

Department of Kinesiology
KINE 5500 & 6500
Exercise Technology I
Spring 2011

Instructor: Jim McDonald

Office: 2092 Memorial Coliseum

Office Hours: By Appointment

Email: jrm0013@auburn.edu

Office Phone: 844-1482

COURSE DESCRIPTION

This course introduces and develops the knowledge, skills, and abilities that are necessary to function as an exercise professional in fitness and clinical exercise settings. Exercise Technology I is the first of two **Exercise Technology** courses designed to prepare students to pass certification examinations for the **American College of Sports Medicine (ACSM), Health/Fitness Specialist (HFS)**. The course will also provide information and hands on experience which may also assist in preparation for certifications from the **National Strength and Conditioning Association** or the **American Council on Exercise**.

Lectures will address the principles of common physical assessments 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 health screening and risk of physical exertion, body composition, musculoskeletal fitness, pulmonary function, cardiovascular function, and exercise tests for functional capacity and cardiovascular fitness.

COURSE OBJECTIVES

After 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 and rhythm, blood pressure, graded exercise testing, body composition, and musculoskeletal fitness.
2. Select optimal pre-test screening instruments for determining the appropriateness of exercise, exercise testing, and cardiovascular disease risk stratification
3. Use direct and indirect techniques to assess muscular strength, flexibility, and endurance
4. Assess body density and estimate body composition using skin fold methods, bioelectrical impedance and anthropometrical techniques

5. Estimate systolic and diastolic blood pressures at rest and during exposure to various environmental stressors using a stethoscope and sphygmomanometer
6. Conduct sub-maximal graded exercise tests for the purpose of examining cardiovascular responses to exercise and determining exercise capacity
7. Demonstrate proficiency using regression equations, nomograms and metabolic calculations to determine body composition, estimates of cardiovascular capacity, exercise energy expenditure and exercise workloads.
8. Interpret assessment results using appropriate norm-referenced standards
9. Prescribe appropriate exercise intervention strategies using the physiologic measures described above

COURSE REQUIREMENTS

All students entering this course should have already completed degree core requirements in anatomy and physiology and must be able to demonstrate competencies in the “General Population/Core” knowledge, skills and abilities (KSAs) 1.1.1 to 1.1.43 (see Appendix D, pp. 326 – 328 in the ACSM’s Guidelines for Exercise Testing and Prescription 8th Edition).

Co-requisites for this course include KINE 3680: Exercise Physiology and current certification in Basic Life Support/Cardiopulmonary Resuscitation (BLS/CPR). (NOTE: You can update your current BLS/CPR certification through several resources, including on-line at <http://www2.nursetesting.com/courses/bls/>)

General Expectations: You are expected to access the course website on **Blackboard** on a regular basis in order to obtain lab reports and some assigned readings. You are expected to read the assigned chapters, class handouts and laboratory instructions PRIOR to data collection for lab experiences. In addition, you are expected to keep up with assignment postings on this syllabus, due-dates and your assignment grades.

Attendance: It is important that you attend each class session and are punctual. Your attendance in this class is mandatory. If you have to miss class for any reason, you should inform the instructor 24 hours in advance, if possible. If the absence is due to an emergency, I expect you to inform the instructor as soon as possible. If the absence is a documented excused absence it will not count against your grade. Excused absences are defined in the Tiger Cub Student Handbook. Unexcused absences will result in a twenty five point (-25 pts), ¼ letter grade, deduction in your course point total. Six unexcused absences will result in an FA in the class. **Exams and laboratory experiences will not be repeated! (The exception to this policy is if you have a documented excused absence.)**

Participation: You are expected to come to class prepared to participate in lab experiences. This means wearing appropriate attire (e.g., shorts, t-shirt and jogging shoes, swim-wear and a towel for body composition analysis) and bringing a calculator and the appropriate laboratory handouts to every class.

Accommodations: Students who need accommodations are asked to arrange a meeting with me during my 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 alternative time can be arranged. To set up this meeting, please contact me by e-mail. Bring a copy of your Accommodation Memo and an Instructor Verification Form to the meeting. If you do not have an Accommodation Memo but need accommodations, make an appointment with the Program for Students with Disabilities at 1244 Haley Center, 844-2096.

Honesty Code: The University Academic Honesty Code and the Tiger Cub Rules and Regulations pertaining to cheating will apply to this class.

5500/6500 TEXTBOOKS

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

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

Advanced Fitness Assessment and Exercise Prescription, Vivian Heyward, Human Kinetics, 6th Edition, 2010, ISBN 978-0-7360-8659-2

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

Supplemental Textbook:

ACSM's Certification Review, Lippincott, Williams & Wilkins, 3rd Edition, 2009, ISBN 0-7817-6901-3

EVALUATION

You may earn up to 1000 total points in this course. Your individual evaluation will be based on the total points you earn throughout the course. For example, an "A" = 900 total points earned or 90%, a "B" = 800 – 899 points earned or 80 – 89%, a "C" = 700 – 799 points earned or 70 – 79%.

There will surprise quizzes given throughout the course based on the previous week's lessons. There will be no make-up for surprise quizzes. Specific point value for each quiz may vary, as may format.

Exams (400 Exam Points)

There will be a total of 4 exams throughout the semester; 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.

Final Exam (100 Points)

The comprehensive final exam, worth 10 pts, will be administered at the scheduled exam time at the end of the semester.

Class Project (300 Points)

The purpose of this project is to provide you with practical experience in assessing physical fitness levels and in designing individualized exercise programs.

The project is divided into four parts:

- Part I Health Screening and Evaluation: Assess your client's health status and lifestyle characteristics (medical history, medical clearance, resting HR and BP, CHD risk analysis, and lifestyle profile).
- Part II Body Composition Assessment: Assess your client's body composition using DEXA, SKF, BIA, and circumference methods. Compare the results of these tests and calculate a healthy body weight for your client. Set a body composition goal (e.g., gain 2 lb [1 kg] of lean tissue or lose 2% body fat) for your client.
- Part III Cardiorespiratory Fitness Assessment and Aerobic Exercise Program: Assess your client's cardiorespiratory fitness status using an appropriate graded exercise test protocol and cardiorespiratory field test. Design a cardiorespiratory fitness program to improve their health.
- Part IV Musculoskeletal Fitness Assessment, Balance Assessment, and Resistance Training Program: Assess your client's musculoskeletal fitness (strength and flexibility) and balance. Pinpoint weaknesses. Design a resistance training program. Also, recommend stretching exercises and balance activities to improve your client's flexibility and balance.

Current Paper Presentation (100 Points)

You may choose or you will be assigned to read, and present a 5- to 10-minute review of research articles published within the past year. The purpose of this assignment is to provide students with the opportunity to read research publications in exercise science and to present up-to-date information about physical fitness testing and exercise prescription. For this assignment, you will present the class with a short review of the paper. Students must select one article from each of the following areas:

1. Cardiorespiratory assessment, aerobic exercise prescription, or effects of aerobic exercise training on cardiorespiratory fitness
2. Muscular fitness assessment, resistance training exercise prescription, or effects of resistance training on muscular fitness
3. Body composition assessment, role of exercise and nutrition in weight management, or the effects of exercise on body composition
4. Flexibility assessment or the effects of exercise on flexibility
5. Balance assessment and activities to improve balance

Exercise Tech I Course Schedule

Spring 2011

January

Week 1	12	Introduction – Physical Activity & Disease
Week 2	19	Principles of Assessment, Prescription & Adherence
Week 3	24	Health Screening & Risk Stratification
	26	Heart Rate, Blood Pressure, Pulmonary Function
Week 4	31	Lab 1 – HR, BP & Pulmonary Function

February

Week 4	2	Body Composition Assessment
Week 5	7	Exam 1 and Body Composition Assessment
	9	Lab 2 – DEXA, Skinfolds & BIA
Week 6	14	Weight Management Programs
	16	Electrocardiogram
Week 7	21	Lab 3 – Electrocardiogram
	23	Cardiorespiratory Fitness Assessment
Week 8	28	Exam 2 and Cardiorespiratory Fitness Assessment

March

	2	Lab 4 – GXT
Week 9	7	Designing Aerobic Fitness Programs
	9	Abstract Presentations
Week 10	14	Spring Break
	16	Spring Break
Week 11	21	Muscular Fitness Assessment
	23	Lab 5 – Muscular Fitness Assessment
Week 12	28	Exam 3 – Designing Resistance Training Programs
	30	Designing Resistance Training Programs

April

Week 13	4	Musculoskeletal Evaluation
	6	Flexibility and Balance
Week 14	11	Abstract Presentations
	13	Lab 6 – Flexibility and Balance Testing
Week 15	18	Exam 4 & Lab Forms
	20	TigerFit Lab
Week 16	25	TigerFit Lab
	27	Review