# Course Description

Laboratory studies of the structure and functions of the systems included in BIO 108.

This course includes a hands-on experience, which will supplement and reinforce the material learned in the Anatomy and Physiology course.

# University Learning Outcomes (ULO)

* **ULO1:** Knowledge of Human Cultures and the Physical and Natural World
* **ULO2:** Intellectual and Practical Skills
* **ULO3:** Personal and Social Responsibility
* **ULO4:** Integrative and Applied Learning
* **ULO5:** Immersed in the Critical Concerns of the Sisters of Mercy of the Americas

# Program Learning Outcomes (PLO)

* **PLO1:** Synthesizes knowledge of nursing and the liberal arts and sciences as a basis for professional nursing practice.
* **PLO2:** Utilize professional judgment to formulate nursing decisions which reflect professional standards consistent with moral and ethical and legal principles.
* **PLO3:** Engages in reflective evaluation of self and other members of the healthcare team in accordance with the prevailing standards of care.
* **PLO4:** Collaborates with other health care providers and consumers in promoting the health and wellbeing of individuals, families, and communities.
* **PLO5:** Demonstrates responsibility and accountability in the use of the nursing process to deliver person centered care.
* **PLO6:** Utilize inter and intra professional communication and collaboration skills to deliver evidence-based care to promote the health and safety of individuals, families, and communities.
* **PLO7:** Applies leadership concepts, skills, and values to effectively implement patient safety and quality improvement initiatives in a variety of healthcare settings.
* **PLO8:** Creates a supportive environment through the therapeutic use of self when caring for individuals, families, and communities.
* **PLO9:** Demonstrates skills in using patient care technology, information systems, and communication devices that support safe nursing practice.
* **PLO10:** Integrates knowledge of social and cultural factors to deliver culturally sensitive care.
* **PLO11:** Advocates for social justice including a commitment to the health of vulnerable populations and the eliminations of health disparities to improve the human condition.
* **PLO12:** Articulates the value of pursuing practice excellence and lifelong learning to facilitate personal and professional development.

# Course Learning Outcomes (CLO)

* **CLO1:** Communicate effectively by demonstrating a basic command of the terminology of the field of anatomy and physiology. (PLO3)
* **CLO2:** Demonstrate professional competency by demonstrating the ability to apply the principles of anatomy and physiology in their field by knowledge of content, disease states, and pathology. (PLO3)
* **CLO3:** Demonstrate moral and ethical judgment by demonstrating the awareness of the prevention of disease and its spread. Students will demonstrate the ability to disinfect work surfaces and use hand washing to prevent contamination. (PLO2, 3)
* **CLO4:** Demonstrateproblem solving by demonstrating the ability to apply what students have learned in class to problems they will encounter in their professions. (PLO2, 3)
* **CLO5:** Students will learn the proper use of certain scientific instruments, such as the microscope, and understand their value and limitations. (PLO3)

# Student Expectations

Students are expected to:

* Ask probing and insightful questions related to course content.
* Make meaningful and relevant connections and application to their own learning process.
* Be productive and contributing members of class discussions.

# Laboratory Materials

You must order the laboratory kit from LabPaq to participate in this course. Follow the steps below to order your lab kit:

1. Go to the [Hands-On Labs (HOL) website](https://holscience.com/).
2. Select **ORDER** from the top menu, then **Order** again from the pull-down menu.
3. Enter the following log-in information and password:
   * + - Log-in: C002464
       - Password: labpaq
4. Select **Anatomy & Physiology** from the sidebar.
5. Choose the item **SKU:** LP-2001-AP-01 **Code:** AP-1
6. Follow the prompts to complete your order.
7. Also, order the basic microscope ([600x Microscope](http://www.holscience.com/mm5/merchant.mvc?Screen=PROD&Product_Code=10-0415-00-01)). Item information **SKU:** 10-0415-00-01 **Code:** 600x Microscope. You **do not** need the oil immersion lens with the microscope.

**Accessing Your Lab Manual**

1. After you have your LabPaq, access the **Lab Manual** with the following link: **Faculty: Enter URL address of your lab course** .
2. Enter the **Kit Code** (14-digit number) on the outside of the box that contains your LabPaq. The Kit Code is a 14-digit number.

# Suggested Point Values

|  |  |  |
| --- | --- | --- |
| **Assessment** | **Point Value** | **Due** |
| **Week 1** |  |  |
| N/A | N/A | N/A |
| **Week 2** |  |  |
| Laboratory 1: The Cardiovascular System: The Heart | 100 |  |
| Laboratory 2: The Cardiovascular System: The Heart Vessels | 100 |  |
| **Week 3** |  |  |
| Laboratory 3: Lymphatic System | 100 |  |
| **Week 4** |  |  |
| Laboratory 4: Digestive System | 100 |  |
| Laboratory 5: Nutrition and Metabolism | 100 |  |
| **Week 5** |  |  |
| Laboratory 6: Respiratory System | 100 |  |
| Laboratory 7: Respiratory Physiology | 100 |  |
| **Week 6** |  |  |
| Laboratory 8: Urinalysis | 100 |  |
| Laboratory 9: Anatomy of the Urinary System | 100 |  |
| **Week 7** |  |  |
| Laboratory 10: Reproductive System | 100 |  |
| **Week 8** |  |  |
| N/A | N/A | N/A |
| **Total Points** | **1000** |  |

**Grading Scale**

|  |  |
| --- | --- |
| **Grade** | **Range** |
| A | 93-100 |
| A- | 90-92 |
| B+ | 87-89 |
| B | 83-86 |
| B- | 82-80 |
| C+ | 77-79 |
| C | 73-76 |
| C- | 70-72 |
| D+ | 67-69 |
| D | 63-66 |
| D- | 60-62 |
| F | 59 |

# Course Schedule

|  |  |  |
| --- | --- | --- |
| **Week** | **Start** | **End** |
| One | <insert start date> | <insert end date> |
| Two |  |  |
| Three |  |  |
| Four |  |  |
| Five |  |  |
| Six |  |  |
| Seven |  |  |

# Weekly Learning Modules

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| **Week One: Blood** | | |
| ***Learning Objectives*** | ***Alignment*** | |
| * 1. N/A |  | |
| ***Resources, Activities, and Preparation***  *Utilize these resources and complete these activities in preparation for your graded assignments.* | ***Alignment*** | ***AIE*** |
| **Tutorials**  During this course, you will be asked to use and participate in various technologies to complete activities and assignments.  **Review** the tutorials available on Blackboard as needed.  **Click** the **Student Resources** button from the menu on the left. | N/A | N/A |
| **Weekly Participation and Discussion**  The purpose of the weekly discussions is to provide you with a way to synthesize the concepts presented in this course. Each week, you will respond to the discussion questions with a substantive post of 200 to 250 words that addresses all the prompts for the question by 11:59 p.m. EST of the listed due date. By the conclusion of each week, Sunday at 11:59 p.m. EST, you will make at least one substantive comment of 100 to 150 words to three of your classmates’ posts for each assigned discussion question. Your comments must further the discussion by following the RISE Model for meaningful feedback. It is recommended that you check in periodically throughout the week to ensure that you are meeting the participation requirement.  **Review** the RISE Model for Peer Feedback, located on Blackboard. | N/A | N/A |
| ***Laboratory***  *Students must complete the laboratory assignment(s) using the Hands-On Lab kit.* | ***Alignment*** | ***AIE*** |
| **Order** your lab kit and microscope from Hands-On Labs Inc. during the first week of class | N/A | N/A |

# Faculty Notes

**Course Setup**

**General Questions and Discussion Forum:** This course includes a discussion forum for general questions, comments, and concerns. This forum is intended for any course-related commentary not found within a specific weekly discussion. This forum is not graded. Make sure to monitor this forum for student posts. You are encouraged to make an announcement advertising this forum and monitor and post regularly to build engagement.

**Adobe Connect:** Consider posting an announcement asking students to submit any questions or topics they would like addressed ahead of time. The instructor can then utilize those questions that come up in the first part of the week to tailor the live Adobe Connect class session that would be scheduled toward the later part of the week. That 1-hour synchronous session will allow students the opportunity to go over any questions they had with the homework and clarify any misconceptions they have about the course content. All Adobe Connect sessions should be recorded and a link to the recording should be posted to the course page so any student who misses the session can review it later in the week.

*Note:* It is the instructor’s choice as to what day they will schedule the Adobe Connect Live Session, but it is recommended that they schedule this session for Wednesday of the week so students have plenty of time to review their homework prior to the deadline on Sunday.

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| Week Two: Cardiovascular System | |  |  |
| ***Learning Objectives*** | | ***Alignment*** | |
| * 1. Demonstrate basic laboratory techniques relevant to the field of anatomy and physiology. | | CLO1, CLO2, CLO3, CLO4, CLO5 | |
| * 1. Gather, analyze, and interpret data from anatomy and physiology laboratory observations. | | CLO1, CLO2, CLO3, CLO4, CLO5 | |
| ***Laboratory***  *Students must complete the laboratory assignment(s) using the Hands-On Lab kit.* | | ***Alignment*** | ***AIE*** |
| **Laboratory 1: The Cardiovascular System: The Heart**  **Resources from Lab Manual:** The Heart Lab Guide; Blood Lab Report Template  **Read** the entire The Heart Lab Guide before you begin the lab.  **Complete** the Heart Lab in which you will do the following:     * View the microscopic structure of cardiac muscle. * Identify the gross anatomical structures of the human heart and determine the path of blood flow through the heart. * Dissect a sheep heart to view and identify its major gross anatomical structures.   *Note*: This lab will take approximately 4 hours to complete.  **Complete** the lab report, which should include the following:   * Photographs of you actually performing the laboratory * References (beyond the textbook and the lab manual)   **Submit** The Heart Lab Report to the instructor via Blackboard. | | 2.1, 2.2 | Lab work =  **4 hours** |
| **Laboratory 2: The Cardiovascular System: The Heart Vessels**  **Resources:** Heart Vessels Lab Guide; Heart Vessels Lab Report Template  **Read** the entire Heart Vessels Lab Guide before you begin the lab.  **Complete** the Heart Vessels Lab, in which you will do the following:   * Describe the differences and similarities between the histology of an artery and a vein. * Compare the microscopic view of an artery and a vein. * Dissect a fetal pig to view major veins and arteries of the neck and chest.   *Note*: This lab will take approximately 4 hours to complete.  **Complete** the lab report, which should include the following:   * Photographs of you actually performing the laboratory * References (beyond the textbook and the lab manual)   **Submit** the Heart Vessels Lab Report to the instructor via Blackboard. | | 2.1, 2.2 | Lab work =  **4 hours** |
| **Total** |  |  |  |

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| Week Three: Lymphatic System and Immunity | |  |  |
| ***Learning Objectives*** | | ***Alignment*** | |
| * 1. Demonstrate basic laboratory techniques relevant to the field of anatomy and physiology. | | CLO1, CLO2, CLO3, CLO4, CLO5 | |
| * 1. Gather, analyze, and interpret data from anatomy and physiology laboratory observations. | | CLO1, CLO2, CLO3, CLO4, CLO5 | |
| ***Laboratory***  *Students must complete the laboratory assignment(s) using the Hands-On Lab kit.* | | ***Alignment*** | ***AIE*** |
| **Laboratory 3: Lymphatic System**  **Resources from Lab Manual:** Lymphatic System Lab Guide; Lymphatic System Lab Report Template  **Read** the entire Lymphatic System Lab Guide before you begin the lab.  **Complete** the Lymphatic System Lab, in which you will do the following:   * Describe the anatomical structure of the lymphatic system and relate the histology of the lymph nodes, thymus, spleen, and tonsils to their role in the lymphatic system and immunity. * Observe the antigen–antibody immune response.   *Note*: This lab will take approximately 2 hours to complete.  **Complete** the lab report, which should include the following:   * Photographs of you actually performing the laboratory * References (beyond the textbook and the lab manual)   **Submit** The Lymphatic System Lab Report to the instructor via Blackboard. | | 3.1, 3.2 | Lab work =  **2 hours** |
| **Total** |  |  |  |

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| Week Four: Digestion and Nutrition | |  |  |
| ***Learning Objectives*** | | ***Alignment*** | |
| * 1. Demonstrate basic laboratory techniques relevant to the field of anatomy and physiology. | | CLO1, CLO2, CLO3, CLO4, CLO5 | |
| * 1. Gather, analyze, and interpret data from anatomy and physiology laboratory observations. | | CLO1, CLO2, CLO3, CLO4, CLO5 | |
| ***Laboratory***  *Students must complete the laboratory assignment(s) using the Hands-On Lab kit.* | | ***Alignment*** | ***AIE*** |
| **Laboratory 4: Digestive System**  **Resources from Lab Manual:** Digestive System Lab Guide; Digestive System Lab Report Template  **Read** the entire Digestive System Lab Guide before you begin the lab.  **Complete** the Digestive System Lab, in which you will do the following:   * Describe the function of the digestive system. * Describe the properties of the gastrointestinal tract and view the gastrointestinal tract wall through microscopy. * Identifying the endocrine and exocrine cells of the pancreas and explain the role of enzymes in digestion. * Determine the effect of enzymes on the rate of carbohydrate, protein, and lipid digestion. * Identify the digestive system organs of the fetal pig through dissection.   *Note*: This lab will take approximately 4 hours to complete.  **Complete** the lab report, which should include the following:   * Photographs of you actually performing the laboratory * References (beyond the textbook and the lab manual)   **Submit** The Digestive System Lab Report to the instructor via Blackboard. | | 4.1, 4.2 | Lab work =  **4 hours** |
| **Laboratory 5: Nutrition and Metabolism**  **Resources from Lab Manual:** Nutrition and Metabolism Lab Guide; Nutrition and Metabolism Lab Report Template  **Read** the entire Nutrition and Metabolism Lab Guide before you begin the lab.  **Complete** the Nutrition and Metabolism Lab, in which you will do the following:   * Define *nutrition* and *metabolism* and describe the roles of macronutrients and micronutrients in the human body. * Describe the process by which food is metabolized throughout the digestive system and the process of nutrient absorption and use in the body. * Analyze a typical diet, which will require you to determine total daily energy expenditure and log personal nutrient intake for one day. * Examine your diet and activity levels relative to recommended levels and propose strategies for change and expected outcomes.   *Note*: This lab will take approximately 2 hours to complete.  **Complete** the lab report, which should include the following:   * Photographs of you actually performing the laboratory * References (beyond the textbook and the lab manual)   **Submit** The Nutrition and Metabolism Lab Report to the instructor via Blackboard. | | 4.1, 4.2 | Lab work =  **2 hours** |
| **Total** |  |  |  |

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| Week Five: Respiratory System | |  |  |
| ***Learning Objectives*** | | ***Alignment*** | |
| * 1. Demonstrate basic laboratory techniques relevant to the field of anatomy and physiology. | | CLO1, CLO2, CLO3, CLO4, CLO5 | |
| * 1. Gather, analyze, and interpret data from anatomy and physiology laboratory observations. | | CLO1, CLO2, CLO3, CLO4, CLO5 | |
| ***Laboratory***  *Students must complete the laboratory assignment(s) using the Hands-On Lab kit.* | | ***Alignment*** | ***AIE*** |
| **Laboratory 6: Respiratory System**  **Resources from Lab Manual:** Respiratory System Lab Guide; Respiratory System Lab Report Template  **Read** the entire Respiratory System Lab Guide before you begin the lab.  **Complete** the Respiratory System Lab, in which you will do the following:   * Describe the function of the respiratory system. * Examine the structure of the lungs and trachea through microscopy and dissection. * Follow the pathway of air from the mouth or nose to the lungs on the fetal pig.   *Note*: This lab will take approximately 4 hours to complete.  **Complete** the lab report ,which should include the following:   * Photographs of you actually performing the laboratory * References (beyond the textbook and the lab manual)   **Submit** the Respiratory System Lab Report to the instructor via Blackboard. | | 5.1, 5.2 | Lab work =  **4 hours** |
| **Laboratory 7: Respiratory Physiology**  **Resources from Lab Manual:** Respiratory Physiology Lab Guide; Respiratory Physiology Lab Report Template  **Read** the entire Respiratory Physiology Lab Guide before you begin the lab.  **Complete** the Respiratory Physiology Lab, in which you will do the following:   * Describe the function of the respiratory system, the components of the respiratory system, and the meaning of external respiration. * Identify the pathway of essential gases from the external air into and out of all cells of the body. * Examine the structure of the lungs and trachea through microscopy. * Measure human respiratory values during rest and exercise.   *Note*: This lab will take approximately 2 hours to complete.  **Complete** the lab report which should include the following:   * Photographs of you actually performing the laboratory * References (beyond the textbook and the lab manual) * **Submit** the Respiratory Physiology Lab Report to the instructor via Blackboard. | | 5.1, 5.2 | Lab work =  **2 hours** |
| **Total** |  |  |  |

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| Week Six: Urinary System, Water, Electrolyte, and Acid-Base Balance | |  |  |
| ***Learning Objectives*** | | ***Alignment*** | |
| * 1. Demonstrate basic laboratory techniques relevant to the field of anatomy and physiology. | | CLO1, CLO2, CLO3, CLO4, CLO5 | |
| * 1. Gather, analyze, and interpret data from anatomy and physiology laboratory observations. | | CLO1, CLO2, CLO3, CLO4, CLO5 | |
| ***Laboratory***  *Students must complete the laboratory assignment(s) using the Hands-On Lab kit.* | | ***Alignment*** | ***AIE*** |
| **Laboratory 8: Urinalysis**  **Resources from Lab Manual:** Urinalysis Lab Guide; Urinalysis Lab Report Template  **Read** the entire Urinalysis Lab Guide before you begin the lab.  **Complete** the Urinalysis Lab, in which you will do the following:   * Study the overall importance of urinalysis, and identify parameters that may be used in urinalysis and their importance to determining the health of an individual. * Examine the effects of hydration levels on urinalysis parameters.   *Note*: This lab will take a minimum of 2 hours and 30 minutes to complete.  **Complete** the lab report, which should include the following:   * Photographs of you actually performing the laboratory * References (beyond the textbook and the lab manual)   **Submit** the Urinalysis Lab Report to the instructor via Blackboard. | | 6.1, 6.2 | Lab work =  **2.5 hours** |
| **Laboratory 9: Anatomy of the Urinary System**  **Resources from Lab Manual:** Anatomy of the Urinary System Lab Guide; Anatomy of the Urinary System Lab Report Template  **Read** the entire Anatomy of the Urinary System Lab Guide before you begin the lab.  **Complete** the Anatomy of the Urinary System Lab, in which you will do the following:   * Learn the overall function of the urinary system, including the general function of the kidneys, ureters, bladder, and urethra. * Examine a microscopic view of a kidney and the wall of a urinary bladder. * Dissect a sheep kidney and view the internal structures. * Dissect a fetal pig to view the major components of the urinary system. Examine the effects of hydration levels on urinalysis parameters   *Note*: This lab will take approximately 4 hours to complete.  **Complete** the lab report, which should include the following:   * Photographs of you actually performing the laboratory * References (beyond the textbook and the lab manual) * **Submit** the Anatomy of the Urinary System Lab Report to the instructor via Blackboard. | | 6.1, 6.2 | Lab work =  **4 hours** |
| **Total** |  |  |  |

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| Week Seven: Reproductive Systems | |  |  |
| ***Learning Objectives*** | | ***Alignment*** | |
| * 1. Demonstrate basic laboratory techniques relevant to the field of anatomy and physiology. | | CLO1, CLO2, CLO3, CLO4, CLO5 | |
| * 1. Gather, analyze, and interpret data from anatomy and physiology laboratory observations. | | CLO1, CLO2, CLO3, CLO4, CLO5 | |
| ***Laboratory***  *Students must complete the laboratory assignment(s) using the Hands-On Lab kit.* | | ***Alignment*** | ***AIE*** |
| **Laboratory 10: Reproductive System**  You will describe differences in male and female reproductive anatomy and explain the functions of the reproductive organs. You will also explain spermatogenesis and oogenesis and explain the events of the menstrual cycle. Additionally, you will view the microscopic structures of the testis and ovary and dissect a fetal pig to identify its reproductive structures.  **Resources from Lab Manual:** Reproductive System Lab Guide; Reproductive System Lab Report Template  **Read** the entire Reproductive System Lab Guide before you begin the lab.  **Complete** the Reproductive System Lab, in which you will do the following:   * Provide the histology of the ovary and testis. * Identify the reproductive structures on the fetal pig.   *Note*: This lab will take approximately 4 hours to complete.  **Complete** the lab report, which should include the following:   * Photographs of you actually performing the laboratory * References (beyond the textbook and the lab manual)   **Submit** the Reproductive System Lab Report to the instructor via Blackboard. | | 7.1, 7.2 | Lab work =  **4 hours** |
| **Total** |  |  |  |

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| --- | --- | --- | --- |
| Week Eight: Reproductive Systems | |  |  |
| ***Learning Objectives*** | | ***Alignment*** | |
| * 1. N/A | |  | |
| ***Laboratory***  *Students must complete the laboratory assignment(s) using the Hands-On Lab kit.* | | ***Alignment*** | ***AIE*** |
| **Finish** up all labs this week. Lab reports for all labs must be submitted by 11:59 p.m. (Eastern Time) on Sunday. | | VARIES |  |
| **Total** |  |  |  |

# Breakdown of Academic Instructional Equivalencies

|  |  |
| --- | --- |
|  | **AIE Hours** |
| **Week 1** |  |
| Required |  |
| Supplemental |  |
| **Week 2** |  |
| Required | 8 |
| Supplemental |  |
| **Week 3** |  |
| Required | 2 |
| Supplemental |  |
| **Week 4** |  |
| Required | 6 |
| Supplemental |  |
| **Week5** |  |
| Required | 6 |
| Supplemental |  |
| **Week 6** |  |
| Required | 6.5 |
| Supplemental |  |
| **Week 7** |  |
| Required | 4 |
| Supplemental |  |
|  |  |
| **Total Required Hours** | 32.5 |
| **Total Supplemental Hours** |  |
| **Total Hours** | 32.5 |