Introduction to Infectious Disease and Hematology/Oncology

Fall 2017

Second of an eight-course sequence that prepares the student to provide patient-centered care by serving as a collaborative interprofessional team-member who is an authority on pharmacotherapy. Learning occurs through team-based learning. This course focuses on providing patient-centered care to patients who have the following disorders: infectious disease, hematology and oncology disorders. Learners will develop, integrate, and apply knowledge from the foundational disciplines (i.e., pharmaceutical, social/behavioral/administrative, and clinical sciences) and apply the Pharmacists’ Patient Care Process in solving case-based scenarios of patients with infectious diseases, hematologic and oncology disorders.

Teaching Partnership Leader

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- Phone: 727-394-6213
- Office Hours: By appointment ONLY.

Entrustable Professional Activities

This course will prepare you to perform the following activities which the public entrusts a Pharmacist to perform:

1. EPA A1. Collect subjective and objective data by performing a patient assessment and gathering data from chart/electronic records, pharmacist records, other health professionals and patient/family interviews.

2. EPA A2. Interpret patient data, and identify medication-related problems and develop a prioritized problem list.


5. EPA A5. Provide counseling and medications and health wellness (including referral when there are social determinants of health and disparities).


7. EPA A7. Present a succinct oral patient summary and plan to a health care provider. Defend a therapeutic plan verbally or in writing using references, guidelines, or primary literature.


9. EPA A9. Collaborate as a member of an interprofessional team and provide patient-centered care.

Course-Level Objectives

Upon completion of this course, the student will be able to:

1. **Upon completion of this course, the student will be able to provide patient-centered care for patients with one or more of the following disorders or pharmacotherapy needs:**
   a. Antibiotic stewardship
   b. Uncomplicated urinary tract infection
   c. Community-acquired pneumonia
   d. Skin and soft tissue infections
   e. Surgical prophylaxis
   f. Vulvovaginitis
   g. Influenza
   h. Anemias (iron-deficiency, B12, and folate)
   i. Lymphoma
   j. Chemotherapy-induced nausea and vomiting

2. **Specifically, given a case of a patient with one or more of the above disorders/pharmacotherapy needs:**
   a. Integrate knowledge and use clinical reasoning skills in accomplishing the following steps when managing a patient with the disease state:
      i. **Collect:** Gather subjective and objective information about the patient in order to understand the relevant medical and medication history and clinical status of the patient.
         1. Subjective and objective information is collected through patient interview, medical record review, pharmacy profile review, and communication with other members of the health care team.
         2. A holistic view is initiated during collection in order to consider physiological, psychological, and sociological variables of the patient and this view is maintained throughout the patient care process.
      ii. **Assess:** Assess the information collected and analyze the clinical effects of the patient’s therapy in the context of the patient’s overall health goals in order to identify and prioritize problems and achieve optimal care.
         1. Understand, explain, and assess a patient’s health status.
2. Interpret physical and patient assessment findings.
3. Assess each medication for appropriateness, effectiveness, safety, and patient adherence.
4. Assess health and functional status, risk factors, health data, cultural factors, health literacy, and access to medications or other aspects of care.
5. Assess immunization status and the need for preventive care and other health care services.
6. Integrate knowledge, clinical experience, and patient data to formulate and test hypotheses about the etiology of medication-related problems. (Generate hypotheses).
7. Establish potential and actual medication-related problems.

iii. **Plan:** Develop an individualized patient-centered care plan in collaboration with other health care professionals and the patient/caregiver.

1. **Therapeutic Goals:** Develop specific and general therapeutic goals for the patient. These goals achieve clinical outcomes in the context of the patient’s overall health care goals and access to care.
2. **Therapeutic Plan:** Integrate knowledge, evidence-based literature/information, clinical experience, patient data, patient goals and desires, and the prescriber’s judgment when developing the best pharmacotherapeutic plan for the patient.
   a. **Therapeutic Alternatives:** Evaluate pharmacotherapeutic alternatives for the patient before establishing the therapeutic plan.
   b. **Develop the Therapeutic Plan:** This plan addresses medication-related problems and optimizes medication therapy. Considerations for the plan include:
      i. Goals and desires of the patient
      ii. Application of established practice guidelines, evidence-based medicine, and population-based treatment plans in developing the plan.
      iii. Accurate and patient-specific dosing (including dosage adjustment for renal/hepatic dysfunction, starting dose, maximum doses, timing of doses and pharmacokinetic design for narrow therapeutic index drugs,).
      iv. Parameters for monitoring response and frequency of monitoring.
      v. Parameters for monitoring adverse effect and frequency of monitoring.
      vi. Plan for patient counseling/education.
      vii. Supports care continuity, including follow-up and transitions of care as appropriate.
c. **Patient/Caregiver engagement:** The patient/caregiver are involved through education, empowerment, and self-management.

iv. **Implement:** Implement the care plan in collaboration with other health care professionals and the patient/caregiver. When implementing the care plan, the following are accomplished:

1. Medication and health-related problems are addressed.
2. Preventative care including vaccine administration are provided.
3. Medication therapy is initiated, modified, discontinued, or administered as authorized.
4. Education and self-management training is provided to the patient/caregiver.
5. Refers and provides transitions of care as needed.
6. Schedules follow-up care as needed to achieve goals of therapy.

v. **Follow-up (Monitor and Evaluate):** Monitor and evaluate the effectiveness of the care plan and modify the plan in collaboration with other health care professionals and the patient/caregiver. The following are continually monitored and evaluated:

1. Medication appropriateness, effectiveness, and safety and patient adherence through available data, biometric test results and patient feedback.
2. Clinical endpoints that contribute to the patient’s overall health.
3. Outcomes of care, including progress toward or achievement of goals.

vi. **Patient-Centered Care:** Foster a patient-centered care approach by accomplishing the following:

1. **Communicate:** Succinctly communicate with other health care team members and the patient/caregiver throughout the patient care process.
2. **Collaborate:** Discuss with team members the specific therapeutic approaches for individual patients based on scientifically and logically validated assessment of the patient’s health care needs and an ethical consideration of the patient’s health care goals and desires.
3. **Document:** Prepare a written communication that is well-organized, logical, complete, appropriate, and evidence-based.

b. **Apply and integrate foundational knowledge (i.e., pharmaceutical, social/behavioral/administrative, and clinical sciences) throughout the patient care process.** This will require the ability to:

i. Describe the pathophysiology of disease state(s) and identify appropriate drug targets (cellular/molecular), biochemical processes, and organ changes for therapeutic intervention. Specifically, for a given disease state:

   1. Describe the basic pathophysiology of the disease including an explanation of the abnormal processes and the resulting disease signs and symptoms.
   2. Outline risk factors and/or diagnostic indicators (e.g., lab values, diagnostic test results).
3. Determine classes of drugs that will treat the disease state and ameliorate the underlying pathophysiology and signs/symptoms.

   ii. Apply knowledge about structure-activity relationships and cellular/molecular mechanisms of action to identify drug classes that are appropriate for treatment of the disease state. Specifically, for each drug class:

      1. Identify the relevant therapeutic targets and explain the mechanism(s) of action.

   iii. Describe major pathways for metabolism and the pharmacological/therapeutic consequences of metabolism.

   iv. Compare and contrast the therapeutic and adverse effects of drug classes that are appropriate for treating the disease state.

      1. Identify the most common/serious drug interactions and adverse effects.

      2. Identify important precautions and contraindications.

   v. Compare and contrast the therapeutic and adverse effects of drugs within a given class and then recommend the best drug for the patient.

   vi. Recommend any unique storage, handling, or use requirements to ensure patient safety and clinical efficacy.

   vii. Discuss significant pharmacokinetic and pharmacodynamic considerations.

   viii. Integrate the following transcending concepts when assessing a patient and developing a care plan:

      1. Apply foundational concepts about health information and informatics (Informatics).

      2. Evaluate Superiority Randomized Controlled Trials (RCTs) and PROs and apply to a patient need (Evidence-based practice).

      3. Use clinical reasoning and clinical judgment (Problem-solving).

      4. Consider a patient/families perspective about death and dying when providing care (Behavioral considerations).

      5. Address issues related to law and ethics.

      6. Recommend Immunizations (Strategies for health-wellness).

      7. Provide aminoglycoside, vancomycin, and general antibiotic dosing recommendations (pharmacokinetics).

      8. Apply oncology pharmacogenomics (Personalized Medicine).


     10. Use SBAR when communicating with another health professional (Interprofessional collaboration).

     11. Consider medication safety issues related to patient care.

     12. Apply population-based care

3. Demonstrate the ability to be an effective team member by collaborating in preparing for class sessions and in solving case studies.
Course Pre-requisites

1. Completion of all Year 1 Pharm.D. program coursework including milestones.

Course Co-requisites

1. PHA5755 Principles of Medical Microbiology, Immunology, and Virology
2. PHA 5163L Professional Practice Skills Lab III

Course Outline

Please routinely check your campus calendar and the Canvas course site for any messages about changes in the schedule including meeting dates/times, deadlines, and room changes.

<table>
<thead>
<tr>
<th>Date</th>
<th>Mod#</th>
<th>Unit Topic</th>
<th>Contact Hours [hr.]</th>
<th>Faculty Author</th>
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<tr>
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<td>1</td>
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<td>1.0hr</td>
<td>LaPlant</td>
</tr>
<tr>
<td>9/18/17</td>
<td>4.2</td>
<td>Unit 4.2: Pharmacology of Oncology Drugs, Part I</td>
<td>1.125hr</td>
<td>LaPlant</td>
</tr>
<tr>
<td>9/18/17</td>
<td>4.2.1</td>
<td>Watch: Introduction to Pharmacology of Oncology Drugs</td>
<td>0.25hr</td>
<td>LaPlant</td>
</tr>
<tr>
<td>9/18/17</td>
<td>4.2.2</td>
<td>Watch: Anthracyclines</td>
<td>0.25hr</td>
<td>LaPlant</td>
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<tr>
<td>9/18/17</td>
<td>4.2.3</td>
<td>Watch: Taxanes</td>
<td>0.125hr</td>
<td>LaPlant</td>
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<td>9/18/17</td>
<td>4.2.4</td>
<td>Watch: Platinums</td>
<td>0.125hr</td>
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<tr>
<td>9/18/17</td>
<td>4.2.5</td>
<td>Watch: Cycle-specific</td>
<td>0.25hr</td>
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<tr>
<td>9/18/17</td>
<td>4.2.6</td>
<td>Watch: Alkylating Agents</td>
<td>0.125hr</td>
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<tr>
<td>9/18/17</td>
<td>4.3</td>
<td>Unit 4.3: Pharmacology of Oncology Drugs, Part II Includes Transcending Concept: Personalized Medicine (Oncology)</td>
<td>2.0hr</td>
<td>May, Lamba</td>
</tr>
<tr>
<td>Date</td>
<td>Mod#</td>
<td>Unit Topic</td>
<td>Contact Hours [hr.]</td>
<td>Faculty Author</td>
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<tr>
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<td>---------------------</td>
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<tr>
<td>9/18/17</td>
<td>4.3.1</td>
<td>Watch: Pharmacology of Oncology Drugs Part 2A</td>
<td>0.5hr</td>
<td>May</td>
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<tr>
<td>9/18/17</td>
<td>4.3.2</td>
<td>Watch: Pharmacology of Oncology Drugs Part 2B</td>
<td>0.5hr</td>
<td>May</td>
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<td>9/18/17</td>
<td>4.3.3</td>
<td>Transcending Concept: Personalized Medicine – Oncology</td>
<td>1.0hr</td>
<td>Lamba</td>
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<td>4.4</td>
<td>Unit 4.4: Medicinal chemistry of Oncology Drugs</td>
<td>1.75hr</td>
<td>Luesch</td>
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<tr>
<td>9/19/19</td>
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<td>Watch: Medicinal Chemistry of Oncology Drugs, Part 1</td>
<td>1.0hr</td>
<td>Luesch</td>
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<tr>
<td>9/19/19</td>
<td>4.4.2</td>
<td>Watch: Medicinal Chemistry of Oncology Drugs, Part 2</td>
<td>0.75hr</td>
<td>Luesch</td>
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<tr>
<td>9/19/19</td>
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<td>Unit 4.5: Non-Hodgkins Lymphoma</td>
<td>3.5hr</td>
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<tr>
<td>9/19/19</td>
<td>4.5.1</td>
<td>Watch: Non-Hodgkins Lymphoma</td>
<td>0.25hr</td>
<td>LaPlant</td>
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<tr>
<td>9/19/19</td>
<td>4.5.2</td>
<td>Watch: Hodgkins Lymphoma</td>
<td>0.25hr</td>
<td>LaPlant</td>
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<tr>
<td>9/19/19</td>
<td></td>
<td>Read: Pharmacotherapy: A Pathophysiologic Approach, 9e, Chapter 109</td>
<td>2.5hr</td>
<td>LaPlant</td>
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<tr>
<td>9/19/19</td>
<td>4.6</td>
<td>Unit 4.6: Transcending Concepts **: Communicating with Terminally Ill Patients; Death and Dying</td>
<td>0.75hr</td>
<td>Normann</td>
</tr>
<tr>
<td>9/19/19</td>
<td>4.6.1</td>
<td>Watch: Death and Dying</td>
<td>0.25hr</td>
<td>Normann</td>
</tr>
<tr>
<td>9/19/19</td>
<td>4.6.2</td>
<td>Watch: Discussing Dying</td>
<td>0.25hr</td>
<td>Normann</td>
</tr>
<tr>
<td>9/19/19</td>
<td>4.6.3</td>
<td>Watch: Brene Brown on Empathy</td>
<td>0.125hr</td>
<td>Normann</td>
</tr>
<tr>
<td>9/19/19</td>
<td></td>
<td>Read: The dying patient: Choices, Control, and Communication. See Canvas.</td>
<td>0.125hr</td>
<td>Normann</td>
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<tr>
<td>9/20/17</td>
<td>4.1-4.6</td>
<td>Active Learning Session 7: Q&amp;A Session</td>
<td>2.0hr (4.0hr workup)</td>
<td>LaPlant, Luesch, May</td>
</tr>
<tr>
<td>8:30-10:25am</td>
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<td></td>
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<tr>
<td>9/20/17</td>
<td>4.7</td>
<td>Unit 4.7: Pharmacology of Anti-emetics</td>
<td>0.5hr</td>
<td>May</td>
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<tr>
<td>9/20/17</td>
<td>4.7.1</td>
<td>Watch: Pharmacology of Antiemetics</td>
<td>0.5hr</td>
<td>May</td>
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</table>
| 4.8        | Unit 4.8: Medicinal Chemistry of Anti-emetics                              | 1.0hr               | Huigens
<table>
<thead>
<tr>
<th>Date</th>
<th>Mod#</th>
<th>Unit Topic</th>
<th>Contact Hours [hr.]</th>
<th>Faculty Author</th>
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<tbody>
<tr>
<td>9/20/17</td>
<td>4.8.1</td>
<td>Watch: Medicinal Chemistry of Antiemetics, Part I</td>
<td>0.5hr</td>
<td>Huigens</td>
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<tr>
<td>9/20/17</td>
<td>4.8.2</td>
<td>Watch: Medicinal Chemistry of Antiemetics, Part II</td>
<td>0.5hr</td>
<td>Huigens</td>
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<td>4.9</td>
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<td>Unit 4.9: Therapeutics of Antiemetics</td>
<td>0.75hr</td>
<td>May</td>
</tr>
<tr>
<td>9/20/17</td>
<td>4.9.1</td>
<td>Watch: Nausea and Vomiting Therapeutics</td>
<td>0.75hr</td>
<td>May</td>
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<tr>
<td>4.10</td>
<td></td>
<td>Unit 4.10: Transcending Concepts**: Informatics, Interprofessional (SBAR), Medication Safety and Patient Safety (Drug Therapy Problems Related to Access)</td>
<td>0.5hr</td>
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<tr>
<td>9/20/17</td>
<td>4.10.1</td>
<td>Watch: Patient Assistance Programs</td>
<td>0.5hr</td>
<td>Smith</td>
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<tr>
<td>4.11</td>
<td></td>
<td>Unit 4.11: Transcending Concepts**: Self-Care – Herbal &amp; dietary supplements for the Immune System</td>
<td>0.75hr</td>
<td>Grundmann</td>
</tr>
<tr>
<td>9/20/17</td>
<td>4.11.1</td>
<td>Watch: Self-care: Herbal and Dietary Supplements for the Immune System</td>
<td>0.75hr</td>
<td>Grundmann</td>
</tr>
<tr>
<td>4.12</td>
<td></td>
<td>Unit 4.12: Transcending Concepts**: Superiority RCTs and PROs,</td>
<td>0.5hr</td>
<td>Patel</td>
</tr>
<tr>
<td>9/20/17</td>
<td>4.12.1</td>
<td>Watch: Oncology Trials</td>
<td>0.5hr</td>
<td>Patel</td>
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<tr>
<td><strong>9/21/17</strong></td>
<td>4.7-</td>
<td>Active Learning Session 8: Lymphoma, Nausea, and Vomiting in the Cancer Patient</td>
<td>4.0hr</td>
<td>LaPlant, Luesch, Huigens, May, Grundmann, Patel, Lam, Normann</td>
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<tr>
<td><strong>8:30am-12:35pm</strong></td>
<td>4.12</td>
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<tr>
<td><strong>9/22/17</strong></td>
<td>1.1-</td>
<td>Active Learning Session 9: Capstone</td>
<td>4.0hr</td>
<td>Venugopalan, Joury, Ding, Klinker, Childs-Kean, May, Khoury, Farland, Lam, Luesch, LaPlant, Normann, DeSear, Smith, Patel</td>
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<tr>
<td><strong>1:55-6:00pm</strong></td>
<td>4.12</td>
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Recommended Dates for Independent Study

<table>
<thead>
<tr>
<th>Date</th>
<th>Mod#</th>
<th>Unit Topic</th>
<th>Contact Hours [hr.]a</th>
<th>Faculty Author</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/25/17</td>
<td>1.1-</td>
<td>Final Exam: Comprehensive</td>
<td>2.5hr</td>
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<tr>
<td></td>
<td>4.12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:55-4:25pm</td>
<td></td>
<td>Total Contact Hours in Course:</td>
<td>75hr</td>
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</table>

**Total Contact Hours in Course:** 75hr

**Required Textbooks/Readings**

   - Not Available via HSC Library (Purchased as a 1PD)
   - Available via HSC Library – Access Pharmacy
   - Available via HSC Library – Access Pharmacy
   - Not Available via HSC Library (Purchased as a 1PD)
5. Primary literature readings will be posted in Canvas.

Use [UF VPN to access UF Libraries Resources](http://www.library.health.ufl.edu/) when off-campus. The UF HSC library staff can assist you with questions or issues related to accessing online library materials. For assistance contact your College of Pharmacy librarian or visit the [HSC Library Website](http://www.library.health.ufl.edu/) at this URL: [http://www.library.health.ufl.edu/](http://www.library.health.ufl.edu/)

**Suggested Textbooks/Readings**

Suggested readings will be posted in Canvas.

**Other Required Learning Resources**

Neehr Perfect
- Neehr Perfect is an educational EHR used throughout the PharmD curriculum. Students will be expected to purchase a subscription to this program.
- Create your Neehr Perfect account by going to: [http://neehrperfect.com](http://neehrperfect.com). Select Subscribe in the upper, right corner and enter the following Pharmacy Student Program Key: S96Y29
Follow the on-screen instructions to create your account and apply your subscription. Refer to the Canvas page for skills labs for more detailed information.

- 1PDs are encouraged to purchase a 3 year Student Subscription
- 2PDs are encouraged to purchase a 2 year Student Subscription
- 3PDs are encouraged to purchase an Academic Year Student Subscription

Materials & Supplies Fees

None

Student Evaluation & Grading

Evaluation Methods and How Grades are calculated.

<table>
<thead>
<tr>
<th>Assessment Item</th>
<th>Grade Percentage</th>
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<tbody>
<tr>
<td>iRATs (6 @ 2.5% ea.) *Single lowest score dropped.</td>
<td>12%</td>
</tr>
<tr>
<td>tRATs (7 @ 3.57% ea.)</td>
<td>20%</td>
</tr>
<tr>
<td>Capstone submission</td>
<td>8%</td>
</tr>
<tr>
<td>Exam 1</td>
<td>25%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>35%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
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</table>

Table 1. Grading Scale

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Letter Grade</th>
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<tbody>
<tr>
<td>92.50-100%</td>
<td>A</td>
</tr>
<tr>
<td>89.50-92.49%</td>
<td>A-</td>
</tr>
<tr>
<td>86.50-89.49%</td>
<td>B+</td>
</tr>
<tr>
<td>82.50-86.49%</td>
<td>B</td>
</tr>
<tr>
<td>79.50-82.49%</td>
<td>B-</td>
</tr>
<tr>
<td>76.50-79.49%</td>
<td>C+</td>
</tr>
<tr>
<td>72.50-76.49%</td>
<td>C</td>
</tr>
<tr>
<td>69.50-72.49%</td>
<td>C-</td>
</tr>
<tr>
<td>66.50-69.49%</td>
<td>D+</td>
</tr>
<tr>
<td>62.50-66.49%</td>
<td>D</td>
</tr>
<tr>
<td>59.50-62.49%</td>
<td>D-</td>
</tr>
<tr>
<td>&lt; 59.50%</td>
<td>E</td>
</tr>
</tbody>
</table>

Rounding of grades:

Final grades in Canvas will be rounded to the 2nd decimal place. If the decimal is X.495 or higher, Canvas will round the grade to X.50. The above scale depicts this policy and grades are determined accordingly. Grade assignment is made using this policy and NO EXCEPTIONS will be made in situations where a student’s grade is “close.”

Educational Technology Use

The following technology below will be used during the course and the student must have the appropriate technology and software.

1. ExamSoft™ Testing Platform
2. Canvas™ Learning Management System
For technical support, navigate to Educational Technology and IT Support Contact Information at this URL: http://curriculum.pharmacy.ufl.edu/current-students/technical-help/

**Pharm.D. Course Policies**

The Policies in the following link apply to this course. Review the Pharm.D. Course Policies carefully, at this URL: http://curriculum.pharmacy.ufl.edu/current-students/course-policies/
Appendix A. Course Directory

Teaching Partnership Leader/Course Director:

Priti N. Patel, Pharm.D., BCPS
Email: ppatel@cop.ufl.edu
Office: St. Petersburg Campus
Phone: 727-394-6213

Questions to Ask:
- Questions about grades
- Concerns about performance
- Guidance when there are performance problems (failing grades)
- General questions about content

Academic Coordinator:

Name: Sarah Burgess, M.Ed
Email: sburgess@cop.ufl.edu
Office: HPNP 4312
Phone: 352-273-5617
Absence Email: absent2pd@cop.ufl.edu

Educational Coordinators:

Name: McKenzie Wallen
Email: mwallen@cop.ufl.edu
Office: Jacksonville Campus

Name: Victoria Savosh
Email: vsavosh@cop.ufl.edu
Office: Orlando Campus

Questions to Ask:
- Issues related to course policies (absences, make up exams, missed attendance)
- Absence requests (Only the Academic Coordinator handles absence requests)
- Questions about dates, deadlines, meeting place
- Availability of handouts and other course materials
- Assignment directions
- Questions about grade entries gradebook (missing grades, wrong grade)
- Assistance with ExamSoft® (Distant campus students may contact Education Coordinator for use of SofTest and assistance during exams. The Academic Coordinator is the contact person for issues related to grading and posting of ExamSoft grades.)
Other Teaching Partnership Faculty Members:

Jürgen Bulitta, Ph.D.
Email: jbullita@cop.ufl.edu
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Phone: 407-313-7010

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Yousong Ding, Ph.D.
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Phone: 352-273-7742

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Paige May, Pharm.D.
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Sven Normann, Pharm.D., DABAT
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Kaylie Smith, Pharm.D.