

BIO K212 - Anatomy & Physiology II

**Lecture: M & W 11am-12:15, Room C101**

**Lab: M or W 1:30pm-4:25pm, Room A219**

**Course Information**

* **Instructor Information**

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| Name: Nicola Ricker  Office: C270  Phone: 860-215-9474  Email: Nricker@trcc.commnet.edu | Office Hours: M/W: 9:30am-10:50am  R: 2pm-3:30  Other hours can be arranged. Please come see me. |

**4 CREDIT HOURS**   
Prerequisite: [***BIO\* K211***](https://catalog.threerivers.edu/content.php?filter%5B27%5D=BIO*&filter%5B29%5D=&filter%5Bcourse_type%5D=-1&filter%5Bkeyword%5D=&filter%5B32%5D=1&filter%5Bcpage%5D=1&cur_cat_oid=6&expand=&navoid=310&search_database=Filter#tt7922)   
This course is a continuation of [***BIO\* K211 - Anatomy & Physiology I °***](https://catalog.threerivers.edu/content.php?filter%5B27%5D=BIO*&filter%5B29%5D=&filter%5Bcourse_type%5D=-1&filter%5Bkeyword%5D=&filter%5B32%5D=1&filter%5Bcpage%5D=1&cur_cat_oid=6&expand=&navoid=310&search_database=Filter#tt9056), and covers the following systems: endocrine, circulatory, lymphatic, respiratory, digestive (nutri­tion), urinary (including fluids and electro­lytes), and reproduction, as well as human development and genetics. Anatomy and Physiology is a two-semester course. Students must enroll in both [***BIO\* K211***](https://catalog.threerivers.edu/content.php?filter%5B27%5D=BIO*&filter%5B29%5D=&filter%5Bcourse_type%5D=-1&filter%5Bkeyword%5D=&filter%5B32%5D=1&filter%5Bcpage%5D=1&cur_cat_oid=6&expand=&navoid=310&search_database=Filter#tt8489) and [***BIO\* K212***](https://catalog.threerivers.edu/content.php?filter%5B27%5D=BIO*&filter%5B29%5D=&filter%5Bcourse_type%5D=-1&filter%5Bkeyword%5D=&filter%5B32%5D=1&filter%5Bcpage%5D=1&cur_cat_oid=6&expand=&navoid=310&search_database=Filter#tt3232) for transfer credit to other institutions. Three-hour lecture; one three-hour laboratory period per week.

* **Required Materials**

Text: (1) ***Fundamentals*** ***of*** ***Anatomy*** ***and*** ***Physiology***, Frederic H. Martini, 9th edition or newer, Prentice Hall Publisher.

(2) *Human Anatomy & Physiology I Laboratory Exercises Manual*

Other required materials

Dissecting kit, Non-latex disposable gloves, Lab coat & Safety goggles.

* **Learning Outcomes**

Upon successful completion of this class a student should be able to:

Course Outcomes: Human and Anatomy and Physiology II

1. The student will be able to compare the physiology of the endocrine system and the nervous systems using practical examples and/or practical applications.
2. The student will be able to compare the cellular components of the endocrine system with those of other tissues and systems and describe how endocrine organs are controlled.
3. The student will be able to compare the major chemical classes of hormones and describe the chemical composition of each class of hormones.
4. The student will be able to explain in detail the general mechanisms of hormonal action.
5. The student will be able to explain how hormones interact to produce coordinated physiological response.
6. The student will be able to name the major endocrine glands of the body describe their location in the body and the hormones they secrete.
7. The student will be able to identify the hormones that are especially important to normal growth, and discuss their roles.
8. The student will be able to explain the action of the hormones secreted by the various endocrine glands of the body.
9. The student will be able to discuss and give examples of both positive and negative feedback mechanisms.
10. The student will be able to describe the interrelationship of neural and hormonal control.
11. The student will be able to discuss the consequences of over secretion and under secretion of various hormones.
12. The student will be able to describe the effects that hormones have on behavior.
13. The student will be able to distinguish between physical and psychological stress.
14. The student will be able to describe the general stress response.
15. The student will be able to name the organs of the digestive system and give their location in the body.
16. The student will be able to describe the structure of the wall of the alimentary canal (G.I. Tract).
17. The student will be able to demonstrate knowledge of regulatory control of the nervous and endocrine systems over the alimentary canal (G.I. Tract).
18. The student will be able to describe the mixing and movements of material through the alimentary canal (G.I. Tract).
19. The student will demonstrate knowledge of the swallowing mechanism.
20. The student will demonstrate knowledge of the phases and the regulation of gastric secretion.
21. The student will demonstrate knowledge of the organs of digestion in the mouth and their role in the digestive process.
22. The student will be able to name, give the location and function of the salivary glands.
23. The student will be able to give the structural make-up and the functions of the pharynx and esophagus.
24. The student will demonstrate knowledge of the structural organization and the function of the stomach.
25. The student will demonstrate knowledge of the structure and function of the small and large intestines.
26. The student will demonstrate knowledge of the structure and function of the pancreas.
27. The student will demonstrate knowledge of the structure and function of the liver.
28. The student will be able to list the enzymes secreted by the various digestive glands or organs and describe the function of each.
29. The student will demonstrate knowledge of the hydrolysis of carbohydrates, neutral fats, and proteins.
30. The student will be able to explain how the products of digestion are absorbed.
31. The student will acquire knowledge of some common disorders of the digestive system.
32. The student will be able to define and explain: nutrition, nutrients, and essential nutrients.
33. The student will demonstrate knowledge of the basic food groups and their major sources.
34. The student will be able to explain how carbohydrates, lipids, proteins, and amino acids are utilized by the cells.
35. The student will be able to name the major vitamins needed by the body, give their chemical make up and describe the general function of each.
36. The student will be able to explain the consequences of vitamin deficiencies.
37. The student will be able to name and describe the general functions of the major minerals and trace elements essential to man.
38. The student will demonstrate knowledge of basic metabolism and temperature regulation.
39. The student will demonstrate knowledge of the composition and functions of the blood.
40. The student will be able to distinguish between the various types of cells found in blood.
41. The student will be able to list the major components of blood plasma and give their functions.
42. The student will be able to explain the formation of blood cells and how it is controlled.
43. The student will demonstrate knowledge of the clotting mechanism of blood.
44. The student will be able to explain the basis for blood typing and the methods used to avoid adverse reaction following blood transfusion.
45. The student will be able to describe how blood reaction may occur between fetal and maternal tissues and how such reaction can be prevented.
46. The student will demonstrate knowledge of the heart and blood vessels both structurally and functionally.
47. The student will be able to describe the cardiac conduction system.
48. The student will demonstrate knowledge of the cardiac cycle and the ECG.
49. The student will demonstrate knowledge of the regulation of heart function and blood pressure.
50. The student will demonstrate knowledge of the division of the circulatory system (circulatory circuits).
51. The student will be able to identify and describe the location of the major arteries and veins of the human body in both the pulmonary and systemic circuits.
52. The student will demonstrate knowledge of both hepatic and renal portal systems of circulation.
53. The student will demonstrate knowledge of fetal circulation.
54. The student will be able to define cardiac arrhythmia and describe several forms for arrhythmia.
55. The student will demonstrate knowledge of some disorders of the blood/cardiovascular system.
56. The student will demonstrate knowledge of the structure and function of the lymphatic vessels, nodes, and associated organs.
57. The student will demonstrate knowledge of the composition and circulation of lymphatic fluid.
58. The student will be able to distinguish between specific and nonspecific body defenses and provide an example for each.
59. The student will be able to demonstrate and/or explain how lymphocytes are formed and their role in the immune mechanisms.
60. The student will be able to name the major types of immunoglobulins and discuss their functions.
61. The student will be able to distinguish between primary and secondary immune responses as well as active and passive immunity.
62. The student will be able to explain how allergic reactions and tissue rejection reaction are related to the immune response.
63. The student will demonstrate knowledge of the structure and function of the organs of the respiratory systems and air passageways.
64. The student will demonstrate knowledge of the respiratory musculature and pressure changes produced by their action.
65. The student will demonstrate knowledge of physical and chemical changes associated with oxygen and carbon dioxide transport.
66. The student will demonstrate knowledge of the respiratory volumes and exchanges.
67. The student will demonstrate knowledge of the phases of the respiratory process.
68. The student will review the major events that occur during cellular respiration and explain how oxygen is utilized by cells.
69. The student will demonstrate knowledge of the mechanisms of regulation the respiratory system.
70. The student will demonstrate knowledge of some common physiological modification of the respiratory process.
71. The student will become familiar with some common respiratory disorders and their effect on the respiratory process.
72. The student will demonstrate knowledge of the structure, location, and functions of the kidneys.
73. The student will demonstrate knowledge of the structures, locations, and functions of the ureters, the bladder, and the urethra.
74. The student will be able to trace the pathway of blood through the renal portal system.
75. The student will demonstrate knowledge of the kidney tissues.
76. The student will be able to describe the nephron and explain the functions of its parts.
77. The student will demonstrate knowledge of the physiology of urine formation.
78. The student will be able to explain glomerular filtration and describe the composition of the filtrate.
79. The student will be able to discuss the composition of urine.
80. The student will demonstrate knowledge of the regulation of kidney functions.
81. The student will be able to discuss the process of micturition and explain how it is controlled.
82. The student will be able to describe the distribution of body fluids into the major fluid compartments.
83. The student will be able to explain what is meant by water and electrolyte balance and discuss why it is important.
84. The student will demonstrate knowledge of the mechanisms controlling the distribution of the body’s water.
85. The student will demonstrate knowledge of the mechanisms of ionic homeostasis (electrolyte homeostasis).
86. The student will demonstrate knowledge of the relationship between trauma and water distribution.
87. The student will be able to explain factors leading to water intoxication and dehydration and their effects on the water/electrolyte balance.
88. The student will be able to explain or define edema and list several causes and their effects.
89. The student will be able to understand and describe the consequences of sodium and potassium imbalance as well as imbalances in various other electrolytes in the human body.
90. The student will be able to define pH and describe the major sources of hydrogen ions.
91. The student will demonstrate knowledge of the acid-base balance and buffer system.
92. The student will be able to explain acidosis and alkalosis, conditions that cause them to occur and how they may be controlled.
93. The student will be able to state the general function of the reproductive system.
94. The student will be able to describe the process of gametogenensis (spermatogenesis and oogenesis).
95. The student will be able to describe the structure, location and function of the female reproductive anatomy.
96. The student will be able to describe the structure, location and function of the female reproductive anatomy.
97. The student will be able to describe how hormones control the activities of the female reproductive system and how they are related to the development of the female secondary sexual characteristics.
98. The student will be able to describe how hormones control the activities of the female reproductive system and how they are related to the development of the female secondary sexual characteristics.
99. The student will be able to describe the physiological changes relative to the menstrual cycle.
100. The student will be able to discuss the structure and function of the mammary glands.
101. The student will be able to explain fertilization and early embryonic development.
102. The student will be able to explain the physiological and anatomical changes experienced during pregnancy and the birth process.
103. The student will be able to discuss some common methods of contraception.
104. The student will be able to distinguish between growth and development.
105. The student will be able to describe the major events that occur during the period of cleavage.
106. The student will be able to explain how the primary germ layers originate and list the structures produced by each layer.
107. The student will be able to describe the formation and function of the placenta.
108. The student will be able to list and give the functions of the extra-embryonic membranes.
109. The student will be able to define the term fetus and discuss fetal development.
110. The student will be able to trace the general path of blood through the fetal circulatory system.
111. The student will demonstrate knowledge of the Mandolin Laws of the Genetics.
112. The student will demonstrate knowledge of the various forms of gene interaction.
113. The student will be able to describe how chromosomes control the inheritance of sex.
114. The student will be able to describe the patterns of sex-linked traits.
115. The student will be able to define nondisjuction of chromosomes and explain the genetic and/or developmental consequences.
116. The student will be able to discuss some common forms of human genetic diseases.
117. The student will be able to explain the role of DNA and RNA in inheritance.

**Grading**

* **Methods of Evaluation**

Your semester grade is out of 900 points. See breakdown below.

There are no “extra credit” assignments given. EVER.

Point Distribution

|  |  |
| --- | --- |
| Item | Possible Point total |
| 12 weekly Lecture quizzes each worth 10 points (lowest 2 will be dropped) | 100 points |
| 3 Unit Tests (100 questions each) | 300 points |
| 3 laboratory practical’s (70 points each) | 210 points |
| 11 weekly post-lab quizzes (lowest 2 will be dropped) | 90 points |
| Cumulative Final (200 questions) | 200 points |
| Semester total | 900 points |

* **Grading Policies**

Assessment

Lecture Portion: Points will be awarded from multiple assessment styles. Any and/or all of the following may be used: multiple choice, true/false, matching, fill in the blank, sort answer, and essay.

Laboratory Portion: There will be three lab practical exams given during the course of the semester. These lab practical’s will be based on your individual recall ability and will not be multiple choice, also, word banks will not be given.

* **Missed Work Make-Up Policy**

Quizzes in lecture and lab CANNOT be made up and they cannot be taken early.

Makeup tests will be granted on an individual basis only following a conference with the instructor; where the reason(s) for missing the test must be determined as mitigating circumstances beyond the control of the student such as, illness, death in the family, or change in condition of employment. All make-up tests will be scheduled at the **convenience of the instructor** (typically office hours) and ***must be made up within 48 hours*** *of the original test date and time.* Only one (1) Unit Test make-up will be allowed.

Laboratory exercises can be made up, please come see me to discuss alternate days and times that lab is being done. Lab practicals CANNOT be made up. There is a possibility of taking a lab practical with another section, on another day and time, but this MUST be discussed and approved prior. If you fail to discuss this with me and do not show up to a scheduled practical, you will receive a zero, with no option of taking it with another section.

* **Letter Grade Equivalents**

94.00 or higher = A

90 – 93 = A-

87 – 89 = B+

84 – 86 = B

80 – 83 = B-

74 – 76 = C

70 – 73 = C-

67 – 69 = D+

64 – 66 = D

60 – 63 = D-

59 or lower = F

**Classroom Policies**

* **Attendance:** Attendance to every lecture and lab is required. Failure to attend will affect your semester grade.
* **Communication:** All communication will occur by email or BlackBoard. Please make sure that you check your TRCC email or set it up to forward to another account. Check your email regularly to be informed of any changes in schedule.
* **Class Cancellation: If school is cancelled**, notification of cancellation due to inclement weather will be available by telephone by 6:00 am for daytime classes and by 2:30 pm for evening classes by calling the College's main telephone at (860) 215-9000, pressing 1, and listening to the taped announcement. The College’s website will also have announcements available by accessing the www.threerivers.edu home page. The myCommnet Alert Notification System will also be used to deliver important information regarding weather-related class cancellations, via both email messages and text messages, to registered individuals. To register, log on to your myCommnet account at http://my.commnet.edu/ and follow the link to myCommnet Alert.

**If class is cancelled by the instructor**, a notice will be placed on the classroom door and on BlackBoard. If time permits, students may be notified by a message via email.

* **Withdrawal Policy:** You may withdraw from this class any time up to and including November 5th, 2019 and you will receive a W grade on your transcript. However, you must complete a withdrawal form in the Registrar’s Office at the time of withdrawal; *if you merely stop attending classes you will be assigned a grade of F*. Any eligibility for refund of tuition is based on the date that the registrar receives the withdrawal.
* **Academic Integrity:** The effective operation of any organization is dependent on the honesty and goodwill of its members. In an organization devoted to the pursuit of knowledge, acting with integrity is essential to effective teaching and learning. Furthermore, academic dishonesty erodes the legitimacy of every degree awarded by the College. To emphasize the importance of academic integrity, Three Rivers Community College adheres to the Student Code of Conduct and Discipline Policy, as provided by the Connecticut State Colleges and Universities (CSCU) - Board of Regents for Higher Education. (Please refer to BlackBoard for the complete statement.)

**Some** of the behaviors that will be considered cheating are:

* + Communicating with another student during a quiz or exam
  + Copying material from another student during a quiz or exam or from any assignment being graded
  + Allowing another student to copy from your quiz, exam, or any assignment being graded
  + Use of unauthorized assistance on any assignment being graded
  + Use of unauthorized notes or books during a quiz or exam
  + Providing or receiving a copy of a quiz or exam used in the course
  + Use of a cell phone or pager to transmit information during a quiz or exam

**Tentative Schedule**

This is the tentative schedule – instructor reserves the right to change dates throughout the semester. It is your responsibility to attend class to learn of any changes in schedule.

*See the end of this syllabus for the schedule*

**School Policies**

Please refer to BlackBoard for a link to the entire policy.

* **Digication:** All students are required to maintain an electronic portfolio using the College template within Digication. Digication can be accessed at https://threerivers.digication.com.
* **Disability:** Three Rivers Community College (TRCC) is committed to the goal of achieving equal educational opportunity and full participation for individuals with disabilities. To this end, TRCC seeks to ensure that no qualified person is excluded from participation in, is denied the benefit of, or otherwise is subjected to discrimination in any of its programs, services, or activities.
* **Non-discrimination:** Three Rivers Community College does not discriminate on the basis of race, color, religious creed, age, sex, national origin, marital status, ancestry, present or past history of mental disorder, learning disability or physical disability, sexual orientation, gender identity and expression, or genetic information in its programs and activities.
* **Sexual Misconduct:** The Board of Regents for Higher Education (BOR) in conjunction with the Connecticut State Colleges and Universities (CSCU) is committed to insuring that each member of every BOR governed college and university community has the opportunity to participate fully in the process of education free from acts of sexual misconduct, intimate partner violence and stalking.

*\*ALL DATES ARE OPEN TO REVISONS NEEDED AT INSTRUCTORS DISCRETION\**

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| --- | --- | --- | --- |
| Date | Lecture | Monday Lab | Wednesday lab |
| 8/26-9/1 | Chapter 18 Endocrine | XXXXXXX | OSMOSIS/DIFFUSION  lab |
| 9/2-9/8 | **NO CLASS MON.**  **W:Quiz 1**  Chapter 18 Endocrine  Chapter 24 Digestive System | NO LAB  LABOR DAY | Endocrine Renal Lab |
| 9/9-9/15 | **M:Quiz 2**  Chapter 24 Digestive System | Endocrine Renal Lab | Dissection: Cat endocrine organs and GI organs  Wet lab: digestive system lab |
| 9/16-9/22 | **M:Quiz 3**  Chapter 24 Digestive System  Chapter 19 Blood | Dissection: Cat endocrine organs and GI organs  Wet lab: digestive system lab | Heart anatomy, blood flow (adult & fetal) & Heart Dissection |
| 9/23-9/29 | **M:Quiz 4**  Chapter 20 Heart | Heart anatomy, blood flow (adult & fetal) & Heart Dissection | **Practical #1**  Blood analysis |
| 9/30-10/6 | **M:Quiz 5**  Chapter 20 Heart | **Practical #1**  Blood analysis | RBC & WBC lecture and identification &  Human blood vessels |
| 10/7-10/13 | **M:UNIT TEST #1**  **(18, 24, 19, 20)**  W:Chapter 21  Blood Vessels | RBC & WBC lecture and identification &  Human blood vessels | Cat blood vessels |
| 10/14-10/20 | **W:** **Quiz # 6**  Chapter 22  Lymphatics and Immunity | Cat blood vessels | Human blood vessels &  Cat blood vessels |
| 10/21-10/27 | **M: Quiz #7**  Chapter 22  Lymphatics and Immunity  Chapter 23  The Respiratory System | Human blood vessels &  Cat blood vessels | **Practical 2**  ELISA |
| 10/28-11/3 | **M: Quiz #8**  Chapter 23  The Respiratory System | **Practical 2**  ELISA | Respiratory Anatomy  Respiratory Values lab  EKG |
| 11/4-11/10 | **M: Unit Test #2**  **(21, 22, 23)**  Chapter 26  Urinary System Chapter 27 Fluid, Electrolyte, and Acid–Base Balance | Respiratory Anatomy  Respiratory Values lab  EKG | Kidney dissection  Kidney anatomy  Nephron anatomy  Countercurrent exchange |
| 11/11-11/17 | **M:Quiz # 9**  Chapter 26  Urinary System Chapter 27 Fluid, Electrolyte, and Acid–Base Balance | Kidney dissection  Kidney anatomy  Nephron anatomy  Countercurrent exchange | Reproductive System Anatomy |
| 11/18-11/24 | **M:Quiz # 10**  Chapter 27 Fluid, Electrolyte, and Acid–Base Balance | Reproductive System Anatomy | Heredity and Genetics |
| 11/25-12/1  Thanksgiving | **M:Quiz #11**  Chapter 28 The Reproductive System | Heredity and Genetics | NO LAB |
| 12/2-12/8 | **M:Quiz #12**  Chapter 29 Development  **W:Unit Test #3** | **Practical #3** | **Practical #3** |
| 12/9-12/15 | M**:** Review for final  **W: Final Exam**  **11am-2pm** | **REVIEW SESSION CAFETERIA** | XXXXX |