

INTRODUCTION

The Department of Pharmacy Care Systems is concerned with the socio-behavioral, economic and administrative sciences in pharmacy. While it is true that the foundation of pharmacy practice is a basic understanding of drug products and their therapeutic use, such knowledge is simply not enough. The Department's primary focus is on the process of drug delivery and drug utilization by the patient from several different perspectives. For example, the department investigates how is drug information most effectively communicated to the patient so that adherence to appropriate therapy and positive therapeutic outcomes result? How can drug delivery systems be designed to avoid the errors which may be made in getting the right drug to the right patient at the right time? How can the physical environment in which pharmacy is practiced be designed to promote efficient and effective drug delivery and information transfer to the patient? How can technology be used to benefit providers of health care and their patients in the drug use process? How do major changes that have taken place or will take place in the practice of pharmacy affect pharmacists and the patients they serve?

The name, Pharmacy Care Systems, developed out of the recognition that any change or innovation often affects many aspects of an organization or system. The Department is involved in research that takes a systems approach to the delivery of pharmaceutical services. It is the Department's intention to examine how to affect changes and how changes affect the delivery of these services to the patient.

The long-range goal of the graduate program in Pharmacy Care Systems is to produce graduates who have unique and needed capabilities for addressing problems and opportunities regarding medication use process in our society

Pertinent to understanding the objectives of the graduate program is the observation that differentiation in pharmacy is of three types: (1) minimal, without appreciable difference in pharmacy knowledge and skills, such as between the staff pharmacist of a small hospital and of a nursing home, (2) a substantial difference in the character of the total professional knowledge and skills, such as between the hospital and community pharmacist, and (3) a significant difference in the amount, complexity, and sophistication of the total professional knowledge and its consequent skills, such as roles in the management of complex health organizations, pharmaceutical research, and university teaching.

Differentiation at the first level is provided by specialization in the undergraduate curriculum; at the second level it is provided by the residency

system; and at the third level differentiation is achieved through graduate education.

The characterizing feature of the complex, differentiated roles which are the concern of graduate education in Pharmacy Care Systems is a focus on the understanding and management of the behavioral environment (including social, economic, legal, etc.) of drug products and devices, drug information and pharmacy care.

The graduate program is committed to the principle of diversification and differentiation of function. We intend to specialize by subject matter, degree requirements and graduate student clientele.

We specialize through interdisciplinary research involving architecture, business, communication, psychology, industrial design, industrial engineering, the computer information sciences, and sociology. The focus will be on (1) information theory applied to processes of drug therapy and drug delivery, (2) the socio-behavioral aspects of drug delivery, (3) the economics of pharmacy care, and (4) the effect of the design of physical facilities on pharmacy care.

Our programs are specifically tailored to take into account the unique skills, education, training, and work experiences of each student, and build upon these.

ADMISSIONS REQUIREMENTS

Students wanting to enroll in the masters or Ph.D. program in the Department of Pharmacy Care Systems should have a bachelors degree in pharmacy or a related discipline with grade point averages (A = 4.0, D = 1.0) and GRE verbal (V) and quantitative (Q) scores of more than 400 in each, and as necessary to achieve a minimum score of 450 in the following formula:

$$\frac{\{V + (2*Q) + [1500 * (GPA-1)]\}}{10} \geq 450$$

Students with both the bachelors degree and a graduate degree in pharmacy or a related discipline should have grade point averages (A = 4.0, D = 1.0) and GRE scores necessary to achieve a minimum score of 700 in the following formula:

$$\frac{[V+(2*Q)+[1500*(BS\ GPA-1)]+[1000*(GRD\ GPA)]}{10} \geq 700$$

10

All students must meet the Graduate School's minimum verbal GRE score requirement. In addition, foreign students must have a TOEFL score of 550 or greater (paper/pencil) or 213 or greater (computer), and a TSE score of 50 or greater. Exceptions to all of the above requirements will be considered on their merits.

Students who are admitted to the program without pharmacy backgrounds may be required to take some courses that will not carry credit toward the terminal degree. While students are not required to obtain a masters degree prior to admission the doctoral program, it is highly recommended.

ADMINISTRATIVE MATTERS

Program Advisor, Advisory Committee and Plan of Study

Once admitted to the program the student will be assigned a temporary program advisor (usually the Graduate Program Officer) by the department head unless the student has indicated a preference prior to being admitted. The advisor will then help the student select a permanent advisor and an advisory committee. The committee shall consist of at least two faculty members from within the department of Pharmacy Care Systems (including the advisor) and one individual from outside of the Department. At least two members of the committee must be members of the Graduate Faculty.

A Plan of Study should be prepared by the student and the advisory committee as soon as possible and submitted to the Graduate School. It should not be delayed beyond the first semester for students enrolled in the master's program or the second semester for Ph.D. candidates. The committee should meet by the end of the semester. It should be understood that revisions in the Plan of Study do occur. Revisions may be made at any time and must be submitted to the Graduate School with justification.

Residency Requirements

The residence year is a significant part of the Doctor of Philosophy program. It is intended to provide the student an uninterrupted period of semesters (18 hours) of intensive devotion to graduate work in course studies or research, except for time spent as an assistant or fellow of the University (see

specific requirements in Graduate School Bulletin). Students entering the doctoral program must file for residency. The proposed schedule of residency must be submitted to the Graduate School by the department prior to or during the first semester of the residence year.

Financial Assistance

Stipend support (ex. graduate teaching and research assistantships) is contingent upon University support to the Department, extramural funding within the Department, and program needs. In the past, it has been possible to offer a stipend to every student wishing to have one. University and other fellowships are also available. Students should consult with their advisors concerning these means of financial assistance. IT SHOULD BE NOTED THAT STIPEND SUPPORT IS LIMITED TO A TOTAL OF FOUR YEARS, UNLESS A SPECIAL EXCEPTION IS MADE.

While the Department discourages full time graduate students from seeking outside employment (relief work as a pharmacist, etc.) the Department does recognize that financial constraints do exist while pursuing a graduate degree. Any outside work must not interfere with normal progress toward the degree or responsibilities the student may have regarding an assistantship. Students planning to work elsewhere must consult with their advisor prior to finalizing their plans.

Responsibilities of Graduate Students

Graduate students are expected to comply with the general expectations outlined in the General Expectations document. This document can be found at www.pharmacy.auburn.edu/pcs/pcs_graduate_degree_program.htm. For example, an annual review of each graduate student is conducted in June by the department. Therefore, all graduate students are required to complete all forms reporting their academic progress by the announced deadline.

Responsibilities of Students with Stipends

Graduate students who receive stipend support will be assigned to work on research projects or have teaching assistant assignments. The workload (number of hours/week) would depend on the students' appointments. It is important to understand that the number of hours per week may vary from one week to another.

The student is expected to comply with the expectations outlined in the General Expectations for teaching and research assistants, which can be found at

www.pharmacy.auburn.edu/pcs/pcs_graduate_degree_program.htm. At the end of each semester, students shall be evaluated by the designated assigned faculty member regarding how the student performed the tasks/responsibilities he/she was assigned. This information will be shared with the student's advisor and the Department Head.

Future Faculty Development

All graduate students who are graduate teaching assistants and those who may be interested in pursuing an appointment in the academy in the future, are encouraged to attend the Harrison School of Pharmacy Faculty College for new faculty. The Faculty College covers topics such as promotion and tenure, teaching methodologies, facilitating, etc. Please contact the Office of Teaching, Learning & Assessment (OTLA) or your advisor for more information. In addition, all graduate students are encouraged to attend faculty development workshops offered by the OTLA and the Biggio center throughout the year.

Use of Department Resources

All work on the equipment available in the Department should be related to graduate course work, research, or an assistantship assignment. Photocopying may be done on Departmental equipment if it involves collaborative research between the student and a faculty member, graduate course work or an assistantship assignment. Work unrelated to any of these areas is not an acceptable reason to use Departmental equipment.

Secretarial help is limited. Usually, the only justification for soliciting secretarial assistance is regarding work related to an assistantship assignment. All requests for secretarial aid should be submitted through your advisor and or supervisor.

PROGRAM CHARACTERISTICS

MASTERS PROGRAM

All students enrolled in the master's program must satisfy the following minimum program requirements:

1. **Core requirements**
 - a. 3-7 hours of statistics

- b. 5 hours of research methods and design
- c. Proficiency in one or more software packages that facilitate the research process. This could include MS Access, SAS, MDP, and SPSS).
- d. Fundamental understanding of selected resources (at the discretion of the student's advisory committee) listed on the basic reading list for the department (provided by your advisor).
- e. Proficiency in the methodology for performing a thorough literature review.
- f. Fundamental understanding of the pharmacy profession
- g. Fundamental understanding of social, behavioral, administrative, economic sciences in pharmacy.

2. Course Work

- a. A minimum of 30 semester hours of course work, including the thesis (20 hours shall be in the student's major area of study) will be required for a master's degree. A master's student must enroll for a minimum of 4 hours of thesis research. A student may register for more than 4 hours of thesis, but may not receive credit for more than 5 hours. It should be noted that a student must register for a minimum of two credit hours each semester.
- b. Special problems course work (PYPC 7960) may be taken for a maximum of six credit hours. The purpose of this course work is to encourage individual study (research) in the student's particular area of interest. A plan of study for the special problem course should be developed by the instructor and the student shall submit written evidence (an exam, log, report, etc.) of progress made as a result of the course at the end of the course.
- c. Each student will be required to enroll in Seminar (PYPC 7950) each semester (except summers). The purpose of the Seminar is to give students experience in defending and presenting their own research and in critiquing the research of others. It will also serve as an opportunity to prepare students to make scientific presentations before their peers, and to hear invited speakers on topics related to the research interests of the Department.

3. The Thesis Proposal Defense

- a. After all graduate course work has been completed the student shall submit a written thesis proposal to his/her advisory committee (for an outline, see your advisor). The proposal shall be submitted at least two weeks before a scheduled meeting for the defense of the proposal. All members of the committee must agree on the time and date.
- b. One week before the proposal defense, the student shall send a memorandum to all members of the committee reiterating the defense date.
- c. If the student does not unanimously pass the initial proposal defense, additional work will be recommended to strengthen the proposal. A second proposal defense will then be scheduled.

4. The Thesis

- a. After approval of the thesis proposal by the student's committee, the student may proceed with work on the thesis research. Guidelines for the style and formatting for the thesis are available through the Graduate School.
- b. It is suggested that each phase of the research be submitted to the student's advisor for approval. After all phases (problem statement, literature review, methodology, etc.) are done, a complete draft of the thesis shall be submitted to the committee. After one week, the committee should return its evaluation, recommendations, corrections, etc., to the graduate student. At that time the student is responsible for responding to these comments in the final draft to be submitted to the committee. The committee shall be given the final draft at least two weeks in advance of the thesis defense.
- c. At the thesis defense the student shall begin with a 15-30 minute oral summary of the research. The student should plan on three hours for the defense. Questions will be asked concerning both the thesis research and may include related course work as listed on the student's plan of study. In the event that the student fails the defense, one re-examination may be given on recommendation of the committee and approval of the Dean of the Graduate School.
- d. The Dean of the School of Pharmacy shall be notified at the same time as committee members regarding the dates of the proposal defense and thesis defense.

- e. The student must follow the Graduate School's requirements and is responsible for obtaining all necessary documents.

Ph.D. PROGRAM

All students enrolled in the Ph.D. program must satisfy the following minimum program requirements:

1. Core Requirements

- a. 10-15 hours of statistics
- b. 7 hours of research methods and design
- c. Proficiency in one or more software packages that facilitate the research process (This could include SAS, BMDP, SPSS)
- d. Fundamental understanding of the resources listed on the basic reading list for the department (to be provided by advisor)
- e. Proficiency in the methodology for performing an exhaustive literature review
- f. Fundamental understanding of the pharmacy profession
- g. Fundamental understanding of social, behavioral, administrative, economic sciences in pharmacy.

2. Course Work

- a. Approximately 70 hours of course work (55-90 semester hours is recommended by the Graduate School) is required for the Doctor of Philosophy degree. Approximately 40-55 hours shall be in the student's major area of study. A doctoral student must enroll for a minimum of 10 hours of dissertation research. It should be noted that a student must register for a minimum of two credit hours each semester.
- b. Special problems course work (PYPC 8960) may be taken for a maximum of 6 credit hours. The purpose of this course work is to encourage individual study (research) in the student's particular area of interest. The instructor should develop a plan of study for the special problem course and the student shall submit written evidence (an

exam. log, report, etc.) of progress made as a result of the course at the end of the course.

- c. Each student will be required to enroll in Seminar (PYPC 8950) each semester (except summers). The purpose of the Seminar is to give students experience in defending and presenting their own research and in critiquing the research of others. It will also serve as an opportunity to prepare students to make scientific presentations before their peers, and hear invited speakers on topics related to the research interests of the Department.

3. General Doctoral Examinations

- a. After the student has completed the required course work, general doctoral examinations may begin. This general examination is often referred to as a preliminary examination.
- b. The purpose of the general doctoral examination is to establish that the student: 1) has the theoretical basis to do dissertation research in the student's field of study, 2) has had sufficient preparation to be considered a scholar in that field of study, 3) is able to relate this expertise to problems of pharmacy practice, and 4) has the ability to address an original problem.
- c. The general examination shall include a written examination and an oral examination.
- d. The student shall inform the Graduate School, in writing (obtain a form from the Graduate School), of the oral general examination date at least one week prior to the oral portion of the exam.
- e. The written examination component consists of two parts: a four-hour test session and a take-home examination. The student will be tested in the student's major area of study.

The oral examination component will be scheduled within two weeks after the completion of the written examination. The student may be asked to further clarify the answers in the written examination or asked to respond to new questions related to the student's major area of study.

- f. The general doctoral examination shall be prepared by the student's advisory committee. Each member of the advisory committee shall

submit questions to the student's advisor to be used in a four-hour test session and a take-home examination. The advisor will then develop written examinations for both four-hour test session and take-home component. There should be at least one question from each member of the committee on the exam. The advisor will then resubmit the comprehensive examination to the committee for its approval. After approval of the content of the examination, the student will be given the exam. For the four-hour test session, the student shall use a computer to type his/her answers. However, the student shall not consult any resources during the test session. At the end of the fourth hour, the student will submit an electronic copy of his/her answers to the major advisor. As for the take-home component, the student will have a maximum of four days to complete the examination and return it to his or her advisor. The student is allowed to consult published resources when preparing answers to the take-home questions. Though, consulting any individuals is prohibited. The student shall submit a typed response to each of the questions. Each committee member will evaluate how the student did on his or her own question(s).

- g. In the event the student fails the exam (in the opinion of two or more of the committee members), the student may be assigned remedial work, will need to reschedule a new exam, or be advised by the committee to discontinue doctoral study.
- h. The student becomes a candidate for the degree on successful completion of the general examination. Upon admission to candidacy, the student has four calendar years to complete all remaining requirements for the doctoral degree. If unable for any reason to complete the requirements on time, the student may petition the dean of the Graduate School for a maximum of a one year extension. Students failing to complete the degree in the allotted time revert to the status of an applicant and must petition the dean of the Graduate School to retake the general examination

4. Dissertation Proposal Defense

- a. After the general examination has been successfully completed, the student must schedule the dissertation proposal defense with his or her advisory committee.
- b. The student shall submit a dissertation proposal to the Advisory Committee at least two weeks prior to the scheduled examination date.

One week before the defense, the student shall send a memorandum to all committee members reiterating the defense date. During the exam, the student may be asked questions concerning the proposed research and may cover any content areas which are consistent with the student's plan of study.

- c. Successful completion of the proposal defense requires unanimous support of the student's advisory committee. In the event the student fails the proposal defense, a re-examination may be given on the recommendation of the committee and approval by the dean of the graduate school.
- d. **It should be noted that at least one full semester must elapse between the proposal defense and the final examination (dissertation defense).** Therefore, if a student's proposal defense took place during Spring Term, the student could not take the final examination (defend the dissertation) until Fall Semester.

5. Dissertation Research, Defense, and the Doctoral Final Oral Exam

- a. The following are guidelines, which the student shall follow in carrying out his or her dissertation research.
 - 1) The research should provide a useful educational experience for the student emphasizing creativity, independent action and learning, research methodology, and a scholarly approach. (Research that is a replication of a previous study would not be acceptable).
 - 2) The research should be rooted in, and have a potential for contributing to theories useful in addressing the problems of the delivery of pharmacy services.
 - 3) The contributions to knowledge should be unique and as such, must represent a genuine addition to the fundamental knowledge of the field or a new and better interpretation of facts already known.
 - 4) The originality of the contributions to knowledge may lie either in the relationships analyzed or in the concepts synthesized for evaluation.
 - 5) The dissertation must contain clear statements about (a) the relevance and importance of the problem, and (b) the significance, originality, and generalizability of the results.

- 6) The dissertation must reflect a level of competence that could not have been achieved without studies beyond the master's level. Thus, the research is expected to draw directly upon the advanced learning in the student's major field and demonstrate mastery of that knowledge. In some cases, advanced studies are reflected by a unique integration of knowledge from several fields in dealing with the research problems.
 - 7) The dissertation shall demonstrate understanding of the theory and methodology related to its main thrust.
 - 8) The research results shall be of a quality publishable in a suitable referred journal.
 - 9) The dissertation must demonstrate a high degree of proficiency in written communication. It must conform to Graduate School requirements in an organization and format.
 - 10) The scope of the research should be such that it requires at least the effort equivalent to one academic year of graduate study.
- b. After the first draft of the dissertation has been completed and approved by the student's advisory committee, it is submitted to the Graduate School. An outside reader (representing the university's graduate faculty and the Graduate School) will be appointed to review the dissertation. However, the student's advisor may request appointment of the outside reader at any time rather than waiting until after the dissertation is drafted.
 - c. After approval of this draft by the Graduate School, the student may apply for the final examination on a form obtained from the Graduate School Office. The application must be filed with the Graduate School at least one week in advance. The committee shall be given the final draft at least one week before the scheduled final examination (dissertation defense). All committee members must agree upon the date of the defense. The student should plan on three hours for the defense.
 - d. At the defense, the student shall provide an oral summary of the research. The summary should be approximately 15-30 minutes in length. After the summary, committee members shall ask the student about the research until all questions are exhausted. The student shall

be asked to leave the room while members of the committee determine whether the student passed the defense. Successful defense requires unanimous support of all members of the examining Committee.

- e. The Dean of the School of Pharmacy shall be notified at the same time as committee members regarding the dates of the proposal defense and dissertation defense.
- f. If a student fails the final examination, a re-examination may be given on recommendation of the advisory committee and approval by the Dean of the Graduate School. Further examination requires exceptional circumstances and approval of the Graduate Council.

Progression in the Department

The Department of Pharmacy Care Systems follows Graduate School guidelines on what is considered normal progression through graduate degree programs. The Graduate School requires that students enrolled in a Masters degree program must complete the degree in five years or less. For doctoral programs, students must complete the degree within four calendar years **after** successfully passed the oral general examination. Exceptions may be made for illness, etc. However, the Graduate School must approve them. Students having difficulties in progressing because they believe that their advisor is not assisting them in an appropriate manner should first raise these concerns with their advisor. If the problem is not resolved to the student's satisfaction, the student should then discuss the situation with the department head or a committee consisting of all graduate faculties in the department.

Policy Concerning Travel to Meetings by Graduate Students

The Department encourages attendance and participation at national and regional professional and scientific meetings. Students are encouraged to seek travel funds from the Graduate School. Limited funding from the PCS department may be available for graduate students to attend these meetings. Generally speaking, only students who are presenting a paper or poster at the meeting may apply to the department head for departmental support. It is expected that any graduate student who attends these meetings will attend all feasible research and educational sessions along with pertinent business meetings. Failure to do so will result in forfeiture of funding.