MIDDLE TENNESSEE SCHOOL OF ANESTHESIA

NDFAP 500 Foundations of Advanced Physiology Syllabus

Spring Semester, 2027 – January 4th, 2027 to April 15th, 2027

Course Code & Name: NDFAP 500 Foundations of Advanced Physiology

Instructor(s): Brett Clay, DNAP, CRNA

Office: Instructor Office Phone
Cell: 615-479-4138
Email: brett.clay@mtsa.edu

Instructor Office Hours: Please contact instructor to schedule an appointment.

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

Suggested Texts or Additional Suggested Reading Material:

1. Hall JE, Hall ME. Guyton and Hall Textbook of Medical Physiology. 15th Edition. Edinburgh, London: Elsevier; 2025.
2. VanPutte C, Regan J, Russo A. Seeley's Anatomy and Physiology. 13th Edition. Boston: McGraw-Hill; 2022

Course Objectives:

Upon successful completion of this course, you will be able 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

Topic Outline

Week & Dates	Topic(s)	Student Activities
Week 1 **1/4/2027 to 1/10/2027**	• Cell structures and functions • Cell metabolism • Cell membrane transport mechanisms	*Take quiz on Brightspace after watching lecture ***There is no deadline for the quizzes.**
Week 2 **1/11/2027 to 1/17/2027**	• Membrane potentials and action potentials • Cell receptor mechanisms	*Take quiz on Brightspace after watching lecture ***Online Synchronous Discussion #1 1/14/27 @ 1900 CST**
Week 3 **1/18/2027 to 1/24/2027**		**Examination #1**
Week 4 **1/25/2027 to 1/31/2027**	• Intro to the central and peripheral nervous systems • Neurotransmitters	*There is no quiz this week
Week 5 **2/1/2027 to 2/7/2027**	• Brain anatomy and physiology	*Take quiz on Brightspace after watching lecture
Week 6 **2/8/2027 to 2/14/2027**	• Spinal cord and spinal nerves • Cranial nerves	*There is no quiz this week ***Online Synchronous Discussion #2 2/11/27 @ 1900 CST**
Week 7 **2/15/2027 to 2/21/2027**		**Examination #2**
Week 8 **2/22/2027 to 2/28/2027**	• Autonomic nervous system • Skeletal and smooth muscle • Neuromuscular synapse	*There is no quiz this week

Week 9 **3/1/2027 to 3/7/2027**	• Cardiovascular physiology and hemodynamic regulation	*Take quiz on Brightspace after watching lecture
Week 10 **3/8/2027 to 3/14/2027**	• Microcirculation • RBCs, hemoglobin, iron, oxygen and CO2 transport	*There is no quiz this week
Week 11 **3/15/2027 to 3/21/2027**		**Examination #3**
Week 12 **3/22/2027 to 3/28/2027**	• Hemostasis and coagulation • WBCs, Inflammation, Immunity	*There is no quiz this week
Week 13 **3/29/2027 to 4/4/2027**	• Renal system	*Take quiz on Brightspace after watching lecture
Week 14 **4/5/2027 to 4/11/2027**	• Acid-Base balance	*There is no quiz this week ***Online Synchronous Discussion #3 4/7/27 @ 1900 CST**
Week 15 **4/12/2027 to 4/15/2027**		**Examination #4**

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 posted on Brightspace.
- We will meet online via Microsoft TEAMS three times throughout the course sequence. If you cannot attend, you will have the opportunity to complete the alternate assignment (found in the synchronous discussion tab in Brightspace) and email it to me for full credit.
- 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.
- Per MTSA policy, there is no rounding of grades.
- 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.

Late Work:

The instructor reserves the right to deduct points for any late assignments.

Policies and Procedures

The policies below summarize key expectations for this course. Full, authoritative policies are found in the MTSA Student Handbook. In the event of any discrepancy, institutional policies take precedence.

Syllabus Subject to Change

This syllabus is intended as a general guide for the course and is subject to change at the discretion of the instructor and/or MTSA administration. Changes may include, but are not limited to, adjustments to the course schedule, assignments, assessments, and policies. Any updates will be communicated to students in a timely manner and posted in the official learning management system. Students are responsible for reviewing and adhering to all announced revisions.

Non-Degree Course Grading Policy

Students can view their final grades for each semester by visiting the transcript section of the Student Portal https://mtsa.edu/student.

The grading scale is based on the following 4.0 grading system:

A	90-100%	(4.0 Quality Points)
B	80-89.9%	(3.0 Quality Points)
C	70-79.9%	(2.0 Quality Points)
F	Below 70%	(0.0 – Failing)
W	Withdrew	See Grade of Withdrew below
WF	Withdrew Failing	See Grade of Withdrew Failing below
T	Terminated	See Terminated below

No grades, including final grades, will be rounded up.

(There is no grade of "D" in the Grading Scale)

Withdrawing from a Course

Students may drop a course within the first 5 MTSA business days of the semester with no grade.

Grade of Withdrew (W)

Students wishing to withdraw from the course after the first 5 MTSA business days of the semester will either receive a grade of "W" or "WF." To receive a W grade, a student must drop the course within the first 60% of the semester. A "W" grade does not impact a student's GPA.

Grade of Withdrew Failing (WF)

Students wishing to withdraw from the course after the deadline to withdraw with a "W" grade (see above) will receive a grade of "WF." A WF grade is calculated into a student's GPA as a failing grade (F).

Terminated (T)

An administratively terminated student is issued a final grade of "T" for all courses in which he/she is currently enrolled, and the termination is noted on the student's transcript.

Grade Appeal/Grievance Process:

Please refer to the *MTSA Student Handbook* for the Grade Appeal Policy (link below).

https://mtsa-dnappd.cleancatalog.net/student-appeals

Communication Expectations:

Students are expected to respond to email from MTSA staff and faculty within two MTSA business days.

Technical Support:

If you have problems with your computer, technology, IT-related questions, including those related to Brightspace, please submit a ticket via the link in your student portal.

Non-Degree Course Refund Policy

Any student who wishes to withdraw from a non-degree course must notify the instructor in writing of this action.

Refund Policy

MTSA will permit any student to cancel their enrollment agreement in a non-degree course within five MTSA business days of the enrollment day. Should a cancellation occur, MTSA will refund 100% of the tuition payment that was made by the student, minus the non-refundable portion (30%) submitted to hold the student's position in the class. Students withdrawing for medical reasons are assessed and adjusted no differently than other withdrawals.

Students who withdraw after this deadline will not receive a refund.

Determination of the Withdrawal Date

The student's withdrawal date is the date the student submits the signed withdrawal form to the Registrar's Office.

Administrative Withdrawal

Students may be administratively withdrawn from a course for non-attendance/participation. Any student who does not attend/participate in the course within 5 MTSA business days will be administratively withdrawn from the course.

Students will not receive a refund if Administratively Withdrawn.

In order to demonstrate active engagement in a course, each student must confirm that they have read the course syllabus and plan to participate in the course. This is done through a survey in the Learning Management System.

For the Spring 2027 semester, all students must complete the survey by the end of the day on Monday, January 11th, 2027.

Completion of the course participation survey demonstrates initial engagement only. If a student completes the course participation survey but does not complete any additional coursework or other academically related course activity by the withdrawal deadline, defined as the point at which 60% of the course or period of attendance has been completed, the student may be administratively withdrawn for non-participation.

The administrative withdrawal date will be determined based on the student's last documented academically related activity.

MTSA Internal Withdrawal Procedure:

1. Notify in writing the instructor who will in turn notify the Program Director and Registrar of your intent to withdraw.
2. Schedule an appointment with the Executive Vice President if requested.
3. The Registrar sends the student the withdrawal form to complete and sign electronically.
4. After the student signs, the completed form is sent to the instructor for signature.
5. The withdrawal process will be initiated upon receipt of the completed withdrawal form.

Artificial Intelligence (AI) and Ethical Use

Students are required to adhere to the instructor's course-specific AI policy as outlined in this syllabus. When using AI tools, you must act ethically and responsibly by:

- **Verifying Sources:** Ensure that any information generated or suggested by AI is accurate, credible, and properly cited.
- **Maintaining Accuracy:** Review and validate all AI-assisted work for correctness and alignment with course standards.
- **Taking Responsibility:** You are fully accountable for the originality, integrity, and quality of all submitted work, regardless of AI involvement.

Failure to follow these guidelines may result in academic integrity violations.

Use of AI that violates these guidelines may constitute an academic integrity violation and will be handled according to MTSA's Academic Integrity policy as outlined in the Student Handbook.

If you are unsure whether a particular use of AI is acceptable, ask your instructor before submitting the work.

Plagiarism, Cheating or Lying Involving Any Clinical, Academic, Or School Endeavor:

Any student cheating on any test, exam, quiz, or assignment; who has falsified clinical documents, such as clinical evaluations or any other documentation; falsified signatures; or who has plagiarized any assignment, will be placed on immediate probation, with the recommendation for termination from the program. The case will be heard by the Progressions Committee and the Committee will make a determination of the recommendation for termination.

Plagiarism, which is defined as "the unauthorized use or close imitation of the language and thoughts of another author and the representation of them as one's own original work," is a form of cheating, and is subject to disciplinary action including termination.

Click the link below to review the Academic Integrity Policy in the Student Handbook.
https://mtsa-dnappd.cleancatalog.net/academic-integrity-policy

Honor Code:

As a student of Middle Tennessee School of Anesthesia, I will incorporate the principles of truth, honor, integrity, and virtue in all that I do while enrolled. I acknowledge the Honor Code as vital in fostering an environment of trust, order, and unity within the School. I accept the sacred trust placed in me to continue this heritage of honor in my efforts to become a competent nurse anesthetist. I freely pledge to abide by the MTSA Standards of Conduct and this Honor Code in all of my conduct. I understand that a violation of this Honor Pledge will result in disciplinary action up to and excluding dismissal from the program.

Click the link below to review the entire Honor Code in the Student Handbook.
https://mtsa-dnappd.cleancatalog.net/honor-code

Americans With Disabilities Statement:

MTSA complies with the Americans with Disabilities Act (ADA). To ensure equal opportunity for all qualified persons, students with documented disabilities requiring accommodation have access to support personnel within the Office of the Executive Vice President. An agent of this office will collaborate with other faculty and staff as necessary to provide reasonable accommodations for courses and examinations. Accommodations help qualified students with disabilities access resources to assist

them in meeting the technical standards for nurse anesthesia program admission, continuation, and graduation.

Requests for accommodation of a disability must be made in a timely manner to the Office of the Executive Vice President. Accommodations provided by MTSA are not retroactive.

Students who receive accommodations are responsible for notifying instructors before beginning each course.

Click the link below to view the Accommodations Policy in the Student Handbook.
https://mtsa-dnappd.cleancatalog.net/accommodation-requests