



COLORADO STATE UNIVERSITY
— GLOBAL —

NUR503: ADVANCED PHARMACOLOGY

Credit Hours: 3

Contact Hours: This is a 3-credit course, offered in accelerated format. This means that 16 weeks of material is covered in 8 weeks. The exact number of hours per week that you can expect to spend on each course will vary based upon the weekly coursework, as well as your study style and preferences. You should plan to spend 14-20 hours per week in each course reading material, interacting on the discussion boards, writing papers, completing projects, and doing research.

Faculty Information: Faculty contact information and office hours can be found on the faculty profile page.

COURSE DESCRIPTION AND OUTCOMES

Course Description:

In this course, nursing students will focus on pharmacology and therapeutics used in the treatment of selected health conditions. The student will explore, analyze, apply, and evaluate commonly used drugs for the treatment of chronic diseases and self-limiting acute conditions and apply critical appraisal skills in determining best evidence for prescriptive intervention. Emphasis is placed on the decision-making process utilized to safely and effectively prescribe and monitor pharmacotherapeutics appropriate to the client situation.

Course Overview:

This course takes a more in-depth look at common medications used in the management of disease states across the age spectrum, from newborns to geriatric patients. You will be guided through each of the major organ systems, highlighting the common medications used in treatment regimens with a focus on the assessment of safety, efficacy, and justification of the use of each medication selected. After a brief review of pharmacokinetics and pharmacodynamics to begin the course, you then progress through a comprehensive assessment of medications used in the treatment of infectious diseases. You then examine the central nervous, endocrine, cardiovascular, respiratory and gastrointestinal systems. The course concludes with a focus on the pediatric population, pregnancy, and lactation. The course is designed to assist you in the preparation of a final portfolio project that illustrates an elevated knowledge of pharmacotherapy through critical evaluation of course concepts.

Course Learning Outcomes:

1. Analyze factors, including pathophysiological processes, pertinent to making the most effective drug selection for diverse clients across the lifespan with specific medical diagnoses.

2. Analyze client indicators of therapeutic, ineffective, contraindications, or adverse responses to drug therapy.
3. Safely select effective drugs for the treatment of clients across the lifespan with specific medical diagnoses.
4. Apply appropriate client teaching for safety of prescribed drug therapy.
5. Utilize current drug research and clinical guidelines in prescribing the most effective drug regimens for clients across the lifespan.
6. Analyze major pharmacological groups including pharmacodynamics, pharmacokinetics, and indications for use, in the management of patients in primary care and with special populations such as infants, children, pregnant and lactating women, and older adults.

PARTICIPATION & ATTENDANCE

Prompt and consistent attendance in your online courses is essential for your success at CSU-Global Campus. Failure to verify your attendance within the first 7 days of this course may result in your withdrawal. If for some reason you would like to drop a course, please contact your advisor.

Online classes have deadlines, assignments, and participation requirements just like on-campus classes. Budget your time carefully and keep an open line of communication with your instructor. If you are having technical problems, problems with your assignments, or other problems that are impeding your progress, let your instructor know as soon as possible.

COURSE MATERIALS

Required:

- Karch, A. M. (2019). *Focus on nursing pharmacology* (8th ed.). Wolters Kluwer. ISBN-13: 978-1975100964
- Shadow Health. (2019). *Adv. Pharmacology DCE [Software Tool]*. ISBN: 978-0-98-978886-1

This course uses Shadow Health for concept labs from the. You will access your Shadow Health assignments through a single sign-on link provided in Canvas. If at any time you have any questions or encounter any technical issues regarding the Digital Clinical Experience, please contact the Shadow Health support specialists by visiting the Learner Support Page at <https://link.shadowhealth.com/helpdesk> for contact information and hours. You may email the Learner Support team directly at support@shadowhealth.com at any time or by calling 800.860.3241.

NOTE: All non-textbook required readings and materials necessary to complete assignments, discussions, and/or supplemental or required exercises are provided within the course itself. Please read through each course module carefully.

COURSE SCHEDULE

Due Dates

The Academic Week at CSU-Global begins on Monday and ends the following Sunday.

- **Discussion Boards:** The original post must be completed by Thursday at 11:59 p.m. MT and Peer Responses posted by Sunday 11:59 p.m. MT. Late posts may not be awarded points.
- **Critical Thinking:** Assignments are due Sunday at 11:59 p.m. MT.

WEEKLY READING AND ASSIGNMENT DETAILS

Module 1

Readings

- Part 1 in *Focus on Nursing Pharmacology*
- Lu, H., & Rosenbaum, S. (2014). Developmental pharmacokinetics in pediatric populations. *The Journal of Pediatric Pharmacology and Therapeutics*, 19(4), 262–276. <https://doi.org/10.5863/1551-6776-19.4.262>
- Moffett, B. S., Resendiz, K., Morris, J., Akcan-Arikan, A., & Checchia, P. A. (2019). Population pharmacokinetics of vancomycin in the pediatric cardiac surgical population. *Journal of Pediatric Pharmacology & Therapeutics*, 24(2), 107-116.

Discussion (25 points)

Critical Thinking (75 points)

OPTION #1: Antimicrobial PK/PD Parameters

One class of medications that requires an elevated knowledge of pharmacokinetic and pharmacodynamic properties is anti-infectives. Using the Onufrak et al. (2016) article as a starting point, select two medications or classes of anti-infectives that are discussed in the article and provide the following information:

1. The pharmacodynamic parameter that is important for the selected medications/classes
2. What type of dosing strategy (dose/frequency, etc.) most effectively achieves the PD parameters for each?
3. Develop a patient case or provide a real-life patient example with the chief complaint of infection. As you describe the infectious process the patient is experiencing, develop a treatment plan with justification of the antimicrobial dosing strategy with PK/PD support.

Requirements: Your submission should be 3-4 pages in length (not including title or reference pages) and conform to APA guidelines in the CSU Global Writing Center. Be sure to discuss and reference concepts taken from the course reading material and relevant research. You must include a minimum of four to six credible, academic or professional references including the text or other course materials if used as a resource.

OPTION #2: Vancomycin: Trough or AUC/MIC?

One of the most commonly utilized antibiotics in the inpatient setting is vancomycin. While it is an excellent tool in our toolbox, we must know how to appropriately dose and monitor this medication as there is a fine line between effective use and potentially unsafe outcomes, also known as a narrow therapeutic index. Using the Patel (2015) article, address the following:

1. Which pharmacodynamic parameter matters most in the dosing of vancomycin?
2. Briefly explain what this PD parameter means and what the common AUC/MIC goal is for vancomycin.

3. Describe the theory behind utilizing the AUC/MIC goal vs. vancomycin troughs to guide safety and efficacy.
4. Based on the article and knowledge obtained in the module, select which monitoring parameter you think is most appropriate (i.e. either troughs or AUC/MIC ratio) and defend your position.

Requirements: Your submission should be 3-4-pages in length (not including title or reference pages) and conform to APA guidelines in the CSU Global Writing Center. Be sure to discuss and reference concepts taken from the course reading material and relevant research. You must include a minimum of four to six credible, academic or professional references including the text or other course materials if used as a resource.

Module 2

Readings

- Parts 2 and 3 in *Focus on Nursing Pharmacology*
- CDC Centers for Disease Control and Prevention (CDC). (2020). Recommended child and adolescent immunization schedule for ages 18 years or younger.
<https://www.cdc.gov/vaccines/schedules/downloads/child/0-18yrs-child-combined-schedule.pdf>

Discussion (25 points)

Critical Thinking (75 points)

Focused Exam: UTI with Antibiotic Sensitivity (Makayla Henderson)

Knowledge of infectious diseases and their corresponding antimicrobial therapy will be assessed through the completion of the Shadow Health focused exam. Prior to completion of this exam it is expected that you will have reviewed all required readings, journal articles, and completed the lecture material.

Complete the Shadow Health exercise. After completing the assigned clinical exercise, complete and submit the following:

- Take a screenshot that verifies exercise completion.
- Reflect on your learning from the clinical exercise. Your written reflection should, at minimum, respond to the following questions:
 - What are your key learnings or takeaways from this clinical exercise?
 - How does this learning relate to information presented in the course textbook? Cite and reference support from the course textbook.
 - How do these concepts or skills build on your prior experience?
 - What is the significance of these concepts or skills and how will they inform your professional practice?

Your paper should be 1-2 pages in length (not including title and reference pages), supported by the textbook, and conform to the APA standards in the CSU Global Writing Center. Ensure that both your screenshot and the paper are attached before you submit the assignment and review the rubric for specific grading criteria.

Portfolio Milestone (50 points)

OPTION #1: Disease State Concept Mapping Diagram

Think about a disease state that you most commonly see in your current (or desired) area of practice. When a patient is diagnosed with this specific disease state there are a multitude of factors that healthcare providers must think about, including etiology, pathophysiology, presenting signs and symptoms etc. Your task in this assignment is to create a concept mapping diagram for your chosen disease state to begin analyzing the thought process behind medication prescribing as well as monitoring.

Your submission should be completed utilizing the attached concept map with a minimum of five bullet points with elaboration for each section. A minimum of three credible, academic or professional references should be cited numerically next to the bullet point and conform to APA guidelines in the CSU Global Writing Center.

OPTION #2: Disease State Overview Visual Presentation

Think about a disease state that you most commonly see in your current (or desired) area of practice. When a patient is diagnosed with this specific disease state, there are a multitude of factors that healthcare providers must think about, including etiology, pathophysiology, presenting signs and symptoms etc. Your task in this assignment is to create a visual presentation for your chosen disease state to begin analyzing the thought process behind medication prescribing as well as monitoring.

Your submission should be 8-10 slides in length (not including title or reference slides) and conform to APA guidelines in the CSU Global Writing Center. Be sure to discuss and reference concepts taken from the course reading material and relevant research. You must include a minimum of three credible, academic or professional references including the text or other course materials if used as a resource.

For help developing your presentation, visit the Visual Presentations section in the CSU Global Writing Center.

Module 3

Readings

- Part 4 in *Focus on Nursing Pharmacology*
- Glauser, T., Shinnar, S., Gloss, D., Alldredge, B., Arya, R., Bainbridge, J., Bare, M., Bleck, T., Dodson, W. E., Garrity, L., Jagoda, A., Lowenstein, D., Pellock, J., Riviello, J., Sloan, E., & Treiman, D. M. (2016). *Evidence-based guideline: Treatment of convulsive status epilepticus in children and adults: Report of the Guideline Committee of the American Epilepsy Society, 16(1)*, 48-61. <https://doi.org/10.5698/1535-7597-16.1.48>
- Smith, D. M., McGinnis, E. L., Walleigh, D. J., & Abend, N. S. (2016). Management of status epilepticus in children. *Journal of Clinical Medicine, 5(4)*, 47. <https://doi.org/10.3390/jcm5040047>

Discussion (25 points)

Critical Thinking (75 points)

Focused Exam: Pain Management (Tanner Bailey)

Knowledge of the central nervous system is crucial to selecting appropriate pain medication therapy. This focused exam will assess your ability to gather patient data, create a patient-specific regimen, and explain major counseling points to the client. Prior to completion of this exam it is expected that you will have reviewed all required readings, journal articles, and gone through the module material.

Complete the Shadow Health exercise. After completing the assigned clinical exercise, complete and submit the following:

- Take a screenshot that verifies exercise completion.
- Reflect on your learning from the clinical exercise. Your written reflection should, at minimum, respond to the following questions:
 - What are your key learnings or takeaways from this clinical exercise?
 - How does this learning relate to information presented in the course textbook? Cite and reference support from the course textbook.
 - How do these concepts or skills build on your prior experience?
 - What is the significance of these concepts or skills and how will they inform your professional practice?

Your paper should be 1-2 pages in length (not including title and reference pages), supported by the textbook, and conform to the APA standards in the CSU Global Writing Center. Ensure that both your screenshot and the paper are attached before you submit the assignment and review the rubric for specific grading criteria.

Module 4

Readings

- Part 6 in *Focus on Nursing Pharmacology*
- Lexicomp®
- American Diabetes Association. (2020). Pharmacologic approaches to glycemic treatment: Standards of medical care in diabetes--2020. (2020). *Diabetes Care*, 43, S98.
- Metlay, J. P., Waterer, G. W., Long, A. C., Anzueto, A., Brozek, J., Crothers, K., Cooley, L. A., Dean, N. C., Fine, M. J., Flanders, S. A., Griffin, M. R., Metersky, M. L., Musher, D. M., Restrepo, M. I., & Whitney, C. G. (2019). Diagnosis and treatment of adults with community-acquired pneumonia: An official clinical practice guideline of the American Thoracic Society and Infectious Diseases Society of America. *American Journal of Respiratory & Critical Care Medicine*, 200(7), e45-e67. <http://doi.org/10.1164/rccm.201908-1581ST>

Discussion (25 points)

Critical Thinking (75 points)

Focused Exam: Community Acquired Pneumonia (Anita Douglas)

This focused exam features a complex geriatric patient with multiple comorbid conditions requiring a robust knowledge from the first three modules of this course. This focused exam serves as a learning checkpoint halfway through the course and will prepare you for the comprehensive portfolio assignment. Prior to completion of this exam, it is expected that you will have reviewed all required readings, journal articles, and completed the lecture material.

Complete the Shadow Health exercise. After completing the assigned clinical exercise, complete and submit the following:

- Take a screenshot that verifies exercise completion.
- Reflect on your learning from the clinical exercise. Your written reflection should, at minimum, respond to the following questions:
 - What are your key learnings or takeaways from this clinical exercise?
 - How does this learning relate to information presented in the course textbook? Cite and reference support from the course textbook.

- How do these concepts or skills build on your prior experience?
- What is the significance of these concepts or skills and how will they inform your professional practice?

Your paper should be 1-2 pages in length (not including title and reference pages), supported by the textbook, and conform to the APA standards in the CSU Global Writing Center. Ensure that both your screenshot and the paper are attached before you submit the assignment and review the rubric for specific grading criteria.

Module 5

Readings

- Part 8 in *Focus on Nursing Pharmacology*
- Kearon, C., Akl, E. A., Ornelas, J., Blaivas, A., Jimenez, D., Bounameaux, H., Huisman, M., King, C. S., Morris, T. A., Sood, N., Stevens, S. M., Vintch, J. R. E., Wells, P., Woller, S. C., & Moores, L. (2016). Antithrombotic therapy for VTE disease: CHEST guideline and expert panel report. *Chest, 149*(2), 315–352.
- Powers, W. J., Rabinstein, A. A., Ackerson, T., Adeoye, O. M., Bambakidis, N. C., Becker, K., Biller, J., Brown, M., Demaerschalk, B. M., Hoh, B., Jauch, E. C., Kidwell, C. S., Leslie-Mazwi, T. M., Ovbiagele, B., Scott, P. A., Sheth, K. N., Southerland, A. M., Summers, D. V., Tirschwell, D. L., & American Heart Association Stroke Council. (2018). 2018 guidelines for the early management of patients with acute ischemic stroke: A guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke (00392499), 49*(3), e46-e99. <https://doi.org/10.1161/STR.0000000000000158>
- Whelton, P. K., Carey, R. M., Aronow, W. S., Casey, J. D. E., Collins, K. J., Dennison Himmelfarb, C., DePalma, S. M., Gidding, S., Jamerson, K. A., Jones, D. W., MacLaughlin, E. J., Muntner, P., Ovbiagele, B., Smith, J. S. C., Spencer, C. C., Stafford, R. S., Taler, S. J., Thomas, R. J., Williams, S. K. A., ... Wright, J. J. T. (2018). 2017 ACC/AHA/AAPA/ABC/ACPM/AGS/APhA/ASH/ASPC/NMA/PCNA Guideline for the prevention, detection, evaluation, and management of high blood pressure in adults: A report of the American College of Cardiology/American Heart Association Task Force on clinical practice guidelines. *Journal of the American College of Cardiology, 71*(19), e127–e248. <https://doi.org/10.1016/j.jacc.2017.11.006>

Discussion (25 points)

Critical Thinking (75 points)

Focused Exam – Hypertension and Type 2 Diabetes

This week’s critical thinking assignment will combine knowledge obtained from Modules 4 and 5 to complete a case with your patient, Arun Patel. The patient case will require a full patient history, medication assessment, and appropriate counseling.

Complete the Shadow Health exercise. After completing the assigned clinical exercise, complete and submit the following:

- Take a screenshot that verifies exercise completion.
- Reflect on your learning from the clinical exercise. Your written reflection should, at minimum, respond to the following questions:
 - What are your key learnings or takeaways from this clinical exercise?
 - How does this learning relate to information presented in the course textbook? Cite and reference support from the course textbook.

- How do these concepts or skills build on your prior experience?
- What is the significance of these concepts or skills and how will they inform your professional practice?

Your paper should be 1-2 pages in length (not including title and reference pages), supported by the textbook, and conform to the APA standards in the CSU Global Writing Center. Ensure that both your screenshot and the paper are attached before you submit the assignment and review the rubric for specific grading criteria.

Module 6

Readings

- Part 10 in *Focus on Nursing Pharmacology*
- Global Initiative for Asthma (GINA). (2020). Pocket guide for asthma management and prevention. *ginasthma.org*.
- Global Initiative for Chronic Obstructive Lung Disease (GOLD). (2020). Teaching slide set 2020. *goldcopd.org*.
- Kapnadak, S. G., Dimango, E., Hadjiliadis, D., Hempstead, S. E., Tallarico, E., Pilewski, J. M., Faro, A., Albright, J., Benden, C., Blair, S., Dellon, E. P., Gochenour, D., Michelson, P., Moshiree, B., Neuringer, I., Riedy, C., Schindler, T., Singer, L. G., Young, D., ... Simon, R. H. (2020). Cystic Fibrosis Foundation consensus guidelines for the care of individuals with advanced cystic fibrosis lung disease. *Journal of Cystic Fibrosis, 19*(3), 344-354. <https://doi.org/10.1016/j.jcf.2020.02.015>
<https://doi.org/10.1016/j.jcf.2020.02.015>
- National Heart, Lung, and Blood Institute (NHLBI). (2012). Asthma care quick reference: Diagnosing and managing asthma. *nhlbi.nih.gov*.

Discussion (25 points)

Critical Thinking (75 points)

Focused Exam: COPD

This week you will care for a patient with a common respiratory illness seen in the adult population. Please complete the focused exam with patient, Debbie O'Connor. The patient case will require a full patient history, medication assessment, and appropriate counseling.

Complete the Shadow Health exercise. After completing the assigned clinical exercise, complete and submit the following:

- Take a screenshot that verifies exercise completion.
- Reflect on your learning from the clinical exercise. Your written reflection should, at minimum, respond to the following questions:
 - What are your key learnings or takeaways from this clinical exercise?
 - How does this learning relate to information presented in the course textbook? Cite and reference support from the course textbook.
 - How do these concepts or skills build on your prior experience?
 - What is the significance of these concepts or skills and how will they inform your professional practice?

Your paper should be 1-2 pages in length (not including title and reference pages), supported by the textbook, and conform to the APA standards in the CSU Global Writing Center. Ensure that both your

screenshot and the paper are attached before you submit the assignment and review the rubric for specific grading criteria.

Module 7

Readings

- Part 11 in *Focus on Nursing Pharmacology*
- Carpenter, M., Pisano, M. E., & Bland, C. M. (2016). Implications of bariatric surgery on absorption of nutrients and medications. *U.S. Pharmacist, 41*(12), HS-2-HS-8.

Discussion (25 points)

Module 8

Readings

- Part 3, Chapter 18 *Vaccines and Sera* in *Focus on Nursing Pharmacology*
- Centers for Disease Control and Prevention (CDC). (2016). ACIP: Guidance for vaccine recommendations for pregnant and breastfeeding women. *cdc.gov*.
- Pariente, G., Leibson, T., Carls, A., Adams-Webber, T., Ito, S., & Koren, G. (2016). Pregnancy-associated changes in pharmacokinetics: A systematic review. *PLoS Medicine, 13*(11), e1002160. <https://doi.org/10.1371/journal.pmed.1002160>
- Sachs, H. C. (2013). The transfer of drugs and therapeutics into human breast milk: An update on selected topics. *Pediatrics, 132*(3), e796–e809. <https://doi.org/10.1542/peds.2013-1985>

Discussion (25 points)

Portfolio Project (300 points)

Final Reflection Paper

The final assignment in the advanced pharmacology course is summative in nature and will require you to draw from each previous module. Within the Shadow Health program, please complete the capstone assignment. Completion of the assignment will evaluate your ability to care for a complex medical patient by illustrating ability to interpret subjective and objective information, assessing if the prescribed medication is appropriate, and providing proper monitoring and counseling information.

After completion of the Shadow Health portion, you will write a 6-8-page reflection paper about the capstone assignment and your overall experience in this course as a whole. Your reflection paper should include:

- What you thought you did well in the case
- What you think you can improve upon moving forward
- How this course will elevate your clinical practice
- How your ability to critically assess a medication regimen evolved throughout the course
- Your level of familiarity with common clinical guidelines after course completion
- Your depth of understanding regarding pharmacokinetic and pharmacodynamic principles that drive proper dosing of medications

Your submission should be 6-8 pages in length (not including title or reference pages) and conform to APA guidelines in the CSU Global Writing Center. You must include a minimum of eight credible, academic or professional references, including the text and/or course articles if used in your final

project. You may wish to review the Template Paper for help formatting your submission according to the requirements. Review the grading rubric to see how you will be graded for this assignment.

COURSE POLICIES

Grading Scale	
A	95.0 – 100
A-	90.0 – 94.9
B+	86.7 – 89.9
B	83.3 – 86.6
B-	80.0 – 83.2
C+	75.0 – 79.9
C	70.0 – 74.9
D	60.0 – 69.9
F	59.9 or below

Graduate Course Grading	
20%	Discussion Participation
45%	Critical Thinking Assignments
35%	Final Portfolio Project and Milestone

IN-CLASSROOM POLICIES

For information on late work and incomplete grade policies, please refer to our [In-Classroom Student Policies and Guidelines](#) or the Academic Catalog for comprehensive documentation of CSU-Global institutional policies.

Academic Integrity

Students must assume responsibility for maintaining honesty in all work submitted for credit and in any other work designated by the instructor of the course. Academic dishonesty includes cheating, fabrication, facilitating academic dishonesty, plagiarism, reusing /re-purposing your own work (see *CSU-Global Guide to Writing and APA Requirements* for percentage of repurposed work that can be used in an assignment), unauthorized possession of academic materials, and unauthorized collaboration. The CSU-Global Library provides information on how students can avoid plagiarism by understanding what it is and how to use the Library and Internet resources.

Citing Sources with APA Style

All students are expected to follow the *CSU-Global Guide to Writing and APA Requirements* when citing in APA (based on the APA Style Manual, 6th edition) for all assignments. For details on CSU-Global APA style, please review the APA resources within the CSU-Global Library under the “APA Guide & Resources” link. A link to this document should also be provided within most assignment descriptions in your course.

Disability Services Statement

CSU–Global is committed to providing reasonable accommodations for all persons with disabilities. Any student with a documented disability requesting academic accommodations should contact the Disability Resource Coordinator at 720-279-0650 and/or email ada@CSUGlobal.edu for additional information to coordinate reasonable accommodations for students with documented disabilities.

Netiquette

Respect the diversity of opinions among the instructor and classmates and engage with them in a courteous, respectful, and professional manner. All posts and classroom communication must be conducted in accordance with the student code of conduct. Think before you push the Send button. Did you say just what you meant? How will the person on the other end read the words?

Maintain an environment free of harassment, stalking, threats, abuse, insults or humiliation toward the instructor and classmates. This includes, but is not limited to, demeaning written or oral comments of an ethnic, religious, age, disability, sexist (or sexual orientation), or racist nature; and the unwanted sexual advances or intimidations by email, or on discussion boards and other postings within or connected to the online classroom. If you have concerns about something that has been said, please let your instructor know.