

Colonnade Explorations Proposal Form: Natural and Physical Sciences

Explorations courses introduce students to discipline-specific concepts, theories, methodologies, and practices that provide a variety of ways to know and understand the world. From artistic expression to scientific experimentation, students learn how various forms of disciplinary knowledge can be applied to solve problems, to understand social interaction, and to interpret human experience through language and image. (12 hours)

Natural and Physical Sciences (Minimum of 6 hours from two different disciplines)

Students use the scientific perspective to gain basic understanding of the natural and physical world and the relevance of science to issues of personal and public importance. Courses examine scientific principles through different modes and scales of observation, development of theories and hypotheses, and data collection and interpretation. Hands-on experience provides an essential applied component in this category.

Natural and Physical Sciences Colonnade Learning Outcomes

1. Demonstrate an understanding of the methods of science inquiry.
2. Explain basic concepts and principles in one or more of the sciences.
3. Apply scientific principles to interpret and make predictions in one or more of the sciences.
4. Explain how scientific principles relate to issues of personal and/or public importance.

Kentucky Graduate Profile Academy Competencies

As part of a CPE initiative, WKU is participating in the Kentucky Graduate Profile Academy which has identified 10 competencies that all Kentucky college graduates should have. Since Colonnade offers students a common learning experience across the university, faculty need to identify which of these competencies students will develop in their class. The 10 competencies are as follows:

1. Communicate effectively.
2. Think critically to solve problems.
3. Apply quantitative reasoning.
4. Interact effectively with people from diverse backgrounds.
5. Engage in civic life to improve society.
6. Adapt to change while leading and supporting others.
7. Exhibit professionalism on the job.
8. Collaborate and work in teams.
9. Apply learning to chosen career.
10. Use information for decision making.

*Courses do not have to incorporate ALL of these competencies but must incorporate at least one. Course proponents should identify those which logically fit into their format, material, etc.

Approval Process

Faculty should fill out the proposal form in its entirety, attach a sample course syllabus, and then upload the document onto Course Leaf for approval. The steps for approval are as follows:

New Colonnade Courses

1. Department - faculty should have their department vote on whether or not they approve the course.
2. College - course goes before the College Curriculum Committee.
3. Colonnade - once it has been approved by both the department and the College Curriculum Committee, it then goes to the Colonnade General Education Committee (CGEC).
4. University Curriculum Committee (UCC) - after it has been approved by the CGEC, it then goes before the UCC.
5. Senate Executive Committee (SEC) - following approval at the CGEC and UCC, the course then goes before the SEC.
6. University Faculty Senate - following SEC approval it goes before the full University Faculty Senate.
7. Provost - final approval is the Provost's Office.

Colonnade Explorations Course Proposal: Natural and Physical Sciences

Proposal Date _____

Basic Information

Proposal Contact Name: Kaylee Woodard

E-mail: kaylee.woodard@wku.edu

College: College of Health and Human Services

Department: School of Kinesiology, Recreation & Sport

Course Details:

1.1 Course prefix (subject area), number: EXS 223

1.2 Course Title: Introduction to Exercise Science

1.3 Credit hours: 3

1.4 Any Foundations pre-requisites? None

1.5 Cross-listed and/or equivalent courses (prefix and number): None

1.6 How often will this course be offered? Fall & Spring terms; Winter & Summer terms

dependent on student demand

1.7 Is this an existing course? Y X N

If yes, when was the last semester it was offered? Spring 2023

1.8 Proposed term of implementation? Summer 2023

1.9 Course Modality (In-person, hybrid, online): In-person and online

1.10 Does this course include an applied/service-learning component? No

Course Overview

1. Course Description (50-100 words)

Investigation of the important interplay between disease prevention and physical activity. Introduction to the application of exercise science to fitness, health, and disease, along with field and laboratory measurement techniques used by practitioners and researchers. Students will learn to be more informed consumers of research by understanding the components of research articles and the origins of evidence-based practices.

2. If this is a NEW course, please explain how this course provides a multi-disciplinary learning experience that will appeal to a broad student audience beyond majors.

3. If this is an existing course, please explain how it will be adapted to appeal to a broad student audience.

This course is already designed to appeal to a broad student audience. Students will learn scientific and behavioral principles that are important for general health and wellbeing. Students will learn principles that will help guide their own lifestyle choices as they seek to maintain health, wellness, and productivity. They will also apply these principles in ways that support health and disease prevention on a societal level. To do this, students will learn to be educated consumers of research, analyze trends, make predictions, and apply scientific findings to real world practice. These skills are useful for a broad spectrum of majors and professions. In addition, students will be exposed to various areas of study within exercise science that connect to several fields and career paths such as rehabilitation, public health, medicine, coaching, corporate wellness, and athletic training.

4. Identify the Colonnade assessment artifact for this course. Please keep in mind that artifacts must demonstrate how students have met all of the Colonnade Learning Outcomes (CLOs) included in the course proposal and are measurable. Each student in the class should complete this assignment and faculty will submit them for assessment at the end of each semester. Each course should produce only ONE artifact that is completed by all students in the class.

EXS 223 Colonnade Artifact: "Real World Physiology"

Introduction

Exercise Physiology focuses on how anatomy and physiology are impacted by physical activity, exercise, and global influences like genetics, nutrition, disease, and environment. For this activity, you will have the opportunity to see how your physiology is impacted by physical activity and explore how exercise may influence physiological adaptations.

Purpose

To connect content from the chapter reading to physiological responses and adaptations to exercise.

Please gather a group of at least four individuals. All group members should complete steps 1-4 and then answer the questions below.

1. Watch the short tutorial on how to measure your heart rate. (<https://youtu.be/AHhr8qNU9QY>)
2. Measure your own resting heart rate for 30 seconds, then multiply by two.
3. Choose an activity that all group members can maintain for the duration of the assessment (e.g., walking, jumping jacks, squats).
4. After two minutes of movement, stop and immediately find your heart rate after physical activity.

Please fill in the chart below for each member of your group and then answer prompts A-I to complete the assignment.

Group Members' Initials	Resting Heart Rate (RHR) in beats per min (BPM)	Is RHR considered "normal" according to your chapter?	Post-exercise HR in BPM	HR Response (Difference between RHR and Post-exercise HR in BPM)

RHR: resting heart rate; BPM: beats per minute

- A. What *general trend* do you observe in your group's post-exercise HR compared to RHR (increase, decrease, or no change)?

- B. Why does the HR respond the way it does after starting physical activity? Answer from the perspective of physiology.

- C. Did all group members experience *identical* HR responses after exercising?

- D. Please identify the range in **HR responses** among your group members.
- Smallest HR response:
 - Largest HR response:
 - Range (largest– smallest):
- E. Please identify two factors that may have affected the group members' HR responses.
- F. How *and* why do you think each of the factors listed above (answer E) influenced HR responses?
- G. Suppose you and your group completed an 8-week aerobic training program and then performed this assignment again. How would you expect average HR responses to change from pre-training (today) to post-training?
- H. Identify one adaptation to the cardiorespiratory system that would support your prediction above (answer G) and explain how this adaptation influences HR responses to exercise.
- I. Finally, describe two positive health-related impacts of regular aerobic exercise.
5. Please explain how the assessment artifact demonstrates that students have met the Natural and Physical Sciences CLOs. Colonnade artifacts in the Natural and Physical Sciences category will be further evaluated by an assessment committee using a common rubric supplied by the Colonnade Directors to determine if the artifact demonstrates student proficiencies with the CLOs. The Colonnade artifact assessment rubrics are available on the Colonnade website.

The table below identifies questions within the artifact that address each of the Natural and Physical Sciences CLO's and the related additional course outcomes:

E-N/S CLO	Additional LO's	Explanation
Demonstrate an understanding of the methods of scientific inquiry.		Students will observe trends in data and consider variables that may influence results. (Items A, C, D, E)
Explain basic concepts and principles in one or more of the sciences.	Explain the basic anatomy and physiology of the	Students will explain basic physiological mechanisms underlying heart rate

	musculoskeletal and cardiorespiratory systems.	responses to exercise. (Items B, F, H)
Apply scientific principles to interpret and make predictions in one or more of the sciences.	Describe acute responses and chronic adaptations to exercise.	Students will predict the effects of an exercise intervention on HR responses and defend their prediction. (Items G, H)
Explain how scientific principles relate to issues of personal and/or public importance.		Students will identify long term effects of exercise on the cardiorespiratory system and describe how exercise can positively impact health outcomes. (Items H, I)

The assignment will be graded by the instructor using the rubric below to determine if assessment artifact has demonstrated student proficiencies with the selected CLO. Success will be measured by 90% of the 20% sample of the class scoring at least 80% (20 points) on the assignment.

Artifact Rubric

Points Possible: 25

	Poor	Fair	Good	Points Earned
HR Table	Answer is missing or inaccurate. (0 points)	Table is partially complete (1 point)	Table is fully complete (2 points)	
Item A			Accurately identifies trend. (2 points)	
Item B		Answer is reasonable but is not explained from physiological perspective. (2 points)	Answer is accurate, thorough, and explained from physiological perspective. (4 points)	
Item C			Answer is accurate. (1 point)	
Item D		1 or 2 parts are accurate. (1 point)	All parts of answer are accurate. (2 points)	
Item E		Correctly identifies one factor. (1 point)	Correctly identifies two factors. (2 points)	

Item F		Provides reasonable explanation for one factor. (2 points)	Provides reasonable explanations for both factors. (4 points)	
Item G			Provides reasonable prediction. (2 points)	
Item H		Correctly identifies one adaptation. (2 point)	Correctly identifies one adaptation and explains how it impacts HR response (4 points)	
Item I		Correctly describes one health-related impact. (1 point)	Correctly describes two health-related impacts. (2 points)	

6. Which of the 10 Kentucky Competencies are incorporated into this class? Please explain how they have been incorporated.

Competency	Description
Think critically to solve problems	Students will analyze population trends in physical activity participation and discuss methods for improving projected health outcomes through physical activity interventions.
Apply quantitative reasoning	Students will learn and practice computing body mass index, measures of exercise intensity, Caloric intake, and percentages of Caloric intake from each macronutrient.
Collaborate and work in teams	Students will work together in groups to discuss concepts, solve problems, and apply the FITT-VP principle for designing exercise programs.
Use information for decision making	Students will need to make decisions regarding appropriate physical activity and exercise for individuals based on their current exercise habits, goals, and established recommendations.

7. Does this course have a service/applied learning component? If so, please explain what it is and how it will help students meet the CLOs and 10 competencies. (NOTE: this is NOT a required component so courses that do not have a service-learning component can still be approved as an Explorations course.)

No.

This proposal form, and a sample course syllabus, must be uploaded to Course Leaf. The course syllabus must contain the Natural and Physical Sciences CLOs on the front page. Additionally, the artifact must be included in the syllabus.