

UNIVERSITY OF PITTSBURGH

Department of Health and Human Development (SPRING 2024)

HPA 2383: Advanced Clinical Health and Physical Activity Assessment

Instructor: Ben Gordon, PhD, ACSM-CEP

Office: Oak Hill Commons, 32 Oak Hill Court

Office #206

Pittsburgh, PA 15261

Office Phone: 412-624-5162

Office Hours: By appointment

Email: bgordon@pitt.edu

GENERAL COURSE DESCRIPTION: This course experience prepares students to participate in a variety of multidisciplinary clinical environments. Students will engage in activities and discussions designed to develop pertinent skills, which are necessary for careers in cardiopulmonary rehabilitation centers and stress testing facilities found in hospitals & other medical facilities. The focus of Advanced Clinical Health and Physical Activity Assessment is the initial patient interview, core clinical competencies, emergency procedures, writing in medical prose, and graded exercise testing. Instruction will include both didactic and laboratory-based experiences. Your success in this course is contingent on your skill building, repetition, and practice of learned skills and procedures over the course of the semester.

PREREQUISITES: Undergraduate course in Exercise Physiology and/or admittance into the master's and/or PhD program. Clinical Exercise Physiology 1 (HPA 2381) preferred.

RECOMMENDED TEXT & RESOURCES:

ACSM's Guidelines for Exercise Testing and Prescription. 11th edition. Wolters Kluwer: Philadelphia, 2018.

SKILLSTAT ECG simulator available at [ecg-sim-page - SkillStat](#)

Additional selected reading will be provided/assigned. The student will be responsible for the information in these readings.

COURSE MEETING TIME: There will be both asynchronous and synchronous material(s) provided. Students are expected to review all asynchronous material ahead of scheduled meeting times. **Synchronous meeting times are Wednesday evenings, from 4pm-6pm OR 6pm-8pm.** at the Physical Activity & Weight Management Research Center located at Oak Hill Commons, 32 Oak Hill Court. Students will be required to attend a minimum of five (5) open lab sessions throughout the semester as their schedule allows.

LEARNING OBJECTIVES:

- ❖ Students will learn how to conduct pre-test procedures including:
 - Explaining test procedures to the patient and obtaining informed consent
 - Obtaining a focused medical history and results of prior tests and physical exam
 - Disease-specific risk factor assessment (e.g., CVD, Metabolic, Pulmonary diseases)
 - Placement of standard 12-lead EKG leads
 - Pre-test hemodynamic and EKG measurements
 - Presenting concise information to other health care providers
- ❖ Students will learn how to administer exercise tests consistent with US nationally accepted standard for testing (i.e., ACSM, AHA).
- ❖ Students will learn how to interpret the variables that may be assessed during clinical exercise testing including:
 - Maximal oxygen consumption
 - Ratings of perceived exertion and discomfort (e.g., chest pain, dyspnea, & claudication)
 - EKG readings, heart rate, blood pressure, and rate pressure product

SPECIFIC STUDENT COMPETENCIES/OBJECTIVES:

- ❖ Recognize and respond to abnormal signs and symptoms during exercise.
- ❖ Identify relative and absolute contraindications to an exercise session.
- ❖ Determine an individual's pre-test and post-test probability of CHD, identify risk factors associated with test complications, and apply necessary precautions to reduce risks to patient(s).
- ❖ Interpret EKG readings precisely and timely.
- ❖ List necessary equipment and supplies for exercise programs and exercise testing laboratories.
- ❖ Calibrate lab equipment used frequently in the practice of clinical exercise physiology.

COURSE TOPICS:

Students will be exposed to the following topics throughout this course.

1. Blood Pressure
 - a. Physiologic mechanisms
 - b. BP monitoring techniques
 - c. Supervised BP monitoring session
 - d. Sources of monitoring inaccuracies
2. Pre-test Responsibilities
 - a. Patient history
 - b. Informed consent
 - c. Administration
 - d. Resting EKG & vitals
3. EKG Preparation and Resting Measurements
 - a. Patient preparation
 - b. 12-Lead & alternative lead placement
 - c. Resting EKG's
4. The Graded Exercise Test (GXT) vs. Field Based Assessments
 - a. GXT protocols (e.g., Treadmill and Cycle Ergometer; max vs. submax)
 - b. Timing of vital measurements
 - c. GXT recovery protocol
5. GXT Emergency Action Plans
 - a. Identification of emergencies
 - b. MEAT algorithm for action in case of abnormal signs and symptoms
 - c. Abnormal responses to exercise testing
 - d. Safety concerns
 - e. Risk management
 - f. Incident reports
6. Completing Full GXTs
 - a. Monitoring skills
 - b. Communication with BP technician
 - c. Communication with patient during and following the GXT
 - d. Observation of signs and symptoms
 - e. Abnormal EKG recognition & actions in case of life-threatening arrhythmia
 - f. Protocol selection
 - g. GXT results interpretation
 - h. Data documentation pre-during-after GXT
 - i. Complete GXT practical from start to finish
7. Equipment Calibration
 - a. Base knowledge on calibration of GXT equipment
 - b. Recognizing technical issues that require technician service

ACADEMIC INTEGRITY POLICY:

Given the nature of clinical exercise physiology, cheating can negate a student from understanding the implications of clinical findings during an exam. This could result in injury and/or death of a patient as well as financial and legal repercussions to the clinical exercise physiologist and associated staff. As a result, cheating/plagiarism will not be tolerated. Students suspected of violating the University of Pittsburgh Policy on Academic Integrity, noted below, will be required to participate in the outlines procedural process as initiated by the instructor. A minimum sanction of a zero score for the quiz, exam or paper will be imposed. Any student caught cheating (includes any form of academic dishonesty such as copying answers, taking quizzes/exams with another student(s), plagiarism, etc.) will result in an automatic “F” in this course. Additionally, the student will be reported to the appropriate university officials, and it will go on file in the student’s academic record. (For the full Academic Integrity policy, go to www.provost.pitt.edu/info/ai1.html.)

DISABILITY RESOURCE SERVICES: If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Office of Disability Resources and Services, 140 William Pitt Union, 412-648-7890/412-383-3346 (Fax), as early as possible in the term. Disability Resources and Services will verify your disability and determine reasonable accommodations for this course.

GRADING SCALE:

| GRADES: | APPROXIMATE POINT VALUE* |
|--|---------------------------------|
| BLOOD PRESSURE RECORDING FORM (30 recorded measures) Due Date: 04/19 by 5pm | 10 points |
| Open Lab – 5 Required Sessions Due Date: 04/19 by 5 pm | 2 points each (10 pts. Total) |
| 3 PRACTICE GXT’S OF STUDENT’S CHOICE Due Date: 04/19 by 5 pm | 10 points each (30 pts. Total) |
| MEDICAL PROSE REPORT Due Date: 04/19 by 11:59pm | 50 points |
| GXT PRACTICAL EXAM Due Date: April 22nd-26th | 50 points |
| TOTAL | 150 points |

The following grading scale will be used to determine final course grades.

| | | | | | |
|-----------|---|----------|-----------|---|----------|
| A | = | 90-100% | C | = | 70-76.9% |
| B+ | = | 87-89.9% | D+ | = | 66-69.9% |
| B | = | 80-86.9% | D | = | 60-66.9% |
| C+ | = | 77-79.9% | F | = | 0-59.9% |

Incomplete or G Grades

Students must complete all course requirements to receive a grade for this course. In the event of extenuating personal circumstances, such as a medical emergency or a death in the family, an I or G grade may be awarded to signify unfinished course work. *G grades will not be an option for students who fall behind in the course for non-emergency reasons.* Students assigned I or G grades are required to complete course requirements no later than one year after the term in which the course was taken. After the deadline has passed, the I or G grade will remain on the record, and the student will be required to reregister for the course if it is needed to fulfill requirements for graduation.

ATTENDANCE POLICY:

Attendance is highly recommended for graduate level courses. If a class is to be missed, good communication prior to the missed class is expected. **There will be no make-ups for quizzes or assignments unless prior arrangements have been made with the instructor.** These must be made up within one week at a time and date approved by the instructor. In rare cases where unexpected (emergency) circumstances arise, it is the student's responsibility to notify the instructor immediately (i.e., within 48 hours) to ensure the possibility of a make-up exam or project.

Department of Health and Human Development Grievance Procedure:

If a student feels that they have been treated unfairly by the instructor with regard to their grade or other aspects of their course participation there are a series of steps that should be taken in an attempt to resolve this matter. These include the following:

1. The student should first inform the instructor of the course of the issue in an attempt to resolve this matter. If the course is taught by a Teaching Assistant, Graduate Student, or Part-Time instructor, their faculty supervisor should also be informed of this matter. The student should bring this issue to the attention of the instructor in a timely matter and should maintain a record of interactions that occurred with the instructor regarding the matter in question. The course instructor should take necessary steps to address the concern raised by the student in a timely matter and should maintain a record of the interactions that occurred with the student regarding this matter.
2. If, after reasonable attempts to resolve the matter, the matter is not resolved in a manner that is deemed to be acceptable to the student, the student retains the right to file a grievance. This grievance is to be filed with the Department Chair in the form of a written document that can be submitted via email or campus mail. This document should include the following:
 - a. Student's name
 - b. Student contact information (email, address, telephone number)
 - c. Information on the course for which the grievance applies (course title, course number, instructor name)
 - d. A copy of the course syllabus that was provided to the student by the instructor

- e. Detailed description of the grievance and additional information the student feels is pertinent to this matter

After receiving this information, the Department Chair will inform the student if additional information is needed, as appropriate will discuss this matter with the student and the instructor, and will issue a decision in a timely manner.

3. If the student is not willing to accept the decision of the Department Chair, the student will be informed that they can request an additional review of this matter through the Office of the Dean of the School of Education. If the student decides to pursue this, the student should contact the Associate Dean for Student Affairs & Certification in the School of Education at the University of Pittsburgh.

SPRING 2024 COURSE SCHEDULE

The following course schedule is tentative and may change at the discretion of the instructor.

You are responsible for any changes made to the syllabus that are posted.

| LAB DATE(S) *Likely to be Modified* | MODULE TOPIC |
|---|--|
| 01/10 – 4:00-6:00 and 6:00-8:00 pm | + Module 1: Heart Rate/Blood Pressure Physiology and GXT Measures of Significance (e.g., Seated, Supine, Standing) |
| 01/17 – 4:00-6:00 and 6:00-8:00 pm | |
| 01/24 – 4:00-6:00 and 6:00-8:00 pm | + Module 2: Pre-test Responsibilities and Procedures with Clients and Patients <i>*Open Lab</i> |
| 01/31– 4:00-6:00 and 6:00-8:00 pm | + Module 3: EKG Prep and Resting Measures <i>*Open Lab</i> |
| 02/07– 4:00-6:00 and 6:00-8:00 pm | + Module 4: Light Exercise Measures & GXT Protocols (3 weeks; TM and Cycle; Field and Laboratory Testing) <i>*Open Lab</i> |
| 02/14– 4:00-6:00 and 6:00-8:00 pm | |
| 02/21– 4:00-6:00 and 6:00-8:00 pm | |
| 02/28– 4:00-6:00 and 6:00-8:00 pm | |
| 03/06 – 4:00-6:00 and 6:00-8:00 pm | Medical Prose Report Introduction* (3/06) |
| SPRING BREAK! 03/10-03/17 | |
| 03/20– 4:00-6:00 and 6:00-8:00 pm | + Module 5: Emergency GXT Scenarios <i>*Open Lab</i> |
| 03/27– 4:00-6:00 and 6:00-8:00 pm | + Module 6: Equipment Calibration <i>*Open Lab</i> |
| 04/03– 4:00-6:00 and 6:00-8:00 pm | + Module 7: Full GXT's (3 weeks) <i>*Open Lab</i> |
| 04/10– 4:00-6:00 and 6:00-8:00 pm | |
| 04/17– 4:00-6:00 and 6:00-8:00 pm | |
| | - Medical Prose Report due 04/19 by 11:59 pm via email* |
| *FINALS WEEK* April 22nd-26th | <i>† GXT PRACTICAL'S (M-F) – Schedule Later</i> |