Revised October, 2012

CORE CURRICULUM COMPONENT APPLICATION
Sam Houston State University

PART I – Course Information

Course Type
☐ Existing/Restructured
☒ New Course Proposed Fall 2013
If new, have you submitted a Form B to the SHSU Curriculum Committee? ☒ Yes ☐ No

Course Prefix & Number: BIOL 2403

Texas Common Course Number (TCCN Matrix)**:** 2306, 2106, 2406

Course Title: Human Anatomy and Physiology I

Course Catalog Description (Copy and paste from online catalog for existing courses):

This course is the first course in a two-semester sequence that examines the systems of the human body using an integrated approach. Emphasis will be given to the study of cells and tissues, and the anatomical and physiological interrelationships of the skeletal, muscular, and nervous systems and special senses. Laboratory exercises will enhance the student's appreciation and comprehension of the biological concepts of structure and function of the human body. Prerequisite: None. Credit 4.

Course Prerequisites: Completion of all developmental courses.

Available Online?
☐ Yes, currently developed in online delivery mode
☐ Anticipated development in online delivery mode (Semester, Year:)
☒ No

Number of Sections to be Offered per Academic Year: 2

Estimated Enrollment per Section: 130

Course Level (freshman, sophomore): sophomore

Designated Contact Person (for follow-up communication purposes): Dr. Jordan Clark

E-Mail Address: jmc124@shsu.edu

Phone: 936-294-2656

Approvals

Department Chair: _____ (Signature) 6 Feb 2017 (Date)

Academic Dean: _____ (Signature) 7 Feb 2017 (Date)

Submit completed, signed form to Core Curriculum Committee - Box 2478 or Fax 4-1271

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PART II – THECB Foundational Component Areas

See Appendix for full description of each component area.

Select Component Area: III. Life and Physical Sciences

In one paragraph, describe how the proposed course will fulfill the core and skill objectives of the component area:

Students in BIOL 2403 will learn the morphology and function of the human body at the gross and microscopic level. Functioning at the tissue, organ, and organ system level is understood by explaining the interactions between anatomical and physiological components. Specifically, emphasis will be placed on the study of cells and tissues, and the anatomical and physiological interrelationships of the skeletal, muscular, and nervous systems and special senses. Several approaches will be used to meet these core goals. First, students will gain factual knowledge such as definitions and explanations of the anatomical and physiological concepts in a traditional lecture format and from assigned readings. Second, students will use scientific methods to predict, analyze, and interpret data demonstrating physiological events and strucutural morphology. These activities will take place during lecture using a small team format and in a laboratory setting. Third, students will combine their knowledge of principles and theories with the quantitative techniques learned in lecture and lab to critically evaluate medical pathologies and current biomedical research topics. They will complete these critical thinking activities in small groups and will communicate their analysis of the problem in written format or orally to the class. They will be expected to defend their work against questions from the class.

PART III – Course Objectives & Student Learning Outcomes (SLO)

Insert the applicable course objectives stated as student learning outcomes (e.g., Students completing the course will be able to…) that support the core component area objectives. Please reference the component rubric for additional information on core component area objectives.

Objective/SLO 1: Describe, explain, and predict natural phenomena of the human body using the scientific method.

How will the objective be addressed (including strategies and techniques)?
Students will use these learned concepts to predict, analyze and interpret changes in cells and tissues, and the skeletal, muscular, nervous, and special systems by comparing healthy and pathological models. Students will apply learned concepts to explain the consequences of abnormal structure and function of individual and integrated systems.

Describe how the objective will be assessed:

This objective will be assessed in in both lecture and laboratory. Outside of lecture, students will be assessed through the use of the online learning platform McGraw Hill Connect. Students

will complete online post-lecture questions at the end of each week or subject block (For example: completion of the nervous system chapter). These questions are prioritized to emphasize three levels of learning as defined by Bloom. Students answer questions that will emphasize basic knowledge and understanding of anatomical and physiological concepts. Students will then answer a series of questions that will require application of basic concepts to predict changes in anatomical structures and phyiological events within selected systems of the organism. Additional questions will ask students to intrepret how a structure or system has changed compared to knowledge of a healthy model. These online assignments will allow for one revision before submission. ~85% and a normal grade distribution will indicate that the class is progressing at an acceptable and expected rate.

In-lecture assessment will consist of four 50-question multiple choice exams. These questions, similar to the online assignment, will prioritize and emphasize three levels of learning as defined by Bloom. A class average of ~75% and a normal grade distribution will indicate that the class is progressing at an acceptable and expected rate.

This objective will be assessed in lab by analytical measurement of function and identification of structures. Lab practicals consisting of 25-30 identification stations will assess students' ability to identify anatomical structures and distinquish bewteen healthy and diseased models.A class average of ~75% and a normal grade distribution will indicate that the class is progressing at an acceptable and expected rate. Following physiology lab exercises, students will submit lab reports that will require prediction of experimental outcomes and analysis of experimental data to explain the function of a human system. A class average of ~80% and a normal grade distribution will indicate that the class is progressing at an acceptable and expected rate.

Objective/SLO 2: Students will compare the interactions between physiological systems and anatomical function in the human model and how this relates to homeostasis.

How will the objective be addressed (including strategies and techniques)?
Students will use knowledge of individual systems, both form and function, to compare iinterdependency and interrelationships. Students will examine system relationships at the level of molecular, cellular, tissue, and organ functions in the human model. Students will identify and explain contributions of systems to the maintenance of homeostasis.

Describe how the objective will be assessed:
Students will be assessed outside of class through the online learning platform McGraw Hill Connect. Questions will be selected that examine how the anatomy of human models is related to specific physiological systems. These questions assess students' ability to identify and predict changes in both structure and function following changes in homeostasis. A class average of ~85% and a normal grade distribution will indicate that the class is progressing at an acceptable and expected rate.

In-lecture assessment will consist of four 50-question multiple choice exams. These questions, similar to the online assignment, will prioritize and emphasize three levels of learning as defined by Bloom. A class average of ~75% and a normal grade distribution will indicate that the class is progressing at an acceptable and expected rate.

This objective will be assessed in the lab by analytical measurement of function and identification of structures. The identification lab practicals will address some areas of this objective. However, the physiology lab component and post lab reports will be more thorough and efficient at addressing this learning objective. Following anatomy and physiology lab

exercises students will answer post lab questions that require identification and understanding of functional changes in a system and the relationship with anatomical structures. The questions will be graded using assigned point values. Physiology experiments, such as measuremnt of muscle force and tension under different weighted loads, will require students to observe and collect data following experimental manipulation of homeostasis. Students will then answer questions assessing their understanding of how homeostasis disruption affects both form and function within human systems. These post lab questions may be presented in the lab manual and included in the physiology post lab report. A class average of ~80% and a normal grade distribution will indicate that the class is progressing at an acceptable and expected rate.

Objective/SLO 3: Students will understand how knowledge of human form and function applies to the experience of human health and disease in both a modern and historial context.

How will the objective be addressed (including strategies and techniques)?
Students will apply learned concepts of anatomy and physiology to compare and assess various pathological conditions. Students will examine how historical medical discoveries developed current understandings of anatomy and physiology. Students will examine how disruption of system interdependancy and interrelationships may result in human pathologies.

Describe how the objective will be assessed:
This objective will be assessed in in both lecture and laboratory. Outside of lecture, students will be assessed through the use of the online learning platform McGraw Hill Connect. Students will complete online post-lecture questions at the end of each week or subject block (For example: completion of the nervous system chapter). These questions are prioritized to emphasize three levels of learning as defined by Bloom. To address this learning objective students will answer questions that will emphasize how abnormalities in form and function may lead to pathological conditions.These questions will use current topics or historical cases as context for questioning. These online assignments will allow for one revision before submission. A class average of ~85% and a normal grade distribution will indicate that the class is progressing at an acceptable and expected rate.

In-lecture assessment will consist of four 50-question multiple choice exams. These questions, similar to the online assignment, will prioritize and emphasize three levels of learning as defined by Bloom. A class average of ~75% and a normal grade distribution will indicate that the class is progressing at an acceptable and expected rate

This objective will be assessed in the lab through post lab questions. Select questions will assess students' knowledge on learned concepts and current or historical topics in clinical, biological, and medical pracitces.These post lab questions may be presented in the lab manual and included in the physiology post lab report. A class avaerage of ~80% and a normal grade distribution will indicate that the class is progressing at an acceptable and expected rate.

Objective/SLO 4:

How will the objective be addressed (including strategies and techniques)?

Describe how the objective will be assessed:

Objective/SLO 5:

How will the objective be addressed (including strategies and techniques)?

Describe how the objective will be assessed:

PART IV – THECB Skill Objectives

Address each of the THECB skill objectives required within the component area. Explain how the skill is addressed, including specific strategies to address the skill(s). *Address ALL skill objectives associated with the selected Component Area. (See Appendix)*

1. Critical Thinking Skills: to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information

How will the skill be addressed (including specific strategies, activities, and techniques)?
Students will develop critical thinking skills in lecture and laboratory. In the lecture, students will engage in interruptive and outside activites. Interruptive activites will consists of in-class practice exercises. These practice exercises will be conducted using Squarecap, an online realtime assessment tool that will give students and the instructor immediate feedback on performance during class. Questions in Squarecap will be presented in multiple choice and short answer formats that emphasize Bloom's learning objective of application. The in-class activity may be used at any time during the lecture. Following this interrupted session there will be a discussion of the questions and review of performance. These in-class pracitce sessions are to prepare students, particularly in a large class setting, for exam questions that will require similar application of knowledge.

For graded assessment of critical thinking, 50-question exams will be administered throughout the semester. These exams will primarly cover Bloom's learning objectives of remembering and understanding. However, each chapter covered in the exam will feature 3-5 multiple choice and short answer questions that emphasize application of knowledge. These questions may include, but not limited to: pathology, experimental design, and concept relationships.

Outside of lecture, students will complete assignments using McGraw Hill Connect, an online learning platform. Following each lecture, students must complete a series of questions that will be automatically graded. In addition to some basic concept questions, the assignment will focus on the following skills:
-Concept mapping, which requires students to recognize relationships between concepts;
-Ranking of physiological events in proper sequence; and
-Review of a pathology or clinical case examples, which are preceded by multiple choice questions.

The online assignment will be customized by the instructor. During the post lecture assignment, students will be allowed one revision of any missed question. After the assignment is complete, the grade is automatically submitted. Once the due date for the assignment has passed, students may access the assignment and receive feedback on any missed questions.

For selected lectures, students will be assigned a brief article that relates human anatomy and physiology to other vertebrate models. These articles will emphasize the importance of vertebrate models in clinical and biomedical research. At the beginning of those selected lectures, there will be a brief discusssion of the article. Questions about the article will be presented through the Squarecap session. These session questions will not be graded, but may be presented during the regular graded lecture exam.

Students will develop critical thinking skills in the anatomy and physiology laboratory through analaysis and interpretation of collected data, and completion of post lab questions. Following completion of specific physiology labs, students will complete a post laboratory report for a grade. These post laboratory reports will consist of the following:

-Statement of hypothesis;
-Graphing of data (when applicable);
-Reporting of results to include statistics;
-Discussion of results and acceptance or rejection of null hypothesis; and
-Additional questions that require the student to predict outcomes of proposed experiments and suggest alternative experimental designs from collected data.

For the anatomy labs students, will complete post lab questions that will include clinical application of learned systems. These questions will require students to apply basic knowledge to assess, intrepret, or propose an outcome based on pathology or clinical scenarios. An example would be to describe regions damaged and loss of function expected following a trauma to the caudal region of the head. These questions will be assigned a point value from 5 to 10 points as determined by depth and complexity of the question.

2. Communication Skills: to include effective development, interpretation and expression of ideas through written, oral and visual communication

How will the skill be addressed (including specific strategies, activities, and techniques)?
Students will have the opportunity to communicate in written and oral format. As part of the lab requirements students will be assigned a topic relative to anatomy and physiolgy. Each group will be given a presentation date on which they will present a ten-minute talk. Selected topics will allow students to address basic content knowledge, clinical and biological relevance of the topic, and propose future direction of research and investigation. Students will receive a presentation guide and the 20-point grading rubric during the second lab meeting. This will familiarize the students with the expectations of the presentation. The rubric will assess such areas as accuracy of interpretation, thoughfulness of responses, and preparation and participation of all group members. In addition to oral presentations, students will be required to interpret experimental data and record it in a lab report.

3. Empirical and Quantitative Skills: to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

How will the skill be addressed (including specific strategies, activities, and techniques)?
Students will be expected to understand, analyze and interpret empirically-derived material to evaluate science issues, experimental results and possible solutions to them. These exercises will be used primarily in the laboratory. Students will use traditional bench experiments or computer-simulated experiments to collect data. In addition, students may be given an

experimental design beginning with specific questions and a dataset designed to address those questions. Using either collected or provided data, they will then be taught basic statistical analysis of the data and how to graph the data in a manner meaningful to the question. Upon completion of the experiment, students will answer post-lab questions that will be recorded in a lab report. In this report, students will revisit the graphs and the questions, but now from a quantitative statistical perspective, and draw conclusions based on this empirical foundation. Questions from the post-lab assignment will help direct this narative. These reports will be graded on an assigned point value.

4. Teamwork: to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

How will the skill be addressed (including specific strategies, activities, and techniques)? Students will work together to solve specific questions, discuss related topics, and present information. In lectures, students will work in groups to map relationships of concepts, discuss and complete case studies, compose short answer essays and debate issues provided by the instructor.

In the laboratory, a majority of the anatomical and physiological experiments will be completed in groups. Each member will be respobsible for specific duties, such as scheduling group meetings and keeping records of all graded team work. For dissections, students must work in teams and assign duties to individual members. Each member will rotate through responsibilities of dissecting, providing procedural guidance, and comparing dissection models with a virtual cadaver.

Students will participate in team challenges in which each team will set up identification challenges to other teams. Students will work as teams when conducting physiological experiments. Many of the quantitative analyses will be used for this goal-oriented group work. These students will work together to graph data, analyze data, draw conclusions and ultimately answer a specific question. The group will work together for a common goal and will prepare a written or oral presentation of their conclusions.

All team work will be assessed throughout the semester by the instructor. Each member of a team will also assess their group performance and that of other team members throughout the semester using a performance rubric. These performance rubrics will be reviewed by the instructor to identify any conflict within the group.

5. Personal Responsibility: to include the ability to connect choices, actions and consequences to ethical decision-making

How will the skill be addressed (including specific strategies, activities, and techniques)?
Not Applicable

6. Social Responsibility: to include intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities

How will the skill be addressed (including specific strategies, activities, and techniques)?
Not Applicable

PART V – SHSU Core Curriculum Committee Requirements

1. Using a 15-week class schedule, identify the topics to be covered during each week of the semester. Provide sufficient detail to allow readers to understand the scope and sequence of topics covered.

Week 1	Orientation to human body
Week 2	Chemistry of living organisms
Week 3	Basic cell structure and function
Week 4	Tissues
Week 5	Integumentary system
Week 6	Bones and skeletal tissue
Week 7	The skeleton
Week 8	Skeleltal joints
Week 9	Fundamentals of muscle tissue
Week 10	Muscular system
Week 11	Fundamentals of the nervous system
Week 12	The central nervous system
Week 13	The peripheral nervous system
Week 14	The autonomic nervous system
Week 15	Special senses

2. Attachments (Syllabus Required)

Syllabus Attached? ☒ Yes ☐ No

Other Attached? ☐ Yes ☒ No If yes, specify:

Appendix: THECB Component Area Descriptions and Skill Requirements

I. Communication (Courses in this category focus on developing ideas and expressing them clearly, considering the effect of the message, fostering understanding, and building the skills needed to communicate persuasively. Courses involve the command of oral, aural, written, and visual literacy skills that enable people to exchange messages appropriate to the subject, occasion, and audience.)

II. Mathematics (Courses in this category focus on quantitative literacy in logic, patterns, and relationships. Courses involve the understanding of key mathematical concepts and the application of appropriate quantitative tools to everyday experience.)

III. Life and Physical Sciences (Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.)

IV. Language, Philosophy, and Culture (Courses in this category focus on how ideas, values, beliefs, and other aspects of culture express and affect human experience. Courses involve the exploration of ideas that foster aesthetic and intellectual creation in order to understand the human condition across cultures.)

V. Creative Arts (Courses in this category focus on the appreciation and analysis of creative artifacts and works of the human imagination. Courses involve the synthesis and interpretation of artistic expression and enable critical, creative, and innovative communication about works of art.)

VI. American History (Courses in this category focus on the consideration of past events and ideas relative to the United States, with the option of including Texas History for a portion of this component area. Courses involve the interaction among individuals, communities, states, the nation, and the world, considering how these interactions have contributed to the development of the United States and its global role.)

VII. Government/ Political Science (Courses in this category focus on consideration of the Constitution of the United States and the constitutions of the states, with special emphasis on that of Texas. Courses involve the analysis of governmental institutions, political behavior, civic engagement, and their political and philosophical foundations.)

VIII. Social and Behavioral Sciences (Courses in this category focus on the application of empirical and scientific methods that contribute to the understanding of what makes us human.
Courses involve the exploration of behavior and interactions among individuals, groups, institutions, and events, examining their impact on the individual, society, and culture.)

Required Skill Objectives

Foundational Component Areas	**Skill Objectives**					
	Critical Thinking	**Communication**	**Empirical & Quantitative**	**Team Work**	**Social Responsibility**	**Personal Responsibility**
Communication	✓	✓		✓		✓
Mathematics	✓	✓	✓			
Life and Physical Sciences	✓	✓	✓	✓		
Language, Philosophy & Culture	✓	✓			✓	✓
Creative Arts	✓	✓		✓	✓	
American History	✓	✓			✓	✓
Government/Political Science	✓	✓			✓	✓
Social and Behavioral Sciences	✓	✓	✓		✓	

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