Complete Research Elective Form
Before start of semester			Completion of all necessary compliance reguirements (IRB/IACUC) and supply any necessary information on these to the COP Research Compliance office.
1-14			Research activities as outlined in the Research Activities section of the *The faculty-student Agreement form*
15-16			Completion of a verbal (and possibly written) presentation of research project as outlined in *The faculty-student Agreement form*

Textbooks

There are no required textbooks.

The student will be expected to complete readings that are electronically available through the UF library.

Student Evaluation & Grading

Research Electives are graded as Pass/Fail.

Prior to starting the course, the student and faculty member must complete **Appendix B** that outlines a Research Activities Agreement. This agreement defines the expected Research Activities and Final Report Requirements. Grading will be based on the rubrics identified in **Appendix C.**

Assessment Item	Description/Criteria	Percentage of Course Grade
General Research Activities (Activities outlined in the Research Activities Agreement)	See *Rubrics* The following is a minimum set of expectations for every student enrolled in this class for credit: i.) perform a background literature search and review, ii.) develop a plan, iii.) participate in experimental work or applied experimental work, iv.) verbally present the research findings. All four of these minimum expectations as well as additional expectations (e.g., attendance at departmental and/or College research seminars, participation in research group meetings, etc.) are to be clearly established and articulated to the student by the research advisor prior to commencement of the research project.	70%
Quality of the Final Report (Verbal and/or written as established in the Research Activities Agreement)	See *The Rubrics*	30%

Attendance Policy

This research elective requires a significant degree of autonomy with relatively little direct oversight from the faculty mentor/research mentor. The student must dedicate a minimum number of hours on a project that is consistent with the total credit hours sought for the experience. At the beginning of the learning experience, the student should meet with the faculty member and determine times that the student is expected to be in the laboratory in order to accomplish expectations related to participation, including attendance at group meetings, individual meetings, etc.

The policies for allowable absences and make-up work follow the university attendance policies: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

General College of Pharmacy Course Policies

The following policies apply to all courses in the College of Pharmacy and are available on the COP website:

University Grading Policies

Please visit the following URL to understand how the University uses the course grade to compute your overall GPA: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Concerns, Appeals, and Complaints

Students who have concerns about their evaluation of performance and/or student-faculty relations should review the Student-Faculty Handbook for guidance. The Student-Faculty Handbook also outlines the chain of command for any appeals and/or complaints.

Academic Integrity Policy

Students are expected to act in accordance with the University of Florida policy on academic integrity (http://www.dso.ufl.edu/sccr/honorcodes/honorcode.php). This Honor Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obliged to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult the course's Teaching Partnership Leader/Course Director.

Students are also expected to abide by the UF Honor Code.

The following is the UF Honor Pledge: *We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity by abiding by the HonorCode.*

On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: *"On my honor, I have neither given nor received unauthorized aid in doing this assignment."*

Psychomotor and Learning Expectations

Psychomotor expectations relate to the ability to meet the physical demands of the pharmacy curriculum. Physically impaired students and students with learning disabilities such as hearing impairment, visual impairment, dyslexia or other specific learning disabilities such as sensory deficit or sensory-motor coordination problems should cooperate with the faculty and staff in addressing these circumstances in order to meet academic standards.

How to Request Learning Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered with the Disability Resource Center, students will receive an accommodation letter which must be presented to both the instructor and academic coordinator to utilize classroom accommodations. Students registered with the Disability Resource Center who are requesting clinical accommodations for rotations or clinical experiences should contact their Learning Specialist in the Disability Resource Center. Students with disabilities should follow this procedure as early as possible in the semester.

Additionally, students at all College of Pharmacy campuses are expected to provide a copy of the accommodation letter of the Office of Student Affairs by email (carswell@cop.ufl.edu), fax (352-273-6219) or in person at G235 (Student Services Suite) of the Health Professions, Nursing and Pharmacy Building since some learning activities, exams, and assessments require additional assistance. The College of Pharmacy highly encourages that this procedure be completed before each course begins. Being proactive in this process will ensure that accommodations are in place for each student's learning activities, exams, and assessments because grades cannot be retroactively changed.

Computer and Other Technology Requirements

Students are required to meet the following computer and technology requirements:
http://pharmacy.ufl.edu/education/student-affairs/admissions/student-computer-requirements/

Expectations In Class and Other Learning Activities

Students are expected to:
- Be diligent and timely in studying the background material.
- Be on time for scheduled lab time and meetings.
- Be prepared for group discussions and conference calls.
- Do your own work.
- Actively collaborate with other lab members when assigned to groups.
- Inform the PI or lab manager about an absence from a scheduled lab activity at least 24 hours prior to the event.
- Dress appropriately for laboratory sessions or research group activities.
- Turn cell phones and other electronic communication devices to silent mode during presentations
- Appropriately use lab computers, i.e., do not access unrelated information on web sites
- Be respectful to all members of the lab.
- Be respectful to fellow students and colleagues.
- Address faculty with the appropriate title and name, i.e., Dr. (last name) or Professor (last name).
- Seek assistance with academic or personal difficulties as soon as possible.

Communication

Student Complaint Process

Concerns about the course (e.g., course requirements) should first be discussed with the research mentor. If a satisfactory resolution is not achieved, the student may appeal to the Associate Dean for Research and Graduate Education who will also engage other individuals depending on the request (e.g., campus dean, department chair, Associate Dean for Student Affairs). If the student finds the decision unsatisfactory, the student may appeal to the Dean of the College of Pharmacy.   If this decision is unsatisfactory, the student may appeal to the Ombuds office (
https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf).

Religious Holidays

Please see the University policy on attendance and religious holidays:

http://www.registrar.ufl.edu/catalog/policies/regulationattendance.html#religious.

Counseling and Wellness Center

Students who are experiencing issues and events that could adversely affect academic performance and personal health should be encouraged to meet with the Teaching Partnership Leader/Course Director or Associate Dean for Student Affairs for guidance. Students in the Gainesville area may contact the UF Counseling and Wellness Center for Gainesville students (352-392-1575; http://www.counseling.ufl.edu). Students outside the Gainesville area may obtain similar contact information from the campus/program administrator.

Emergencies

Call the University Police Department for emergencies: 392-1111 or 9-1-1

Student Crisis

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Students who are experiencing issues and events are also encouraged to contact their local crisis center. For Alachua County the Crisis Center number is 352-264-6789; for Jacksonville and Duval County 904-632-0600 and toll free for Northeast Florida at 1-800-346-6185; and for Orlando 407-425-2624.

The following national call numbers are also available for students who reside outside of the main COP campuses: a) 1-800-273-8255, and b) 1-800-784-2433.

How to Access Services for Student Success

Students who need guidance for course success or who are having academic difficulty should contact the Teaching Partnership Leader/Course Director. In addition, students are encouraged to contact their advisor or Campus Director/Associate Dean for Student Affairs for assistance.

Faculty Lectures/Presentations/Course Materials Download Policy

Photography, audio-visual recording, and transmission/distribution of classroom lectures, course materials, and discussions is prohibited unless there is expressed written permission.

Recorded lectures and class sessions are authorized solely for the purpose of individual or group study with other UF College of Pharmacy students enrolled in the same class. Such recordings may not be reproduced, shared, or uploaded to publicly accessible web environments. Students who do not adhere to this policy will be considered to be breeching COP copyrights and/or FERPA law.

Appendix A: Student and Faculty Member Responsibilities

Student Responsibilities
1. Prior to registering for the course, identify a faculty member that is doing research in an area you have interest in and who is available to teach in the semester you desire to take the elective.
2. Gain an understanding the faculty member's expectations of your work (specific research tasks, deliverables, timeline, etc.) on the project by the end of the first week of the course.
3. Complete the College of Pharmacy Research form
4. Complete any lab requirements such as IACUC or IRB training and registration.
5. Understand how to conduct research in a responsible and ethical manner. Follow the UF Honor Code at all times.
6. Work actively doing research and related activities that are consistent with the credit hours.
7. Keep clear accurate records of your work.
8. Follow all safety protocols and ask questions about safety protocols before performing any procedure about which you are unsure.
9. Ask for assistance when you need it.
10. Keep your faculty member and other laboratory members informed of your progress.
11. Work as a team member on your project.
12. Present your research findings in an oral presentation, and when appropriate in written form.
13. Strive to go beyond the minimum expectations of preparing a literature review and project plan, performing the research, and writing a final report.
14. Seek out opportunities for oral or poster presentations at a conference, writing and submitting a journal paper of your work, etc.

Responsibilities of the Faculty Mentor, Graduate Student/Post-Doctoral Mentor(s):
1. Determine the appropriate number of credit hours to be assigned to the project. Approve and sign the application form to enable the student to register for 1-3 credit hours.
2. Clearly define your expectations of the student's participation on the project (specific tasks, deliverables, timeline, etc.).   Establish deadlines for the student's literature review, project plan and final report
3. Arrange for all safety training that is appropriate for the student to ensure her/his safety in your laboratory.
4. Arrange for all IACUC and IRB training and registration
5. Assure that the student has completed the College of Pharmacy Research form (located at and has completed all appropriate training modules for conduct of the research (esp for animal or human subject research)
6. Guide the student in understanding the broader context in which her/his research project fits into the research being conducted in the laboratory.
7. Provide support and supervision of the student (either directly or by referring her/him to a graduate student, postdoctoral fellow, or research staff member).
8. Meet weekly with the student to review her/his progress and to provide guidance in moving forward in her/his project.
9. Provide a mid-semester evaluation of the student's performance, accompanied by recommendations for improving performance for the remainder of the semester.
10. Assign the student's final grade.
11. Encourage the student to go beyond the minimum expectations of preparing a literature review and project plan, performing the research, and writing a final report. Note a research report, and presentation of the research is a requirement for the honors project.

APPENDIX B: STUDENT –FACULTY AGREEMENT FORM

Research Activities Evaluation Plan *(Must be Completed by End of Week 1; faculty should retain)*

Section 1 – Completed by the Student

Outline the Research Problem/Question that you will address during this course:

How I will be Evaluated:

__Review of the literature and presentation to the faculty member/other laboratory members.

__Development of a plan outlining my research methodology

__Learn and perform the following research procedures: _____

__Collect research data using accurate and ethical procedures

__Analyze the research data (Outline student responsibilities and if available others who will assist in data analysis: _____

__Prepare a written report of the research data (The following describes the expected length/format): _____

__Give a verbal presentation of the research results.

Section 2: Completed by Faculty Member

Plans for student evaluation (lab attendance, verbal or written evaluation - See Appendix E)

Additional Comments/Expectations

Approvals:

Student Signature: _____ Date: _____

Faculty Member Signature: _____ Date: _____

APPENDIX C: Rubrics for Assessing Student Performance

	Exemplary (Score = 3)	Proficient (Score = 2)	Marginal – Needs Improvement (Score = 1)	Unacceptable (Score = 0)
Attendance – (Score must be 1 or greater to pass the course)	Student is in the laboratory more frequently than required and attends all expected meetings. All activities while in the laboratory focus on the research effort.	Student is present in the laboratory for the minimum expected amount of time and attend the expected laboratory meetings.	The student met the course requirements but missed an expected laboratory meeting.	The student did not meet the expected laboratory time commitments expected for the credit hours taken.
Participation in Laboratory Meetings/ Discussions	Student listens carefully, is very engaged in discussions, and actively contributes insightful and valuable thoughts.	Student listens carefully and sometimes contributes to discussions.	Student listens carefully but does not contribute to discussions.	Student does not appear to listen to discussions. The student did not appear to be engaged in the meeting/discussions.
Review of the literature	Student completed a comprehensive literature review. Was also able to accurately summarize key articles. Was able to identify accurate weaknesses in the articles.	Student completed a literature review but it was not comprehensive. Student read key articles related to the project and was able to summarize the findings.	Literature review was marginal or not done. Student read only key articles mentioned by the faculty member. Student was able to accurately summarize these articles.	No literature review was attempted. Student was not able to accurately summarize key articles mentioned by the faculty member.
Plan for Research	Proposes a research methodology that	Proposes a sound research methodology.	Research methodology had several flaws.	Research methodology exhibited multiple

Methodology	was appropriate, accurate, and comprehensive. There were no methodological flaws that needed correction.	With a limited prompt by the faculty member, the student was able to realize 1-2 methodological flaws and recommend a correction.	Student required faculty coaching to understand the problems and correct the plan.	deficiencies such as being superficial and having numerous flaws. Even with significant faculty guidance the student struggles to develop a sound research methodology.
Skills in research lab/ procedures	Demonstrates high level of proficiency in skills related to their project. Is able to work independently on some aspects of the project.	Demonstrates competency at a level expected for the time allotted to the project. Is not yet able to work independently.	Has had considerable challenges in conducting the research, but has worked on these with guidance. Requires oversight on all aspects of the project.	Unable to demonstrate basic skills needed for the project even with significant oversight and guidance form members of the research team.
Participation as a team member in the laboratory	Interacts well with all members of the research group. Demonstrates professionalism. Contributes to others projects.	Interacts well with members of the research group. Demonstrates professionalism.	Interacts with only those members of the group most related to their research. Has had some difficulty in interactions with others requiring consultation or mentoring by PI or other lab members.	Unprofessional behavior that required intervention by the PI
Evaluation of Final Paper, where appropriate:	Paper is well written and shows a high level of understanding of the topic and the	Paper is well written and shows a generally good level of understanding of	Paper has some weakness in grammar or in referencing; shows acceptable	Paper shows deficiencies in the understanding of the material

	approaches to study; excellent understanding of the background for study of the area with appropriate referencing	the topic and the approaches to study; able to summarize finding with appropriate referencing	level of understanding of material and methodology, with some weaknesses	

Rubric:

Presentation Rubric

Grade Determination:
 Satisfactory = 4 Points with a score of "Meets Expectations" in 3 of the 4 areas.
Unsatisfactory = 3 or less points

	Accomplished (2 Points)	Meets Expectations (1 Point)	Deficits Exist (0 Points)
Content *Did the presentation have valuable information?*	Presentation had an exceptional amount of valuable information. Knowledge of subject extended beyond expectations. Knowledge of the subject is evident throughout.	Presentation had a good amount of valuable information. Knowledge of the subject met expectations. Information was clear, appropriate, and correct.	Presentation had little or no valuable information. Insufficient knowledge of the subject. Information was incorrect and/or confusing.
Organization *Was the presentation well organized and easy to follow?*	The presentation was well organized, well prepared and easy to follow.	The presentation had organizing ideas but could have been much stronger with better preparation.	There were minimal or no signs of organization or preparation.
Presentation *Did the presenter*	Did an excellent job engaging others in the presentation.	Showed evidence of planning prior to presentation. Was	Demonstrated little evidence of planning prior to

speak clearly? Was it obvious the material had been rehearsed? Were materials free of errors?	Was very confident and spoke clearly. Materials were free of spelling/grammatical errors.	generally confident and spoke clearly. Materials had less than 2 spelling/grammatical errors.	presentation. Presenters mumbled and/or speaking was not clear. Materials had spelling/grammatical errors.