GENERALIZED SYLLABUS FOR ADVANCED PHARMACY PRACTICE EXPERIENCES (APPE)

The following is an excerpt from the ACPE Accreditation Standards which defines the role of the Advanced Pharmacy Practice Experience in pharmacy education.

Guideline 11.6
The Advanced Pharmacy Practice Experiences should provide active participation and in-depth experiences to acquire practice skills and judgment and to develop, in a graded fashion, the level of confidence and responsibility needed for independent and collaborative practice. Toward this end, a spectrum of practice experiences should be deployed wherein the biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and pharmacy practice are integrated, professional knowledge and skills are applied, and professional attitudes, ethics, and behaviors are developed so as to enable students to provide pharmaceutical care. Advanced practice experiences should enhance communication and collaborative skills with patients and other professionals, including the ability to work and communicate effectively with diverse colleagues and patients. The advanced practice experiences should also provide experience in prescription processing, compounding and preparation of dosage forms, including parenteral products, drug distribution systems, documentation of services, the taking of drug histories, participating in drug therapy decisions, monitoring, educating, and counseling patients, solving problems, and systematically evaluating drug use. Advanced practice experiences should include application of clinical pharmacokinetic principles in the development and management of dosing and should incorporate knowledge and skills in the searching, analysis, and interpretation of drug information. Students should be under the close supervision of pharmacist role models.

Guideline 11.7
The organization of the Advanced Pharmacy Practice Experiences should provide a balanced series of core and selective experiences that cumulatively provide sustained experiences of adequate intensity, breadth, and duration to enable achievement of stated competencies as demonstrated by assessment of outcome expectations. Generally, the core and selective experiences should be full-time and provide continuity of care, with pharmacy faculty supervision and monitoring. The duration of the Advanced Pharmacy Practice Experiences should ordinarily be the equivalent of one academic year. Core experiences should develop pharmaceutical care capabilities in inpatient and ambulatory care settings, especially community pharmacies. Selective experiences should complement the core experiences and provide adequate and innovative opportunities for
students to mature professionally in accord with their individualized interests. The series of core and selective experiences should be philosophically and educationally coordinated to achieve, in composite, the experiential whole of the Advanced Pharmacy Practice Experiences.

**Guideline 11.8**
The Advanced Pharmacy Practice Experiences should be provided in both ambulatory and inpatient settings and should include primary, acute, chronic, and preventive care among patients of all ages. The core experiences should provide substantial experience in community pharmacy practice and hospital/institutional pharmacy practice, as well as substantial practice experience with general medicine acute care patients. Most of the advanced practice experiences should involve direct patient care. However, some of the advanced practice experiences may involve indirect patient care or may occur in non-patient care areas, such as research and management. Other experiences, such as those in drug information, managed care, and home health care should be available.

Given this framework, the purpose of this syllabus is to provide a global view of the Advanced Pharmacy Practice Experience structure. This includes:

- **General Advanced Practice Experience Outcomes**
- **Instructor's - "Student Orientation Outline"**
- **Course Outline - Twenty Day Schedule**
- **Student Guidelines**
- **Attendance Policy**
- **Evaluation Criteria**
- **Ability Based-Outcomes For Specific Advanced Practice Experiences**
General Advanced Practice Experience Outcomes

An ability based outcome is composed a knowledge, skills and attitudes and is highlighted in bold text. The non-bold texts are the objectives discussed by the Advanced Practice Experience faculty members.

1. **The student should be able to evaluate, review or develop, implement and monitor therapeutic outcomes associated with a pharmaceutical care plan for a patient.**
   - A. Understand the administration and delivery systems.
   - B. Understand how to evaluate laboratory and patient data.
   - C. Develop basic patient (including physical) assessment.
   - D. Review patient’s drug therapy for drug related problems (pharmaceutical care).
   - E. Develop a pharmaceutical care plan for patients.
   - F. Integrate problem solving in developing cost-effective therapy related plan toward achieving a desired therapeutic outcome, keeping in mind non-pharmacologic alternatives.
   - G. Develop therapeutic parameters and become competent in monitoring the patients for therapeutic endpoints on an ongoing basis.
   - H. Competently use pharmacokinetics in developing and monitoring the patient’s drug therapy.
   - I. Understand the responsibility and reporting mechanism for adverse drug reactions.

2. **The student should be able to identify and utilize drug information services in order to facilitate their role as a drug-information specialist for other health care professionals and patients to achieve positive therapeutic outcomes.**
   - A. Interact appropriately with other members of the health care team.
   - B. Know and use the sources of drug information for any given rotation.
   - C. Apply drug information to obtain positive outcomes for patients.
   - D. Serve as drug information specialists for patients and other health care professionals.
   - E. Understand the responsibility and reporting mechanism for adverse drug reactions.

3. **The student should be able to develop oral or written presentations on a drug topic or drug-related topics to other health care professionals and patients.**
   - A. Effectively communicate in verbal and/or written form, in concise and organized fashion, a pharmaceutical evaluation of the patient.
   - B. Serve as drug information specialists for patients and other health care professionals.
   - C. Develop presentation skills for variable audiences for interdisciplinary education.
   - D. Develop communication skills for patient education.
Instructor's - "Student Orientation Outline"
(Topics to be covered during student's initial visit to the site)

1. Meet student and discuss student's previous experience.
2. Review course objectives and evaluation criterion with student.
3. Develop a plan to meet course objectives in given time span.
4. Inform the student of your expectations of dress and grooming.
5. Inform the student of area for employee parking.
6. Tour site and introduce student to team / employees.
7. Orient the student to location of pertinent equipment and supplies.
8. Explain how the telephone system is used.

Course Outline - Twenty Day Schedule

DAY 1   - Follow Orientation Outline

DAY 2-19 - Advanced Practice Experience Training

DAY 10 – Mid Point Evaluation (the SUCCESS website can be used for this)

Day 20   - The instructor should complete the student's post evaluation via the SUCCESS web site. The instructor should go over the student's Post Evaluation with the student. The student is responsible for completing the instructor evaluation on-line before they graduate.
Student Guidelines

1. The student should contact the instructor for appointment (at a mutually convenient time) prior to the first session to become acquainted with instructor.

2. The student must exhibit a professional appearance both in manner and dress. The student must adhere to the standards of dress and behavior specified by the instructor to whom he or she is assigned. These standards should be identical to those required of all pharmacists in the pharmacy.

3. The student shall identify him or herself as a Student at all times.

4. The student is obligated to respect any and all confidences revealed during the assignment including pharmacy records, medical records, fee systems, professional policies, etc.

5. The student must keep in mind that the primary objective of Advanced Practice Experiences is learning and that learning is not a passive process but requires a deep and active commitment on the student's part.

6. The student should recognize that the optimum learning experience requires mutual respect and courtesy between the instructor and themselves.

7. The student should encourage communication with all persons involved in the Advanced Practice Experience including the instructor, physicians, other health professionals and patients.

8. A student should never publicly question the advice or directions of the instructor, but discuss any disagreements in private. All criticism should be viewed as a means of learning.

9. The student should question any activity that appears to be in conflict with state or federal drug laws and regulations. Report any problems to your instructor or the Director of Experiential Programs. Remember that your internship registration is revocable for causes specified in Law and that revocation or suspension could prevent receiving licensure as a pharmacist.

10. When making professional judgments the student should first discuss alternatives with the instructor.

11. The student should take the initiative in communicating with physicians and patients but should discuss professional decisions with the instructor prior to carrying them out.

12. The student is responsible for adhering to the work schedule of the instructor. For the student's own benefit, it may be necessary at times to devote more than the scheduled time or to deviate from previous schedule.

13. The student should be punctual in meeting the schedule and is obligated to notify the instructor as soon as possible if going to be absent or late.

14. Attendance is Mandatory if academic and licensure credit is to be received.
**Attendance Policy**

Attendance is a vital part of Advanced Practice Experience Rotations and is mandatory. The quality of learning experiences is directly related to the time spent in the clinical environment. If sickness or other problems require the student's absence during rotation time, those lost hours must be rescheduled as soon as possible. Failure to participate in the assigned number of hours will result in an "Incomplete" grade for the course.

If you are unable to attend rotation, contact your instructor and leave a message with the Office of Experiential Programs (352) 392-5964. Absences will be dealt with in the following manner:

1. **Excused** - each excused absence will be made up at the discretion of the instructor. Absences may be excused secondary to either health or family issues (personal illness, dependent’s illness, Dr.’s appointment, family crisis, etc.), professional issues (interview for position, educational meeting, etc.) or at the discretion of the preceptor for other reasons not listed here. Absences that are planned require notification prior to the day of the absence. A minimum of 1-week notice regarding planned absences is expected.

2. **Unexcused** - each unexcused absence will result a deficiency in that competency area in the SUCCESS program. Each absence must be made up at the convenience of the instructor. Failure to notify at the time of the absence in the case of unexpected situations will result in an unexcused absence. Failure to notify in advance of planned activities will result in an unexcused absence. More than 1 unexcused absence is grounds for dismissal from the experience.

3. **Tardiness** - two unexcused tardies will be the same as one unexcused absence. The definition of tardy will be left up to the instructor.

Educational meetings are an important part of being a professional. Attendance will be encouraged, but not required. Faculty and instructors will encourage the students to attend meetings.
Evaluation Criteria
Because of the diversity of settings in which an Advanced Pharmacy Practice Experience can occur, each course instructor should create evaluation criteria that are specific to the objectives of the course. Students should be evaluated based on objective means whenever possible. There are no strict requirements for numbers exams or presentations. Each student should be made aware of the evaluation criteria at the beginning of the experience. Each student should be given feedback throughout the rotation as well as a final summary in writing at the termination of the experience.

Evaluations will occur via the SUCCESS online evaluation system. The system and the tutorial for the system are located at the address below. The competencies for the SUCCESS system should be used to help structure the objectives of the rotation to provide a clear understanding to the student of what is expected.

WWW.COP.UFL.EDU/SUCCESS/

- Students will be evaluated using the SUCCESS criteria. (see the following pages)

- Faculty may use but are not limited to the following evaluation mechanisms which will be set at the beginning of the rotation
  - Direct observation of performance
  - Report of performance to faculty member by other health care team members
  - Patient presentations
  - Formal educational presentation evaluation
  - Formal Oral and/or written testing

- Specific evaluation criteria will be set at the beginning of the rotation period as determined by the set of activities that the student will complete for that specific site and time interval in order to meet the objectives of the rotation.

This is a list of the competencies and sub-competencies for the SUCCESS program. Students will be evaluated using these on a “Excellent, Competent, or Deficient” scale. Definitions of Excellent, Competent and Deficient for each sub-competency are available in the SUCCESS program. Sub competencies noted with “**” are considered “Critical”. Critical deficiencies are indicative of a major deficit in the student’s skill set. This is reflected in the grade calculation. You can use this document to determine the percentage weight you will assign to each competency area in the SUCCESS program based on your rotation.

___ Competency #1  Drug distribution systems.

  a. Apply principles of civil law to the practice of pharmacy.

  **b. Applies state and federal regulations in the dispensing process.

  c. Determines need and factors for correctly using the medication.

  d. Identifies drug costs to the patient.
**e.** Clarifies, adds and/or corrects prescription order information when necessary.

**f.** Correctly labels and performs the final check.

g. Correctly documents adverse drug reactions through the appropriate channels.

h. Applies ordering, purchasing and inventory control principles.

i. Abides by laws on storage and disposal of medication.

______Competency #2  Disease State Knowledge.

a. Discusses pathophysiology of disease(s).

**b.** Synthesizes basic science and clinical information to appropriately identify patient problems

c. Applies knowledge of the pathophysiology of a specific disease to prevent medication-related problems.

**d.** Uses appropriate critical pathways, clinical practice guidelines, and disease management protocols in the delivery of pharmaceutical care.

e. Assesses the needs of the target population relative to disease prevention/detection.

f. Selects and implements an appropriate strategy to prevent (i.e. immunizations) or detect (i.e. blood cholesterol screening) disease in the target population

______Competency #3  Drug therapy evaluation and development.

a. Synthesizes complete patient history and laboratory and physical exam data to identify problems.

**b.** Identifies and prioritizes both actual and potential drug related problem stating rationale.

**c.** Identifies problems that require emergency medical attention.

**d.** Designs and evaluates treatment regimens for optimal outcomes using pharmacokinetic data and drug formulation data.
**e. Designs and evaluates treatment regimens for optimal outcomes using disease states and previous or current drug therapy as well as including psycho-social, ethical-legal, and financial data.

f. Develops backup plans based on what problems are likely to occur from/with the primary plan.

g. Provides written documentation of the pharmaceutical care plan that is clear, complete, and concise.

_____Competency #4  Monitoring for Endpoints.

**a. Identifies and suggests appropriate therapeutic endpoints for patient (cure, maintenance, or prophylaxis of disease).

**b. Develops monitoring plan appropriate for patient specific physiologic differences.

c. Provides rationale for monitoring plan with documentation from reliable sources.

d. Evaluates and alters monitoring plan when necessary as the patient's needs change.

**e. Identifies monitoring results, which would require emergency medical attention.

f. Suggests drug therapy changes based on progress towards endpoints or identified drug-related problems.

_____Competency #5  Patient Case Presentations.

a. Patient cases are prepared in a timely manner.

b. Follows patients and maintains information on number required by preceptor. Insufficient or inaccurate information.

c. Verbally presents data in an organized manner.

d. Writes a chart note on patient and data is recorded and presented in appropriate format.

e. Uses appropriate verbal and nonverbal mannerisms during presentation.

f. Communicates presentation clearly and in a tone and volume that is clearly understood.

g. Able to answer questions about patients or disease states.
Competency #6  Patient Interviews.

**a.** Introduces self as student from College of Pharmacy.

b. Optimizes environment for the interview.

c. Clarifies the purpose and structure of the interview.

**d.** Verifies patient name and correct pronunciation, and demographic data.

e. Explains how patient will benefit from interview.

**f.** Employs vocabulary, question structure, question complexity, and invited feedback to insure patient understanding.

g. Implements the interview in an organized fashion.

**h.** Answers patient questions providing appropriate and correct data.

Competency #7  Patient Education/Counseling.

**a.** Speaks clearly using proper enunciation, volume, and rate.

b. Uses terminology specific to the understanding of the patient.

c. Uses appropriate non-verbal communication.

**d.** Provides accurate and pertinent information in appropriate detail.

e. Includes information required for the patient's social and financial needs.

f. Provides feedback to patient questions/concerns.

g. Determines patient level of understanding by asking questions.

h. Demonstrates empathy.

i. Shows concern for patient well-being.

j. Retrieves and evaluates new information for the purpose of responding to patient questions.

Competency #8  Drug Information.

a. Selects the best available resource for answering a drug related request.
b. Demonstrates the ability to use other information resources (this includes poison control centers, pharmaceutical companies and federal agencies).

c. Generates correct answers to questions in a timely and systematic manner.

d. Can define primary, secondary and tertiary references.

e. Is able to discuss the organization and operation of the Pharmacy and Therapeutics Committee (or its equivalent depending on the site). (Specific responsibilities would include formulary management and drug usage evaluation process).

f. Demonstrates the ability to interpret descriptive statistics and inferential statistical tests using assessment tools commonly reported in medical and pharmaceutical literature.

g. Critically analyzes the design, methodology, results, and conclusions of a given published study.

h. Compares and contrasts the approaches to clinical practice guideline (CPG) development and the concept of evidence-based medicine (EBM).

Competency #9  Formal Oral Presentations

a. Provides list of references that support an adequate review of the literature.

b. Delivers a content correct presentation based on the assignment parameters.

c. Communicates correct information that is understood and useable by the audience.

d. Uses appropriate verbal and non-verbal communication skills (inclusive of body language).

e. Utilizes audiovisual aids and technology that enhance delivery and understanding of the presentation.

f. Utilizes time allotted for presentation efficiently and effectively.

g. Generates feedback from the audience by asking questions.

h. Demonstrates a knowledge base sufficient for the topic of discussion.

i. Correctly synthesizes enthusiasm, verbal skills, non-verbal skills, and audiovisual aids to produce a presentation, which gains and keeps the audience's attention.
_____Competency #10 Formal Written Presentations

**a. Facts about the topic are correct.

b. Presentation of the topic is organized.

c. Presentation format and length adheres to the parameters established by the Preceptor.

**d. Written document contains review of primary literature from reputable sources.

_____Competency #11 Professional team interaction

a. Dresses appropriately for the setting.

**b. Demonstrates sensitivity for patients and families during team activities.

c. Demonstrates respect for other health care professionals.

d. Uses interpersonal communication skills to facilitate team interactions.

e. Actively participates in team activities.

f. Assists team members in establishing therapeutic and/or diagnostic objectives.

g. Uses documentation, persuasion, and alternative suggestions to resolve therapeutic disagreements.

**h. Provides accurate, organized, and pertinent information relevant to the team's current or future tasks.

i. Follows up on questions asked by the team in a timely fashion.

j. Interactions with the team are conducted with an appropriate level of confidence.

k. Retrieves and evaluates new information for the purpose of responding to professional questions.

_____Competency #12 Professionalism/Motivation

a. Identifies and respects the values of others.

**b. Demonstrates knowledge and understanding of the pharmacist "code of ethics".

c. Defends ethical decisions through analysis of ethical principles.
**d. Demonstrates sensitivity to confidentiality issues.**

**e. Attends and participates in all activities according to attendance policies.**

f. Is punctual for all activities.

g. Completes assigned responsibilities (including patient care responsibilities) on time.

h. Accommodates to change in workflow without disruption of work schedule.

i. Initiates additional learning opportunities.

j. Synthesizes new information in order to draw conclusions, hypothesizes, or decides a course of action.

___Competency #13 Cultural Sensitivity___

a. Assesses the religious and socio-economic value systems that affect need and adherence.

b. Possesses the knowledge, skills and behaviors required to identify communication tools to accommodate a culturally diverse population.

c. Identifies cultural differences that will potentially affect professional interactions.

d. Identifies appropriate alternative measures to improve verbal and non-verbal interactions between patient and pharmacist.
Additional Ability Based-Outcomes For Specific Advanced Pharmacy Practice Experiences

PEDIATRICS

1. The student should be able to describe, evaluate, implement, recommend and monitor therapeutic outcomes associated with a pharmaceutical care plan for the pediatric patient suffering from the following disease states.
   A. Pediatric Disease States
      i. Cystic Fibrosis
      ii. Asthma
      iii. Otitis Media
      iv. Meningitis/Sepsis
      v. HIV
      vi. Fluids and Electrolyte Disturbances
      vii. Nutritional Disturbances
      viii. Hematological Diseases of Childhood
      ix. Dermatological Conditions
      x. Seizures
   A. Understand developmental physiology.
   B. Understand the uniqueness of pediatric disease states.
   C. Understand differences in the preparation of dosage forms for all ages.
   D. Understand differences in pediatric physical assessment.
   E. Demonstrate aspects involved in pediatric physical assessment.
   F. Understand psychosocial aspects of pediatric care.

1. The student should be able to discuss, administer and monitor childhood vaccinations/immunizations.

2. The student should be able to develop and present appropriate oral or written presentations for pediatric patients, parents and other health care professionals.
ONCOLOGY

1. The student should be able to describe, evaluate, recommend, implement and monitor therapeutic outcomes associated with a pharmaceutical care plan for the patient suffering from the following conditions.
   A. Types of Cancer
      i. Breast Cancer
      ii. Lung Cancer
      iii. Prostate Cancer
      iv. Colon Cancer
   A. Understand the pathophysiology, epidemiology, etiology, diagnosis, staging and treatments of the above malignances.
   B. Know ASC guidelines for screening of cancer
   C. Discuss the uses and toxicities of commonly used antineoplastic agents.
   D. Demonstrate a basic understanding of BMT process and application in the treatment of neoplastic diseases.
   E. Develop appropriate pharmaceutical care plans using antineoplastic agents.
   F. Describe appropriate uses for currently marketed BMR’s and biotechnology products.
   G. Recommend supportive care plans for pain management, antiemetics, neutropenic fevers and infectious disease.
   H. Understand psychosocial, financial and ethical issues involved in oncology patients.

1. The student should be able to develop and present appropriate oral or written presentations for cancer patients, their caregivers and other health care professionals.
AMBULATORY CARE

1. The student should be able to describe, evaluate, recommend, implement and monitor therapeutic outcomes associated with a pharmaceutical care plan for the ambulatory care patient.
   A. Understand an appreciation of clinical guidelines in an ambulatory care setting.
   B. Apply clinical guidelines in an ambulatory care setting.
   C. Display the ability to obtain adequate and complete medication history (disease states, prescription medications, over-the-counter medications, alternative medications), adverse drug reactions, allergies, social and family history, compliance, past medications, patient’s comprehension of medications and drug interactions.
   D. Demonstrate skills for patient counseling to meet the particular patient's need and understanding.
   E. Develop strategies to improve patient compliance.
HOME HEALTH CARE

1. The student should be able to discuss, develop and monitor a reimbursement, documentation, distribution and clinical education program in the home health care setting.
   A. The student should be able to discuss and differentiate between different payor mixes.
   B. The student should discuss problems associated with various reimbursement methods.
   C. The student should understand interdisciplinary approach in the communication process on recommendations either positively or negatively.
   D. The student should understand the negative charting concept.
   E. The student should be able to demonstrate knowledge of the ancillary supplies including but not limited to various needleless systems, peripheral and central lines.
   F. The student should be aware of O.S.H.A. regulations associated with IV therapy.
   G. The student should show knowledge of inventory control.
   H. The student should understand what happens on a nursing visit or hospital discharge.
   I. The student should understand the terminology in the practice setting.
   J. The student should be able to demonstrate and provide a return demonstration of good IV aseptic techniques.
   K. The student should be able to interview a patient for a medication profile.
   L. The student should be able to counsel a patient in plain English words.

1. The student should be able to describe, implement and document a business plan using total quality management for a home health care setting.
   A. The student should be able to describe who are the target markets and scope of services provided.
   B. The student should demonstrate the ethical issues and past business problems in the home infusion therapy.
   C. The student should describe how health care reform affects this area of practice.
   D. The student should have knowledge and be able to demonstrate JCAHO standards relating to patient’s rights consent for treatment and outcome monitoring.
   E. The student should be able to demonstrate the improvement process of establishment of indicators.
   F. The student should be able to demonstrate the how and why of establishing new indicators and elimination from the practice site.
   G. The student should be able to demonstrate and implement a pharmacy TQM program for the site.

3. The student should be able to describe, develop and monitor the management and administration in a home health care setting.
CRITICAL CARE

1. The student should be able to describe, evaluate, recommend, implement and monitor therapeutic outcomes associated with a pharmaceutical care plan for the patient suffering from the following conditions.

A. Conditions
   i. Stress ulcer prophylaxis
   ii. Hemodynamics/Shock States
   iii. Nutrition and Fluid Balance
   iv. Acid-Base Balance
   v. Infectious Diseases

A. Knowledge in the use of vasoactive agents (e.g., inotropes, pressor, vasodilators)
B. Knowledge in the use of paralytics, sedatives and analgesics
C. Knowledge in the use of non-pharmacological measures (e.g., ventilators, lines, intracranial pressure, monitors, Swan-Ganz catheters.
D. Demonstrate therapeutic monitoring for commonly used critical care drugs (e.g., digoxin, aminoglycosides, vancomycin, lidocaine, procainamide and phenytoin)
E. Understand psychosocial, financial and ethical issues involved in these patients
PHARMACOKINETICS AND/OR INFECTIOUS DISEASE

1. The student should demonstrate knowledge, evaluate and perform individual patient evaluations and pharmacotherapy plan involving pharmacokinetics and infectious disease.

1. The student should be able to describe, evaluate, recommend, implement and monitor therapeutic outcomes associated with a pharmaceutical care plan (including pharmacokinetic/pharmacodynamic monitoring) for patient suffering from the following disease states.
   A. Disease states
      i. Pneumonia
      ii. UTI/Polynephritis
      iii. Surgical Px
      iv. HIV
      v. Osteomyleitis
      vi. Diabetic wounds
      vii. Endocarditis
      viii. Sepsis
      ix. Abdominal/Peritonitis
      x. STP
      xi. PID
      xii. Others as reflected in the patient population
   A. The student should know aminoglycoside and vancomycin pharmacokinetics and dosing/monitoring techniques.
   B. The student should know and demonstrate pharmacokinetic/dynamic monitoring of drugs such as antibiotics, anti-virals, antifungals, theophylline, digoxin, anticoagulants, anticonvulsants and antiarrythmics.

1. The student should discuss, demonstrate and implement aspects of pharmacy policies for clinical pharmacokinetics or infectious disease services.

2. The student should be able to describe, discuss and demonstrate pharmacy services and various technological and computer applications to patients and other health care professionals in various types of health care settings when providing accurate, efficient and medically appropriate pharmacokinetic or infectious disease services.

CARDIOLOGY

1. The student should be able to describe, evaluate, recommend, implement and monitor therapeutic outcomes associated with a pharmaceutical care plan for the patient suffering from the following conditions.
   A. Disease States
i. Hypertension  
ii. Heart Failure  
iii. Acute Myocardial Infarction  
iv. Hyperlipidemia  
v. Stable or Unstable Myocardial Ischemia  
vi. Supraventricular or Ventricular Arrhythmias  

A. Discuss diagnosis, pathophysiology, presenting symptoms, short-and-long term complications and prognosis  
B. Describe in detail the mechanisms of action, pharmacokinetic properties, indications and other uses, dose regimens, adverse effects and drug diseases and laboratory interactions of all agents used to treat the above conditions.  
C. List drugs that are known or potential causes of the above listed conditions.  
D. Describe pertinent characteristics of these drug-induced cardiovascular conditions.  
E. Recommend safe and effective therapeutic measures for non-cardiac conditions that will not exacerbate the above listed conditions.  
F. Apply established principles of pharmacokinetics to a) interpretation of serum concentrations of quinidine, procainamide, lidocaine and digoxin.  
G. Design individualized regimens for quinidine, procainamide, lidocaine and digoxin.  
H. Describe physiological, ethical and legal problems involved in delivering pharmaceutical care to patients afflicted with the above listed conditions.
ADULT MEDICINE

1. The student should be able to describe, evaluate, recommend, implement and monitor therapeutic outcomes associated with a pharmaceutical care plan for the patient suffering from any six of the following conditions.

A. Diseases

   i. Chronic Obstructive Pulmonary Disease
   ii. Asthma
   iii. Pneumonia
   iv. Congestive Heart Failure
   v. Angina
   vi. Myocardial Infarction
   vii. Diabetes
   viii. Renal Failure
   ix. HIV
   x. Stroke/Transient Ischemic Attacks
   xi. Anticoagulation
   xii. Seizures
   xiii. Hypertension

A. The student should be able to discuss, understand, and present procedures and testing relating to the pathophysiology and or pharmacotherapeutic issues.