SCHOOL OF PHARMACY

PRACTICE MANAGEMENT

NONTRADITIONAL

PHARMACOTHERAPEUTICS

DOCTOR OF

PATIENT ASSESSMENT

PHARMACY

DRUG LITERATURE EVALUATION

PRIOR LEARNING ASSESSMENT

AMBULATORY OR ACUTE CARE

PHARMACEUTICAL CARE

PROGRAM

UNIVERSITY OF MARYLAND AT BALTIMORE
The University of Maryland at Baltimore is accredited by the Middle States Association of Colleges and Schools. The School of Pharmacy's Doctor of Pharmacy (Pharm.D.) and continuing education programs are accredited by the American Council on Pharmaceutical Education. The school is a member of the American Association of Colleges of Pharmacy.

The University of Maryland at Baltimore is actively committed to providing equal educational and employment opportunity in all of its programs. It is the goal of the university to assure that women and minorities are equitably represented among the faculty, staff and administration of the university, so that its work force reflects the diversity of Maryland's population.

All employment policies and activities of the University of Maryland at Baltimore shall be consistent with federal and state laws, regulations and executive orders on nondiscrimination on the basis of race, color, religion, age, ancestry or national origin, sex, sexual orientation, handicap, marital status and veteran status. Sexual harassment, as a form of sex discrimination, is prohibited among the work force of the university.

Admission and curriculum requirements are subject to change without prior notice.
School of Pharmacy
1994-1995
Catalog
Nontraditional
Doctor of Pharmacy
(Pharm.D.)
Performance-Based Evaluation

Community/Institutional Pharmaceutical Care (4)

Drug Information Experience (1)
Clinic/Institutional Assignment (1)

Patient Assessment Skills (1)

Practice Management Planning (2)

Practice Management (4)
Pharmacotherapeutics (4)
Integrated Pharmaceutical Science (2)
Literature Evaluation (2)

Prior Learning Assessment of Pharmacy Practice (2)

Therapeutics (3)
Ambulatory or Acute Care

Principles of Pharmaceutical Care (3)
Community Practice or Organized Health Care
## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>2</td>
</tr>
<tr>
<td>Curriculum Summary</td>
<td>3</td>
</tr>
<tr>
<td>Program Description</td>
<td>4</td>
</tr>
<tr>
<td>Terminal Pharmaceutical Care</td>
<td>4</td>
</tr>
<tr>
<td>Performance Objectives</td>
<td></td>
</tr>
<tr>
<td>Admission Information</td>
<td>10</td>
</tr>
<tr>
<td>Meeting Program Requirements</td>
<td>11</td>
</tr>
<tr>
<td>Transfer</td>
<td>11</td>
</tr>
<tr>
<td>Prior Learning Assessment</td>
<td>11</td>
</tr>
<tr>
<td>Credit by Examination</td>
<td>12</td>
</tr>
<tr>
<td>Course Descriptions</td>
<td>12</td>
</tr>
<tr>
<td>Principles of Pharmaceutical Care</td>
<td>12</td>
</tr>
<tr>
<td>Therapeutics</td>
<td>13</td>
</tr>
<tr>
<td>Prior Learning Assessment</td>
<td>14</td>
</tr>
<tr>
<td>Principles of Literature Evaluation</td>
<td>14</td>
</tr>
<tr>
<td>Integrated Pharmaceutical Sciences</td>
<td>15</td>
</tr>
<tr>
<td>Pharmacotherapeutics</td>
<td>16</td>
</tr>
<tr>
<td>Practice Management</td>
<td>17</td>
</tr>
<tr>
<td>Experiential Learning</td>
<td>17</td>
</tr>
<tr>
<td>Academic Policies</td>
<td>21</td>
</tr>
<tr>
<td>Grading System</td>
<td>21</td>
</tr>
<tr>
<td>Academic Status</td>
<td>21</td>
</tr>
<tr>
<td>Financial Information</td>
<td>22</td>
</tr>
</tbody>
</table>

## Continuing Education Information

ACPE Provider Number: 680-025-94

The University of Maryland at Baltimore School of Pharmacy is approved by the American Council on Pharmaceutical Education as a provider of continuing pharmaceutical education.
SCHOOL OF PHARMACY
UNIVERSITY OF MARYLAND at BALTIMORE

NONTRADITIONAL PHARM. D. PROGRAM

Introduction

The Nontraditional Doctor of Pharmacy Program at the University of Maryland at Baltimore School of Pharmacy provides a mechanism for licensed practicing pharmacists to earn the Pharm.D. degree.

The goal of this academic program is to enhance the ability of pharmacists to provide pharmaceutical care within their current practice setting.

Pharmaceutical care is defined as the responsible provision of drug therapy for the purpose of achieving measurable outcomes that improve a patient's quality of life. Examples of these outcomes include: prevention of disease or symptoms; cure of disease; elimination or reduction of symptoms; arrest or slowing of progression of the disease process.

Provision of pharmaceutical care requires the ability to design, implement and monitor therapeutic plans that will result in definable benefits. This, in turn, requires a sound foundation in pathophysiology and therapeutics; the skills to educate, counsel, monitor and follow-up patients; the motivation to sustain competency; and an economically viable mode of practice.

Admission to the program is limited to graduates of B.S. Pharmacy programs, accredited by the American Council on Pharmaceutical Education (ACPE), thus assuring that matriculants have already acquired entry-level knowledge and skills for practice. The successful applicant must be practicing and have access to patients.

Pharmacists who complete this program will meet, in their practice area, the same terminal performance objectives as students who complete the school's "traditional" Doctor of Pharmacy program.

Since each nontraditional student brings to the program a different level of practical experience, knowledge and skill developed throughout a practice career, a system of prior learning assessment has been developed to:

- Individualize a program of study
- Award credit(s) (0-10) when appropriate.

A mentor will work with each student to design a program based on input from prior learning assessment. It should be noted that the awarding of credit through assessment of prior learning does not exempt a participant from responsibility for any of the process or knowledge-based outcomes of the program.

Experiential learning (clerkship training) will be centered in the pharmacist's own practice site, under the supervision of a faculty mentor, and utilizing the pharmacist's own patients. Some clerkship experience is required at other sites. The mentor will also work closely with each pharmacist to identify an appropriate mix of patients and to develop an appropriate experience component that will meet individual and program needs. Evaluation in the experiential learning phase will be cumulative and performance-based.
# Curriculum Summary

<table>
<thead>
<tr>
<th>Core Courses</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principles of Pharmaceutical Care in Community Practice</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>Principles of Pharmaceutical Care in Organized Health Care Settings</td>
<td></td>
</tr>
<tr>
<td>Ambulatory Therapeutics</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>Acute Care Therapeutics</td>
<td></td>
</tr>
<tr>
<td>Prior Learning Assessment (PLA) of Pharmacy Practice</td>
<td>2</td>
</tr>
<tr>
<td>Principles of Literature Evaluation</td>
<td>2</td>
</tr>
<tr>
<td>Integrated Pharmaceutical Science(^1)</td>
<td>2</td>
</tr>
<tr>
<td>Practice Management(^1)</td>
<td>4</td>
</tr>
<tr>
<td>Pharmacotherapeutics(^1)</td>
<td>4</td>
</tr>
<tr>
<td>Total Minimum Course Requirements</td>
<td>20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Experiential (Clerkship) and Final Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longitudinal Care</td>
</tr>
<tr>
<td>Practice Management Planning</td>
</tr>
<tr>
<td>Patient Assessment Skills</td>
</tr>
<tr>
<td>Clinic OR Institutional Assignment</td>
</tr>
<tr>
<td>Drug Information Experience</td>
</tr>
<tr>
<td>Pharmaceutical Care (Community OR Institutional)</td>
</tr>
<tr>
<td>Total Minimum Experience Requirements</td>
</tr>
</tbody>
</table>

Total Minimum Program Credits \(30\)

\(^1\) Multiple options have been approved that will satisfy all or some of this program requirement.
Program Description

The Nontraditional Pharm.D. Program is a 30 credit (minimum) degree program designed to enhance candidates' current practices rather than prepare them to enter a new career path. All graduates will be required to meet the terminal performance outcomes of the school's traditional Pharm.D. program. These performance outcomes and their linkage to the nontraditional program are presented below.

Credits in the Nontraditional Pharm.D. Program may be earned by taking courses from a menu approved by the faculty, through supervised experiential learning, by approved self-study with appropriate assessment and/or through the assessment of prior learning (PLA).

The foundation of the Nontraditional Pharm.D. Program is established in the core courses; i.e., the philosophy of the program is developed; the concepts, procedures and skills of Pharmaceutical Care delivery are defined and demonstrated; and a personal documentation of prior experiences is developed.

Required courses in the program include an in-depth treatment of therapeutics for prevalent diseases specific to the practice site, so that the pharmacists are prepared to provide Pharmaceutical Care services. Candidates will demonstrate the ability to manage a practice fiscally and behaviorally; to measure value of service(s) and establish fees and reimbursement policies; and to market and promote pharmaceutical care services.

Currently, courses are offered only at the University of Maryland at Baltimore campus in downtown Baltimore. In the future, selected courses may be offered through distance education facilities throughout the state. Classes are planned for the Fall, Spring, and Summer semesters.

Terminal Pharmaceutical Care Performance Objectives

The school's new Pharm.D. program, initiated in September 1993, has adopted a set of terminal performance objectives derived from Background Paper II of the AACP Commission to Implement Change in Pharmaceutical Education [Am. J. Pharm. Educ., 57, 377-385(1993)]. These objectives are those enumerated below, preceded by the Roman numerals. The Nontraditional Pharm.D. Program Committee expanded these to be assessed during the educational and/or experiential phases.

The prior learning assessment portfolio method will be used to evaluate learning that has occurred during practice (i.e., following graduation but before entry into the Nontraditional Pharm.D. Program). As they progress through the curriculum, candidates will be evaluated on their foundation in pathophysiology and therapeutics relevant to their practice site; the ability to evaluate literature and other data sources; and the appropriate physical assessment, communication, decision making and teaching skills.

Assessment of these performance objectives, based upon the individualized practice requirements, will be completed as part of the experiential learning activities.
CATEGORY I. Pharmaceutical Care Functions

Candidates shall demonstrate the ability to deliver pharmaceutical care to a representative patient population in their practice area.

Patient Level

I. Participate in the development of a patient-specific therapeutic plan:

A. Assess patients, based on available objective and subjective data, to make appropriate therapeutic decisions. Examples include:
   1. A triage recommendation
   2. An intervention such as an OTC recommendation
   3. A referral to a source for medical care
   4. Obtaining further information necessary to perform any or all the above options.

B. Assist practitioners and patients in establishing therapeutic or diagnostic objectives.

C. Determine an appropriate patient-specific therapeutic intervention based on:
   1. The problem addressed
   2. The medication selected
   3. The setting-specific monitoring parameters
   4. Concomitant disease states
   5. Concomitant treatment modalities
   6. Barriers to adherence (e.g., knowledge, skills, attitudes, cost, dosage form selection)

D. Recommend appropriate drug entities to use in specific patients.

E. Define treatment goals for the individual patient.

II. Select the appropriate dosage form, formulation, administration and/or delivery system of specific drug entities:

A. Participate with prescribers and patients in selection process.

B. Select the route and method of administration.

C. Establish a plan for assessing clinically significant problems, such as:
   1. Drug-drug interactions
   2. Drug-disease interactions
   3. Drug-nutrient interactions
   4. Inappropriate duration of therapy
   5. Inappropriate dose or dosing schedule
   6. Barriers to adherence
III. Determine the dose and dosage schedule:

A. Apply pharmacokinetic principles to the determination and recommendation of appropriate doses and dosing schedules for patients.

B. Assess concomitant dosage schedules and recommend modifications as needed.

IV. Prepare medication, including compounding when appropriate to meet specific patient care needs.

V. Dispense drug products to patients:

A. Develop and supervise management systems to ensure that adequate supplies of drug products are available to meet patient care needs.

B. Ensure that drug products are delivered to patients in a timely, safe and efficient manner.

VI. Assess therapeutic objectives and make recommendations to ensure desired outcomes:

A. Communicate specific treatment goals to the patient and/or caregiver.

B. Develop and implement patient-specific therapeutic monitoring plans.

C. Monitor the continuing effectiveness of therapeutic plans.

D. Assess the patient for toxic effects of treatment.

E. Develop appropriate recommendations to revise the therapeutic plan.

VII. Detect and address adverse drug reactions and drug interactions:

A. Monitor patients to detect incipient adverse consequences of drug therapy.
   
   1. Determine preventive measures that identify patient and drug-related variables that place individuals at increased risk for adverse reactions or disease occurrence.
   2. Identify appropriate monitoring for early detection of adverse effects.
   3. Develop recommendations to revise therapeutic plans to reverse or prevent these adverse events.

B. Communicate the identified risk to the patient, caregiver and/or health care practitioners as appropriate.
VIII. Counsel patients to maximize outcomes:

A. Provide patients with specific instructions to follow the therapeutic regimen.
B. Assess patients' ability to follow the regimen.
C. Obtain patients' agreement to follow instructions
D. Provide patients or their agents with information to understand the importance, nature and scope of the therapeutic plans being implemented. Include both benefit and risk information.
E. Provide patient-specific instructions to follow if a problem occurs.
F. Implement monitoring plan for compliance.
G. Develop systematic follow-up of patients with compliance problems.

IX. Access and evaluate medical information received through formal (e.g., scientific literature and seminars) and/or informal (e.g., newspapers, magazines, TV) sources.

A. Maintain and update personal knowledge base.
B. Communicate relevant information to patients, caregivers and/or health care practitioners in written or oral form.

Public Health System Level

I. Participate in public health promotion/disease prevention programs:

A. Implement appropriate public health programs at the practice site.
B. Participate in the development and implementation of community-based health promotion/disease prevention programs, including those for specialized populations (e.g., elderly, minority, adolescent, disadvantaged).
C. Collaborate with established community health agencies (e.g., American Heart Association, American Cancer Society, local health departments).

II. Participate with health professionals in the decision making processes related to therapy:

A. Provide educational programs to health professionals regarding drug therapy.
B. Participate in pharmacy and therapeutics committee deliberations.
C. Participate in and perform drug use evaluations.
III. Select the drug product source of supply.

A. Judge the quality of products and select manufacturers based on appropriate data, such as biopharmaceutics, economic and quality control information.

B. Ensure the security of the drug product inventory.

C. Ensure that medications are labeled appropriately.

CATEGORY II. Management and Organizational Behavior

Candidates shall demonstrate the ability to assess their practice and market new services determined to be important for the delivery of pharmaceutical care. Content areas include organizational development and behavior, conflict resolution, economic forecasting, cost-benefit analysis and systems management. The ability to measure service value and establish reimbursement policies is an important component in the development of these areas.

Patient Level

I. Establish a mission statement with short- and long-term goals and objectives for the delivery of pharmaceutical care.

II. Develop outcomes management techniques to support therapeutic monitoring, including DUR.

III. Document service delivery in terms of patient benefit and cost.

System Level

I. Determine what specialized information is necessary for decision making and provide for its collection, manipulation and integration into the facility's operation (e.g., computer system, procedures manual).

II. Purchase and control the inventory for a pharmaceutical facility in a cost effective and efficient manner.

III. Establish and maintain an effective system for financial management and accounting inputs.

   A. Identify and collect data required for financial statements.

   B. Evaluate financial performance.

   C. Evaluate individual services provided by the facility.

IV. Develop a system for human resources management.
V. Document the value of innovative services and programs.

VI. Exercise proper risk management techniques.
   A. Develop a policies and procedures manual.
   B. Screen future employees.
   C. Monitor and evaluate current employees.
   D. Evaluate insurance needs.

VII. Perform an economic analysis of specific components of the practice using sound professional philosophy, competitive influences and financial theory.
   A. Create a profitable fee structure for fee-for-service clients.
   B. Evaluate options such as participation in a third party prescription program or managed care network.

VIII. Formulate a marketing plan for pharmaceutical care services.

CATEGORY III. Experiential (Clerkship) Training

Candidates will demonstrate their ability to deliver pharmaceutical care by managing a representative sample of patients at their own practice site whenever possible. Since evaluation is performance based, this component is an open-ended learner activity that incorporates a broad range of skill and knowledge demands, as elicited previously in this document. Specific performance objectives will be determined individually, in concert with a faculty mentor, based upon the elective site and patient mix.

The following is a partial list of educational outcomes to accomplish the practice functions entailed in pharmaceutical care (patient and system levels are integrated).

I. Demonstrate confidence and competence in managing patients and their therapy (practice specific).

II. Demonstrate proficiency in the acquisition and integration of knowledge using health-related literature and problem-solving experiences.

III. Demonstrate understanding and control of behavior through effective patient education and counseling activities.
IV. Participate in policy formation/professional governance:

A. Take an active role in shaping policies, practices and future directions of the profession of pharmacy by working through local, state and federal governments; private organizations and institutions; and professional associations and groups.

B. Scan the environment of pharmacy and the health care system in order to prepare, plan and shape change and set a course for future direction.

C. Deal analytically with financing, delivery, reimbursement, access, quality and regulation of drugs and pharmaceutical services from a policy as well as from a practice perspective.

V. Develop a "professional demeanor" and a sense of responsibility for the practice of pharmacy as a patient-oriented profession.

Admission Information

In order to be considered for admission to the program, applicants must:

► Be graduates from ACPE accredited schools of pharmacy.

► Be licensed in Maryland, the District of Columbia, or an adjacent state.

► Practice in Maryland, the District of Columbia or areas of surrounding states so that they have access to the program's mentoring system.

► Complete an application and pay an application fee.

► Display appropriate verbal communication skills during the admissions interview.

► Provide a statement that indicates that they have access to patients that will be involved in the instructional program.

► Provide a written description of their practice, including the type of practice, the practice work load, a physical description of the site, and a description of their patient population.

► Provide a brief written description of innovative services provided, and past accomplishments in direct patient care.

► Provide a written statement that states their career goals, and how the completion of the program will help them accomplish those goals.

Foreign pharmacy school graduates will not be considered for admission to this program, but may apply for admission into the entry-level Pharm.D. program.

Because of the highly interactive nature of the curriculum, class size is generally limited to 30 students; since the program has just been approved, Fall 1994 admissions may be further limited. Nontraditional Pharm.D. application deadlines are June 1, 1994 for Fall admission, and October 1, 1994, for Spring 1995 admission.
Applicants may call the School of Pharmacy's Office of Student Affairs at (410) 706-7653 or 1-800-852-2988 (toll free) with specific questions regarding the school or the application process.

To obtain an application for the Nontraditional Pharm.D. Program or other information, write:

School of Pharmacy
University of Maryland at Baltimore
20 N. Pine Street
Baltimore, MD 21201-1180
ATTN: Admissions Information

Meeting Program Credit Requirements

In addition to course work, the credit requirements of the Nontraditional Pharm.D. Program may be partially met through the following options:

Transfer

Up to six (6) credit hours of relevant course work, completed after the B.S. degree was earned at an approved college or university may be transferred towards meeting the requirements of the Nontraditional Pharm.D. Program. To be acceptable, the course work must relate directly to curricular components of the Nontraditional Pharm.D. Program.

Identification of potential transfer courses is done at the time of admission, or later if appropriate, through consultation between the student and the advisor. (Note: It is not possible to obtain additional credit through the prior learning assessment process for transfer courses.)

Prior Learning Assessment (PLA)

The prior learning assessment process provides a mechanism through which credit may be earned. To be eligible for credit through prior learning assessment, a student must complete the course Prior Learning Assessment in Pharmacy Practice, have her/his portfolio evaluated by the PLA panel, and have a credit recommendation from the Panel approved by the faculty. A maximum of 10 credits may be earned through this process.

Credits are partitioned into four areas: Practice Management Planning (0-1); Community/Institutional Pharmaceutical Care (0-1); Pharmacotherapeutics (0-4); and Practice Management (0-4). These four areas correspond directly to curriculum components. The panel has developed assessment instruments for each of these areas.

All credits awarded by PLA will be confirmed during the Experiential Learning Activities as part of the evaluation of the terminal performance objectives. Credits awarded in Practice Management will be confirmed by the preparation of a set of practice management plans, outcome measures of the experiential learning course, Practice Management Planning. Credits awarded in Pharmacotherapeutics will be confirmed for each disease topic for which credit was received, using the seven explicit learning outcomes that form the basis for the PLA evaluation.

Upon awarding credit, the PLA panel will record a list of therapeutic topics to be confirmed as part of the experiential learning activities. Students and their advisors will be instructed that confirmation may be accomplished in any of the experiential learning courses, but must be completed prior to graduation from the program.

At the time when the student is ready to enter the final experiential learning
clerkship, Community or Institutional Pharmaceutical Care, this list will be re-examined and completion of any disease topic that has not been confirmed will be required as part of this course.

**Credit by Examination**

The university permits a credit by examination process for a course. Information about test-out options is provided by each coursemaster.

A student who successfully completes the entire course by examination may register for credit by examination in the specific area at a cost of $175 per course. Upon approval of the coursemaster, a student who successfully completes a discrete section of the examination may not be required to attend all class sessions and/or modules. In this case, the student must still register for the course and the results of the examination will be factored into the grade determination.

**Course Descriptions**

Pharmacists entering the program will enter into one of two pathways based on the following broad classification: practice in community or organized health care settings. Presented below are detailed course descriptions with emphasis on major learning outcomes stated in terms of what it is expected the pharmacist will be able to do after completion of the specific learning activities.

**Principles of Pharmaceutical Care**

**PHNT 501 - Principles of Pharmaceutical Care in Community Practice - 3 Cr.**

This course focuses on the processes involved in the delivery of pharmaceutical care by community pharmacists to patients with selected common disease states. Learning experiences include: development of a personal drug information library and provision of answers to questions from other health professionals and patients; evaluation of appropriateness of drug use; assessment of patients' drug therapies including therapeutic response and possible adverse drug events; and development of action plans for delivery of specific patient services. Major learning outcomes include:

- Given a description of a community pharmacy practice, develop an information library which meets the information needs of the pharmacists practicing in the described setting.
- Given questions from a health care provider and a patient about drug therapy involving one of the disease themes, provide a written answer to the questions.
- Given a potential adverse drug reaction, establish the degree of certainty that the patient's findings are being induced by an adverse drug reaction and make a recommendation regarding management of the potential reaction.
- Given a written case or simulation of a patient with a complaint related to one of the theme diseases, decide if the patient should be referred (triaged) to another source of health care.
- Given a written case or simulation of a patient with one of the theme diseases, develop an individualized pharmaceutical care plan.
- Given a description of a group of patients at risk for developing significant health problems related to
the theme diseases, **develop** a plan for promotion of health behaviors and maintenance of good health for that group.

PHNT 502 - *Principles of Pharmaceutical Care in Organized Health Care Settings* - 3 cr.

The processes involved in the delivery of pharmaceutical care in organized health care settings are the focus of this course. Through the use of common disease state examples (e.g., pain management, pneumonias, lung cancer) students participate in a series of class discussions, case studies, selected reading assignments, and projects which demonstrate processes which are fundamental to the delivery of pharmaceutical care.

These processes include both programmatic (e.g., drug information, adverse drug reaction reporting and monitoring, formulary management, DUE, development of process and outcome indicators to apply quality improvement strategies to patient care) and patient-specific (e.g., symptom assessment, database development and interpretation, discharge counseling, monitoring, and care plan implementation) efforts which the student can apply in their own practice setting.

Major learning outcomes include:

- Given a written case or simulation of a patient with one of the theme diseases, **develop** an individualized pharmaceutical care plan.
- Given a description of a group of patients with health problems related to the theme diseases, **develop** population interventions, utilizing principles of quality improvement, which will impact rational drug therapy for that group.

**Therapeutics**

PHNT 503 - *Ambulatory Therapeutics in Community Practice* - 3 Cr.

This course addresses the pharmacotherapy of common ambulatory drug therapy problems and the development and monitoring of pharmaceutical care plans for patients with these problems. Learning experiences include discussions of pharmacotherapy (both prescription and non-prescription), case study analysis, triage decision making, and development of care plans. These experiences are focused on the participant's own pharmacy practice.

Topics covered include Gastrointestinal Therapeutics, Cardiovascular Therapeutics, Principle of Oncology, Pain Management, Ambulatory Infectious Disease, Osteoporosis and Menopause.

Major learning outcomes include:

- Given a written case or simulation of a potential adverse drug reaction involving drug therapies presented in the course, **establish** the degree of certainty that the patient's findings are being induced by an adverse drug reaction and **make a recommendation** regarding how the potential reaction should be handled.
- Given a written case or simulation of a patient with a complaint related to one of the disease states presented in the course, **develop** a triage plan.
- Given a written case or simulation of a patient with one of the disease states
presented in the course, develop an individualized care plan.

PHNT 504 - Acute Care Therapeutics - 3 cr.

This course addresses the pharmacotherapy problems that occur primarily in acute care and organized health care settings, and the development and monitoring of pharmaceutical care plans for patients with these problems.

Learning experiences include discussions of pharmacotherapy, case study analysis, adverse drug reaction analysis, discharge and transition of care planning, and development of care plans. These experiences are focused on the participant's own pharmacy practice.

Topics include Gastrointestinal Therapeutics, Cardiovascular Therapeutics, Infectious Diseases, Cancer Chemotherapy, and Endocrinology. Major learning outcomes include:

> Given a written case or simulation of a potential adverse drug reaction, establish the degree of certainty that the patient's findings are being induced by an adverse drug reaction and make a recommendation regarding how the potential reaction should be handled.

> Given a written case or simulation of an acute care patient with one of the disease states presented in the course, develop an individualized care plan.

> Given a written case or simulation of an acute care patient with health problems related to one of the disease states presented in the course, develop a plan for discharge and health care transition.

Prior Learning Assessment

PHNT 505 - Prior Learning Assessment of Pharmacy Practice - 2 cr.

The objective of the course is to generate a documented compilation of a candidate's experiences and accomplishments - the Prior Learning Assessment (PLA) Portfolio - to be used to: identify strengths and weaknesses, individualize the learning plan, validate credits that satisfy program requirements, and grant academic credit when appropriate.

The Portfolio, a requisite for matriculation in the Nontraditional Pharm.D. Program, will be developed under the direction of the coursemaster. Completion of the Portfolio is a requirement for the course. Evaluation of the Portfolio for the purposes of individualized curriculum development and the awarding of academic credit(s) (0-10) is conducted by a practitioner/faculty panel.

Principles of Literature Evaluation

PHNT 506 - Principles of Literature Evaluation - 2 cr

The goal of this course is to enable practitioners to critically read primary literature and apply the knowledge to the pharmaceutical care models developed in their practices.

Major learning outcomes include:

> Distinguish between types of clinical trials

> Apply a framework of analysis to evaluate a study

> Assess whether appropriate outcome measures were used to evaluate the hypothesis
> Interpret and understand statistical significance, type I and II errors, and confidence intervals

> Identify and critique various errors committed by investigators

> Determine and apply the appropriate statistic for a particular hypothesis with a particular set of data

**Integrated Pharmaceutical Sciences**

The scientific foundation of pharmacy practice is growing and changing at an ever increasing rate. While it is not possible for anyone to assimilate all of these changes, pharmacists must have the ability to apply new knowledge to help solve therapeutic problems and to comprehend new developments in science related to pharmaceutical care. The integrated pharmaceutical sciences component of the curriculum addresses this issue. Either of the following courses may be taken to satisfy this program requirement.

**PHNT 507: Integrated Pharmaceutical Sciences Seminar - 2 cr**

The goal of this course is to further educate students in different areas of the pharmaceutical sciences and to help them use their scientific knowledge to understand current issues. It will not provide a pharmaceutical science curriculum identical to that experienced by traditional students, but will expand their knowledge of the sciences and provide in-depth examples of pharmaceutical science topics relevant to the student's pharmaceutical care setting.

Students will research a topic, write a paper with a focus on the relevance to their area of practice and present a 30-45 minute seminar followed by class discussion.

The topics will be chosen from a list provided by the coursemaster or proposed by the student with coursemaster approval, and will be driven by topics in current lay and/or scientific literature. Major learning outcomes include:

> Converse with other health professionals about new scientific discoveries related to their field

> Analyze the primary scientific/medical literature (e.g., The New England Journal of Medicine)

> Read and judge lay literature (newspapers, magazine articles) as to scientific validity

> Understand new drug descriptions and relate the chemistry and pharmacology to existing drug therapies

> Translate scientific language to lay language to explain the science underlying pharmaceutical care logically and accurately to their patients

> Use basic science references/texts to supplement and refresh their knowledge

> Explain how science contributes to the practice of pharmacy

**PHNT 510 - Novel Drug Delivery Systems - 2 cr**

The goal of this course is to enable students to make decisions about the appropriate use of novel drug delivery systems from an integrated science and
practice perspective, basing the decisions on the physical, chemical, therapeutic, and economic attributes of these systems. After completion of this course, the pharmacist will be able to:

- **Describe** the bio-physical rationale and attributes of selected novel drug delivery systems
- **Implement** appropriate storage and distribution procedures to insure stability of the bioactive agent(s) and stability of the drug release mechanism
- **Critically evaluate** claims made for a novel drug delivery system
- **Provide** a recommendation for or against the use of a specific drug delivery system for a specific patient's therapy, to a prescriber, on a rational scientific and therapeutic basis
- **Counsel** patients with regard to the appropriate use of each delivery system.

**Pharmacotherapeutics**

PHNT 540 *Pharmacotherapeutics* - 4 cr

Each student in this course is to meet the learning objectives set forth for 6 units to assure breadth of content. These units are in addition to those topics covered in the initial core coursework (e.g., Principles of Pharmaceutical Care and Therapeutics). Other units *may be included or developed* to meet specific individual or program needs.

**Unit I: ARTHRITIS**
- Topic 1 Degenerative Joint Disease
- Topic 2 Rheumatoid Arthritis
- Topic 3 Gout

**Unit II: NEPHROLOGY**
- Topic 4 Acute Renal Failure
- Topic 5 Chronic Renal Failure
- Topic 6 Drug Dosing in Renal Failure
- Topic 7 Drug Induced Renal Failure

**Unit III: NEUROPSYCH**
- Topic 8 Anxiety Disorders
- Topic 9 Sleep Disorders
- Topic 10 Depression
- Topic 11 Seizure disorders

**Unit IV: HEMATOLOGY**
- Topic 12 Iron Deficiency Anemia
- Topic 13 Folate Deficiency Anemia
- Topic 14 B12 Deficiency Anemia
- Topic 15 Vitamin Deficiency in Alcoholism

**Unit V: AIDS**
- Topic 16 PCP Pneumonia
- Topic 17 Antiretrovirals
- Topic 18 Immune Modular Therapy
- Topic 19 Cytomegalovirus

**Unit VI: DERMATOLOGY**
- Topic 20 Drug Induced Skin Eruptions
- Topic 21 Seborrhea
- Topic 22 Allergic Dermatitis
- Topic 23 Acne
- Topic 24 Fungal Infections

**Unit VII: OPHTHALMOLOGY**
- Topic 25 Glaucoma
- Topic 26 Conjunctivitis
- Topic 27 Contact Lens Products

**Unit VIII: RESPIRATORY DISEASE**
- Topic 28 Asthma
- Topic 29 Chronic Bronchitis
- Topic 30 DVT/Pulmonary Embolus

**Unit IX: INFECTIOUS DISEASES II**
- Topic 31 Otitis
- Topic 32 Sexually Transmitted Diseases
- Topic 33 Sepsis
- Topic 34 Pyelonephritis
Topic 35  Tuberculosis

Unit X: ONCOLOGY II

Topic 36  Leukemias and Lymphomas
Topic 37  Ovarian Cancer
Topic 38  Colon Cancer
Topic 39  Bone Marrow Transplant

Learning outcomes for the therapeutic topics are:

- **Describe** the elements of a pharmaceutical care plan.

- **Describe** the clinical findings associated with the topic disease state.

- **Describe** the currently accepted drug therapy options used in the treatment of the topic disease state.

- **Collect and assess** a patient data base from a patient presentation.

- **Assess** potential adverse drug reaction(s) and make recommendations regarding management.

- **Develop** a triage plan given a patient presentation.

- **Develop** a plan for discharge and health care transition.

- **Develop** an individualized pharmaceutical care plan given a patient presentation.

Credits for the topics in this course may be awarded through the PLA process, or earned by traditional coursework, self-study, or other faculty approved modalities.

Learning experiences include home study assignments, discussions of pharmacotherapy, case study analysis, adverse drug reaction analysis, discharge and transition of care planning, triage planning and development of pharmaceutical care plans.

**Practice Management**

PHNT 511-Practice Management - 4 cr

Practice Management is composed of four modules: Financial Management, Principles of Management, Marketing and Managing Pharmaceutical Care Services. These modules are designed to prepare the student for the practice management experiential component and to facilitate the student's ability to provide well rounded management of their practice.

These credits may be earned by traditional coursework, self-study, or other faculty approved modalities identified with the student's advisor. When appropriate, credits in this area may be awarded through the PLA process. Learning outcomes for the modules are:

- **Describe** and assess sound financial management principles and practice.

- **Demonstrate** an understanding of management principles and their application to pharmacy practice.

- **Develop** a marketing plan for pharmacy services through application of marketing concepts.

- **Develop** a strategic plan for patient-specific clinical pharmacy services.

- **Develop** staff development and quality improvement programs.

**Experiential Learning**

Starting early in the required courses, students will develop a representative
patient population in their practice site to be followed during the program and in the performance based evaluation in the final clerkship. Beginning with the initial patient identified as a study case, students will learn to triage, develop explicit pharmaceutical care plans, and initiate the patient management process. As they proceed, a longitudinal process will be used to monitor and assess their progress in practice.

Typically a faculty mentor will be assigned to each student to periodically assess the student's progress and provide continuous feedback. Some on-site observations will be conducted by the faculty advisor or his/her assignee.

Since implementation of a new service should be cost effective, students will develop a resource assessment - e.g., personnel needs, space, equipment - propose a structure for compensation, and provide a marketing plan for the practice site.

While the central philosophy of the experiential learning program is to provide for an impact on patients in the pharmacist's own practice, it is anticipated that it will not always be possible to completely meet experiential learning objectives at that site. When it is necessary for exposure to the delivery of pharmaceutical care services at other practice sites, every effort will be made to schedule these visitations at convenient times.

PHNT 521 - Longitudinal Care - 1 cr

This experiential course focuses on assessing the health status of a minimum of eight (8) patients in the student's own practice, developing health status reports, and participating in the management of pharmaceutical care needs of these patients during health transitions. Selected patients have health care problems (such as congestive heart failure, AIDS, cancer, or problems of ageing) that are likely to result in health transitions requiring changing pharmaceutical care needs including changes in drug therapy, health education, patient counselling and physical environment (e.g., home, long term care, hospital). It is expected that students commit a minimum of approximately 45 hours (e.g., an average of about 3 hours per week over a semester or 1.5 hours per week over an academic year) to experiential activities in this course at their own practice site. Students are expected to apply skills from this course in subsequent Pharmaceutical Care experiential coursework.

Major learning outcomes include:

- Given eight patients in his/her own practice (or an assigned practice site), the pharmacist will develop a health care status report for each patient.
- Given eight patients in his/her own practice (or an assigned practice site), the pharmacist will manage the patients' pharmaceutical care during health transitions.
- Given eight patients in his/her own practice (or an assigned practice site), the pharmacist will communicate to other health providers the pharmaceutical care needs and services of these patients during health transitions.

PHNT 531 - Practice Management Planning - 2 cr

Practice Management Planning will focus on the application of management
principles to a pharmaceutical care service. The course will provide an opportunity for the student to develop and write a plan defining and justifying a pharmaceutical care service and an opportunity for implementing the plan.

Prerequisites: Principles of Pharmaceutical Care, Therapeutics, Prior Learning Assessment of Pharmacy Practice, and Practice Management.

Major learning outcomes include:

- Critique the organizational structure, human resource plan, and operational policies and procedures of a pharmacy practice.
- Develop a pharmaceutical care business plan for the provision of a professional service to patients.
- Incorporate financial analysis, outcome measures, quality improvement, and marketing into their practice.

**PHNT 532 - Patient Assessment Skills - 1cr**

This experiential course focuses on the student acquiring skills necessary to obtain general pharmaceutical care data bases and problem-oriented data bases from patients. Acquired skills include both history-taking and physical assessment. Learning experiences include faculty demonstrations, videos, simulations, and patient encounters.

The course has six to seven four hour workshop sessions and one clinic session with a mentor to practice acquired skills in a supervised environment. Students are expected to apply and practice skills from this course in the program's other experiential courses. Major learning outcomes include:

- Collect a general pharmaceutical care data base including subjective and objective patient data.
- Given a patient complaint, collect a problem-oriented data base including discriminating subjective and objective data.
- Utilize the pharmaceutical care data base and the problem-oriented data base to define pharmaceutical care problems.

**PHNT 534 - Clinic or Institutional Assignment - 1 cr**

Activities in this course include supervised development of pharmaceutical care plans, triage decision making, discharge/transition planning, and patient counselling. Students are assigned to a total of 15 three hour faculty supervised pharmaceutical care sessions.

Students whose area of interest is ambulatory practice are assigned to 10 three hour Pharmacotherapy-Medication Refill Clinic sessions and 5 hospital-based three-hour Pharmaceutical Care Rounds sessions. Students whose area of interest is in organized or institutional health care are assigned to 10 hospital-based Pharmaceutical Care Rounds sessions and 5 Pharmacotherapy-Medication Refill Clinic sessions. Major learning outcomes include:

**Clinic Assignment:**

- Given a patient scheduled for pharmacotherapy and medication refill assessment, develop and implement a pharmaceutical care plan under the direct supervision of a faculty mentor.
**Institutional Assignment:**

- Given an institutionalized patient, **discuss** and **assess** the development, implementation, and monitoring of a pharmaceutical care plan under the direct supervision of a faculty mentor during pharmaceutical care rounds.

**PHNT 536 - Drug Information Experience - 1 cr**

Pharmacists acquire and apply drug information skills in their own practice. Students will develop and attain their own drug information library, access appropriate drug information databases, and utilize appropriate pharmaceutical and medical literature to prepare drug information reports. Assignments are made based upon the needs of the patients in the student's practice and the organizational needs of the practice site.

Students usually enroll in this course concurrently with their Pharmaceutical Care and/or Longitudinal Pharmaceutical Care experiential course(s). It is expected that students commit a minimum of 45 hours to this course spread out over one or two semesters (an average of 1.5 to 3 hours per week). It is preferable for students to link their drug information activities to their activities in the concurrent experiential course(s).

Prerequisites for this course include: Principles of Pharmaceutical Care (Community or Organized Health Settings); Therapeutics (Ambulatory or Acute); and Principles of Literature Evaluation. Major learning outcomes include:

- Given queries regarding possible adverse drug events or drug toxicities, **provide** verbal responses and written reports answering the questions.
- Given requests to evaluate drugs for possible addition to a formulary, **prepare** written formulary review reports.
- Given questions regarding the pharmacotherapy of patients, **provide** verbal responses and written reports answering the questions.
- Given questions from consumers regarding pharmaceuticals (e.g., prescriptions, OTC's, vitamins and minerals, pharmaceutical devices), **provide** written and verbal responses.

**PHNT 560 - Community or Institutional Pharmaceutical Care - 4 cr**

Pharmacists obtain and apply the skills to deliver pharmaceutical care services to patients in their own practice. Students develop and implement Triage Plans, Pharmaceutical Care Plans, and Transition Plans for a minimum of ten patients (in addition to the 8 patients accumulated during the Longitudinal Care experience) in their own practice. Patients selected for plan development and implementation must have at least two pharmaceutical care or pharmacotherapy problems.

Students communicate these plans to other health care professionals, monitor the response of patients to these plans, make any necessary modifications, and assess health outcomes resulting from their plans. Students usually are concurrently enrolled in the program's Drug Information experiential course.

It is expected that students commit a minimum of approximately 180 hours (an average of about 6 hours per week over two semesters) to activities related to this course.
During this course, students will be held accountable for application of pharmacotherapy topics acquired through Prior Learning Assessment and the didactic Pharmacotherapeutics course. Students completing this course are expected to be able to demonstrate the Nontraditional Pharm.D. program's terminal performance objectives related to implementation of pharmaceutical care services in their own practice site.

- Given ten patients, each of whom have at least two pharmaceutical care problems, in the student's own pharmacy practice, develop Pharmaceutical Care Plans, Triage Plans, and Transition Plans.

- Given ten patients in the students own pharmacy practice, implement previously developed Pharmaceutical Care, Triage, and Transition Plans.

- Given ten patients in the student's own pharmacy practice, assess and document health outcomes associated with previously implemented Pharmaceutical Care, Triage, and Transition Plans.

**Academic Policies**

The student affairs committee, mentors and coursemasters are all concerned with student academic progress in the nontraditional program. Therefore, student performance in courses and clerkships will be monitored on an ongoing basis. Students are ultimately responsible for their own academic progress and thus, must discuss academic issues with individual coursemasters and their mentors. By the same token, faculty members are encouraged to initiate discussions with students who appear to have academic problems.

**Grading System**

The School of Pharmacy uses the following grading system:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Interpretation</th>
<th>Point Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Excellent</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>Good</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>Fair</td>
<td>2</td>
</tr>
<tr>
<td>D</td>
<td>Poor</td>
<td>1</td>
</tr>
<tr>
<td>P</td>
<td>Pass</td>
<td>0</td>
</tr>
<tr>
<td>F</td>
<td>Failure</td>
<td>0</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete. Must be replaced by definite grade within one year</td>
<td></td>
</tr>
<tr>
<td>WD</td>
<td>Withdrawal. No grade is assigned.</td>
<td></td>
</tr>
</tbody>
</table>

When, for any reason, a course is repeated, the grade achieved in the repeated course replaces all previous grades in the same course. Courses in the program are approved for continuing professional education credit by ACPE.

**Academic Status**

The minimum passing grade for required courses in the nontraditional Pharm.D. program is a "C". Students may not register for a course or clerkship if they have received a grade below a "C" in a prerequisite for that course or clerkship. The student affairs committee will review the situation when a student receives a grade below a "C" in a required course or clerkship, an "F" in an elective course, or when the student's GPA falls below 2.0. In these situations, students may be subject to academic dismissal, academic probation or other action.

To appeal academic dismissal or probation, students must write to the student affairs committee. Students have the right to present their case in person before the
committee. The decision on the appeal is forwarded by the committee to the faculty assembly. If the appeal is denied, students have the right to appeal directly to the dean. The dean's decision on academic dismissal is final. All appeals must be completed before the beginning of the next semester. Students who have been academically dismissed twice are not eligible for reinstatement.

Students in this program have the rights and responsibilities for academic integrity that are expressed in detail in the school's Entry-Level Doctor of Pharmacy catalog.

Financial Information

A summary of fees and expenses for the Nontraditional Pharm.D. program is presented below. The total cost of the program depends on many factors: actual number of credits taken; cost of supplemental or alternative coursework completed outside of the school; PLA evaluation fee; and the number of semesters over which matriculation takes place. If one were to complete the program at a rate of 3 credits per semester, requiring 5 years, the total costs would be approximately $7,000.

<table>
<thead>
<tr>
<th>Fees and Expenses 1994-95$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition</td>
</tr>
<tr>
<td>Fees</td>
</tr>
<tr>
<td>Supporting Facilities</td>
</tr>
<tr>
<td>Instructional Resources</td>
</tr>
<tr>
<td>Student Fees</td>
</tr>
<tr>
<td>NTPD Program Administration$^2</td>
</tr>
<tr>
<td>Clinical Clerkship$^3</td>
</tr>
<tr>
<td>Other One-time Expenses</td>
</tr>
<tr>
<td>Application Fee</td>
</tr>
<tr>
<td>PLA Portfolio Evaluation Fee</td>
</tr>
<tr>
<td>Diploma Fee</td>
</tr>
</tbody>
</table>

1 All charges are per semester unless otherwise noted.

2 The University of Maryland at Baltimore School of Pharmacy is approved by the American Council on Pharmaceutical Education as a provider of continuing pharmaceutical education. All courses in the Nontraditional Pharm.D. program are available for continuing education credit.

3 Clerkship fee only applies when registered for the Clinic/Hospital Assignment, Pharmaceutical Care, or Drug Information units of the experiential component of the program. This fee will be charged for no more than 2 years.