KINE 6500

Exercise Technology I: Principles of Exercise Testing and Interpretation

Ex Tech I

Credit Hours: 4 hours; Lec 3, Lab 1

Syllabus revised: Aug 2015

Instructor:  Dr. Jim McDonald               Email: [jrm0013@auburn.edu](mailto:jrm0013@auburn.edu)

Office: Room 169, Kinesiology Building, 301 Wire Road

Office Hours: Tues & Thurs                    Office Phone:  844-1922

1:00 – 3:00 pm

**Required Textbooks**

**ACSM's , Guidelines for Exercise Testing and Prescription (GETP),**Lippincott, Williams & Wilkins, 2013, 9th Edition, ISBN 0-7817-6903-7

**Supplemental Textbooks:**

**ACSM’s Health-Related Physical Fitness Assessment Manual**, Lippincott, Williams & Wilkins, 4th Edition, 2013, ISBN 0-7817-7549-6

**COURSE DESCRIPTION**

This course has been designed to develop the knowledge, skills and abilities to function as an exercise professional in fitness and clinical exercise settings.  The topics covered are designed to help the student prepare for certification examinations offered by the **American College of Sports Medicine (ACSM).**

The course will focus on the 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 for normal and special populations as well as populations with chronic disease. 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:**

1. Explain and discuss the underlying principles and rationale for health and fitness screening, blood profile analysis , measurements of heart rate, rhythm and electrical activity, blood pressure, cardiorespiratory fitness (CRF) testing, body composition, pulmonary testing, musculoskeletal fitness and sports related testing.
2. Understand and explain the basic pathophysiology related being sedentary and obese including cardiovascular disease, pulmonary disease, dyslipidemia, hypertension, diabetes, and metabolic syndrome.  Identify general drug groups associated with medical intervention in these diseases.
3. Use pre-test screening to determine the appropriateness of exercise, exercise testing, and cardiovascular disease risk stratification based on blood pressure, cholesterol levels, physical activity or other factors.
4. Understand basic safety considerations for an exercise facility and for exercise testing.  Understand basic treatment for common injuries seen in a exercise facility
5. Use direct and indirect techniques to assess muscular strength, flexibility, and endurance
6. Understand the underlying principles of body composition testing and become familiar with techniques to estimate body composition using the skin-fold methods, bioelectrical impedance, DEXA and anthropometrical techniques.
7. 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
8. 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
9. Demonstrate proficiency using metabolic calculations to determine body composition, estimates of cardiovascular capacity, exercise energy expenditure and exercise workloads.
10. 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.
11. Understand and discuss the appropriate testing and exercise prescription for populations with chronic disease including: metabolic disorders; cardiovascular disease; respiratory disease; cancer and disorders of the bones and joints.

**Grading Scale**

Your course grade will be determined your quiz grades, case studies, and your final exam.  Grading Scale: A = > 90%; B = 89.9% - 80%; C = 79.9% -70%

**Quizzes – 120 points worth 40% of your final grade**

There will be 12 quizzes given throughout the semester, each worth 10 points.  The quizzes will be based on ACSM's certification guide and the practice questions for the ACSM Health/Fitness Specialist certification.  This will be discussed in class.  The quizzes will be comprehensive in that they will cover topics you have had during your undergraduate studies.  The best method to prepare for the quiz is to review the specific section of the Certification Review for the quiz.  This will be announced before the quiz is given.

**Case Studies - 80 points worth 20% of your grade**

There will be 8 case studies during the semester.  You are expected to read the study, answer questions and be prepared to discuss the case in class.  You will be graded on your preparation, your case study answers and your participation in class.

**Final Exam - 100 points worth 40% of your final grade.**

The final exam will cover all aspects of ACSM's exam to become a Certified Exercise Physiologist

**Class Policies**

Attendance:  You are expected to attend all classes; lectures will not be repeated or recorded.  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](http://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](https://cas.auburn.edu/owa/redir.aspx?C=bc06a9c32636407d8a7ce9284b94e692&URL=https%3a%2f%2fsites.auburn.edu%2fadmin%2funiversitypolicies%2fdefault.aspx)

**Course content outline:**

Week 1 – 17 Aug              Class overview,

                                          Physical Activity

Week 2 – 24 Aug              Health Screening - Chapter 2 GETP

Pre-participation Screening – Medications

Obesity & chronic disease

Week 3 – 31 Aug              Body composition

                                          Body Composition

                                          Independent Study – assigned readings

Week 4 – 7 Sep                 Pulmonary Testing

                                          Exercise Testing – Cardiorespiratory Fitness

Week 5 – 14 Sep              Exercise Testing - Cardiorepiratory Fitness

                                         Normal ECG

Research

Week 6 – 21 Sep              Abnormal ECG

                                         Abnormal ECG

                                         Muscular Fitness Testing

Week 7 – 28 Sep              Balance and Flexibility Testing

                                        Metabolic calculations

                                       Metabolic calculations

Week 8 – 7 Oct               Behavior Change

                                        Behavior Change

Motivational Counseling

Week 9 – 12 Oct             Exercise Prescription

                                        Exercise Prescription

Week 10 – 19 Oct          EP for Special Populations

                                       EP for Special Populations

                                      Research

Week 11 – 26 Oct         Nutrition

                                      Diet & Weight Management

                                      Diet & Weight Management

Week 12 – 2 Nov           Cardiovascular Disease

                                       Cardiovascular Disease

                                       Metabolic Disease

Week 13 - 9 Nov           Pulmonary Disease

                                       Other Chronic Disease

                                       Other Chronic Disease

Week 14 – 16 Nov            Presentations

                                          Presentations

                                          Legal & Professional Considerations

Week 15 Thanks giving Break

Week 16 Course review and CEP prep