

**RARITAN VALLEY COMMUNITY COLLEGE  
ACADEMIC COURSE OUTLINE**

**FITN 204 Exercise Physiology & Body Mechanics**

**I. Basic Course Information**

A. Course Number and Title: FITN 204 Exercise Physiology & Body Mechanics

B. New or Modified Course: Modified

C. Date of Proposal: Semester: Fall Year: 2016

**D. Effective Term: Fall 2017**

E. Sponsoring Department: Health Science Education

F. Semester Credit Hours: 3

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

H. Prerequisites:     BIOL 124 – Human Anatomy & Physiology I  
                                  BIOL 125 – Human Anatomy & Physiology II

I. Laboratory Fees: None

J. Name and Telephone Number or E-Mail Address of Department Chair at time of approval: Beryl Stetson, [Beryl.Stetson@rartianval.edu](mailto:Beryl.Stetson@rartianval.edu), 908 526-1200 x8208

**II. Catalog Description**

**Prerequisites:** BIOL 124 – Human Anatomy & Physiology I  
                          BIOL 125 – Human Anatomy & Physiology II

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.

- B. This course is required to enable the student to successfully complete the AS Degree in Exercise Science.
- C. The lab component of this course helps the student to understand the theoretical components taught in lecture through application of the principles learned.
- D. This course generally transfers as an exercise science program requirement. This course generally transfers as a fitness and wellness program elective.

#### **IV. Place of Course in College Curriculum**

- A. Free Elective.
- B. This course meets a program requirement for the Associate of Science degree in Exercise Science, Associate of Science degree in Exercise Science- Option in Sports Management, Associate of Applied Science Nursing/RN, Associate of Arts, Liberal Arts, Associate of Arts, Associate of Arts Liberal Arts Women & Gender Studies Option, Associates of Arts, English, Associate of Applied Science Early Childhood Education, Associate of Science Computer Science, Science and Mathematics, Associate of Applied Science Degree in Ophthalmics.
- C. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, [www.njtransfer.org](http://www.njtransfer.org); b) for all other colleges and universities, go to the individual websites.

#### **V. Outline of Course Content**

- A. Origins of Exercise Physiology
  - 1. Foundations for the Field of Study
- B. Structure & Function of Exercising Muscle
  - 1. Anatomy of Skeletal Muscle
  - 2. Muscle Fiber Contraction
  - 3. Muscle Fiber Types
  - 4. Skeletal Muscle & Exercise
- C. Bioenergetics and Muscle Metabolism
  - 1. Human Energy Transfer at Rest and During Exercise
  - 2. Basic Energy Systems
  - 3. Energy Expenditure
- D. 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. General Education and Course Learning Outcomes**

### **A. General Education Learning Outcomes:**

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

1. Apply quantitative knowledge to analyze data from laboratory experience to measure and calculate the physiological responses to exercise. (GE-NJ 2)
2. Design an experiment testing a physiological response to exercise and present findings in a research paper and in a class demonstration. (GE-NJ 1, IL)\*
3. Analyze case studies in the discipline and present findings, either verbally or in writing. (GE-NJ 1) \*
4. To produce accurate lab reports. (GE-NJ1)

\*embedded critical thinking

### **B. 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.
2. Identify physiological principles related to exercise training, warm up and cool down.
3. Analyze types of training with regard to their overall effect on physical well-being.

4. Compare and contrast the benefits and risks of various exercise and nutritional programs.
5. Demonstrate how to take heart rate and blood pressure at rest and during exercise.
6. Demonstrate measurement of oxygen consumption and adaptations that occur due to training.
7. Calculate training responses using scientific formulas to determine current levels of fitness.
8. Design a research study, test subjects, organize and present data gathered, calculate outcomes and present the findings to the class.
9. Calculate RMR and V02 Max using metabolic formulas learned in class.
10. Gather information from the internet and/or library data base to design a research study.
11. Design and implement a scientific study, analyze the data collected from the study, and present the findings in a research paper and an oral presentation.

**C. Assessment Instruments**

- A. laboratory products
- B. research papers
- C. demonstrations
- D. essays
- E. exams
- F. case studies

**VII. Grade Determinants**

- A. essays/research papers
- B. lab reports
- C. tests
- D. case studies

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. Reading assignments
- C. Small-group work
- D. Laboratory exercises
- E. Student oral 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. RVCC Fitness Center
- B. Lab Equipment
- C. RVCC Library