

**MIDDLE TENNESSEE SCHOOL OF ANESTHESIA**  
**UCNAP 500: ADVANCED PHYSIOLOGIC FOUNDATIONS FOR NURSING PRACTICE**  
**SPRING 2022**

**INSTRUCTOR:** Brett T. Clay, DNAP, CRNA  
Faculty, Middle Tennessee School of Anesthesia, Madison, TN  
Nurse Anesthetist, Vanderbilt Medical Center, Nashville, TN

**CONTACT INFORMATION:**

**E-MAIL:** brett.clay@mtsa.edu  
**MOBILE PHONE:** (615) 479-4138

**COURSE PREREQUISITES:**

Successful completion of an undergraduate course in human anatomy and physiology

**COURSE DESCRIPTION:**

This course addresses advanced human physiologic concepts at the system, organ, cellular, and subcellular levels, with the overall goal to enhance the learner's foundation for nursing practice. Emphasis is on integration of concepts as a basis for understanding interrelationships among complex physiologic processes. This course may strengthen the learner's application for a nurse anesthesia program, but satisfactory completion of the course does not guarantee acceptance into a program as acceptance is based on a number of factors.

**COURSE CREDIT:** 3 credit hours

**COURSE DATES:** January 3<sup>rd</sup>, 2022 to April 15<sup>th</sup>, 2022

**SUGGESTED COURSE MATERIALS:**

Hall, J.E. (2020). *Guyton and Hall textbook of medical physiology* (14<sup>th</sup> ed.). Philadelphia: Saunders/Elsevier. ISBN: 9780323597128

Seeley, R., VanPutte, C., Regan, J., & Russo, A. (2020). *Seeley's anatomy and physiology* (12<sup>th</sup> ed.). Boston: McGraw-Hill. ISBN: 9781260172195

**COURSE OBJECTIVES:**

Students may be evaluated for ability to:

1. Describe complex physiologic processes at biochemical, cellular, organ, system, and human organism levels.
2. Integrate concepts as a basis for understanding interrelationships among complex physiologic processes.
3. Integrate physiologic concepts with clinical assessment, diagnostic reasoning, and therapeutic management of patients.

**LECTURE TOPICS AND EXAMINATIONS:****Week 1 (January 3<sup>rd</sup>):**

Cell structures and functions

Cell metabolism

Cell membrane transport mechanisms

**\*Take quiz on Brightspace after listening to voice-over PowerPoint lectures**

**Week 2 (January 10<sup>th</sup>):**

Membrane potentials and action potentials

Cell receptor mechanisms

**\*Take quiz on Brightspace after listening to voice-over PowerPoint lectures**

**\*Online Synchronous Discussion #1 (Week of January 10<sup>th</sup>)**

**Week 3****EXAMINATION #1 (January 17<sup>th</sup>-21<sup>st</sup>)****Week 4 (January 24<sup>th</sup>)**

Central and peripheral nervous systems

Neurotransmitters

**Week 5 (January 31<sup>st</sup>):**

Brain anatomy and physiology

**\*Take quiz on Brightspace after watching lecture**

**Week 6 (February 7<sup>th</sup>):**

Spinal cord and spinal nerves

Cranial nerves

**\*Online Synchronous Discussion #2 (Week of February 7<sup>th</sup>)**

**Week 7****EXAMINATION # 2 (February 14<sup>th</sup>-18<sup>th</sup>)****Week 8 (February 21<sup>st</sup>):**

Autonomic nervous system

Skeletal and smooth muscle

Neuromuscular synapse

**Week 9 (February 28<sup>th</sup>):**

Cardiovascular physiology and hemodynamic regulation

**\*Take quiz on Brightspace after watching lecture**

**Week 10 (March 7<sup>th</sup>):**

Microcirculation

RBCs, hemoglobin, iron, oxygen and CO<sub>2</sub> transport**Week 11****EXAMINATION # 3 (March 14<sup>th</sup>-18<sup>th</sup>)****Week 12 (March 21<sup>st</sup>):**

Hemostasis and coagulation

WBCs, Inflammation, Immunity

**Week 13 (March 28<sup>th</sup>):**

Renal system

**\*Take quiz on Brightspace after watching lecture****Week 14 (April 4<sup>th</sup>):**

Acid-Base balance

**\*Online Synchronous Discussion #3 (Week of April 4<sup>th</sup>)****Week 15****EXAMINATION #4 (April 11<sup>th</sup>-15<sup>th</sup>)****GRADING SYSTEM:**

- Four examinations will be given. The total number of questions answered correctly by each student will be divided by the total number of possible questions to obtain a percentage.
- Five post-lecture quizzes will be posted on Brightspace.
- We will meet online via Microsoft TEAMS three times throughout the course sequence.
- The final course grade will be determined by the following method:
  - The four examinations will count for 80% of the final grade.
  - The five post-lecture quizzes on Brightspace will be worth 1% each for a total of 5% of the final grade. **Grade will be based on participation**, not performance on the quizzes.
  - The three Microsoft Teams synchronous activities will be worth 5% each for a total of 15% of the final grade. **Grade will be based on participation in the various activities I have planned.**
  - Then the grading scale is:

90 – 100% = A

80 – 89% = B

70 – 79% = C

60 – 69% = D

59% or below = F

- No one student will be given opportunities to improve his or her grade unless the same opportunities also are available to every other student in the class.
- **DO NOT** request special opportunities to improve your grade on an individual basis.

**BRIGHTSPACE POSTINGS AND LAPTOP COMPUTERS:**

Course materials will be posted on Brightspace related to each week's lecture content. These will include lecture recordings, PowerPoint presentations, and Word documents. Due to the nature of the online component, students must make sure their home computer has an internet speed of 2MBPS (upload/download) or greater for a successful Skype connection. Computers must have an internal or external web camera and microphone. Students can test their internet speed at [www.speedtest.net](http://www.speedtest.net).

**ATTENDANCE:**

Students are encouraged to engage in all online activities and take all examinations when scheduled. Alternate test times should be requested before 24 hours of the scheduled test time. Accommodations will be made as necessary and only for appropriate reasons (work schedule, illness, family death, etc.).

**OTHER INFORMATION:****Plagiarism, cheating or lying involving any clinical, academic, or School endeavor**

Plagiarism, which is defined as "The act of using another person's words or ideas without giving credit to that person", is a form of cheating, and is subject to disciplinary action.

Plagiarism: The act of using another person's words or ideas without giving credit to that person.

<http://www.merriam-webster.com/dictionary/plagiarism>

**Honor Code:** On my honor, I pledge to abide by MTSA policies described in the Student Handbook. I understand that students are to be honest in words and actions, in particular, to not lie, cheat, plagiarize, or steal. I pledge to conduct myself in a manner based on Christian values and to require the same of fellow students. I understand that a violation of this Honor Code may result in my dismissal from the class.

**Americans with Disabilities statement:**

Students with disabilities, who are protected by the Americans with Disabilities Act of 1990 and require special accommodations, should contact their instructor prior to course start date. The School will make reasonable accommodation whenever necessary for all applicants with disabilities, provided that the individual is otherwise qualified to safely perform the duties and assignments connected with the academic and clinical requirements of the curriculum. (*See handbook for more detailed requirements for completion of clinical/coursework*). Reasonable accommodation will be made to assure student success and completion of coursework only with notification of need prior to course start date.

