Department of Kinesiology
KINE 5500 - 6500
Exercise Technology I:
Principles of Exercise Testing and Interpretation

Fall 2012
Credit Hours: 4 hours; Lec 2, Lab 4

Prerequisites/Co-requisites: KINE 3680 – Physiology of Exercise

Instructor: Dr. Jim McDonald **Email: jrm0013@auburn.edu**
Office: Room 2070, Coliseum
Office Hours: Tues & Thurs **Office Phone: 844-1462**
1:00 – 3:00 pm

5500/6500 TEXTBOOKS

Exercise Physiology, Scott Powers & Edward Holley, McGraw Hill, 8th Edition, 2012, ISBN 978-0-07-802253-1

ACSM's Health-Related Physical Fitness Assessment Manual, Lippincott, Williams & Wilkins, 3rd Edition, 2007, ISBN 0-7817-7549-6

Supplemental Textbooks:

ACSM's Guidelines for Exercise Testing and Prescription. Lippincott, Williams & Wilkins, 8th Edition, 2009, ISBN 0-7817-6903-7

Practical ECG for Exercise Science and Sports Medicine, G. Whyte and S. Sharma, Human Kinetics, 2010, ISBN 978-0-7360-8194-8

COURSE DESCRIPTION

The class will cover the concepts and skill development in physiologic testing, test selection, and interpretation in normal and special populations.

The class will address underlying physiology that is involved in common physical assessments, testing used in clinical and fitness settings, the selection of appropriate assessments, results interpretation and the application of assessment results for exercise prescription and chronic disease risk reduction. Laboratory experiences are designed to develop competencies in physical assessments. Laboratory experiences will include body composition, musculoskeletal fitness, pulmonary function, cardiovascular function, and exercise tests for functional capacity and cardiovascular fitness with electrocardiogram.

Student Learning Outcomes:

After successfully completing this course, you will be able to: Explain and discuss the underlying physiology and principles of health and fitness assessment in accordance with American College of Sports Medicine (ACSM) guidelines. This will prepare you to take either the **ACSM Personal Training** or **Health/Fitness Specialist (HFS) certification.** The course will also provide information and hands on experience that may also assist in preparation for certifications from the **National Strength and Conditioning Association** or the **American Council on Exercise.**

Specific outcomes:

1. Understand basic human physiology to include control of the internal environment, exercise and the immune system, basic cell signaling and hormonal response to exercise or lack of exercise, the respiratory system, the cardiac cycle, basic electrocardiogram, responses to exercise or a lack of physical activity, basic nutrition and weight control and exercise prescription for normal and special populations.

2. Using pre-test screening instruments for determining the appropriateness of exercise, exercise testing, and cardiovascular disease risk stratification based on blood pressure, cholesterol levels, physical activity or other factors.

3. Use direct and indirect techniques to assess muscular strength, flexibility, and endurance

4. Understand the underlying principles of body composition testing and become familiar with techniques to estimate body composition using skin fold methods, bioelectrical impedance and anthropometrical techniques.

5. Understand the physiologic basis of blood pressure. Measure systolic and diastolic blood pressures at rest and during exposure to various environmental stressors using a stethoscope and sphygmomanometer

6. Understand the cardiorespiratory changes that occur with exercise and how it can be measured. Conduct sub-maximal graded exercise tests for the purpose of examining cardiovascular responses to exercise and determining exercise capacity

7. Demonstrate proficiency using metabolic calculations to determine body composition, estimates of cardiovascular capacity, exercise energy expenditure and exercise workloads.

8. Demonstrate the ability to prepare a subject for a 12-lead electrocardiogram. And be familiar with a normal ECG reading at rest and during a graded exercise test.

Course content outline:

Week 1 – 20 Aug	Class overview, Careers in Exercise Science Homeostasis Cell signaling & Hormones
Week 2 – 27 Aug	Hormones and exercise Immune response to exercise and disease Physical activity and health
Week 3 – 3 Sep	Obesity and disease Cardiovascular disease
Week 4 – 10 Sep	Overview of health testing & screening CVD Risk assessment Exam #1
Week 5 – 17 Sep	Body Composition testing Nutrition Weight Control
Week 6 – 24 Sep	Pulmonary structure and function Pulmonary testing Pulmonary function during exercise
Week 7 – 1 Oct	Cardiac structure and function Cardiac response to exercise VO_2 and aerobic fitness
Week 8 – 8 Oct	Basic ECG Abnormal ECG Exam #2
Week 9 – 15 Oct	Joints, tendons & biomechanics Balance & balance testing Muscle structure and function
Week 10 – 22 Oct	Muscle fitness and testing Orthopedic evaluation Flexibility testing and prescription
Week 11 – 29 Oct	Graded Exercise testing Metabolic calculations and aerobic fitness Overview of exercise training
Week 12 – 5 Nov	Exercise prescription for health populations Exercise prescription for special populations Exam #3

Week 13 – 12 Nov	Testing for Athletic performance Training for performance Training for Females, Children & Masters athletes
Week 14 - 19 Nov	Thanksgiving
Week 15 – 26 Nov	Safety during exercise testing CPR training Class review
Final	Exam #4

Lab schedule:

Week 5 – 17 Sep	Health screening, blood pressure, heart rate, weight & height
Week 6 – 24 Sep	Body composition testing
Week 7 – 1 Oct	Pulmonary function tests
Week 8 – 8 Oct	VO_2 testing
Week 9 – 15 Oct	Basic ECG
Week 11 – 29 Oct	Muscular fitness, balance & flexibility testing
Week 12 – 5 Nov	Graded Exercise testing
Week 13 – 12 Nov	Practice TigerFit health & fitness clinic

Grading Scale

You may earn up to 500 total points in this course. Your individual evaluation will be based on the total points you earn throughout the course. For example, an "A" = 450 total points earned or 90%, a "B" = 400 - 449 points earned or 80 - 89%, a "C" = 350 - 399 points earned or 70 - 79%.

Labs (100 Points)

There are 8 laboratory sessions scheduled. You will be graded on your preparation for the laboratory and your participation. There will be a quiz at the beginning of each lab session to evaluate your preparation. The labs are worth 20% of your grade. If you do not attend a lab session you will receive a 0 for that class unless you have an excused absence. Total points available from the lab sessions equal 100 with preparation counting for 80% of that grade.

Exams (400 Points)

There will be a total of 4 exams including the final; each exam is worth 100 points. Exams are designed to test your knowledge in areas covered in assigned text readings, lectures and laboratory experiences. Make-up exams will only be given for students with documented excused absences. Students with excused absences must be prepared to take the exam on the day they return to class. The comprehensive final exam, will be administered at the scheduled exam time at the end of the semester.

Class Policies

Attendance: Although attendance is not required except for the lab sessions, students are expected to attend all classes, and will be held responsible for any content covered in the event of an absence.. Excused absences are defined in the Student Policy eHandbook, www.auburn.edu/studentpolicies.

Make up policy: Arrangements to make up a missed examination due to a properly authorized absence must be initiated by the student within one week of the end of the period of the excused absence. In unusual circumstances such as an extended absence to illness, the make-up exam will occur within two weeks of the absence.

Accommodations: Students who need accommodations are asked to electronically submit their approved accommodations through AU Access and to arrange a meeting during office hours the first week of classes, or as soon as possible if accommodations are needed immediately. If you have a conflict with my office hours, an alternate time can be arranged. To set up this meeting, please contact me by e-mail. If you have not established accommodations through the Office of Accessibility, but need accommodations, make an appointment with the Office of Accessibility, 1228 Haley Center, 844-2096 (V/TT).

Honesty Code: Students are expected to do their own work and cheating will not be tolerated. Please see University policies at https://sites.auburn.edu/admin/universitypolicies/default.aspx