RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

EXSC 204 Exercise Physiology

I. Basic Course Information

A. Course Number and Title: EXSC 204 Exercise Physiology

B. New or Modified Course: Modified

C. Date of Proposal: Semester: Fall Year: 2024

D. Effective Term: Fall 2025

E. Sponsoring Department: Health Science Education

F. Semester Credit Hours**: 3**

G. Weekly Contact Hours**:** 4 Lecture**:** 2
Laboratory**:** 2
Out of class student work per week: 5

H. ☒ Prerequisite (s): BIOL 124 – Human Anatomy & Physiology I
BIOL 125 – Human Anatomy & Physiology II
EXSC 203 – Exercise Measurement and Prescription

I. Additional Fees**:** None

II. Catalog Description

Prerequisite (s): BIOL 124 – Human Anatomy & Physiology I
BIOL 125 – Human Anatomy & Physiology II
EXSC 203 – Exercise Measurement and Prescription

This course is designed to study the human responses to exercise and the adaptations that occur from various types of training programs. In both a lecture and a laboratory setting, the student will learn about the metabolic, circulatory, respiratory, neuromuscular, and hormonal responses to exercise in the general population, youth, and seniors.

III. Statement of Course Need

A. This course will give the student an understanding of the physiological aspects of exercise and the adaptations that occur from it, with both theoretical and practical

application of exercise and training principles. It is a required course to enable the student to successfully complete the Associate Degree in Exercise Science.

B. The lab component of this course helps the student to understand the theoretical components taught in the lecture through the application of the principles learned.

C. This course generally transfers as an Exercise Science program requirement. This course generally transfers as an Exercise Science program elective.

IV. Place of Course in College Curriculum

A. Free Elective (This applies automatically to all college-level credit courses in the College.)
B. This course meets a program requirement for the Associate Degree in Exercise Science.
C. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for all other colleges and universities, go to the individual websites.

V. Outline of Course Content

A. Structure & Function of Exercising Muscle
    1. Anatomy of Skeletal Muscle
    2. Muscle Fiber Contraction
    3. Muscle Fiber Types
    4. Skeletal Muscle & Exercise
B. Bioenergetics and Muscle Metabolism
    1. Human Energy Transfer at Rest and During Exercise
    2. Basic Energy Systems
    3. Energy Expenditure
C. Physiological Support Systems
    1. Pulmonary System and Exercise
    2. Cardiovascular System and Exercise
    3. Neuromuscular System and Exercise
    4. Hormonal System and Exercise
E. Exercise Training and Adaptations
    1. Principles of Training
    2. Adaptations to Aerobic and Anaerobic Training
    3. Adaptations to Resistance Training
E. Environmental Influences on Performance
    1. Effect of Exercise in Hot and Cold Environments
    2. Exercise at Altitude
F. Training for Sport
    1. Periodization
    2. Overtraining
    3. Optimizing Training
    4. Body Composition & Nutrition for Sport

5. Ergonomic Aids

G. Special Populations
1. Youth
2. Aging Adult
3. Males vs. Females

VI. A. Course Learning Outcomes:

At the completion of the course, students will be able to:

1. Identify the major systems of the body and explain their response to exercise and the physiological principles related to exercise training, warm-up, and cool-down (GE-1).
2. Analyze types of training with regard to their overall effect on physical well-being and compare and contrast the benefits and risks of various exercise and nutritional programs. (GE*).
3. Demonstrate and explain how to take heart rate and blood pressure at rest and during exercise, and explain measurement of oxygen consumption and adaptations that occur due to training. (GE-1)
4. Calculate training responses using scientific formulas to determine current levels of fitness, resting metabolic rate (RMR), and maximal oxygen consumption (VO2max). (GE-2)
5. Gather information from the internet and/or library database to review a research topic, analyze the data collected from the literature, and present the findings in a research paper and an oral presentation. (GE-1, IL)*
6. Apply quantitative knowledge to analyze data from laboratory experience to measure and calculate the physiological responses to exercise. (GE-2, 3)
7. Analyze case studies in the discipline and present findings. (GE-1) *
8. Design an experiment testing a physiological response to exercise and present findings in a research paper and a class demonstration. (GE-1, 3, IL)*

* embedded critical thinking

B. Assessment Instruments

1. laboratory products
2. research papers
3. case studies
4. demonstrations/fitness testing
5. exams

VII. Grade Determinants

A. case studies
B. projects
C. tests
D. laboratory practical
E. essays/research papers

Given the goals and outcomes described above, LIST the primary formats, modes, and methods for teaching and learning that may be used in the course:

A. lecture/discussion
B. small-group work
C. case studies
D. laboratory
E. practical demonstrations/presentations

VIII. Texts and Materials

A. Kenney, Larry W., Wilmore, Jack H., Costill, David L., Physiology of Sport and Exercise, 6th ed., Human Kinetics, 2015.

(Please Note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.)

IX. Resources

A. Lab Equipment
B. RVCC Fitness Center
C. RVCC Gymnasium
D. RVCC Library

X. Check One: ☐Honors Course ☐Honors Options ☒ N/A