COURSE SYLLABUS

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SECTION 1: COURSE INFORMATION

Format: Eight weeks.

Course ID: NSCI 1034

Course Title: Life Science

College: College of Unrestricted Education – Department of Foundational Core

Prerequisites: None.

Credit Hours: 4

Instructor: See the online course in MyFIRE for instructor contact information and availability.

Course Description

The content of this course includes the major biological principles and their application to the general health and well-being of humankind. Problem solving and explanation of biological phenomena is expected to be the basic process development approach.

This is a laboratory course and includes hands-on applied technology and field-oriented experiences using scientific inquiry for discovery and problem solving.

Course Overview

This course will introduce you to what science is and how the scientific method is a systematic approach followed in science. As we focus on journeying through the amazing human body, we will learn about the various organ systems – their components and review disorders and diseases associated with each one. I hope you will be able to see how God designed each structure with a purpose in mind and how the various cells, tissues, organs within each organ system and all the organ system live as a community and serve to glorify God by doing what they were created to do. As you study about the human body, I pray you will praise His workmanship!
Job 36: 22-25 "Do you have any idea how powerful God is? Have you ever heard of a teacher like him? Has anyone ever had to tell him what to do, or correct him, saying, 'You did that all wrong!'? Remember, then, to praise his workmanship, which is so often celebrated in song. Everybody sees it; nobody is too far away to see it. 26 "Take a long, hard look. See how great he is—infinite, greater than anything you could ever imagine or figure out!

Course Workload

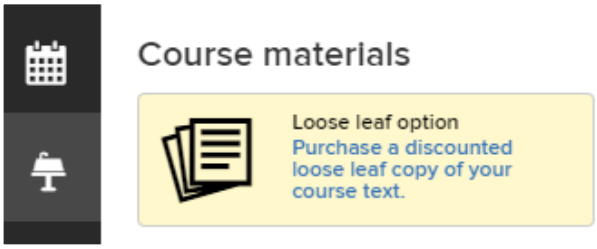
Time spent on course assignments will vary by student depending on familiarity with course content, reading rate of speed, writing rate of speed, and other individual factors. Based on averages for most students, it is estimated that the course workload estimate for this course is 68.08 (8.51 hours per week).

Course Materials

This course is utilizing Follett Access®, a new and convenient program designed to ensure every student has the course materials they need to succeed. When you register for this course, the required course materials will be ordered for you, and the cost of the materials will be applied to your student account as a course fee. This feature enables you to identify the full cost of your course upfront with no surprises of additional out of pocket expenses for required course materials.
Once you are registered in the Student Information System (JICS) and you gain

access to the course, you will automatically have access to the required course materials.

If a physical (print) copy of course textbook is preferred, a request can be sent from within the McGraw Hill course under the 'Course Materials' title on the left-hand side of the page (screenshot of the location below)



If you have questions about the cost of your course materials, please access your financial statement through the Student Information System (JICS). The cost will be listed as a course material(s) fee.

Grades: Grades that appear in McGraw Hill are not reflective of course grades; course grades will appear in MyFIRE only.

Disclaimer: The resources utilized in this course provide information, thoughts and insights that should encourage critical thinking on the part of the student. Please note as well that as an Assembly of God institution, Southeastern University does not necessarily endorse specific personal, religious, philosophical, or political positions found in these resources.

Course Topics

The purpose of this course is to introduce, reinforce, and measure learning on the following topics:

- The Scientific Method, Biological hierarchy of life
- Cells, Tissues, Organs and Organ Systems of the Human Body
- Integumentary System, Cardiovascular System, Blood, Digestive System, Respiratory System, Skeletal System, Muscular System, Nervous and Sensory Systems

Intended Learning Outcomes

As a result of reading, study, and assessments in this course, the student should be able to:

1. Obtain a basic understanding of the human body on the cellular, tissue, organ, and organ system levels.
2. Obtain a greater appreciation for science generally and the human body particularly.
3. Interact intelligently with ethical issues related to medicine and the Christian faith that are often raised in contemporary society.
4. Achieve competency using electronic, online class materials.

Late Work

Work ahead: For planned events (mission trips, vacations, surgeries) you are invited to work ahead in order to submit work by the due date. No permission is needed.

Request an extension: If you know you will not be able to turn work in on time, contact your professor at least 24 hours before the assignment is due. Let the professor know about your circumstances and when you can turn the work in. If the professor decides to grant you an extension and you get the

work in when you say you will, there will not be a penalty. You should only request an extension when something unforeseen comes up that you have no control over; a professor has no obligation to grant an extension and will be less inclined to do so if you are asking for one every week.

Late work: without prior arrangements, late work* submitted within one week of the original due date will be considered for partial credit. Work will ONLY be accepted for the first seven days after it is due. NO WORK will be accepted past the last day of the course.

*Discussion Posts: late participation in discussion forums is not accepted for late credit. The purpose of the discussion forum is to engage with your classmates on substantive ideas related to the course material, and your classmates will not revisit forums past the due dates. Similarly, professors will not revisit forums to grade past discussion due dates.

Professors of Foundational Core courses have been instructed to follow this policy to ensure fairness across all FC classes. Your professor will work with you if true emergencies occur, but your busy schedule will not be considered an emergency. If you have travel, a vacation, a wedding, or any other plannable event, it is up to you to communicate with your instructor to avoid grade penalties.

Extra Credit

None accepted.

SECTION 2: SOUTHEASTERN POLICIES

Academic Policies

View this link to see Southeastern's Policies regarding SEU's Mission and Vision Statements, Title IX Statement, Student Services, Class Participation, Official Email, MyFIRE Use, Technical Difficulties, Technical Support, Disability Statement, Academic Honesty, Course Evaluation, Official Withdrawal, Grading Scale, and Netiquette.

SECTION 3: COURSE SCHEDULE

The **Course Schedule** provides a listing of your work in this course. The assessments are listed by Module and include the due dates and point values.

Note: Assignments are due by 11:59 p.m. EST on the due date, unless otherwise noted.

AIM, LEARN, AND APPLY DESCRIPTIONS

Aim

 When you see the Aim icon, you will be introduced to topics and ideas that will be covered throughout this module. The AIM will also provide you with a glimpse into your learning objectives and an introduction to this module.

Learn

 When you see the Learn icon, all of your reading assignments will be listed and may include additional resources that your instructor is providing to help you complete the activities and assessments for the module.

Apply

 When you see the Apply Icon, it will be time to demonstrate your learning for the module. The items here are those in which you'll be graded and may include discussions, activities, assignments, quizzes, exams, and projects.

MODULE 1

XX/XX/XX – XX/XX/XX

Aim

Be sure you read the learning outcomes that your instructor has set for this week and then do your best to accomplish them.

- Explain the seven basic characteristics that are common to all living organisms.
- Define the term biology.
- List and understand the sequence of the eleven levels of organization of life.
- List the levels of taxonomy that help biologists organize organisms.
- Define the terms homeostasis, science, metabolism, development, evolution, genes, and adaptation.
- Identify the steps of the scientific method, how to make sense of a scientific study, and the challenges of science.
- Discuss public issues related to science, such as environmental impact.

Learn

This section lists all your reading assignments and may include additional resources that your instructor is providing to help you complete the activities and assessments for the week.

- Read: Chapter 1: Exploring Life and Science

Apply

Now you're ready to demonstrate your learning for the week. The items below are those on which you'll be graded this week and may include discussions, activities, assignments, quizzes, exams, and projects.

- Practice Activities for Week 1

- Due: Thursday
- Points: 100 (one chapter)

- Discussion for Week 1
  - Due: Saturday, Tuesday
  - Points: 100 (60 points for the initial post; 20 points for each response post (40 total))
- Homework for Week 1
  - Due: Saturday
  - Points: 100 (one homework assignment)
- Virtual Labs for Week 1
  - Due: Tuesday
  - Points: 100 (50 points for each lab; two labs)

MODULE 2:
XX/XX/XX – XX/XX/XX

Aim

- Identify the components of a human cell and state the function of each
- Distinguish between the structure of a prokaryotic cell and that of a eukaryotic cell
- Describe the structure of the plasma membrane and list the types of molecules found in the membrane
- Distinguish among diffusion, osmosis, and facilitated transport and state the role of each in the cell. Know the difference between passive and active transport
- Describe the structure of the nucleus and all the other organelles of the endomembrane system
- Describe the four types of tissues and provide a general function for each
- Describe the general structure and function of human skin
- Summarize the function of each organ system in the human body
- Discuss medical applications based on knowledge of tissues and organs and related advances in bioengineering and regenerative medicine

Learn

- Read: Chapter 3: Cell Structure and Function
- Read: Chapter 4: Organization and Regulation of Body

Apply

- Practice Activities for Week 2
    - Due: Thursday

- Points: 200 (100 points for each; two chapters)

- Discussion for Week 2
  - Due: Saturday, Tuesday
  - Points: 100 (60 points for the initial post; 20 points for each response post (40 total))
- Homework for Week 2
  - Due: Saturday
  - Points: 200 (100 points for each; two homework assignments)
- Virtual Labs for Week 2
  - Due: Tuesday
  - Points: 200 (100 points for each lab; two labs)

MODULE 3:
XX/XX/XX – XX/XX/XX

Aim

- Identify the components and the functions of the cardiovascular system.
- Identify the difference between arteries and veins and explain the loop of blood flow.
- Identify the structure and chambers of the human heart and describe the flow of blood through the human heart.
- Identify how pulse rate relates to heart rate, what blood pressure is, and the difference between systolic and diastolic pressure.
- Compare blood flow in the pulmonary and systemic circuits.
- Explain the underlying causes of cardiovascular disease in humans.
- Summarize how advances in medicine can treat cardiovascular disorders.
- List the functions and composition of human blood.
- Identify the general functions of red blood cells, white blood cells, and platelets, and identify the disorders involving them.
- Explain what determines blood types in humans and predict the compatibility of blood types for a transfusion.
- Summarize the role of Rh factor in hemolytic disease of the newborn.
- Discuss the long-term effects of cardiovascular disease.

Learn

- Read: Chapter 5
- Read: Chapter 6

Apply

- Practice Activities for Week 3
  - Due: Thursday
  - Points: 200 (100 points for each; two chapters)
- Discussion for Week 3
  - Due: Saturday, Tuesday
  - Points: 100 (60 points for the initial post; 20 points for each response post (40 total))
- Homework for Week 3
  - Due: Saturday
  - Points: 200 (100 points for each; two homework assignments)
- Virtual Labs for Week 3
  - Due: Tuesday
  - Points: 100

MODULE 4:
XX/XX/XX – XX/XX/XX

Aim

- Identify the five major steps or phases of the digestive process.
- Locate the structure and list the function of each primary and accessory organ of the gastrointestinal tract.
- Calculate a body mass index (BMI) value and interpret its relationship to your overall health.
- Identify the role of each class of nutrient in the human body.
- Know how to plan nutritious meals.
- Review the various disorders and diseases associated with the gastrointestinal tract, and review the various eating disorders.
- Discuss the side effects of weight loss drugs and effective dieting strategies.

Learn

- Read: Chapter 9

Apply

- Practice Activities for Week 4
  - Due: Thursday
  - Points: 100 (one chapter)
- Discussion for Week 4
  - Due: Saturday, Tuesday
  - Points: 100 (60 points for the initial post; 20 points for each response post (40 total))

- Homework for Week 4
  - Due: Saturday
  - Points: 100 (one homework assignment)
- Virtual Labs for Week 4
  - Due: Tuesday
  - Points: 100 (one lab)
- Midterm Exam
  - Due: Tuesday
  - Points: 100

MODULE 5:
XX/XX/XX – XX/XX/XX

Aim

- Summarize the role of the respiratory system in the body.
- Distinguish between inspiration and expiration.
- Identify the structures of the human respiratory system.
- Summarize the roles of the nose, pharynx, and larynx in respiration.
- Identify the structures of the upper respiratory system and provide their function.
- Summarize the roles of the trachea, bronchial tree, and lungs in respiration.
- Identify the structures of the lower respiratory system and provide their function.
- Explain how the alveoli increase the efficiency of the respiratory system.
- Contrast the processes of inspiration and expiration during ventilation.
- Define the terms "tidal volume," "vital capacity," "residual volume," "inspiratory reserve volume," and "expiratory reserve volume" in relation to ventilation.
- Identify the symptoms and causes of selected upper respiratory tract infections.
- Identify the symptoms and causes of selected lower respiratory tract disorders.
- Summarize the relationship among smoking, cancer, and emphysema.
- Discuss the impact of secondhand smoking.

Learn

- Read: Chapter 10

Apply

- Practice Activities for Week 5
  - Due: Thursday
  - Points: 100 (one chapter)
- Discussion for Week 5
  - Due: Saturday, Tuesday
  - Points: 100 (60 points for the initial post; 20 points for each response post (40 total))
- Homework for Week 5
  - Due: Saturday
  - Points: 100 (one homework assignment)
- Virtual Labs for Week 5
  - Due: Tuesday
  - Points: 100 (50 points for each lab; two labs)

MODULE 6:
XX/XX/XX – XX/XX/XX

Aim

- State the functions of the skeletal system.
- Identify the bones of the axial and appendicular skeleton: the skull, hyoid, vertebral column and rib cage, regions of the vertebral column, pelvic and pectoral girdles, and upper and lower limbs.
- List the three types of joints that connect bones and summarize the types of movement made possible by a synovial joint.
- Summarize the process of ossification and list the types of cells involved, and review the process of bone modeling.
- Explain the steps in the repair of bone.
- List the three types of muscles and provide a function for each.
- Describe the general structure of a skeletal muscle and recognize how skeletal muscles are named.
- Identify the structures of a muscle fiber.
- Explain how the sliding filament model is responsible for muscle contraction.
- Summarize how activities within the neuromuscular junction control muscle fiber contraction.
- List the stages of a muscle twitch and explain what is occurring at each stage.
- Explain how summation and tetanus increase the strength of whole muscle contraction.
- Summarize how muscle cells produce adenosine triphosphate (ATP) for muscle contraction.
- Distinguish between fast-twitch and slow-twitch fibers.
- Distinguish between common muscle conditions such as sprains and strains.

- Summarize the causes of fibromyalgia, muscular dystrophy, myasthenia gravis, and muscle cancer.
- Discuss muscle fiber, strength, and techniques for enhancing performance.

Learn

- Chapter 12: Skeletal System
- Chapter 13: Muscular System

Apply

- Practice Activities for Week 6
  - Due: Thursday
  - Points: 200 (100 points for each; two chapters)
- Discussion for Week 6
  - Due: Saturday, Tuesday
  - Points: 100 (60 points for the initial post; 20 points for each response post (40 total))
- Homework for Week 6
  - Due: Saturday
  - Points: 200 (100 points for each; two homework assignments)
- Virtual Labs for Week 6
  - Due: Tuesday
  - Points: 100 (one lab)

MODULE 7:
XX/XX/XX – XX/XX/XX

Aim

- Distinguish between the central nervous system and the peripheral nervous system with regard to location and function.
- List the three types of neurons and provide a function for each.
- Summarize the activities that generate and propagate an action potential. Explain the role of neurotransmitters and the process of synaptic integration.
- Describe the series of events during a spinal reflex.
- Distinguish between the somatic and autonomic divisions of the peripheral nervous system and the sympathetic and parasympathetic divisions of the autonomic division.
- Explain the ways that drugs interact with the nervous system; classify psychoactive drugs as depressants, stimulants, or hallucinogens; and list the long-term effects of drug use on the body.
- List the four categories of sensory receptors and describe what causes a response to each.
- Distinguish between perception and sensation.
- Explain the purpose of integration and sensory adaptation.
- Compare and contrast the senses of taste and smell. Identify the structures of the tongue and the olfactory areas of the nose. Summarize how the brain receives taste and odor information.
- Identify the structures of the eye and provide a function for each.
- Identify the structures of the ear that are involved in hearing.
- Summarize how sound waves are converted into nerve signals.
- Describe the pathway of sensory information from the ear to the brain.

- Discuss examples of synesthesia.

Learn

- Read: Chapter 14
- Read: Chapter 15

Apply

- Practice Activities for Week 7
  - Due: Thursday
  - Points: 200 (100 points for each; two chapters)
- Discussion for Week 7
  - Due: Saturday, Tuesday
  - Points: 100 (60 points for the initial post; 20 points for each response post (40 total))
- Homework for Week 7
  - Due: Saturday
  - Points: 200 (100 points for each; two homework assignments)
- Virtual Labs for Week 7
  - Due: Tuesday
  - Points: 200 (100 points for each lab; two labs)

MODULE 8:
XX/XX/XX – XX/XX/XX

Aim

- Review the learning objectives of weeks 5-8 in preparation of the final exam
- Learn, apply and interpret results from basic practical techniques (auscultation and ECG) used to measure cardiovascular health
- Determine the mechanics and biology of vision by completing vision demonstrations including blind spot, photopupillary reflex, accommodation, convergence reflex

Learn

- No new readings. Prepare for final exam by reviewing past chapters.

Apply

- Discussion for Week 8
  - Due: Saturday, Tuesday
  - Points: 100 (60 points for the initial post; 20 points for each response post (40 total))
- Virtual Labs for Week 8
  - Due: Tuesday
  - Points: 100 (25 points for each lab; four labs)
- Final Exam
  - Due: Tuesday
  - Points: 100

SECTION 4: ASSESSMENTS

Discussion Forums

Description

Completed within MyFIRE

The forum is a thinking exercise where students will be prompted to expand and apply the knowledge gained from the weekly chapter content. Each week, students will need to address a prompt(s) by posting their initial response to the question. Students will also need to engage and participate in group discussion on the issue by posting two follow-up responses to comments made by classmates.

Total Possible Points

800

Grade Weight

15%

Practice Activities (LearnSmart)

Completed through McGraw-Hill's Connect

When accessing McGraw-Hill Connect content, please ensure that you have access to a laptop or desktop computer with Adobe Flash Player installed and enabled.

You'll be completing course work in essentially two learning management systems; MyFIRE, and McGraw-Hill Connect. You'll refer to MyFIRE for overall course information and resources, discussion forum responses, and exams. You'll refer to content in McGraw-Hill Connect for completing readings, homework assignments, practice assignments, and virtual labs. To access your course in Connect, please refer to the McGraw-Hill Connect Campus link, which is also located in Course Information. You'll refer to this link to complete assignments and activities in Connect.

Description

Students will review the assigned chapters from the SmartBook through an adaptive

learning experience. The SmartBook will measure what the student knows and prompts students to answer questions based on the text. The student gets to measure how much they know about a concept/if they know it at all and will be redirected to the part of the book that corresponds to what they are learning at the moment.

Total Possible Points

1100

Grade Weight

20%

Homework Assignments

Description

Completed through McGraw Hill's Connect

Students will be required to complete assigned homework assignments (quizzes) comprising a minimum of 10 questions. The question types include matching, true/false, multiple-choice, interactive animations etc.

Total Possible Points

1100

Grade Weight

15%

Exams

Description

Completed within MyFIRE

Students will be required to complete a mid-term exam before the end of week 4 and a final exam before the end of week 8. Each exam will cover content from 5-6 chapters and include multiple-choice type and true or false questions.

Total Possible Points

200

Grade Weight

25%

Labs (Virtual Labs)

Description

Completed within MyFIRE

LearnSmart Labs is a highly realistic simulated lab environment where students can conduct experiments, collect and analyze data and draw conclusions based on your experiments. The selected virtual labs for each week complement the concepts learned from each week's topic and help students assess their learning by applying it in the form of experiments or health-based labs (Blood Pressure, eye and vision tests etc.)

Total Possible Points

1200

Grade Weight

25%