

Pharmaceutical Sciences - Ph.D

Group 1: Cycle 1 - Fall 2017 - Summer 2019

Currently status is: Report Accepted

ASSESSMENT REPORT FOR Group 1: Cycle 1 - Fall 2017 - Summer 2019

Mission Statement

Our mission is to prepare the next generation of innovative and collaborative pharmacists and health scientists while pioneering clinical, entrepreneurial, and research endeavors to improve health outcomes for residents of South Carolina and beyond.

We will accomplish this by:

- Continually building a culture of compassion, inclusiveness and collegiality
- Providing comprehensive pharmacy education
- Conducting and disseminating state of the art research
- Establishing optimal student experiences
- Engaging in community outreach
- Expanding pharmacy practice, post-graduate training, and business opportunities
- Growing alumni and partner relationships
- Foster faculty and staff development

Goal 1.

Students will demonstrate knowledge and application of the theories, principles, and methods underlying the pharmaceutical sciences.

Curriculum

Department of Drug Discovery and Biomedical Sciences (DDBS)

- PHAR 700 *Principles of Pharmacology, Medicinal Chemistry, and Pharmaceutics.*
- PHAR 701 *Current Topics in Pharmaceutical Sciences*

Department of Clinical Pharmacy and Outcomes Sciences (CPOS)

- BIOS 701 *Concepts and Methods of Biostatistics*
- BIOS 757 *Intermediate Biometrics*
- PHAR 740 *Socioeconomics of Pharmacy Practice*
- PHAR 742 *Research Methods in Pharmacy Administration*

Learning Outcome 1.

DDBS: Students will demonstrate proficiency in understanding principles of medicinal chemistry, pharmacology, and pharmaceutics. Students will also demonstrate knowledge in techniques of biochemistry, molecular biology, physiology as applied to pharmaceutical research.

Measures and Criteria

- At least 90% of students will receive a grade of B or better in each exam and project in PHAR 700. A final grade of B or higher for 90% of students is also the goal.
- For PHAR 700, students will be evaluated with 5 written exams of equal weighting. There will also be a special project and presentation.
 - Tests 1-5, 18% each
 - Project: 10%
- At least 90% of students will receive a grade of B or better in PHAR 701.
- For PHAR 701, students will be evaluated based on an assignment from each instructor. The assignments will be weighted equally and averaged to give a final percentage and grade.

Methods

- Faculty teaching PHAR 700 will grade the exams and identify students' strengths and weaknesses related to overall course objectives.
- At the end of the semester, all faculty members who administered exams will submit this information to the course coordinator who will aggregate and analyze the data. A final report will be provided to the Graduate Program Director, Department Chair and Associate Dean for Assessment. Results will be shared and discussed with the graduate faculty in the department at the end of the academic year. Appropriate recommendations for course or program specific changes will be

made and recorded in the program faculty minutes.

- Grades in PHAR 701 are largely determined by students' performance on written assignments. Faculty will grade the written assignments to probe the depth of knowledge and ability of the students to effectively communicate their knowledge through written responses.

Results

PHAR 700: In fall 2018, 7 students were enrolled in PHAR 700. The results for each assessment (5 exams and 1 project) are included in table 1 below. A total of 81% of the assessments in the course had a grade of B or better (which does not meet the overall goal of at least 90%). Exam 1 had the highest number of grades < 80 at 57% (4 of 7). No student has received less than a B in the course over the last 3 years (table 2).

Table 1	Fall 2015	Fall 2016	Fall 2017	Fall 2018	Average
	<i>n</i> =5	<i>n</i> =5		<i>n</i> =7	
Exam 1	76.5	83.7	-	78.3	79.5
Exam 2	88.6	88.6	-	89.6	89.0
Exam 3	93.2	91.6	-	87.5	90.8
Exam 4	82.2	89.5	-	92.8	88.1
Exam 5	80.8	84.6	-	86.9	84.1
Project		93.6	-	88.1	90.9
Final Grade	84.3	88.6	-	87.2	86.7

Table 2	Fall 2016	Fall 2017	Fall 2018
A	40.00%	33.33%	28.57%
B+	60.00%	16.67%	71.43%
B	0.00%	50.00%	0.00%
C+	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%
< C	0.00%	0.00%	0.00%
Average	88.60%	-	87.20%

PHAR 701: In spring 2019, 8 students were enrolled in PHAR 701. The average for each assignment was 90% or higher except for 2 of the 3 in block 3 which included Theragnostics (83.8%) and Methods to study drug resistance in cancer (85%). The overall average for each block throughout the semester is included in table 3 below. No student has received less than a B+ in the course over the last 3 years (table 4).

Table 3	Spring 2016	Spring 2017	Spring 2018	Spring 2019	Average
	<i>n</i> =5	<i>n</i> =7	<i>N/A</i>	<i>n</i> =8	
Block 1: Academia, Career Path and Manuscript Writing	-	-	-	100.0	100.0
Block 2: Genomics and Gene Modifications	90.7	98.2	-	95.0	94.7
Block 3: Personalized Medicine / Genetics of Disease	89.8	91.2	-	87.4	89.9
Block 4: Bioinformatics and Other Processes and Diseases	93.7	94.6	-	93.4	94.1
Final Grade	91.0	93.1	-	92.2	92.1

Table 4	Spring 2017	Spring 2018	Spring 2019
A	100.00%	100.00%	87.50%
B+	0.00%	0.00%	12.50%
B	0.00%	0.00%	0.00%
C+	0.00%	0.00%	0.00%
C	0.00%	0.00%	0.00%
Average	93.10%		92.20%

PHAR 742 has not been taught over the last 3 years, but will be taught in Spring 2020.

Two students took the **qualifying exam** during the current assessment cycle and both passed on the 1st attempt (1 in 2018-2019 and 1 in 2017-2018).

Qualifying Exam	# of students taking qualifying exam	# pass on 1 st attempt	# pass on 2 nd attempt	Measure - ≥90% of students pass on 1 st attempt
2018-2019	1	1		Achieved
2017-2018	1	1		Achieved
2016-2017	0	0		N/A

Use of Results

Given that the BIOS 701 and BIOS 757 are not taught within the College of Pharmacy, will investigate if assessment data is easily obtained for graduate students within our program.

Since it has been 5 years since the last offering of PHAR 742, will need to fully review results during the next assessment cycle given that some of the course assignments may have changed.

Overall, students did very well on the qualifying exam. No concerns noted at this time.

Goal 2.

Students will identify pertinent research problems and formulate a research plan.

Curriculum

Department of Drug Discovery and Biomedical Sciences (DDBS)

- *PHAR 712 Seminar Course*
- *PHAR 896 Doctoral Directed Research*

Department of Clinical Pharmacy and Outcomes Sciences (CPOS)

- *PHAR 711 Seminar Course*
- *PHAR 896 Doctoral Directed Research*

Learning Outcome 1.

Students will be able to identify pertinent research problems and formulate a research plan.

Measures and Criteria

- DDBS and CPOS:
 - Initial Research Proposal (IRP): Students provide a written report and orally defend the proposal to their thesis or dissertation committee. This proposal is typically prepared in the third year of their graduate career, and is focused on their doctoral research topic. The committee judges the written and oral presentation. The categories on the written portion of the examination are: pass, provisional pass pending submission of corrections, and fail. For the oral examination, the categories are: pass, fail.
 - Ninety percent of students should pass or receive a provisional pass on their written IRP on the first attempt. Ninety percent of students should pass the oral examination on the first attempt. All students are required to pass in order to progress.
- DDBS:
 - NIH-style research proposal: Students provide a written report and orally defend the proposal to their thesis committee. This proposal is typically prepared in the sixth semester of their graduate career and is on a research topic outside of the area of their doctoral research. The thesis committee judges the written and oral presentation.
 - Ninety percent of students should pass their NIH-style proposal on the first attempt. All students are required to pass their NIH-style proposal in order to progress.

Methods

- DDBS and CPOS:
 - Members of the thesis committee will rate the student's written document for grammar, clarity, soundness of scientific rationale, and feasibility. In the case that the committee recommends provisional pass pending submission of revisions, the committee members provide suggestions in writing to the student, and the chair of the committee is responsible for setting a deadline by which the corrections must be submitted to the committee for approval. In the case that the committee recommends fail, the committee will provide, in writing, suggestions to the student. The committee chair will provide a written summary of the results of the examination, specify why the proposal was unacceptable, set the criteria by which the proposal must be modified, and set a deadline by which the revised

- proposal is to be resubmitted. The written summary provided by the chair will be added to the student's file.
- For the oral examination, the categories are: pass or fail. In the case of fail, the committee chair will explain to the student the reasons, as judged by the committee, for failure. The chair will document the major deficiencies in writing and the summary will be added to the student's file.
 - The student's thesis committee chair forwards all results of IRP and NIH proposal examinations to the administrative assistant, who compiles the information. The Graduate Director analyzes the data from all students who presented proposals during that year. The data is then reported to the the faculty, Department Chair and Associate Dean for Assessment at a faculty meeting just after the conclusion of the academic year.

Results

All students (100%) who presented their Initial Research Proposal during the current assessment cycle, passed on the 1st attempt.

Initial Research Proposal – Written and Oral	# of students taking qualifying exam	# pass on 1 st attempt	# pass on 2 nd attempt	Measure - ≥90% of students pass on 1 st attempt
2018-2019	8	8		Achieved
2017-2018	4	4		Achieved
2016-2017	4	4		Achieved

Additionally, all students (100%) passed their comprehensive exam on the 1st attempt.

Comprehensive Exam (DDBS)	# students taking exam	# pass on 1 st attempt	# pass on 2 nd attempt	Measure - ≥90% of students pass on 1 st attempt
2018-2019	4	4		Achieved
2017-2018	3	3		Achieved
2016-2017	1	1		Achieved

Comprehensive Exam (CPOS)	# students taking exam	# pass on 1 st attempt	# pass on 2 nd attempt	Measure - ≥90% of students pass on 1 st attempt
2018-2019	1	1		Achieved
2017-2018	0			N/A
2016-2017	1	1		Achieved

Use of Results

No concerns, the students are passing their IRP and comprehensive examinations.

A significant undertaking during the current assessment cycle, was a revision of the Academic Bulletin and accompanying Student Handbook for the PhD program. Within this update, the details for the IRP and Comprehensive Written / Oral Examination are very clearly outlined. With recent changes in administrative staff support as well as graduate program directors, these enhancements are beneficial to the students and faculty of the program. One opportunity for improvement in future assessment cycles, will be to better collate and archive summaries of strengths and weaknesses from the IRP.

Goal 3.

Students will critically analyze relevant literature and communicate scientific findings through oral presentations.

Curriculum

Department of Drug Discovery and Biomedical Sciences (DDBS)

- *PHAR 712 Seminar Course*
- *PHAR 896 Doctoral Directed Research*

Department of Clinical Pharmacy and Outcomes Sciences (CPOS)

- *PHAR 711 Seminar Course*
- *PHAR 896 Doctoral Directed Research*

Learning Outcome 1.

Students will critically analyze relevant literature and communicate scientific findings through oral presentations.

Measures and Criteria

- DDBS and CPOS:
 - In PHAR 712 (DDBS) and PHAR 711 (CPOS), students present an oral presentation of approximately 45 minutes. The presentation is on a research topic approved by the faculty advisor. The student is expected to present the methods, findings, and conclusions of 2-4 primary research papers newly published in high quality journals. The students are graded by faculty in attendance in the following categories (100 points maximum):
 - Depth of knowledge demonstrated during presentation (35 points) and during post-seminar questioning (10 points),
 - Abstract quality (5 points)
 - Quality of power point slides (15 points)
 - Oral communication skills (25 points)
 - Adequate conveyance of relevance and potential future impact of the subject (10 points)
 - All students should earn a B or better on this assignment, which comprises the grade for this 1 credit hour course.
- DDBS:
 - This ability is also assessed by performance in the NIH-style proposal. All students must pass their NIH-style proposal in order to progress in the program. The pass / fail structure is based on their written and oral defense of the proposal.

Methods

- DDBS and CPOS:
 - The instructor of record for PHAR 712 (DDBS) and PHAR 711 (CPOS) assigns the dates for each student to present for each semester. All students attend all presentations; the instructor takes attendance. For each presentation, the instructor passes out judging forms to all faculty in attendance. Each faculty member grades the presenter on the criteria above. The instructor collects the forms, and compiles the data, including numerical scores and comments. The instructor prepares a written summary of the grading and meets with each student to discuss the performance, including suggestions for improvement.
- DDBS:
 - Members of the student's thesis committee judge the NIH-style proposal.

Results

A total of 17 students were enrolled in PHAR 712 during the 2017-2018 academic year and 26 for 2018-2019. Only 1 student did not receive a grade of B or higher on their oral presentation (average 91%, min 79% and max 99%). The categories receiving the highest performance included the abstract section (94%), quality of slides and other visual (93%), depth of knowledge during presentation (92%) and oral communication skills during presentation (91%). All sections were very strong however with the lowest sections having an average of 89% which included depth of knowledge displayed during post-seminar questioning and relevancy. Both of these lower performing areas were notably higher than results during the prior assesment cycle.

Oral Presentation	2016-2017	2017-2018	2018-2019
	n=15	n=17	n=26
Depth of knowledge demonstrated during presentation	88.21%	92.36%	90.96%
Depth of knowledge displayed during post-seminar questioning	84.80%	89.31%	87.86%
Abstract	93.92%	93.08%	94.41%
Quality of Power Point slides and other visual	89.32%	93.27%	92.70%
Oral communication skills during the presentation	87.33%	91.59%	90.48%
Did the speaker adequately convey the relevance and potential future impact of the subject?	83.61%	88.02%	89.24%

For the PHAR 711 seminar course, all students achieved an A on their assignment during the current assessment cycle. Specific rubric data is not available for this assignment unfortunately at this time.

PHAR 711	A	B	B+	C	C+	D	D+	F	TOTAL	Measure - ≥90% of students with B or higher in course
2018-2019	7								7	Achieved
2017-2018	6								6	Achieved
2016-2017									0	Achieved

PHAR 712 Graduate Seminar - Spring 2019

Use of Results

PHAR 712 is operating smoothly and achieving its objectives. Constructive written feedback is provided to each of the students; however, it is encouraged that more detailed feedback continue to be requested from faculty within each evaluation. A formal process needs to be defined to be able to debrief with the students and discuss opportunities for improvement.

PHAR 712 will also undergo a course coordinator change during the upcoming academic year. However, during this time the old coordinator will provide assistance during the transition. It will be important to debrief with the new and old coordinator as well as

the graduate director to discuss what went well and opportunities for future improvement.

For PHAR 711, course faculty are working on a revised rubric for the upcoming academic year and electronic documentation of individual student performance for each of the evaluation criteria. This will be similar to the process already utilized for PHAR 712.

Additionally, a new course evaluation system for graduate program courses will be implemented in Fall 2019 and allow additional insight into strengths of the courses and opportunities for improvement specifically for these courses.

Goal 4.

Students will generate and analyze original research and communicate findings to the scientific community.

Curriculum

Department of Drug Discovery and Biomedical Sciences (DDBS)

- PHAR 712 Seminar Course
- PHAR 896 Doctoral Directed Research

Department of Clinical Pharmacy and Outcomes Sciences (CPOS)

- PHAR 711 Seminar Course
- PHAR 896 Doctoral Directed Research

Learning Outcome 1.

Students will generate and analyze original research and communicate findings to the scientific community.

Measures and Criteria

- DDBS and CPOS:
 - The number of papers authored/co-authored and the number of conference presentations given by graduate students are indicators of research ability. The graduate director recommends that each student submit at least one manuscript for outside peer review, leading to reputable journals, and/or present research findings at national/international conferences. Acceptance of the manuscripts for publication is not required for graduation, but the thesis committee should conclude that there is enough original research for at least one publication in the thesis. The final disposition of publications is the decision of the faculty advisor in agreement with the student. All students should submit at least one manuscript for submission to a refereed archival journal, and/or present research at a conference by the time they defend their thesis.
 - This research ability is also assessed through the thesis defense. The student's ability to analyze original research results and to communicate these results in writing is rated by the thesis committee. The categories are: pass; provisional pass pending minor revisions; fail, major revisions required. All students must pass the thesis defense to graduate.
 - The student's ability to draw conclusions from research findings and propose future experiments in writing and orally is judged by the thesis committee in the doctoral thesis and during the oral defense of the thesis.

Methods

- DDBS and CPOS:
 - Students' major professors keep track of presentations at conferences and published papers that involve the work of students. At the end of each year, each student's major professor sends notice to the administrative assistant of the graduate program of graduate student participation in abstracts submitted, conferences attended, and manuscripts published. The administrative assistant enters this information into a database. At the end of the academic year, the graduate director compiles the data and analyzes it. The summary of results is then given to the department chair and Associate Dean for Assessment. The information is also shared and discussed with the graduate faculty of the department.
 - Members of the thesis defense committee will rate the student's ability to generate, analyze original research results, and to communicate these results. The committee also evaluates the student's ability to draw conclusions from the results and propose future experiments. In the case that a rater determines that a student is unsatisfactory, the committee will provide narrative explanation of the nature and area of the deficiency. The committee chair will report unsatisfactory performances in writing to the graduate director and department chair. At the end of each year, the graduate director will summarize noted areas of deficiency. At the first program meeting of each academic year, the graduate director will discuss with faculty areas of deficiency. If problem areas are identified, the faculty will develop curriculum and programmatic changes that can remedy the problem.

Results

Publication and presentation numbers are included in the table below.

Scholarly Activity	# of publications	# of presentations	Other
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(DDBS)			
2018-2019	8	35	
2017-2018	8	32	
2016-2017	15	14	

Scholarly Activity (CPOS)	# of publications	# of presentations	Other
2018-2019	2	12	
2017-2018	1	6	
2016-2017	0	1	

All graduate students were rated satisfactory from their committee regarding their ability to generate and analyze original research results and to communicate results. Seven students successfully defended their doctoral thesis during the current assessment cycle.

Dissertation Defense (DDBS)	# students defending dissertation	# pass	# provisional pass	# fail	# major revisions
2018-2019	4	4			
2017-2018	3	3			
2016-2017	2	2			

Dissertation Defense (CPOS)	# students defending dissertation	# pass	# provisional pass	# fail	# major revisions
2018-2019	0	0			
2017-2018	1	1			
2016-2017	1	1			

Use of Results

The department continues to encourage students to publish and present their work at national and international meetings. Students have had success in securing travel awards and fellowships to support these activities. There is an opportunity to work leverage our communications department within the College to promote the research successes of our current graduate students and also communicate travel award opportunities in a timely manner.