

COURSE PREFIX & NUMBER: BIO 210

INSTRUCTOR: _____

OFFICE: _____

OFFICE TELEPHONE: _____

OFFICE HOURS: _____

INSTRUCTOR'S E-MAIL: _____

Get the information above from your instructor on the first day of class.
Adjunct instructors do not have assigned offices or office hours,
so all meetings with adjuncts will be by appointment only.

Lead Instructor for BIO 210:

Dr. Peter Susan, phone: 574-6427

E-mail: peter.susan@tridenttech.edu

Biological Sciences Department Head:

Angela Edwards, phone: 574-6038

Science & Mathematics Administrative Assistant:

Emily Troxel, phone: 574-6015

BIO 210 COURSE SYLLABUS - Page 2

COURSE TITLE:	Anatomy & Physiology I	PREFIX & NUMBER	BIO 210
LECTURE HOURS:	3	LAB HOURS:	3
CONTACT HOURS:	6	CREDIT HOURS:	4

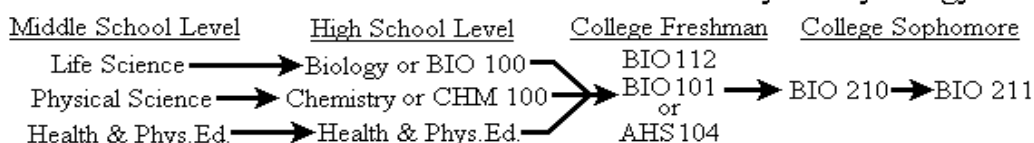
CATALOG DESCRIPTION: The first part of a two-semester sequence, this comprehensive transfer course is a lecture and laboratory study with model and specimen dissections of the integrated structure and function of the human body. Basic cellular chemistry and the integumentary, skeletal, muscular, nervous, and endocrine systems are presented. **Prerequisite:** *Within the past five years, completed High school biology, high school chemistry, BIO 100, or a college-level, lab-based science course with a grade of C or better.*

RECOMMENDED PREREQUISITES: Many past BIO 210 students that got D, F, or W grades started with insufficient science background. BIO 210 follows a national curriculum with college biology and college chemistry as prerequisites to anatomy and physiology. However, the South Carolina Technical College System allows you to enroll in BIO 210 without the nationally recommended prerequisite. Your advisor and academic program could advise you to take BIO 210, though you might not be ready. In the very least: Within five years, you should have earned a C grade or better in both college-preparatory biology and chemistry courses. You already must have skill at imagining concepts down to the cellular and chemical levels and be able to communicate with many basic terms used in biology and chemistry. Before committing to BIO 210 this semester, carefully plan your educational strategy to optimize success in completing this coursework. Share the information on this page with your advisors (they might not know).

To maximize performance, complete preparatory courses before enrolling in BIO 210. Possible choices:

- **BIO 100: Introductory Biology** covers general principles of biology. This course is useful for students that have not earned a C grade or above in a college-preparatory biology within the last five years.
- **CHM 100: Introductory Chemistry** covers general principles of chemistry. This course is useful for students that have not earned a C grade or above in a college-preparatory chemistry within the last five years.
- **BIO 112: Basic Anatomy and Physiology** covers basic biochemistry, cell biology, tissue biology, and all the organ systems covered in BIO 210 & BIO 211, focusing on fewer more fundamental concepts.
- **BIO 101: Biology I** covers basic biochemistry, cell biology, genetics, evolution, and ecology. Students that need more practice imagining and communicating at cellular and chemical levels should take this before BIO 210.
- **AHS 104, Medical Vocabulary** covers major organs, systems, and terminology of the human body. This helps students that know basic biology and chemistry concepts, but need practice with human structures & functions.

Flowchart of Recommended Coursework for Anatomy & Physiology



PERSONAL PLANNING RECOMMENDED: Most past BIO 210 students that got D, F, or W grades started with insufficient study time and inability to commit to the course schedule. Only you decide whether BIO 210 can work for you this semester. In most cases, your instructors and advisors cannot provide help with personal issues. For help fitting your personal, work, and academic lives together, contact Trident Technical College's Counseling and Career Development Services at Bldg.410/Rm.210; phone: 574-6131. Plan smart!

In a 14-week **Fall or Spring Semester**, an average BIO 210 student will need 12-14 hours per week outside of class + 3 hours for lecture + 3 hours for lab = **18-20 hours per week**.

In a 9-week **Summer Semester**, an average BIO 210 student will need 18-21 hours per week outside of class + 4½ hours for lecture + 4½ hours for lab = **27-30 hours per week**.

If you are weak in prerequisite skills, lack study time, have busy extracurricular commitments, cannot attend every class meeting, cannot get required materials, or do not have back-up plans for travel and care for dependents, then drop BIO 210 and enroll during a more favorable future semester. **Students enrolled after the Drop/Add Deadline must attend and earn grades, to be permanently recorded on transcripts.**

REQUIRED MATERIALS

- Martini & Nath (2009). *Fundamentals of Anatomy and Physiology* (8th ed.). Benjamin/Cummings. For help with online resources, contact the publisher's representative, Susan Coughlin, phone: 971-3679.
- *InterActive Physiology 10-System Suite CD* (comes with new textbook). For help with using or to separately purchase this CD, contact the publisher's representative, Susan Coughlin (see above).
- **Computer access** that can run: (1) the *InterActive Physiology CD*, above, and (2) CampusCruiser from its website, link at www.tridenttech.edu. For TTC CampusCruiser, try online help, then contact Harvey Byrd, phone: 574-6212, Bldg.200/Rm.221. **Online lectures** have more requirements, and online students must contact their instructor by the semester's first day (listed next to each online section in the current "On Course").
- Marieb & Mitchell. (2009). *Human Anatomy and Physiology Laboratory Manual: Fetal Pig Version* (9th ed.). Benjamin/Cummings.
- Each student must obtain a dissection kit and personal protective equipment that includes closed-toe footwear, safety glasses, latex gloves, and an over-garment (e.g., lab coat, large shirt, or smock).
- Other materials required by your instructor, might be announced during class, including items that are listed as optional below.

OPTIONAL MATERIALS - may be required, depending on instructor

- *Detailed Course Objectives for BIO 210: Anatomy & Physiology I* (compiled Summer 2002). This is a curriculum guide given to instructors. Students may request a copy by e-mail from your TTC CampusCruiser account to Dr. Susan, the lead instructor for BIO 210 (peter.susan@tridenttech.edu).
- Seiger (2009). *Study guide to Accompany Fundamentals of Anatomy and Physiology* (8th ed.). In a 2006 study, students that regularly practiced problems from the study guide increased their performance by 7-10%.
- Additional support materials are also in the TTC Bookstore; e.g., flashcards, anatomy coloring books, etc.
- **Learning Center**, Bldg. 920/Rm. 211, phone: 574-6409 – For help more effectively studying from science textbooks or other reading strategies, please call and make an appointment with a specialist at the learning center. Free tutors are often available for help with BIO 210, just call to make an appointment.

CORE COMPETENCIES

All courses approved for the general education core curriculum develop a student's critical thinking and/or communication skills. Students will demonstrate achievements by assessments on the departmental final exam and on testing developed by individual instructors.

This course develops critical thinking skills through instruction that emphasizes the understanding of the scientific disciplines of human anatomy and physiology. The student will demonstrate ability to:

- apply standard scientific methods and interpret laboratory observations and data;
- make inferences justified by data and observations;
- explain relevance of findings to anatomical principles, physiological principles, or expected results;
- identify key assumptions of anatomy and physiology;

This course develops communication skills through instruction that emphasizes presentation of anatomical and physiological ideas in discipline specific, appropriate, and clear language. The student will demonstrate ability to:

- explain concepts of anatomy and physiology, using clear, appropriate, well-reasoned, and precise terminology in keeping with established professional usage
- discuss relevant implications, consequences, and uses for anatomical and physiological principles.

SAFETY:

For your safety, if you have a medical condition that results in seizures, blackouts, etc. (e.g. epilepsy, diabetes, etc.), then please inform your instructor. This will be kept confidential.

GRADING POLICY

Your instructor can provide additional details about grading or other policies in a syllabus addendum. If you cannot commit to all the policies, then drop the course and take it when you can make more favorable arrangements.

GRADE BREAKDOWN:	Final grade will be awarded by comparing what you earn of the “ Total Possible ” to this Scale :
Lab Quizzes/ Activities10%	91 - 100% = A
Midterm & Final Lab Practicals20%	81 - 90% = B
Lecture Quizzes/ Activities.....10%	71 - 80% = C
Four Major Lecture Exams.....40%	65 - 70% = D
<u>Departmental Final Exam20%</u>	0 - 65% = F
Total Possible 100%	

POLICY FOR INCOMPLETES:

Rarely, a grade of I (incomplete) may be granted, but the following conditions **must all** be met. The student must:

- (1) provide documented evidence of a family or medical emergency after W deadline near semester’s end;
- (2) be passing the course when an I grade is requested (zeroes calculated for work missed >24 hrs before request);
- (3) submit all missing requirements by a deadline that the instructor establishes;
- (4) accept an automatic F grade, if any requirement is not met by the instructor’s deadline;
- (5) in any event, receive an automatic F grade, if any requirement is not met by midterm of the very next semester.

Instructor can also require a certain level of participation in the course for you to qualify for an incomplete (I grade).

ATTENDANCE & WITHDRAWAL POLICY: Record the Withdrawal Deadline here _____

Before attending classes, you must meet all prerequisites and officially register for this course. Prompt and regular attendance is your responsibility. You are responsible for all covered materials and assignments. For any time missed from a lecture, laboratory, or other scheduled event, you must arrange any make-up work permitted by the instructor. Not all work qualifies for make-up. BIO 210 LAB strictly assesses participation, so all missed lab work will be permanent zeroes, regardless of reasons. If personal issues excessively decrease your grade, then withdrawal before the deadline can keep a low grade off your transcript.

Absence is non-attendance for any reason, including illness, emergency or official leave. If you arrive late, you may not be allowed into the classroom and may be considered absent for that class meeting. If you leave before the instructor dismisses class, you also may be considered absent.

WARNING: If you quit participating in a course and fail to file a Withdrawal Form by the withdrawal deadline for the semester, then you will receive a grade of F or U. F grades significantly reduce GPA. Your instructor cannot file a withdrawal and cannot assign a W grade. Only you have that power. If you properly file a Withdrawal Form, then you will receive a W grade, which will not affect GPA. If you receive financial aid or veterans’ aid, your aid may be revised as a result of any changes in your course schedule.

FOR STUDENTS IN DISTANCE-LEARNING SECTIONS WITH AN ONLINE COMPONENT:

By the end of the first day of the semester, online students must contact their online BIO 210 instructor (see listing for your section in the current “*On Course*” catalog). To confirm active involvement, you must contact your online instructor at least once per week. Contact can include (but is not limited to) posting/receiving emails, participating in online discussions or chat rooms, and completing/submitted assignments online. As soon as possible, access the instructor’s online course for instructions and additional requirements. Note: Online lecture students are assigned to a specific traditional laboratory that **MUST** be attended throughout the semester. If a student cannot attend this laboratory time, then the student should **NOT** enroll in this online lecture section.

INSTRUCTOR AVAILABILITY:

Your instructor is available to you outside of class for academic assistance. Full-time instructors maintain and post scheduled office hours. Part-time instructors are accessible in a variety of ways, which include conferences before and after class, appointments, telephone conferences, or e-mails. If your instructor does not provide contact information in a syllabus addendum, then you should record it on the cover of this syllabus.

MAKE-UP TEST POLICY:

Failure to contact instructor within 24 hours of a missed exam will result in a permanent zero, unless a documented excuse clearly indicates an unavoidable condition that prevented timely phoning or e-mailing.

In BIO 210, only one make-up is permitted, regardless of reasons. Students automatically get zeroes on all missed work. Make-ups are refused, unless a student provides verifiable documentation of a serious emergency condition that directly conflicts with the test time. Make-up arrangements are at the instructor's convenience and should be in a more difficult format. **A missed make-up gets a zero with no further make-ups allowed.**

Warning: A make-up quiz eliminates the one allowed make-up for the course! Any additional missed testing will be zeroes. If an instructor provides a drop quiz, then missed quizzes cannot be made up, for any reason. At the instructor's discretion and convenience, early testing need not count as a make-up. **This is not guaranteed.**

Due to the nature of lab practical tests and lab quizzes, **lab testing CANNOT BE MADE-UP or taken early.** For a missed midterm practical, to avoid a low grade due to the zero, your only option will likely be to withdraw before the Withdrawal Deadline for the semester. For a missed final practical, an incomplete is the only option.

WARNING: Instructors cannot accommodate problems with travel to/from class, childcare, vacations, weddings, jobs, or your failure to control any other extra-curricular activities. Put back-up plans in place for all potential problems that could interfere. **For more information on developing a support network & back-up plans, you should seek help from the Counseling & Career Development Services, counseling@tridenttech.edu, Main Campus phone: 574-6131; Palmer Campus phone 722-5516; Berkeley Campus phone: 899-8079.**

ACCOMMODATIONS FOR STUDENTS WITH SPECIAL NEEDS:

Trident Technical College makes reasonable accommodations for persons with documented disabilities. By the first day of class, a student should notify instructors of any special needs and document the need with a counselor in the Counseling and Career Development Office (Bldg.410/Rm.210; phone: 574-6131). Instructors cannot accommodate any need, until a documented request is received from a qualified counselor. Requested accommodations cannot be granted, unless faculty of the Department of Biological Sciences finds it feasible and compatible with curriculum.

ELECTRONIC COMMUNICATION DEVICES IN CLASSROOMS:

To minimize classroom disruptions and protect the integrity of test-taking situations, activated electronic communication devices such as pagers and telephones are generally not permitted in classrooms at Trident Technical College. The only exception to this policy is on-call emergency personnel (police, fire, EMS), who must notify the instructor of their need for such devices at the beginning of the semester. Emergency personnel must provide verifiable documentation of a qualifying occupation. On-call emergency personnel that leave a testing situation and communicate by electronic means cannot return to complete an examination. In this case, the instructor should make arrangements for re-testing.

COURSE OBJECTIVES: BIO 210 follows "*The Human Anatomy & Physiology Society (HAPS) Core Curriculum Guidelines for an Undergraduate Course in Anatomy and Physiology*", second edition, subsection titled "Anatomy and Physiology I", except special senses were moved to the BIO 211 course. Topics are listed as published by HAPS and might not reflect the actual order covered in class.

Body Plan and Organization – Students who complete this section should understand the scope of studies in anatomy and physiology and be able to understand descriptive anatomical and directional terminology. This section of the course includes the following topics:

- | | | |
|-----------------------|---------------------------|------------------------|
| anatomical position | body cavities and regions | basic terminology |
| body planes, sections | directional terms | survey of body systems |

Homeostasis – Students who have completed this section of the course should be able to explain the basic concept of homeostasis and how homeostatic mechanisms apply to body systems. This section of the course includes the following topics:

- | | | | |
|-------------------|-------------------|------------------------|-----------------|
| negative feedback | positive feedback | homeostatic mechanisms | control systems |
|-------------------|-------------------|------------------------|-----------------|

Chemistry and Cell Biology Review – Students who complete this section should be able to identify cellular structures and explain their respective functions. This section includes the following topics:

atoms and molecules	mechanisms for movement of materials
chemical bonding	between compartments in the body
inorganic compounds	protein synthesis
solutions and pH	cellular respiration (introduction)
organic compounds	somatic cell division (mitosis & cytokinesis)
energy transfer using ATP	cellular communication mechanisms
intracellular organization of the	direct signaling (gap junctions)
nucleus and cytoplasm	synaptic signaling (neurotransmitters)
cellular membrane structure and function	paracrine signaling (cytokines, etc.)
organelles	endocrine signaling (hormones)

Histology – Students who complete this section should be able to describe the basic tissues of the body, their locations, and explain their functions. This section includes the following topics:

microscopic anatomy, location, and functional	microscopic anatomy, location, and functional
roles of the basic tissue types:	roles of four major body membranes:
epithelial tissues	mucous membranes (mucosae)
connective tissues	serous membranes (serosae)
muscle tissues	cutaneous membranes
nervous tissues	synovial membranes

Integumentary System – Students who complete this section should be able to identify and describe the major gross and microscopic anatomical components of the integumentary system and describe the functions of this system. This section includes the following topics:

general functions of skin	roles of accessory structures, which include
gross and microscopic anatomy of	cutaneous glands
skin and accessory structures	sensory receptors
roles of the specific tissue layers	hair follicles
of the integumentary system	nails

Skeletal System – Students who complete this section should be able to identify and describe the major gross and microscopic anatomical components of the skeletal system and explain their functional roles in osteogenesis, repair, and body movement. This section includes the following topics:

general functions of bone and	names of bones
the skeletal system	many markings & features on bones
histology and structure of a typical bone	organization of the skeleton
physiology of bone formation, growth,	structure and function of joints
remodeling, and repair	classification of joints

Muscular System – Students who complete this section should be able to identify and describe major gross and microscopic anatomical components of the muscular system and explain their functional roles in body movement, posture maintenance, and heat production. This section includes the following topics:

general functions of muscle tissue	physiology of skeletal muscle contraction
identification, location, & characteristics of	skeletal muscle metabolism
the three types of muscle tissues	principles of whole muscle contraction
skeletal muscle tissue	locations and functions of
smooth muscle tissue	many major skeletal muscles
cardiac muscle tissue	nomenclature of skeletal muscles
detailed gross and microscopic anatomy	group actions of skeletal muscles
of skeletal muscle	(prime movers, synergists, etc.)

Nervous System – Students who complete this section should be able to identify and describe the major gross and microscopic anatomical components of the nervous system and explain their functional roles in communication, control, and integration. This section includes the following topics:

general functions of the nervous system anatomical and physiological organization of the nervous system gross and microscopic anatomy of nervous tissue neurophysiology, including mechanisms of resting potential, production of action potentials, & impulse transmission neurotransmitters and their roles in synaptic transmission sensory receptors and their roles	divisions, origin, and functional components of the brain protective roles of cranial bones, meninges, and cerebrospinal fluid structure and function of cranial nerves anatomy of the spinal cord & spinal nerves reflexes & their roles in nervous function physiology of sensory and motor pathways in the brain and spinal cord functions of the autonomic nervous system comparisons of the somatic and autonomic nervous systems
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Endocrine System – Students who complete this section should be able to identify and describe the major gross and microscopic anatomical components of the endocrine system and explain the functional roles of their respective hormones in communication, control, and integration. This section includes the following topics:

general functions of the endocrine system
definition and chemical classification of hormones
control of hormone secretion
mechanisms of hormone actions at effectors
roles of the hypothalamus and pituitary gland
identity, secretory control, and functional roles of the major hormones of the
pituitary, adrenal, thyroid, parathyroid, pancreas, gonads, and pineal glands, including
the effects of hyposecretion and hypersecretion
functions of hormones secreted by other endocrine tissues and cells, such as
erythropoietin, thymosin, digestive hormones, placental hormones,
atrial natriuretic peptide, vitamin D, eicosanoids, and growth factors
hormonal response to stress

Many of the topics in this course are important unifying themes, with details that will be revisited and details emphasized throughout BIO 210 & BIO 211, including:

- (1) homeostatic control,**
- (2) chemicals and their behaviors,**
- (3) cells and their structures & functions,**
- (4) tissues and their structures & functions,**
- (5) the nervous system and its regulation & integration of functions, and**
- (6) the endocrine system and its regulation & integration of functions.**

Fall or Spring Semester - TENTATIVE CLASS SCHEDULE (SUBJECT TO CHANGE)

LEC Week	Lecture Chapters	LAB Week	Lab Exercises
1	1 An Introduction to Anatomy and Physiology	1	1 Language of Anatomy 2 Organ Systems Overview
2	2 The Chemical Level of Organization	2	3 Microscope 4 Cell: Anatomy & Division 5 Cell: Transport Mechanisms
3	3 The Cellular Level of Organization	3	6 Classification of Tissues
4	4 The Tissue Level of Organization	4	6 Classification of Tissues 7 Integumentary System 8 Classification of Covering & Lining Membr...
5	4 The Tissue Level of Organization 5 The Integumentary System	5	9 Overview of Skeleton: Classification... 10 Axial Skeleton
6	6 Osseous Tissue and Bone Structure (For lab, see 7 The Axial Skeleton & 8 The Appendicular Skeleton)	6	11 Appendicular Skeleton 12 Fetal Skeleton
7	6 Osseous Tissue and Bone Structure 9 Articulations	7	13 Articulations & Body Movements Finish Exercises & Review for Practical
8	10 Muscle Tissue InterActive Physiology CD: Muscular System	8	Midterm Practical Exam (NO MAKE-UP)
9	10 Muscle Tissue (For lab, see 11 The Muscular System) 12 Neural Tissue InterActive Physiology CD: Nervous System	9	14 Microscopic Anatomy & Organization of Skeletal Muscle 15 Gross Anatomy of Muscular System
10	12 Neural Tissue 13 The Spinal Cord, Spinal Nerves, and Spinal Reflexes	10	15 Gross Anatomy of Muscular System 17 Histology of Nervous Tissue
11	13 The Spinal Cord, Spinal Nerves, and Spinal Reflexes 14 The Brain and Cranial Nerves	11	21 Spinal Cord, Spinal Nerves, & the ANS 22 Reflex Physiology 19 Gross Anatomy of Brain & Cranial Nerves
12	14 The Brain and Cranial Nerves	12	19 Gross Anatomy of Brain & Cranial Nerves Sheep's Brain Dissection
13	16 Neural Integration II: The Autonomic Nervous System and Higher-Order Functions	13	27 Endocrine Glands Finish Exercises & Review for Practical
14	18 The Endocrine System	14	Final Practical Exam (NO MAKE-UP)
15	Comprehensive Final Examination (scheduled by the college)		

Summer Semester - TENTATIVE CLASS SCHEDULE (SUBJECT TO CHANGE)

**Summer sessions are more difficult, because they cover the same curriculum in less time.
Consider the benefits of waiting to enroll in BIO 210 in a Fall or Spring 14-week session.**

LEC Week	Lecture - Textbook Chapters	LAB Class	Laboratory – Lab Manual Exercises
1	1 An Introduction to Anatomy and Physiology 2 The Chemical Level of Organization	1 st	1 Language of Anatomy 2 Organ Systems Overview 3 Microscope
		2 nd	4 Cell: Anatomy & Division 5 Cell: Transport Mechanisms & Permeability
2	2 The Chemical Level of Organization 3 The Cellular Level of Organization	3 rd	6 Classification of Tissues
		4 th	
3	4 The Tissue Level of Organization	5 th	7 Integumentary System 8 Classification of Covering & Lining Membr... 9 Overview of the Skeleton: Classification...
		6 th	10 Axial Skeleton
4	5 The Integumentary System 6 Osseous Tissue and Bone Structure (For lab, see 7 The Axial Skeleton & 8 The Appendicular Skeleton)	7 th	11 Appendicular Skeleton
		8 th	12 Fetal Skeleton Finish Exercises & Review for Practical
5	9 Articulations 10 Muscle Tissue InterActive Physiology CD: Muscular System	9 th	Midterm Practical Exam (NO MAKE-UP)
		10 th	13 Articulations & Body Movements 14 Microscopic Anatomy & Organization of Skeletal Muscle (also see lecture's CD)
6	10 Muscle Tissue (For lab, see 11 The Muscular System) 12 Neural Tissue InterActive Physiology CD: Nervous System	11 th	15 Gross Anatomy of Muscular System
		12 th	
7	13 The Spinal Cord, Spinal Nerves, and Spinal Reflexes 14 The Brain and Cranial Nerves	13 th	17 Histology of Nervous Tissue 21 Spinal Cord, Spinal Nerves, & the ANS 22 Reflex Physiology
		14 th	19 Gross Anatomy of Brain & Cranial Nerves
8	14 The Brain and Cranial Nerves 16 Neural Integration II: The Autonomic Nervous System and Higher-Order Functions	15 th	19 Gross Anatomy of Brain & Cranial Nerves Sheep's Brain Dissection
		16 th	27 Endocrine Glands
9	18 The Endocrine System	17 th	Finish Exercises & Review for Practical
		18 th	Final Practical Exam (NO MAKE-UP)
10	Comprehensive Final Examination (scheduled by the college)		

