

Request for Undergraduate Course Addition

Prepare one paper copy with all signatures and forward to Bernice Bullock in the Faculty Senate office. Additionally, immediately following attainment of the College Curriculum Chair signature, send one identical ELECTRONIC COPY sans signatures in PDF format with all supporting documentation converted to PDF format by email to Bernice Bullock in the Faculty Senate office.

College: COEHS Department/Division: ESSR Alpha Designator/Number: ESS 444 Graded: CR/NC:
 Contact Person: Eric Arnold, Ph.D., and Gina Sobrero Evans, Ph.D. Phone: 696-2412/2924

NEW COURSE DATA:

| | | | | | | | | | | | | | | | | | | | | | | | | |
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| New Course Title: <u>Cardiovascular Exercise Physiology</u> | | | | | | | | | | | | | | | | | | | | | | | | |
| Alpha Designator/Number: | <table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr><td>E</td><td>S</td><td>S</td><td>4</td><td>4</td><td>4</td><td></td><td></td></tr> </table> | E | S | S | 4 | 4 | 4 | | | | | | | | | | | | | | | | | |
| E | S | S | 4 | 4 | 4 | | | | | | | | | | | | | | | | | | | |
| Title Abbreviation: | <table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr><td>C</td><td>a</td><td>r</td><td>d</td><td>i</td><td>o</td><td></td><td>E</td><td>x</td><td>e</td><td>r</td><td>c</td><td>i</td><td>s</td><td>e</td><td></td><td>P</td><td>h</td><td>y</td><td>s</td><td></td><td></td><td></td></tr> </table> (Limit of 25 characters and spaces.) | C | a | r | d | i | o | | E | x | e | r | c | i | s | e | | P | h | y | s | | | |
| C | a | r | d | i | o | | E | x | e | r | c | i | s | e | | P | h | y | s | | | | | |
| Course Description (Limit of 30 words): | <div style="border: 1px solid black; padding: 5px; min-height: 40px;">Detailed study of the anatomy and physiology of the cardiovascular systems and its response to acute and chronic exercise.</div> | | | | | | | | | | | | | | | | | | | | | | | |
| Co-requisite(s): <u>None</u> | First Term to be Offered: <u>Fall 2009</u> | | | | | | | | | | | | | | | | | | | | | | | |
| Prerequisite(s): <u>ESS 345, 346, & HS 200</u> | Credit Hours: <u>3</u> | | | | | | | | | | | | | | | | | | | | | | | |
| Course(s) being deleted in place of this addition (must submit course deletion form): <u>None</u> | | | | | | | | | | | | | | | | | | | | | | | | |

CHECKLIST/REQUIREMENTS

1. After completing this two page form in its entirety, include a complete syllabus and route through the departments/committees below.
2. A complete syllabus can be from when this course was previously taught as a special topics course or by creating a new, intended syllabus to use with the course. The sample syllabus must at a minimum address the following areas:
 - a. COURSE OBJECTIVES
 - b. COURSE OUTLINE
 - c. SAMPLE TEXT(S) WITH AUTHOR(S) AND PUBLICATION DATE
 - d. INSTRUCTIONAL METHODS (Lecture, Lab, Internship, Practicum, etc...)
 - e. EVALUATION METHODS (Unit/Chapter, Midterm, Final, Projects, etc...)
3. If this course will replace a course that is required by another department, please send a memo to the affected department and include it with this packet, as well as, the response received from the affected department.
4. If this course will be similar in title or content to another department's courses, please send a memo to the affected department and include it with this packet, as well as, the response received from the affected department.
5. Send a copy of this completed form to the Marshall University Catalog Editor.

SIGNATURES: (If disapproved at any level, do not sign. Return to previous signer.)

| | |
|--|-------------|
| Department Chair/Division Head: _____ | Date: _____ |
| Registrar: _____ | Date: _____ |
| Librarian: _____ | Date: _____ |
| College Dean: _____ | Date: _____ |
| College Curriculum Chair: _____ | Date: _____ |
| University Curriculum Committee Chair: _____ | Date: _____ |
| Faculty Senate Chair: _____ | Date: _____ |
| VP Academic Affairs/VP Health Science _____ | Date: _____ |

Request for Undergraduate Course Addition - Page 2
Additional Information Required for Undergraduate Course Addition

College: COEHS Department/Division: ESSR Alpha Designator/Number: ESS 444

Provide complete information regarding the new course addition for each topic listed below. Before routing this form, a complete syllabus also must be attached addressing the items listed on the first page of this form.

1. Identify by name the faculty in your department/division who may teach this course.

Gina Sobrero Evans, Ph.D., and Eric Arnold, Ph.D.

2. If your department/division requires additional faculty, equipment, or specialized materials, attach an estimation of money and time required to secure these items.

N/A

3. If this course will be required by a department/division other than your own, identify by name.

N/A

4. If there are any agreements required to provide clinical experience, attach details and signed agreements.

N/A

5. If library resources are deemed inadequate, attach a plan to overcome this. The plan must include the cost as stated by the Dean of Libraries.

N/A

6. EQUIPMENT/SUPPLIES NEEDED TO TEACH THIS COURSE (this does not refer to additional equipment/supplies that need to be purchased; simply what materials are needed in order to teach this course successfully.):

Electrocardiography
Treadmill
Pulse Oximetry
Blood Pressure Cuff
Stethoscope



7. ADDITIONAL GRADUATE REQUIREMENTS IF LISTED AS AN UNDERGRADUATE OR GRADUATE COURSE (please also submit to Graduate Council course addition for 5xx graduate component):

Please see attached page.

8. PROVIDE A COMPLETE BIBLIOGRAPHY INCLUDING ALL PUBLICATIONS RESEARCHED TO CREATE THIS COURSE AND WHAT PUBLICATIONS MAY BE BENEFICIAL TO STUDENTS TAKING THIS COURSE (separate page).

COURSE SYLLABUS
ESS 444
CARDIOVASCULAR EXERCISE PHYSIOLOGY

MARSHALL UNIVERSITY
DIVISION OF EXERCISE SCIENCE, SPORT, AND RECREATION

Fall 2009

WHEN: TBA

LOCATION: TBA

TIME: TBA

INSTRUCTOR(S): Eric Arnold, Ph.D./Gina Sobrero Evans, Ph.D., HFI®

OFFICE: GH 108/ (GH 1) Exercise Physiology Laboratory

PHONE: 304-696-2412/2924

EMAIL: arnoldc@marshall.edu/evansg@marshall.edu

OFFICE HOURS: TBA

PREREQUISITE: ESS 345 Exercise Physiology
ESS 346 Exercise Physiology Laboratory
HS 200 Medical Terminology

COURSE DESCRIPTION

Detailed study of the anatomy and physiology of the cardiovascular systems and its response to acute and chronic exercise.

REQUIRED TEXTBOOKS

Goldberger, A. L., & Goldberger, E. (2006). *Clinical electrocardiography: A simplified approach* (7th ed.). St. Louis, MO: Mosby.

Mohrman, D. E. (2006). *Cardiovascular physiology: Lange physiology series* (6th ed.) Boston, MA: The McGraw-Hill Companies.

PURPOSE OF THE COURSE

The purpose of this course is to provide detailed instruction regarding the acute and chronic effects of exercise on the cardiovascular systems. In addition, students will study cardiovascular pathology and basic related pharmacology.

COURSE OBJECTS

Students should be able to:

1. Name the components of the oxygen transport system, describe the function of each, and understand the integrative interactions of the components
2. Describe the anatomical and physiological structure of the heart, including nervous innervations and vascular supply
3. Explain the physiological events of the cardiac action potential and the associated mechanical events
4. Explain the sliding filament theory as it applies to the contraction of cardiac muscle fibers
5. Briefly discuss normal heart sounds
6. Discuss the principals of electrocardiography and explain the physiological consequences of selected abnormalities of rate, rhythm, axis, and infarction
7. Explain the major determinants of cardiac output at rest and during exercise
8. Discuss the organization of the circulatory system and the role of the lymphatic system
9. Explain the relationships between pressure, flow, and resistance at rest, during exercise, and in various diseased states
10. Determine normal and abnormal values for systolic, diastolic, and mean arterial blood pressure and explain the control of blood pressure
11. Explain blood pressure changes during acute and chronic exercise as well as in response to resistance exercise and aerobic endurance exercise training
12. Discuss structural changes in the heart in response to resistance exercise and aerobic endurance training
13. Discuss the principals of movement of fluid and dissolved solutes in the body
14. Explain the control of the peripheral circulation at rest and during exercise
15. Students will discuss the effects of aging on the cardiovascular system
16. Students will discuss pathology of ischemic heart disease, congestive heart failure, hypertension and circulatory shock as well as related pharmacology

EXPECTATIONS and ATTENDANCE

Class attendance is extremely important and you are expected to attend **all** classes. Qualified **excused** absences will be considered to be **an illness, family crisis** or **approved institutional activity**. This **does not** include routine medical appointments (unless of special nature and only with written notification and approval). Classes that are missed to count for an excused absence must be verified, in writing with the instructor ahead of time in regard to an institutional activity. **Absences** will be counted as unexcused unless the student provides written documentation and verification within **one week** of the class missed. **A STUDENT HAVING EXCESSIVE UNEXCUSED ABSENCES WILL BE ADVISED TO DROP THE COURSE.** Students are required to make-up missed exams within **one week** of returning to class at a time mutually agreed upon with the instructor except with scheduled institutional activities which will be discussed **AHEAD** of time for a make-up schedule. The **make-up** exam and or quiz will be **different** than the **missed** exam and or quiz.

POLICY ON ACADEMIC HONESTY

The University assumes as a basic and minimum standard conduct in academic matters that students are honest and they submit for credit only the products of their own efforts. All dishonest work will be rejected as the basis for academic credit. This includes work done in unauthorized collaboration with another person, falsification, or plagiarism (for instance, misrepresented material, fabricated information, false or misleading citation sources, falsification of the results of experiments or computer data). Any of the above violations will result in a final grade of **F** being received.

OTHER PERTINENT INFORMATION

Class begins at **TBA**; therefore, it is important to be on time. If you are going to be late, **call** and **inform** the instructor. If you have to leave class early, inform the instructor (by phone or email) prior to class and try and sit close to the exit to minimize disruption to your fellow classmates. Also, please keep **paggers, cell phones, beepers, personal digital assistants, satellite messaging systems, laptops or other audible communicators** turned off during lecture or on vibration mode. Show **respect** toward your classmates and **please don't talk during lecture.** However, questions are welcomed during lecture.

GRADING POLICY

Each test or quiz is given in specific points. Assignments will be made during the semester. At the end of the semester, the total points you have received will determine your grade based upon the following:

GRADING

| | |
|---------------------------|-------------------|
| Exam 1 | 100 points |
| Exam 2 | 100 points |
| Exam 3 | 100 points |
| Comprehensive Exam | 200 points |
| Total Points | 500 points |

| GRADE | PERCENTAGE | POINTS |
|--------------|-------------------|---------------------|
| A | 89.5-100 | 447.5-500 |
| B | 79.5-89.49 | 397.5-447.45 |
| C | 69.5-79.49 | 347.5-397.45 |
| D | 59.5-69.49 | 297.5-347.45 |
| F | < 59.5 | < 297.5 |

TESTS

Each **test** will be comprised of **multiple choice, fill-in the blank, and short essay** type questions. The total number of questions for **tests 1-3** will be designated at **50-60 multiple choice/fill in the blank, and possibly 1-2 short essay questions**. Students will have the entire class time to complete the exam. The **comprehensive exam** will have between **70 and 100 multiple choice/fill in the blank** questions.

STATEMENT CONCERNING LEARNING DISABLED STUDENTS

If you have special needs regarding testing or notetaking please notify the instructor at the beginning of the semester. You will be asked to follow up with written documentation from the appropriate agency. Appropriate accommodations will be made on an individual basis. As a general rule please plan on taking exams on the day and time as posted in the syllabus.

CARDIOVASCULAR EXERCISE PHYSIOLOGY

Course Schedule

Please note that this is considered a basic course schedule outline that will be followed as closely as possible; however, deviations from the designated schedule may occur. Each student is responsible for keeping up with the class schedule, scheduled changes, and requirements including assigned chapter readings.

| Date | Topic | Chapter | Assignment/Test |
|--------|---|---------------|---|
| Week 1 | Syllabus Review Blood & Circulation | Chapter 1 | Circulatory Physiology pp. 1-15 |
| Week 2 | Hemodynamics | Chapter 2 | Circulatory Physiology pp. 15-30 |
| Week 3 | Structure & Function of the Heart Electrical Properties of the Heart | Chapter 3 & 4 | Circulatory Physiology pp. 31-69 |
| Week 4 | Contractile Properties of the Heart | Chapter 5 | Circulatory Physiology pp. 71-88 |
| Week 5 | Pressure & Flow in the Arterial & Venous Systems | Chapter 6 | Exam 1 Chapters 1-5 Circulatory Physiology Circulatory Physiology pp. 89-109 |
| Week 6 | Venous Return & Cardiac Output | Chapter 7 | Circulatory Physiology pp. 111-126 |
| Week 7 | Microcirculation of Lymphatic System | Chapter 8 | Circulatory Physiology pp. 128-138 |

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|---------|--|------------|--|
| Week 8 | Peripheral Circulation & Regulation | Chapter 9 | Circulatory Physiology pp. 140-159 |
| Week 9 | Regulation of Arterial Blood Pressure | Chapter 10 | Exam 2 Chapters 6-9 Circulatory Physiology Circulatory Physiology pp. 161-179 |
| Week 10 | Circulation to Special Regions | Chapter 11 | Circulatory Physiology pp. 182-219 |
| Week 11 | Circulation to Special Regions | Chapter 11 | Circulatory Physiology pp. 182-219 |
| Week 12 | Physiology of Exercise and the Effects of Aging | Chapter 12 | Circulatory Physiology pp. 223-249 |
| Week 13 | Circulatory Response to Nonexercise Stress | Chapter 13 | Exam 3 Chapters 10-12 Circulatory Physiology Circulatory Physiology pp. 253-273 |
| Week 14 | Pathophysiology: Ischemic Heart Disease and Congestive Heart Failure | Chapter 14 | Circulatory Physiology pp. 274-299 |
| Week 15 | Pathophysiology: Hypertension and Circulatory Shock | Chapter 15 | Circulatory Physiology pp. 302-327 |
| Week 16 | FINAL EXAM | | COMPREHENSIVE |

References: Cardiovascular Exercise Physiology

- American College of Sports Medicine. (2006). *ACSM's advanced exercise physiology*. Philadelphia: Lippincott Williams & Wilkins.
- American College of Sports Medicine. (2006). *ACSM's guidelines for exercise testing and prescription* (7th ed.). Philadelphia: Lippincott Williams & Wilkins.
- American College of Sports Medicine. (2006). *ACSM's resource manual for guidelines for exercise testing and prescription* (5th ed.). Philadelphia: Lippincott Williams & Wilkins.
- Goldberger, A. L., & Goldberger, E. (2006). *Clinical electrocardiography: A simplified approach* (7th ed.). St. Louis, MO: Mosby.
- O'Toole, M. T. (Ed.). (1997). *Miller-Keane encyclopedia & dictionary of medicine, nursing, & allied health* (6th ed.). Philadelphia: W. B. Saunders Company.
- Powers, S. K., & Howley, E. T. (Eds.). (2009). *Exercise physiology: Theory and application to fitness and performance*. Boston, MA: McGraw-Hill Higher Education.
- McArdle, W. D., Katch, F. I., & Katch, V. L. (Eds.). (2006). *Exercise physiology: Energy, nutrition, and human performance* (6th ed.). Philadelphia: Lippincott Williams & Wilkins.
- Skinner, J. S. (Ed.). (2005). *Exercise testing and exercise prescription for special cases: Theoretical basis and clinical application* (3rd ed.). Baltimore: Lippincott Williams & Wilkins.