

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 446 Graded: CR/NC:
 Contact Person: Eric Arnold, Ph.D., and Gina Sobrero Evans, Ph.D. Phone: 696-2412/2924

NEW COURSE DATA:

New Course Title: <u>Neuromuscular Exercise Physiology/Plasticity</u>																							
Alpha Designator/Number:	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">E</td> <td style="width: 20px;">S</td> <td style="width: 20px;">S</td> <td style="width: 20px;">4</td> <td style="width: 20px;">4</td> <td style="width: 20px;">6</td> <td style="width: 20px;"> </td> <td style="width: 20px;"> </td> </tr> </table>	E	S	S	4	4	6																
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Title Abbreviation:	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">N</td><td style="width: 20px;">e</td><td style="width: 20px;">u</td><td style="width: 20px;">r</td><td style="width: 20px;">o</td> <td style="width: 20px;">E</td><td style="width: 20px;">x</td><td style="width: 20px;">e</td><td style="width: 20px;">r</td><td style="width: 20px;">c</td><td style="width: 20px;">i</td><td style="width: 20px;">s</td><td style="width: 20px;">e</td> <td style="width: 20px;">P</td><td style="width: 20px;">h</td><td style="width: 20px;">y</td><td style="width: 20px;">s</td> <td style="width: 20px;">P</td><td style="width: 20px;">l</td><td style="width: 20px;">a</td><td style="width: 20px;">s</td><td style="width: 20px;">t</td> </tr> </table> (Limit of 25 characters and spaces.)	N	e	u	r	o	E	x	e	r	c	i	s	e	P	h	y	s	P	l	a	s	t
N	e	u	r	o	E	x	e	r	c	i	s	e	P	h	y	s	P	l	a	s	t		
Course Description (Limit of 30 words):	This course is a detailed study of the structure and function of the neuromuscular system along with the etiology and functional consequences of numerous neuromuscular diseases.																						
Co-requisite(s): <u>None</u>	First Term to be Offered: <u>FALL 09</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 446

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.

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

Electromyography and electrodes
Cybex equipment

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 sheet.

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 446
NEUROMUSCULAR EXERCISE PHYSIOLOGY/PLASTICITY

MARSHALL UNIVERSITY
DIVISION OF EXERCISE SCIENCE, SPORT, AND RECREATION

Spring 2010

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

This course is a detailed study of the structure and function of the neuromuscular system along with the etiology and functional consequences of numerous neuromuscular diseases.

REQUIRED TEXTBOOKS

Lieber, R.L. (2002). *Skeletal muscle structure, function, & plasticity* (2nd ed.). Philadelphia: Lippincott Williams & Wilkins.

PURPOSE OF THE COURSE

The purpose of this course is to provide detailed instruction regarding physiology of movement, fatigue, and neuromuscular adaptations to strength and endurance training, disuse, and aging. Students will learn the etiology and functional consequences of numerous neuromuscular diseases; e.g., muscular dystrophy, muscular sclerosis, central core disease, malignant hyperthermia, myasthenia gravis, and amyotrophic lateral sclerosis.

COURSE OBJECTIVES

Specific learning objectives for this course include understanding the following:

1. Skeletal muscle development
2. Anatomy of the myocyte
3. Anatomy of whole skeletal muscle
4. Muscle fiber activation
5. Skeletal muscle mechanics
6. Muscle fiber types and motor units
7. Fatigue
8. Production of movement
9. Muscle adaptation to increased use: electrical stimulation
10. Muscle adaptation to increased use: chronic stretch
11. Muscle adaptation to increased use: compensatory hypertrophy
12. Muscle adaptation to increased use: exercise
13. Muscle adaptation to decreased use: immobilization
14. Muscle adaptation to decreased use: spinal cord transection
15. Adaptation to aging
16. Adaptation to denervation
17. Etiology and functional consequence of neuromuscular diseases
18. Skeletal muscle response to injury

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 may 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
5 Quizzes 20 points each	100 points
Total Points	400 points

GRADE	PERCENTAGE	POINTS
A	89.5-100	358-400
B	79.5-89.49	318-357.96
C	69.5-79.49	278-317.96
D	59.5-69.49	238-277.96
F	< 59.5	<238

TESTS

Each **test** will be comprised of **multiple choice, fill-in the blank, or matching** type questions. The total number of questions for **tests 1-3** will be designated at **50-60 multiple choice, fill in the blank or matching type 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. Each quiz will be comprised of **10-20 multiple choice, fill-in the blank, or matching** type 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.

NEUROMUSCULAR EXERCISE PHYSIOLOGY/PLASTICITY

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	Introduction and Skeletal muscle Development	Ch 1 Pgs 1-13	
Week 2	Skeletal muscle Development and Skeletal muscle Microstructure	Ch 1 Pgs 13-26	
Week 3	Muscle Fiber Activation and Skeletal Muscle Mechanics	Ch 2 Pgs 46-74	Quiz 1
Week 4	Skeletal Muscle Mechanics and Muscle Fiber Types	Ch 2 Pgs 74-89	
Week 5	Motor Units and Fatigue	Ch 2 Pgs 90-106 And Research and Review Paper	Quiz 2
Week 6	Production of Movement	Ch 3 Pgs 113-169	EXAM 1 Chapters 1-2
Week 7	Production of Movement and Muscle Adaptation (Electrical Stimulation)	Chs 3 & 4 Pgs 113-179 and Research and Review Paper	
Week 8	Muscle adaptation Chronic Stretch and Compensatory Hypertrophy	Ch 4 Pgs 179-195 and Research and Review Paper	Quiz 3
Week 9	Muscle Adaptation to Exercise and Muscle Adaptation to Decreased Use: Immobilization	Ch 4 & 5 Pgs 208-239 and Review and Research Paper	
Week 10	Muscle Adaptation to Decreased Use: Spinal Cord Transection and Hindlimb Suspension	Ch 5 Pgs 239-253	Quiz 4
Week 11	Muscle Fiber Atrophy		EXAM 2 Chapters 3-5
Week 12	Adaptation to Aging, Denervation, and Tenotomy and Reinnervation	Ch 5 Pgs 256-281	

Week 13	Morphology of the Degeneration/Regeneration Cycle and Muscle Properties after Regeneration	Ch 6 Pgs 288-300	
Week 14	Clinical Application: Neuromuscular Diseases	Ch 6 Pgs 300-304 and Handouts	Quiz 5
Week 15	Muscle Response to Exercise-Induced Injury	Ch 6 Pgs 304-341	
Week 16	EXAM 3		EXAM 3 Chapters 5 -6

References: Neuromuscular Exercise Physiology/Plasticity

- 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.
- Lieber, R. L. (2002). *Skeletal muscle structure, function, & plasticity* (2nd ed.). Philadelphia: Lippincott Williams & Wilkins.
- 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.
- MacIntosh, B.R., Gardiner, P., McComas, A. J. (2006). *Skeletal muscle: Form and function* (2nd ed.). Champaign, IL: Human Kinetics.
- Skinner, J. S. (Ed.). (2005). *Exercise testing and exercise prescription for special cases: Theoretical basis and clinical application* (3rd ed.). Baltimore: Lippincott Williams & Wilkins.