# SUMMER 2010

# KINE 5500/6500
# Exercise Technology I


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**Office Hours by Appointment**

## Department of Kinesiology

*"Everything that we do in teaching, research and public service is directed toward intervening in the lives of those with whom we interact to enhance health or performance."*

COLLEGE OF EDUCATION

**CONCEPTUAL FRAMEWORK**

**Faculty, staff and students strive to prepare and be professionals who are:**

*Competent*
equipped with the knowledge, skills and technological expertise to help all individuals learn and develop

*Committed*
dedicated to the ethical practices and collaboration that serve as the foundation of a diverse and intellectually vibrant society

*Reflective*
devoted to analyzing their own past practices in ways that fuel ongoing learning and improve future practices

*A Keystone in Building a Better Future for All*

AUBURN UNIVERSITY

# KINE 5500 & 6500
# EXERCISE TECHNOLOGY I

## COURSE DESCRIPTION

This course has been designed to introduce and develop 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 & Management*** courses designed to prepare students to pass certification examinations offered by the ***American College of Sports Medicine, National Strength & Conditioning Association and 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 assessments of cardiovascular disease risk 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 and the Appendix, pp. 821 – 822 in the ACSM's Resource Manual 6th 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 WebCT 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:* Your attendance in this class is mandatory. I will not provide you with information covered in class if you are absent during the class session. You must be present in order to take exams and participate in laboratory sessions. You must be present for all laboratory sessions in order to submit a written report on lab experiences. Please note: ***Exams and laboratory experiences will not be repeated! (The exception to this policy is if you have a documented excused absence. Excused absences are defined in the Tiger Cub Student Handbook).***

*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.

Professionalism: As faculty, staff, and students interact in professional settings, they are expected to demonstrate professional behaviors as defined in the College's conceptual framework. These professional commitments or dispositions are listed below:

1. Engage in responsible and ethical professional practices
2. Contribute to collaborative learning communities
3. Demonstrate a commitment to diversity
4. Model and nurture intellectual vitality

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

## CORE CONCEPTS FOR OPTIMAL LEARNING

These concepts are adopted from Thomas H. Benton's article in the June 9, 2006 *Chronicle of Higher Education*. I adopted these concepts because it is my responsibility to help you become an educated, disciplined graduate willing to work hard and become a productive citizen. This is basically a list of concepts that will help structure our teacher-student relationship.

### *Students and professors have obligations to each other.*

*Here is what I expect from students:* You will treat everyone in class, including the professor, with respect due to all human beings. You will attend every class, give your full attention to the material, and conduct yourself in a manner appropriate for a learning environment. You will agree to do the work outlined in the syllabus on time. You will acknowledge that previous academic preparation (e.g., writing, scientific, and mathematical skills) will affect your performance in this course. You will acknowledge that your perception of effort, by itself, is not enough to justify a distinguished grade. You will not plagiarize or otherwise steal the work of others. You will not make excuses for your failure to do what you should do in order to succeed. You will accept the rewards or consequences of your actions.

*Here is what students can expect from me:* I will treat you with the respect due all human beings. I will know your name and treat you as an individual. I will not discriminate against you on the basis of your identity or well-informed viewpoints. I will be honest with you. I will manage the class in a professional manner. I will prepare carefully for every class. I will begin and end class on time. I will teach you in areas of my professional expertise. If I do not know something, I will say so. I will conduct scholarly research and publication with the aim of making myself a more informed teacher. I will return your assignments with feedback. I will pursue the maximum punishment for plagiarism, cheating, and other violations of academic integrity. I will maintain careful records of your attendance, performance, and progress. I will investigate every excuse for non-attendance of classes and non-completion of assignments. I will make myself accessible to you for course-related advising. I will maintain confidentiality concerning your performance. Your grade will reflect the quality of your work and nothing else. At the end of the semester, I will be interested in your feedback about the class, but I will be most interested in what you learn rather than how you feel.

*It is my goal to provide you with a fantastic learning experience that will prepare you to compete favorably in the marketplace of health and fitness professionals. It is my hope that your experience in this class and in this major will impact you such that you will want to maintain contact with myself and other faculty in the Department of Kinesiology.*

## 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%.

### Grade Descriptions

**A (90.0-100%): Excellent:** A full "A" grade reflects superior knowledge and understanding of the material covered in this course. This grade also reflects demonstrated excellence in all of the skills and abilities outlined and covered in laboratory assignments. In order to receive an "A" you must go beyond simply repeating material covered in lecture, laboratory work or your assigned reading. There is usually a distinct difference between "repetition" and "understanding." To get an "A" answer you must go beyond this, showing that you understand and can integrate all of the material by adding further content, linkages to additional concepts, and similar material not directly covered in the lecture, laboratory work, and assigned readings. It must be noted that grades of 100 percent are very rare, and reflect perfection - that is, such an answer could not be improved in any way, there are no factual errors in the answer, nothing important has been left out, and you have done an incredible job of demonstrating an understanding of the material and its relationship to other important concepts or theories. A grade of 90 percent reflects work that has achieved all of the assigned goals, without any notable omissions or factual errors and has demonstrated a level of understanding beyond that required of the assignment. A grade of 90 percent is still considered a full "A" and reflects superior understanding - above and beyond the repetition of lecture notes and assigned readings - and the ability to demonstrate excellence in all of the skills and abilities included in laboratory assignments.

**B Range (80.0-89.9%): Good – Above Average:** A "B" grade reflects work that is good and above average, but that is not good enough to reach the "A" range. Typical reasons include important omissions in the answer (leaving out concepts or ideas that really need to be there) or factual errors, perhaps from following the "shotgun approach" (write down everything you think you know about the subject, in the hope that I will find what I am looking for in your response), and/or demonstrating skills and abilities that are very good but not perfected. Remember, even if your answer includes the correct material the instructor is looking for, also including incorrect or inappropriate material indicates that you do not understand the material at the "A" level. A grade of 80 to 89.9 percent reflects work that has achieved all of the assigned goals, but has not adequately demonstrated a level of understanding or performance beyond that required of the assignment.

**C Range (70.0-79.9%): Average:** A "C" grade reflects work that is average at best. Such a grade typically indicates work that reflects a basic understanding of many of the concepts involved in the assignment, but does not address or integrate these concepts in a very satisfactory manner. "C" assignments are generally not very well organized or written, often contain important errors of fact, important omissions from an answer, and/or demonstrated skills and abilities that may pass review but; otherwise, will not distinguish you as an exceptional health practitioner.

**D Range (60.0-69.9%): Below Average:** A "D" grade reflects work that is below average. In general, such a grade reflects performance that is not worthy of credit toward

graduation with a health promotion degree. A “D” indicates that that you do not possess a basic understanding of the assigned material, and often reflects a very poorly organized and written argument or repeated lack of professional skills and abilities. In addition to common errors of fact and frequent omissions of relevant material, and poor performance of skills and abilities, assignments rarely reflect much independent thought beyond simply trying to repeat – and often incorrectly - material from the lecture, assigned readings, and laboratory work.

F (below 60.0%): Unacceptable: An "F" grade reflects work that is completely unacceptable. Such work usually shows little resemblance to the assignment, whether because you left out large parts of the assignment, didn't bother to complete the assignment, acquired information from some other source that was written for a different assignment, and/or you fail to demonstrate the professional skills and abilities required for basic competency.

*There are 3 categories in which you may earn 1000 course points: 1) course notebook; 2) laboratory activities and reports, and; 3) topic exams. Each of these categories is described in detail below.*

## Notebook (100 Notebook Points)

You are expected to keep an organized notebook of your class work. The notebook evaluation will be worth 100 points and will be graded while you are taking the final written exam at the end of the semester. Section I is worth 10 points. Section II and III are worth 45 points each. ***All notebooks should be in three-ring binders with all pages bound (no loose pages).*** The order of the notebook should be as follows:

I. Syllabus

II. Notes, handouts, and lab reports divided into topical sections (with a tabbed divider and in chronological order).

Topic Sections: 1) Pre-Participation Health Appraisal; 2) Musculoskeletal Evaluation; 3) Body Composition Assessment & Metabolic Calculations and Application in Exercise Programming; 4) Pulmonary Function Testing; 5) Cardiovascular Control; 6) Electrocardiography and Functional Exercise Testing & Interpretation.

III. Exams in topical sections. Each of your exams should include your handwritten corrections, *including the location in your texts and/or notes where the correct answer can be found,* on (a) separate sheet(s) of paper that is/are stapled to the back of the original exam.

## Lab Reports (600 Lab Report Points)

There will be a total of 6 lab reports, each worth 100 pts. Each lab report will be completed on PC-based or Mac word-processing and graphics programs. *All responses to lab questions will be completed in your own words and in the format indicated below.* Lab reports will be due at the beginning of class on the assigned due date.

*PLEASE NOTE: Late lab reports or those that are not properly formatted will not be accepted. No partial credit will be given for assignments that do not meet the deadline and format guidelines.*

## Lab Report Format

1. Type your name, the lab report title and due date in bold single-spaced 12-point font in the upper left-hand corner on the first page.

2. Each of your responses should be numbered and in the following format: (Font: Black, Arial, 12 pt / Spacing: Double Space / Margins: 1" Top, Bottom, Right & Left). Staple all pages of your reports in the upper left-hand corner. Please proof-read your work! *One point will be subtracted from your final lab report grade for each spelling and grammatical error.* You will need to be proficient with different software programs, such as MS Word, Excel, and PowerPoint (or Mac equivalents) in order to complete most of your lab reports.

## Exams (300 Exam Points)

There will be a total of 3 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.* Excused absences are defined in the TIGER CUB STUDENT HANDBOOK.

**NOTE:** See the *COURSE OUTLINE & ASSIGNED READINGS* section (below) for a list of the readings and KSAs covered in this class

# COURSE OUTLINE & ASSIGNED READINGS

## INTRODUCTION: EXERCISE PROGRAM PROFESSIONALS

**RESOURCES to REVIEW:**

**ACSM's Resource Manual (6th Edition) PRIMARY READING:**

Chapter 46: Exercise Program Professionals

**ACSM's Resource Manual (6th Edition) BACKGROUND READING:**

Chapter 1: Functional Anatomy
Chapter 2: Biomechanics
Chapter 3: Exercise Physiology
Chapter 5: Lifespan Effects of Aging and Deconditioning

**ACSM's Certification Review (3rd Edition):** *The chapters in this text should serve as an outline for reviewing the material covered in the KSA exam.*

Chapter 1: Anatomy & Biomechanics
Chapter 2: Exercise Physiology
Chapter 3: Human Development & Aging

**KSAs:** You should be familiar with KSAs 1.1.1 through 1.1.43 found on pp. 326-328 in ACSM's Guidelines (8th Edition) and on pp. 821-822 in ACSM's Resource Manual (6th Edition).

***KSA EXAM***

## TOPIC 1: PRE-PARTICIPATION HEALTH APPRAISAL & PHYSIOLOGICAL EFFECTS OF COMMON MEDICATIONS

**RESOURCES:**

**ACSM's Guidelines (8th Edition):**

Chapter 1: Benefits and Risks Associated with Physical Activity
Chapter 2: Pre-Participation Health Screening and Risk Stratification
Chapter 3: Pre-Exercise Evaluation
Appendix A: Common Medications
Appendix B: Medical Emergency Management

**ACSM's Resource Manual (6th Edition) PRIMARY READING:**

Chapter 10: General Overview of Pre-participation Health Screening & Risk Assessment

**ACSM's Resource Manual (6th Edition) BACKGROUND READING:**

Chapter 6: Pathophysiology and Treatment of Cardiovascular Disease
Chapter 7: Pathophysiology and Treatment of Pulmonary Disease
Chapter 8: Pathophysiology and Treatment of Metabolic Disease
Chapter 34: Exercise Prescription and Medical Considerations
Chapter 42: Behavioral Strategies to Enhance Physical Activity Participation
Chapter 50: Exercise Program Safety and Emergency Procedures
Chapter 51: Legal Considerations for Exercise Programming

**ACSM's Health-Related Physical Fitness Manual (2nd Edition):**

Chapter 1: Introduction
Chapter 2: Pre-Activity Screening
Appendix B: Forms

**ACSM's Certification Review (3rd Edition):** *The chapters in this text should serve as an outline for reviewing the material covered in this content area.*

Chapter 4: Pathophysiology and Risk Factors
Chapter 5: Human Behavior and Psychosocial Assessment
Chapter 6: Heath Appraisal and Fitness Testing
Chapter 7: Safety, Injury Prevention, and Emergency Care

**KSAs covered in Topic 1:**

- **GPC: Exercise Physiology and Related Exercise Science (COMPLETE)**
- **GPC: Pathophysiology and Risk Factors 1.2.2 – 1.2.8**
- **GPC: Health Appraisal, Fitness, and Clinical Exercise Testing 1.3.1 – 1.3.6, 1.3.13, 1.3.14, 1.3.23**
- **GPC: Electrocardiography and Diagnostic Techniques – NONE**
- **GPC: Patient Management and Medications 1.5.1 and 1.5.2 (COMPLETE)**
- **GPC: Exercise Prescription and Programming – 1.7.2, 1.7.32**
- **GPC: Nutrition and Weight Management – NONE**
- **GPC: Human Behavior and Counseling 1.9.1 – 1.9.9 (COMPLETE)**
- **GPC: Safety, Injury Prevention, and Emergency Procedures 1.10.1 – 1.10.4, 1.10.5, 1.10.9, 1.10.10, 1.10.12, 1.10.14**
- **GPC: Program Administration, Quality Assurance, and Outcome Assessment 1.11.1**

**Cardiovascular: Pathophysiology and Risk Factors 2.2.1 – 2.2.4 (COMPLETE)**
**Pulmonary: Pathophysiology and Risk Factors 3.2.1**
**Metabolic: Pathophysiology and Risk Factors 4.2.1 (COMPLETE)**
**Orthopedic/Musculoskeletal: Pathophysiology and Risk Factors – NONE**
**Neuromuscular: Pathophysiology and Risk Factors – NONE**
**Immunologic: Pathophysiology and Risk Factors 7.2.1 (COMPLETE)**

***EXAM 1:*** ***Readings and Application (Topic 1)***
***LAB 1:*** ***PRE-PARTICIPATION HEALTH APPRAISAL (for EXERCISE TESTING and EXERCISE PRESCRIPTION) and PHYSIOLOGICAL EFFECTS of COMMON MEDICATIONS***

## TOPIC 2: MUSCULOSKELETAL EVALUATION

**RESOURCES:**

**ACSM's Guidelines (8th Edition):**

Chapter 4: Health-Related Physical Fitness Testing & Interpretation, pp. 85 - 101
Chapter 7: General Principles of Exercise Prescription, pp. 165 - 174
Chapter 10: Exercise Prescription for Other Clinical Populations, pp. 225 – 227, 237 – 241, and 256 – 257

**ACSM's Resource Manual (6th Edition) PRIMARY READING:**

Chapter 1: Functional Anatomy
Chapter 2: Biomechanics
Chapter 20: Musculoskeletal Fitness and Assessment
Chapter 29: Musculoskeletal Exercise Prescription
Chapter 31: Adaptations to Resistance Training

**ACSM's Resource Manual (6th Edition) BACKGROUND READING:**

Chapter 25: Occupational and Functional Assessments
Chapter 39: Exercise Prescription for People with Osteoporosis
Chapter 40: Exercise Prescription for People with Arthritis

**ACSM's Health-Related Physical Fitness Manual (2nd Edition):**

Chapter 5: Muscular Fitness: Muscular Strength, Endurance & Flexibility
Chapter 6: Postural Analysis and Body Alignment

**ACSM's Certification Review (3rd Edition):** *The chapters in this text should serve as an outline for reviewing the material covered in this content area.*

Chapter 1: Anatomy & Biomechanics
Chapter 6: Health Appraisal & Fitness Testing (Part I)

**KSAs covered in Topic 4:**

**GPC: Pathophysiology and Risk Factors - NONE**
**GPC: Health Appraisal, Fitness, and Clinical Exercise Testing 1.3.18, 1.3.20**
**GPC: Electrocardiography and Diagnostic Techniques – NONE**
**GPC: Exercise Prescription and Programming 1.7.1, 1.7.2, 1.7.5, 1.7.7, 1.7.8, 1.7.11, 1.7.12, 1.7.20, 1.7.23, 1.7.26, 1.7.29, 1.7.31, 1.7.34, 1.7.42 – 1.7.45, 1.7.47**
**GPC: Safety, Injury Prevention, and Emergency Procedures 1.10.7 - 1.10.9, 1.10.12, 1.10.15, 1.10.18**
**GPC: Program Administration, Quality Assurance, and Outcome Assessment – NONE**
**Pulmonary: Pathophysiology and Risk Factors - NONE**
**Orthopedic/Musculoskeletal: Pathophysiology and Risk Factors 5.2.1 (COMPLETE)**
**Neuromuscular: Pathophysiology and Risk Factors 6.2.1 (COMPLETE)**

***LAB 2: MUSCULOSKELETAL EVALUATION***

## TOPIC 3a: BODY COMPOSITION ASSESSMENT

**RESOURCES:**

**ACSM's Guidelines (8th Edition):**
Chapter 4: Health-Related Physical Fitness Testing & Interpretation, pp. 60 - 70
Chapter 10: Exercise Prescription for Other Clinical Populations, pp. 250 - 255

**ACSM's Resource Manual (6th Edition) PRIMARY READING:**
Chapter 17: Body Composition Status and Assessment
Chapter 33: Weight Management

**ACSM's Resource Manual (6th Edition) BACKGROUND READING:**
Chapter 4: Nutrition
Chapter 13: Nutritional Status and Chronic Disease
Chapter 14: Assessment of Nutritional Status

**ACSM's Health-Related Physical Fitness Manual (2nd Edition):**
Chapter 4: Body Composition

**ACSM's Certification Review (3rd Edition):** *The chapters in this text should serve as an outline for reviewing the material covered in this content area.*
Chapter 9: Nutrition & Weight Management

## TOPIC 3b: METABOLIC CALCULATIONS in EXERCISE PROGRAMMING

**RESOURCES:**

**Special Readings:**
Willette, W. et al., *Guidelines for a Healthy Weight.* NEJM 341(6): 427 – 434, 1999.
Melby, C. and M. Hickey. *Energy Balance & Body Weight Regulation.* GSSI Sports Science Exchange #99 18(4): 1-6, 2005.

**ACSM's Guidelines (8th Edition):**
NONE

**ACSM's Resource Manual (6th Edition):**
NONE

**ACSM's Health-Related Physical Fitness Manual (2nd Edition):**
Appendix A: Conversions

**ACSM's Certification Review (3rd Edition):** *The chapters in this text should serve as an outline for reviewing the material covered in this content area.*
Chapter 8: Exercise Programming (Parts I – III)
Chapter 11: Metabolic Calculations

**KSAs covered in Topics 2 & 3:**

**GPC: Pathophysiology and Risk Factors – NONE**
**GPC: Health Appraisal, Fitness, and Clinical Exercise Testing 1.3.7, 1.3.9, 1.3.12, 1.3.19**
**GPC: Electrocardiography and Diagnostic Techniques – NONE**
**GPC: Exercise Prescription and Programming 1.7.2, 1.7.35 – 1.7.39**
**GPC: Nutrition and Weight Management 1.8.1 – 1.8.18 (COMPLETE)**
**GPC: Safety, Injury Prevention, and Emergency Procedures – NONE**
**GPC: Program Administration, Quality Assurance, and Outcome Assessment – NONE**
**Pulmonary: Pathophysiology and Risk Factors - NONE**
**Metabolic: Pathophysiology and Risk Factors 4.2.1 (COMPLETE)**
**Orthopedic/Musculoskeletal: Pathophysiology and Risk Factors – NONE**
**Neuromuscular: Pathophysiology and Risk Factors – NONE**

***EXAM 2:*** ***Readings and Application (Topics 2 and 3)***
***LAB 3:*** ***BODY COMPOSITION ASSESSMENT and METABOLIC CALCULATIONS in EXERCISE PROGRAMMING***

## TOPIC 4: PULMONARY FUNCTION ASSESSMENT

**RESOURCES:**
**ACSM's Guidelines (8th Edition):**
Chapter 3: Pre-Exercise Evaluation
Chapter 5: Clinical Exercise Testing, pp. 121 - 122
Chapter 6: Interpretation of Clinical Test Data, pp. 144
Chapter 10: Exercise Prescription for Other Clinical Populations, pp. 260 - 264

**ACSM's Resource Manual (6th Edition) PRIMARY READING:**
Chapter 23: Diagnostic Procedures in Patients with Pulmonary Disease

**ACSM's Resource Manual (6th Edition) BACKGROUND READING:**
Chapter 36: Exercise Prescription in Patients with Pulmonary Disease

**ACSM's Health-Related Physical Fitness Manual (2nd Edition):**
NONE

**ACSM's Certification Review (3rd Edition):** *The chapters in this text should serve as an outline for reviewing the material covered in this content area.*
Chapter 6: Health Appraisal & Fitness Testing (Part I: Pretest Considerations)

**KSAs covered in Topic 5:**

**GPC: Pathophysiology and Risk Factors 1.2.1**
**GPC: Health Appraisal, Fitness, and Clinical Exercise Testing 1.3.16**
**GPC: Electrocardiography and Diagnostic Techniques – NONE**
**GPC: Exercise Prescription and Programming - NONE**
**GPC: Safety, Injury Prevention, and Emergency Procedures - NONE**
**GPC: Program Administration, Quality Assurance, and Outcome Assessment – NONE**
**Pulmonary: Pathophysiology and Risk Factors 3.2.1 (COMPLETE)**

***LAB 4: PULMONARY FUNCTION ASSESSMENT***

## TOPIC 5: CARDIOVASCULAR (HEART RATE and BLOOD PRESSURE) ASSESSMENT

**RESOURCES:**
**ACSM's Guidelines (8th Edition):**
Chapter 3: Pre-Exercise Evaluation
Appendix A: Common Medications

**ACSM's Resource Manual (6th Edition) PRIMARY READINGS:**
Chapter 18: Pre-Exercise Testing Evaluation

**ACSM's Resource Manual (6th Edition) BACKGROUND READINGS:**
Chapter 28: Cardiorespiratory Exercise Prescription
Chapter 30: Adaptations to Cardiorespiratory Exercise Training

**ACSM's Health-Related Physical Fitness Manual (2nd Edition):**
Chapter 3: Resting and Exercise Blood Pressure and Heart Rate
Chapter 7: Cardiorespiratory Fitness Management

**ACSM's Certification Review (3rd Edition):** *The chapters in this text should serve as an outline for reviewing the material covered in this content area.*
Chapter 6: Health Appraisal & Fitness Testing (Section I: Pretest Considerations)

**KSAs covered in Topic 6:**

- **GPC: Pathophysiology and Risk Factors 1.2.1**
- **GPC: Health Appraisal, Fitness, and Clinical Exercise Testing – NONE**
- **GPC: Electrocardiography and Diagnostic Techniques – NONE**
- **GPC: Exercise Prescription and Programming 1.7.10, 1.7.13, 1.7.15 -1.7.18, 1.7.21, 1.7.24, 1.7.25, 1.7.28**
- **GPC: Safety, Injury Prevention, and Emergency Procedures 1.10.6**
- **GPC: Program Administration, Quality Assurance, and Outcome Assessment – NONE**

***EXAM 3:*** ***Readings and Application (Topics 4 and 5)***
***LAB 5:*** ***CARDIOVASCULAR RESPONSES TO STRESS***

## TOPIC 6a: ELECTROCARDIOGRAPHY

**RESOURCES:**

**ACSM's Guidelines (8th Edition):**

Chapter 5: Clinical Exercise Testing
Chapter 6: Interpretation of Clinical Test Data
Appendix C: Electrocardiogram (ECG) Interpretation

**ACSM's Resource Manual (6th Edition) PRIMARY READING:**

Chapter 27: Electrocardiography

**ACSM's Certification Review (3rd Edition):** *The chapters in this text should serve as an outline for reviewing the material covered in this content area.*

Chapter 12: Electrocardiography

**KSAs covered in Topic 6:**

- **GPC: Pathophysiology and Risk Factors - NONE**
- **GPC: Health Appraisal, Fitness, and Clinical Exercise Testing – NONE**
- **GPC: Electrocardiography and Diagnostic Techniques 1.4.1, 1.4.3**
- **GPC: Exercise Prescription and Programming – NONE**
- **GPC: Safety, Injury Prevention, and Emergency Procedures – NONE**
- **GPC: Program Administration, Quality Assurance, and Outcome Assessment – NONE**

## TOPIC 6b: CARDIORESPIRATORY FITNESS and EXERCISE TESTING

**RESOURCES:**

**ACSM's Guidelines (8th Edition):**

Chapter 4: Health-Related Physical Fitness Testing and Interpretation
Chapter 5: Clinical Exercise Testing
Chapter 6: Interpretation of Clinical Exercise Test Data
Chapter 7: General Principles of Exercise Prescription, pp. 152 – 165
Chapter 10: Exercise Prescription for Other Clinical Populations, pp. 248 – 250, pp. 258 - 260

**ACSM's Resource Manual (6th Edition) PRIMARY READING:**

Chapter 19: Cardiorespiratory and Health-Related Physical Fitness Assessments
Chapter 21: Clinical Exercise Testing Procedures

**ACSM's Resource Manual (6th Edition) BACKGROUND READING:**

Chapter 34: Exercise Prescription and Medical Considerations
Chapter 35: Exercise Prescription in Patients with Cardiovascular Disease

**ACSM's Health-Related Physical Fitness Manual (2nd Edition):**

Chapter 7: Cardiorespiratory Fitness Management
Chapter 8: Laboratory Sub-Maximal Exercise Testing
Chapter 9: Maximal Exercise Testing
Chapter 10: Interpretation of Assessment Results

**ACSM's Certification Review (3rd Edition):** *The chapters in this text should serve as an outline for reviewing the material covered in this content area.*

Chapter 6: Health Appraisal & Fitness Testing

**KSAs covered in Topic 6:**

- **GPC: Pathophysiology and Risk Factors 1.2.1 (COMPLETE)**
- **GPC: Health Appraisal, Fitness, and Clinical Exercise Testing 1.3.10, 1.3.15, 1.3.17, 1.3.21, 1.3.22 (COMPLETE)**
- **GPC: Electrocardiography and Diagnostic Techniques 1.4.1, 1.4.3 (COMPLETE)**
- **GPC: Exercise Prescription and Programming 1.7.3, 1.7.30, 1.7.33, 1.7.40, 1.7.41**
- **GPC: Safety, Injury Prevention, and Emergency Procedures 1.10.5**
- **GPC: Program Administration, Quality Assurance, and Outcome Assessment – NONE**

***EXAM 4:*** ***Readings and Application (Topics 6 and 7)***
***LAB 7:*** ***BASIC ECG and CARDIORESPIRATORY FITNESS and EXERCISE TESTING***

## KSAs FOR HFS CERTIFICATION EXAM (not covered in this course)

**KSAs remaining to be studied and reviewed prior to taking the HFS Certification Exam:**

- **GPC: Exercise Prescription and Programming 1.7.4, 1.7.6, 1.7.14, 1.7.19, 1.7.22, 1.7.27, 1.7.34, 1.7.46**
- **GPC: Safety, Injury Prevention, and Emergency Procedures 1.10.13, 1.10.17,**
- **GPC: Program Administration, Quality Assurance, and Outcome Assessment 1.11.1 – 1.11.13 (ALL)**

**ACSM's Certification Review (3rd Edition):** *The chapters listed below should serve as an outline for reviewing the remaining material.*

Chapter 7: Safety, Injury Prevention, and Emergency Care
Chapter 8: Exercise Programming
Chapter 10: Program Administration/Management
Appendix B: Clinical Comprehensive Exam

## 5500/6500 TEXTBOOKS

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

ACSM. ACSM's Resource Manual for Guidelines for Exercise Testing & Prescription. **Lippincott, Williams & Wilkins, 6th Edition 2009, ISBN 0-7817-6906-8**

ACSM. ACSM's Health-Related Physical Fitness Assessment Manual. **Lippincott, Williams & Wilkins, 2nd Edition, 2007, ISBN 0-7817-7549-6**

C. Dunbar & B. Saul. ECG Interpretation for the Clinical Exercise Physiologist. **Lippincott, Williams & Wilkins, 1st Edition, 2009, ISBN 0-7817-7865-4**

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

# Exercise Tech I Daily Course Schedule Summer 2010

| | May | | | |
|---|---|---|---|---|
| Week 1 | **20** | **1.** Pre-Participation Health Appraisal | | |
| Week 2 | **25** | Pre-Participation Health Appraisal | | **Lab 1** |
| | **27** | Pre-Participation Health Appraisal | | |

| | June | | | |
|---|---|---|---|---|
| Week 3 | **1** | ***ACSM Meeting – Baltimore, MD*** | | |
| | **3** | ***ACSM Meeting – Baltimore, MD*** | | |
| Week 4 | **8** | **2.** Musculoskeletal Evaluation | | **Lab 2** |
| | **10** | Musculoskeletal Evaluation | | |
| Week 5 | **15** | **3.** Body Composition Assessment | **Exam 1** | |
| | **17** | Body Composition Assessment | | **Lab 3** |
| Week 6 | **22** | Body Composition Assessment | | |
| | **24** | Metabolic Calculations for Weight Control | | |
| Week 7 | **29** | **4.** Pulmonary Function Testing | | **Lab 4** |

| | July | | | |
|---|---|---|---|---|
| | **1** | Pulmonary Function Testing | | |
| Week 8 | **6** | **5.** Cardiovascular Control | **Exam 2** | |
| | **8** | Cardiovascular Control | | **Lab 5** |
| Week 9 | **13** | Cardiovascular Control | | |
| | **15** | **6.** Basic Electrocardiography | | |
| Week 10 | **20** | Basic Electrocardiography | | |
| | **22** | Basic Electrocardiography | | **Lab 6** |
| Week 11 | **27** | **7.** Exercise Testing | | |
| | **29** | Exercise Testing | **Exam 3** | |