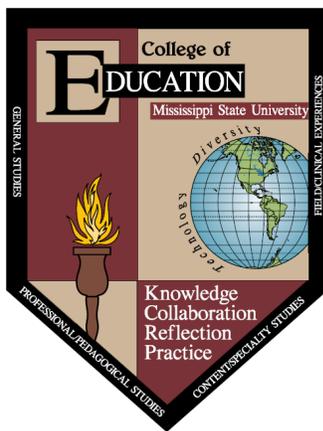


**MISSISSIPPI STATE UNIVERSITY
COLLEGE OF EDUCATION**

**DEPARTMENT of KINESIOLOGY
COURSE SYLLABUS**

Course Prefix & Number:	EP 8423
Course Title:	Graded Exercise Testing
Credit Hours:	Three (3) semester hours
Course Type:	Lecture/Laboratory
Catalog Description:	Methods of supervising graded exercise stress testing; including interpretation of basic electrocardiography.

College of Education Conceptual Framework:



The faculty in the College of Education at Mississippi State University are committed to assuring the success of students and graduates by providing superior learning opportunities that are continually improved as society, schools, and technology change. The organizing theme for the conceptual framework for the College of Education at Mississippi State University is educational professionals - dedicated to continual improvement of all students' educational experiences. The beliefs that guide program development are as follows:

1. **KNOWLEDGE** - Educational professionals must have a deep understanding of the organizing concepts, processes, and attitudes that comprise their chosen disciplinary knowledge base, the pedagogical knowledge base, and the pedagogical content knowledge base. They must also know how to complement these knowledge bases with the appropriate use of technology.
2. **COLLABORATION** - Educational professionals must continually seek opportunities to work together, learn from one another, forge partnerships, and assume positions of responsibility.
3. **REFLECTION** - Educational professionals must be willing to assess their own strengths and weaknesses through reflection. They must also possess the skills, behaviors, and attitudes necessary to learn, change, and grow as life-long learners.
4. **PRACTICE** - Educational professionals must have a rich repertoire of research-based strategies for instruction, assessment, and the use of technologies. They must be able to focus that array of skills on promoting authentic learning by all students or clients, while exhibiting an appreciation and commitment to the value and role of diversity.

Course Objectives:

Upon completion of EP 8423 the student will be able to:

1. Describe the contraindications to exercise stress testing. **CFPO #'s 2, 3, 4; InTASC #'s 2, 4, & 6**
2. Describe various exercise stress test protocols. **CFPO #'s 3, 4, 7; InTASC #'s 2, 4, & 6**
3. Describe the components of the informed consent for exercise stress testing. **CFPO #'s 1, 2, 3, 4 & 10; InTASC #'s 2, 4, 6, & 9**
4. Describe the safety statistics concerning exercise stress testing. **CFPO #'s 2, 3, 10; InTASC #'s 2, 6, & 8**
5. Describe laboratory safety procedures. **CFPO #'s 2, 4, 7, 9, 10; InTASC #'s 2, 4, & 9**
6. Describe cardiovascular response to acute exercise. **CFPO #'s 3, 4 & 10; InTASC #'s 2, 4, & 6**
7. Describe the technique for blood pressure assessment. **CFPO #'s 1, 2, 3, 4, 5, 7, 9, 10; InTASC #'s 2 & 4**
8. Describe laboratory equipment for exercise stress testing. **CFPO #'s 2, 3, 4, 10; InTASC #'s 4 & 6**
9. Describe emergency plans and procedures for exercise testing. **CFPO #'s 1, 2, 3, 10; InTASC #'s 2, 4, 6, & 9**
10. Describe basic electrocardiographic analysis. **CFPO #'s 1, 2, 3, 4, 7, 10; InTASC #'s 2, 4, 6, & 9**
11. Describe EKG and the electrical conduction of the heart. **CFPO #'s 1, 2, 3, 4, 7; InTASC # 4**
12. Describe the characteristics of EKG recording paper. **CFPO #'s 4,7; InTASC #'s 4 & 6**
13. Describe electrode placement of 12-lead EKG monitoring. **CFPO #'s 4, 7; InTASC #'s 2, 4, & 9**

Topics to Be Covered:

1. Contraindications to exercise stress testing (30 min)
2. Exercise stress test protocols (30 min)
3. Consent for exercise stress testing (30 min)
4. Safety statistics concerning exercise stress testing (30 min)
5. Laboratory safety procedures (30 min)
6. Cardiovascular response to acute exercise (30 min)
7. Blood pressure assessment (30 min)
8. Laboratory equipment for exercise stress testing (30 min)
9. Emergency plans and procedures for exercise testing (30 min)
10. Basic electrocardiographic analysis (30 hours total for the following topics)
 - a) EKG and the electrical conduction of the heart (30 minutes)
 - b) Characteristics of EKG recording paper (30 minutes)
 - c) Electrode placement for 12-lead EKG monitoring (30 minutes)
 - d) Determination of heart rate with the EKG (30 minutes)

- bradycardia (30 minutes)
- tachycardia (30 minutes)
- ectopic pacemakers (30 minutes)
- cardia arrhythmias (30 minutes)
- sinus arrhythmias (30 minutes)
- wandering pacemaker (30 minutes)
- atrial flutter (30 minutes)
- atrial fibrillation (30 minutes)
- atrial premature contractions (30 minutes)
- nodal premature contractions (30 minutes)
- ventricular premature contractions (30 minutes)
- bigeminy (30 minutes)
- trigeminy (30 minutes)
- quadrigeminy (30 minutes)
- unifocal pvc's (30 minutes)
- multifocals pvc's (30 minutes)
- parasystole (30 minutes)
- PVC on T wave phenomenon (30 minutes)
- atrial escape (30 minutes)
- nodal escape (30 minutes)
- ventricular escape (30 minutes)
- sinus arrest (30 minutes)
- paroxysmal atrial tachycardia (30 minutes)
- ventricular flutter (30 minutes)
- ventricular fibrillation (30 minutes)
- first degree av block (30 minutes)
- second degree av block (30 minutes)
- third degree av block (15 minutes)
- wenckebach phenomenon (30 minutes)
- Moritz I (30 minutes)
- Moritz II (30 minutes)
- left bundle branch block (30 minutes)
- wolff-parkinson-white (30 minutes)

e) Axis

- p wave axis (30 minutes)
- normal axis (30 minutes)
- left axis deviation (30 minutes)
- right axis deviation (30 minutes)
- extreme right axis deviation (30 minutes)
- effect of infarction on axis (30 minutes)
- effect of ventricular hypertrophy on axis (30 minutes)

f) Hypertrophy

- right atrial hypertrophy (30 minutes)
- left atrial hypertrophy (30 minutes)
- right ventricular hypertrophy (30 minutes)
- left ventricular hypertrophy (30 minutes)

- causes of hypertrophy (30 minutes)
- g) Infarction and cardiovascular insufficiency
 - causes of ischemia (30 minutes)
 - detection of ischemia (30 minutes)
 - criteria for recognition of infarctions (30 minutes)
 - subendocardial infarction (30 minutes)
 - anterior infarction (30 minutes)
 - posterior infarction (30 minutes)
 - lateral infarction (30 minutes)
 - inferior infarction (30 minutes)
 - anterior hemiblock (30 minutes)
 - posterior hemiblock (30 minutes)
 - bifascicular blocks (30 minutes)
 - pulmonary infarction (30 minutes)
- 11. Environmental factors during exercise stress testing (30 min)
- 12. Effect of cardiovascular drugs and other drugs on the EKG (30 min)
- 13. Legal considerations for exercise stress testing (30 min)
- 14. Interpretation of exercise stress test results (30 min)

Required Text:

ACSM, (2014). *American College of Sports Medicine, resource manual for guidelines for exercise testing and prescription*. Baltimore, MD, Lippincott, Williams & Wilkins Publishing Company.

Method of Instruction:

Lecture/ Laboratory Experiences

Methods of Instruction:

Methods utilized in this course will include lecture and group discussion.

Suggested Student Activities:

1. Students will interpret numerous examples of EKG's throughout the semester. Obj 10-13
2. Students will assist in supervision of one GXT during the semester. Obj 1-8
3. Student will practice blood pressure assessment during the semester. Obj 7
4. Students will interpret an ECG during a GXT. Obj 10-13

MSU Honor Code:

"As a Mississippi State University student I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do."

Upon accepting admission to Mississippi State University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor Code. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the MSU community from the requirements or the processes of the Honor Code. For additional information please visit:

<http://www.msstate.edu/dept/audit/1207A.html>

Technology:

Students will use technology and tools related to cardiography.

Diversity:

Diversity will not be specifically addressed in this course.

Disability:

Students who have a disability that requires any type of accommodation must see the instructor immediately. Students with disabilities as well as low income and first generation students should be aware that Student Support Services at MSU (662-325-3335) can support them in becoming successful academically. More information about Student Support Services can be found at: <http://www.sss.msstate.edu/>

Field Component: None

Evaluation of Student Progress:

Test 1	100 Points	A = 400 - 360 Points
Test 2	100 Points	B = 359 - 320 Points
Test 3	100 Points	C = 319 - 280 Points
Test 4	<u>100 Points</u>	D = 279 - 240 Points
	400 Points	F = 239 - 0 Points

Bibliography:

ACSM, (2014). *American College of Sports Medicine, guidelines for exercise testing and prescription*. Baltimore MD. Lippincott, Williams & Wilkins, Publishing Company.

Brown, S.P., Miller, W.C., and Eason, J.M. (2006). *Exercise Physiology: Basis of human movement in health and disease*. Baltimore: Lippincott Williams & Wilkins.

Niebauer, J. (2011). *Cardiac rehabilitation manual*. New York: Springer.

Ehrman, J., Gordon, P., Visich, P., Keteyian, S. (2013). *Clinical exercise physiology*. Champaign, IL: Human Kinetics.

Frontera, W. (2006). *Exercise in rehabilitation medicine*. Champaign, IL: Human Kinetics.

Thow, M., Graham, K., & Lee, C. (2013). *The Healthy Heart Book*. Champaign, IL: Human Kinetics.

Whyte, G. & Sharma, S. (2010). *Practical ECG for Exercise Science and Sports Medicine*. Champaign, IL: Human Kinetics.