Learning Experiences of Advanced Practice In  

**Internal Medicine**

Auburn University School of Pharmacy

**Course Number:** PYPP 5620  
**Course Title:** Internal Medicine  
**Credit Hours:** 3 Semester Hours  
**Prerequisites:** P4 Standing  
**Corequisite:**

**Course Description:** Advanced practice experience in providing inpatient pharmaceutical care to adult patients with diseases of the major organ systems.

**Background:**  
**Relation to Pharmaceutical Care.** This is the first of two consecutive rotations that focus on the care of hospitalized adult patients. During the Internal Medicine and Medicine Specialties sequence students will refine and develop the pharmacotherapy skills necessary to evaluate, implement, and monitor drug therapy to optimize the delivery of pharmaceutical care and improve the therapeutic outcomes in adult patients with disease states that include but are not limited to: Heart Disease, Pulmonary Disease, Renal Disease, Infectious Diseases, and GI Disease.

During this rotation, students are expected to demonstrate exceptional work habits and deportment (e.g., Professional Ethics, Identity, and Behavior; Social Interaction Citizenship and Leadership; Self-Learning Abilities) in addition to successful completion of patient evaluation and management responsibilities.

**Practice Description:** The student will be assigned to an internal medicine service in an inpatient setting. These patients will be under the care of a private practice internist and/or an Internal Medicine team that includes internal medicine residents and an attending physician. In this setting the student will have opportunity to communicate (both orally and in writing) with physicians, patients, and other health care professionals.

**Outcomes and Goals:**

<table>
<thead>
<tr>
<th>Programmatic Outcome</th>
<th>Course Objectives</th>
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| 1. Communication Abilities - The student shall read, write, speak, listen, and use media to communicate. | A. Effectively communicate, verbally and in writing (e.g., consultations progress notes, drug information responses and other documents), with other health care professionals (pharmacists, physicians, nurses, etc.) about therapeutic plans, other patient care needs, and health care issues.  
B. Articulate and defend rationale and conclusions regarding drug therapy.  
C. Write patient care notes/documents that: |
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|  | i. Are accurate, logical, yet only pertinent information  
ii. Provide complete drug therapy directions (dosage, route, frequency, duration, monitoring parameters, and time of follow up)  
iii. Use correct terminology, spelling, and grammar. | A. Provide concise, applicable, and timely responses to requests for drug information from health care professionals and patients. Specifically, the student shall:  
i. Perceive, assess, and evaluate drug information needs.  
ii. Apply a systematic approach to solve drug information questions.  
iii. Demonstrate efficient literature search strategies.  
iv. Select and use the most appropriate references and cite only pertinent references.  
v. Interpret and synthesize information from multiple sources into a concise written or verbal presentation. | B. Identify and evaluate each drug-related problem.  
A. Assess each acute and chronic medical problem.  
C. Identify and evaluate each drug-related problem.  
B. Identify the following drug-related problems:  
i. Patient is receiving a drug that has no indication and/or there is therapeutic duplication.  
ii. There is a better choice of drug based on patient/disease characteristics, formulary, cost, etc.  
iii. There is a better choice of drug based on patient/disease characteristics, formulary, cost, etc.  
iv. Consider strengths and weaknesses when developing a personal learning plan.  
v. Implement and successfully complete personal learning plans.  
vi. Respond appropriately to constructive feedback.  
vii. Identify areas for new practice opportunities and/or new professional roles and use self-directed learning skills to initiate or implement them. | A. Are accurate, logical, yet only pertinent information  
B. Provide complete drug therapy directions (dosage, route, frequency, duration, monitoring parameters, and time of follow up)  
C. Use correct terminology, spelling, and grammar. | A. Make appropriate ethical and legal decisions.  
B. Accept responsibility and provide patient-centered care.  
C. Maintain excellence in personal practice.  
D. Exhibit a professional demeanor. | A. Display appropriate team behaviors.  
B. Display appropriate interpersonal behaviors.  
C. Display independent self-learning:  
i. Self-assess pharmacotherapy/practice responsibilities and develop improved approaches to pharmacotherapy and other aspects of practice.  
ii. Recognize self-limitations (e.g., prejudices, assumptions, bias).  
iii. Assess one's own abilities independently.  
iv. Consider strengths and weaknesses when developing a personal learning plan.  
v. Implement and successfully complete personal learning plans.  
vi. Respond appropriately to constructive feedback.  
vii. Identify areas for new practice opportunities and/or new professional roles and use self-directed learning skills to initiate or implement them. | A. Display self-learning abilities:  
i. Are accurate, logical, yet only pertinent information  
ii. Provide complete drug therapy directions (dosage, route, frequency, duration, monitoring parameters, and time of follow up)  
iii. Use correct terminology, spelling, and grammar. | A. Display independent self-learning:  
i. Self-assess pharmacotherapy/practice responsibilities and develop improved approaches to pharmacotherapy and other aspects of practice.  
ii. Recognize self-limitations (e.g., prejudices, assumptions, bias).  
iii. Assess one's own abilities independently.  
iv. Consider strengths and weaknesses when developing a personal learning plan.  
v. Implement and successfully complete personal learning plans.  
vi. Respond appropriately to constructive feedback.  
vii. Identify areas for new practice opportunities and/or new professional roles and use self-directed learning skills to initiate or implement them. | A. Develop functional patient databases by gathering and generating relevant information:  
i. Patient/Caretaker interview  
ii. Physical assessment and review of systems performed by the student  
iii. MAR and pharmacy profile  
v. Medical record and lab/test databases  
vi. Laboratory tests requested by the student/preceptor. | A. Assess each acute and chronic medical problem.  
B. Identify the following drug-related problems:  
i. Drug therapy is needed for untreated indications.  
ii. Patient is receiving a drug that has no indication and/or there is therapeutic duplication.  
iii. There is a better choice of drug based on patient/disease characteristics, formulary, cost, etc.  
iv. Drug therapy needs optimization (population and patient-specific pharmacokinetic and pharmacodynamic data indicate a drug regimen is not optimized).  
v. Medication nonadherence.  
vi. Drug induced disease/medical conditions.  
vii. Socio-behavioral and economic barriers to effective drug therapy.  
viii. Adverse drug reactions that are substantiated by laboratory, test, and physical findings.  
ix. Routes of administration that are not the best, safest, and most cost-effective.  
x. Drug interactions that are substantiated with pharmacokinetic/dynamic and compatibility information.  
A. Develop functional patient databases by gathering and generating relevant information:  
i. Patient/Caretaker interview  
ii. Physical assessment and review of systems performed by the student  
iii. MAR and pharmacy profile  
v. Medical record and lab/test databases  
vi. Laboratory tests requested by the student/preceptor. | B. Consider drug and non-drug therapy alternatives. | A. Are accurate, logical, yet only pertinent information  
B. Provide complete drug therapy directions (dosage, route, frequency, duration, monitoring parameters, and time of follow up)  
C. Use correct terminology, spelling, and grammar. |
The student shall develop a therapeutic plan for the patient, which includes appropriate monitoring to address any problem identified.

|                                  | B. Participate in pharmacotherapy decision-making by:  
|                                  | i. Identifying opportunities for decision-making.  
|                                  | ii. Proactively engaging decision-making opportunities  
|                                  | iii. Formulating decision rationale that is the result of rigorous inquiry, scientific reasoning, and evidence  
|                                  | iv. Pursuing the highest levels of decision-making.  
|                                  | v. Seeking *independence* in making decisions and accepting personal responsibility for the outcomes to patients resulting from one's decisions.  
|                                  | vi. Personally enacting decisions.  

10. Medication Use Systems - The student shall specify, develop, use and evaluate acquisition, inventory control and distribution systems, while documenting and maintaining quality.

| A. Work effectively within a medication use system (formulary, medication errors, ADR reporting.)  
| B. Utilize effective methods to monitor and evaluate the cost of drug therapy.  
| C. Schedule medications and laboratory testing so that they are congruent with patient care, facility procedures, and are feasible.  

C. Develop drug therapy plans that are patient-specific, comprehensive, logical, practical, consider current evidence-based medicine recommendations, include strategies for prevention, and include patient education.  
D. Establish a plan for therapeutic drug monitoring that includes accurate documentation of population and patient-specific parameters, dosing history/administration times, monitoring parameters, and daily SOAP notes/plans.  
E. Develop and implement the pharmacotherapeutic plan promptly, efficiently, accurately, and effectively.  
F. Use an effective patient monitoring system (monitoring forms).  
G. Monitor the patient and follow up at appropriate intervals.  
H. Revise drug therapy plans on an ongoing basis.  
I. Ensure continuity of pharmaceutical care to and from the acute and ambulatory care patient care settings.
Typical Rotation Schedule:

<table>
<thead>
<tr>
<th>Times</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Weekends</th>
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<tbody>
<tr>
<td>7-8AM</td>
<td>Morning Report w/ Team</td>
<td>Morning Report w/ Team</td>
<td>Morning Report w/ Team</td>
<td>Morning Report w/ Team</td>
<td>Morning Report w/ Team</td>
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<tr>
<td>8-9AM</td>
<td>Attending Rounds on Patient Care Unit</td>
<td>Attending Rounds on Patient Care Unit</td>
<td>Attending Rounds on Patient Care Unit</td>
<td>Attending Rounds on Patient Care Unit</td>
<td>Attending Rounds on Patient Care Unit</td>
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<td>9-10AM</td>
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<td>10-11AM</td>
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<tr>
<td>12-1PM</td>
<td>Resident’s Conference</td>
<td>Open</td>
<td>Open</td>
<td>Resident’s Conference</td>
<td>Pharmacy Grand Rounds</td>
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<tr>
<td>2-3PM</td>
<td>Meet with Faculty Instructor</td>
<td>Meet with Faculty Instructor</td>
<td>Meet with Faculty Instructor</td>
<td>Meet with Faculty Instructor</td>
<td>Meet with Faculty Instructor</td>
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<tr>
<td>3-4PM</td>
<td>Final Patient Check</td>
<td>Final Patient Check</td>
<td>Final Patient Check</td>
<td>Final Patient Check</td>
<td>Final Patient Check</td>
<td>**</td>
</tr>
<tr>
<td>Evening</td>
<td>Resident’s Journal Club - Once a month 5:30-7:00pm</td>
<td>Longitudinal Pharmacy Team Assignment</td>
<td>**</td>
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<td>**</td>
</tr>
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</table>

* Reading Charts, retrieving data, researching literature for evidence to apply to drug therapy decisions, obtaining medication histories from patients, conducting patient teaching and counseling on discharge medications.

** The student may be required to attend practice activities on weekends and evenings, as directed by the practitioner-instructor’s

1 These are typical responsibilities – more specific responsibilities will be provided in the instructor’s rotation syllabus.
Rotation Activities:

1. **Orientation** - During the first day of the rotation, the student will be oriented to the internal medicine program, and hospital if relevant. Pertinent policies and procedures will be reviewed. The student should:
   
a. Tour the nursing unit and pharmacy and meet staff. The instructor will explain the staff member's duties to the student and the student's responsibilities as a pharmacy student to the staff.

   b. The student and instructor should discuss rotation specific policies and procedures. Specific discussion points should include:
      1. Confidentiality
      2. Appropriate Dress
      3. Lines of Authority
      4. The student's schedule
      5. Available drug information resources

   c. Learn about the instructor's practice philosophy regarding professional responsibilities and pharmaceutical care.

   d. Learn how to access computer and library resources that have password security/limited access to the public.

2. **Daily Responsibilities**:

   a. Establish rapport with the physicians responsible for the patients on the assigned internal medicine service and contribute to their decisions about patient management.

   1. The student's specific contributions will be dependent on the physician and setting. The student is expected to be assertive and self-directed in establishing a working relationship with the physician and in identifying the most effective ways to contribute

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2 These are typical responsibilities – more specific responsibilities will be provided in the instructor’s rotation syllabus.

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**Table I. Outline for Providing Explanation/Rationale of Workup**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td>Summarize Database</td>
<td>Discuss the pathophysiology of each disease state.</td>
</tr>
<tr>
<td>Assess/Evaluate each acute and chronic medical problem that the patient presents with:</td>
<td>Assess whether the patient presents with the characteristic physical symptoms, major techniques of diagnosis, and laboratory abnormalities of each disease state.</td>
</tr>
<tr>
<td>Discuss the pathophysiology of each disease state.</td>
<td>Assess the significance of pertinent physical and laboratory findings.</td>
</tr>
<tr>
<td>Assess whether the patient presents with the characteristic physical symptoms, major techniques of diagnosis, and laboratory abnormalities of each disease state.</td>
<td>Assess any socio-behavioral and economic barriers to effective drug therapy.</td>
</tr>
<tr>
<td>Assess the significance of pertinent physical and laboratory findings.</td>
<td>Use this information to develop and identify the endpoints of therapy and develop a plan.</td>
</tr>
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<td>Assess any socio-behavioral and economic barriers to effective drug therapy.</td>
<td>Asses/evaluate drug therapy for each disease state:</td>
</tr>
<tr>
<td>Use this information to develop and identify the endpoints of therapy and develop a plan.</td>
<td>Pharmacology - mechanism of action</td>
</tr>
<tr>
<td>Asses/evaluate drug therapy for each disease state:</td>
<td>Describe the mechanism of action and site of action for each medication.</td>
</tr>
<tr>
<td>Pharmacology - mechanism of action</td>
<td>Use the information to determine if the medication is most appropriate for a given patient.</td>
</tr>
<tr>
<td>Describe the mechanism of action and site of action for each medication.</td>
<td>Pharmacology - adverse drug reactions (ADRs)</td>
</tr>
<tr>
<td>Use the information to determine if the medication is most appropriate for a given patient.</td>
<td>List the significant adverse reactions of each medication.</td>
</tr>
<tr>
<td>Pharmacology - adverse drug reactions (ADRs)</td>
<td>Utilize laboratory tests and physical findings to monitor ADRs.</td>
</tr>
<tr>
<td>List the significant adverse reactions of each medication.</td>
<td>Evaluate the possibility of an ADR and provide data for FDA and JCAHO report.</td>
</tr>
<tr>
<td>Utilize laboratory tests and physical findings to monitor ADRs.</td>
<td>Formulate and carry out a plan to address a suspected adverse drug reaction.</td>
</tr>
<tr>
<td>Evaluate the possibility of an ADR and provide data for FDA and JCAHO report.</td>
<td>Differentiate between idiosyncratic or unexpected reactions and dose related reactions and utilize the information to avoid dose-related reactions.</td>
</tr>
<tr>
<td>Formulate and carry out a plan to address a suspected adverse drug reaction.</td>
<td>List the contraindications of each drug and utilize this list to avoid adverse reactions in a patient.</td>
</tr>
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<td>Differentiate between idiosyncratic or unexpected reactions and dose related reactions and utilize the information to avoid dose-related reactions.</td>
<td>Pharmacokinetics</td>
</tr>
<tr>
<td>List the contraindications of each drug and utilize this list to avoid adverse reactions in a patient.</td>
<td>Describe the absorption, distribution, elimination, and pharmaodynamic characteristics of each medication.</td>
</tr>
<tr>
<td>Pharmacokinetics</td>
<td>Determine how these may be affects by the patient's different disease states.</td>
</tr>
<tr>
<td>Describe the absorption, distribution, elimination, and pharmaodynamic characteristics of each medication.</td>
<td>Use the information to evaluate drug dosing.</td>
</tr>
<tr>
<td>Determine how these may be affects by the patient's different disease states.</td>
<td>Use advanced pharmacokinetic skills to calculate the most appropriate dose of drugs for which drug levels are available.</td>
</tr>
<tr>
<td>Use the information to evaluate drug dosing.</td>
<td>Evaluate drug concentrations which are reported.</td>
</tr>
<tr>
<td>Use advanced pharmacokinetic skills to calculate the most appropriate dose of drugs for which drug levels are available.</td>
<td>Evaluate reported drug levels (scheduling, compare population and patient specific data and assess validity of calculations.</td>
</tr>
<tr>
<td>Evaluate drug concentrations which are reported.</td>
<td>Use pharmacokinetic information to formulate a dosing plan.</td>
</tr>
<tr>
<td>Evaluate reported drug levels (scheduling, compare population and patient specific data and assess validity of calculations.</td>
<td>Pharmaceutics</td>
</tr>
<tr>
<td>Use pharmacokinetic information to formulate a dosing plan.</td>
<td>Utilize information about available dosage forms to determine the best, safest, and most cost-effective route of administration.</td>
</tr>
<tr>
<td>Pharmaceutics</td>
<td>Utilize information about compatabilities to avoid drug interactions.</td>
</tr>
<tr>
<td>Utilize information about available dosage forms to determine the best, safest, and most cost-effective route of administration.</td>
<td>Drug interactions</td>
</tr>
<tr>
<td>Utilize information about compatabilities to avoid drug interactions.</td>
<td>Support concerns about drug interactions with references and assess clinical significance.</td>
</tr>
<tr>
<td>Drug interactions</td>
<td>Identify potential drug-drug, drug-disease, and drug-nutrient interactions.</td>
</tr>
<tr>
<td>Support concerns about drug interactions with references and assess clinical significance.</td>
<td>Therapeutics</td>
</tr>
<tr>
<td>Identify potential drug-drug, drug-disease, and drug-nutrient interactions.</td>
<td>List possible drug and nondrug treatment modalities for a given disease state.</td>
</tr>
<tr>
<td>Therapeutics</td>
<td>Utilize drug therapy assessment and an assessment of the patient's disease to choose the most appropriate treatment modality.</td>
</tr>
<tr>
<td>List possible drug and nondrug treatment modalities for a given disease state.</td>
<td>Identify drug-related problems.</td>
</tr>
<tr>
<td>Utilize drug therapy assessment and an assessment of the patient's disease to choose the most appropriate treatment modality.</td>
<td>Identify drug-related problems.</td>
</tr>
</tbody>
</table>
to patient care. The student should actively engage her-/himself in the medical care activities of his/her team and actively pursue answers to questions that occur as a result of this involvement.

b. Triage patients to in-depth monitoring and peripheral monitoring statuses according to initial assessment of a patient's drug therapy.
   1. Develop indepth monitoring plans for patients that have disease states/drug regimens that are most likely to be associated with drug related problems.
   2. Discuss with the instructor any drug-related issues that occur with patients that are being monitored peripherally.

c. Independently develop a patient database, assess drug therapy, and develop a pharmacotherapy plan for assigned patients that are encountered in the inpatient setting.
   1. The instructor will observe medication history skills.
   2. The student is expected to explain and provide rationale for his/her database, drug therapy assessment, and pharmacotherapy. (See Table I)
   3. The student is expected to write pharmacotherapy consultation notes/SOAP notes summarizing all findings.

d. Provide answers to drug information questions that arise in during the rotation. All drug information responses must be reviewed with the instructor before communication with other health care practitioners.
   1. Each of the drug information responses should be placed in the your learning portfolio.

e. Give a formal Journal Article Presentation to an audience that will be selected by the instructor.
   1. A copy of the presentation and faculty evaluation forms should be placed in your learning portfolio.
   2. The instructor may assign additional literature analysis learning experiences as part of a weekly journal club.

f. Give a formal Pharmacy Grand Rounds Patient Presentation to an audience that will be selected by the instructor.
   1. A copy of the presentation and faculty evaluation forms should be placed in your learning portfolio.
   2. The instructor will hold informal meetings to discuss patients on a daily basis.

g. Document all patient care activities in your portfolio as outlined in the LEAP Rotation Manual.

h. The instructor may require completion of an independent self-directed project (e.g., preparation and delivery of a health consumer presentation, presentation to health professionals, paper).

i. Perform self-assessments by: corroborating midpoint and final rotation self-assessment ratings with those of the instructor, performing a self-assessment of each document placed in the learning portfolio, writing a reflective self-evaluation at the end of the rotation.

j. Demonstrate use of a core library of journals, reference books and databases that comprise your personal library.
Textbooks:
The student is expected to build a personal library that has text resources. The following list outlines topics of resources to be included in the personal library; the student is expected to select a specific text or reference that covers the stated topic:

- Pharmacotherapy Book/Reference
- General Drug Information Reference
- General Medicine Book/Reference
- Physical Assessment Book/Reference
- Laboratory Interpretation Book/Reference
- Pharmacokinetics Book/Reference
- Adverse Drug Reaction Book/Reference

The student is expected to be self-directed in obtaining drug literature pertinent to patient care issues. The student is expected to have Internet access in order to utilize the School of Pharmacy Drug Information Resources and conduct literature searches using Medline databases such as OVID or Grateful Med. These are available free of charge from the National Library of Medicine.

Students are expected to check their email and have internet access on a daily basis.

Students must possess a beeper so that other health care professionals and the instructor can reach them within the hospital.

The instructor may assign additional required/suggested readings based on conference topics and patient care issues.
Grading and Assessment Procedures

Course Requirements and Grading Criteria:

Performance Based on Instructor's Daily Observations 60%
- Patient Assessment(10); Drug Therapy Assessment(10); Develop, Implement and Monitor Drug Therapy Plans(15); Communication Abilities(5); Pharmacotherapy Decision-Making(5); Thinking abilities(5); Professional Ethics, Identity, and Behavior(5); Social Interaction Citizenship and Leadership(S/U); Self-Learning Abilities(5); Medication Use Systems (S/U)

- Midpoint Evaluation will be weighted 20% (2/6 of total section grade) and the Final Evaluation will be weighted 40% (4/6 of the total section grade) of this section grade.

Written Assignment 10%
- e.g., drug information questions/responses

Other Assessments per Instructor (e.g., presentations, projects, participation in conferences) 30%
- Pharmacy Grand Rounds and/or Pharmacotherapy Clinical Trials Presentations

Participation in all rotation activities S/U
- The student is required to spend a minimum of 40 hours per week at the rotation site. The student is expected to be prompt in attending all rotation activities.
- Absence any rotation activities and late assignments will be deemed unsatisfactory and a failing grade will be submitted irrespective of other grades.

Grading Scale:

<table>
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<tr>
<th>Percentage Score</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90 - 100</td>
<td>A</td>
</tr>
<tr>
<td>80 - 89</td>
<td>B</td>
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<tr>
<td>70 - 79</td>
<td>C</td>
</tr>
<tr>
<td>60 - 69</td>
<td>D</td>
</tr>
<tr>
<td>&lt;60</td>
<td>F</td>
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</table>

If the rotation grade is less than a C (<70%), the rotation must be completed.

Assessment System:

This rotation is part of an abilities-based outcomes curriculum. The Auburn University School of Pharmacy, Advanced Practice Experience Manual provides specific details and policies
about how students are assessed during rotations.

Policies: Specific policies pertaining to all Advanced Practice Experience rotations are found in the Auburn University School of Pharmacy, Advanced Practice Experience Manual.

Attendance: Students are required to be at the rotation site a minimum of 40 hours/week. As a professional, the student is expected to stay beyond the usual work hours when patient care still needs to be completed.

Special Needs: It is the policy of the Auburn University to provide accessibility to its programs and activities and reasonable accommodation for persons defined as having disabilities under Section 504 of the Rehabilitation Act of 1973, as amended, and the American with Disabilities Act of 1990.

Students should contact the Program for Students with Disabilities 1244 Haley Center, 334-844-2096 (Voice/TT) and must receive this approval before individual instructors grant any special circumstances.

Students with defined special needs should see the Director of Experiential Education at the beginning of the P4 Year so that accommodations can be scheduled. Students should also see the site instructor to make specific accommodations.