EXSS 6201
ADVANCED MEASUREMENT AND EVALUATION
IN EXERCISE AND SPORT SCIENCE

Instructor: Dr. Matthew T. Mahar
Office Hours: Tuesday & Thursday 2:00 - 3:00
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Course Description: This course is designed to help students examine the validity, reliability, and feasibility of current assessment techniques in exercise and sport science. Measurement related research in exercise and sport science, basic statistical analyses, and practical computer applications will be covered. We will relate our work to the issues of reliability and validity to aid you in making valid decisions.

Course Objectives:
Students who successfully complete this course will be able to:

- systematically evaluate the psychometric properties of assessment techniques to help them make informed decisions;
- understand how the dynamic nature of society has affected the role of the physical activity professional;
- cite evidence relating to the roles of physical activity, obesity, and fitness on health and low back problems;
- select and understand the statistical technique that is correct for a given situation.
- utilize the microcomputer to analyze data.
- understand the importance of validity, reliability, and objectivity for norm-referenced and criterion-referenced tests.
- select valid and reliable tests and criterion scores based on measurement theory.
- identify important test characteristics.
- define and compare the terms evaluation, measurement, and test.
- identify the methods used to measure physical activity.
- identify how the unique characteristics of youth, adults, and older adults influence the measurement of physical activity.
- outline procedures to evaluate and develop valid and reliable fitness and motor skill tests.
- outline procedures to develop a knowledge test.
- evaluate knowledge tests in terms of reliability and item analysis.
- identify tests used to measure aerobic endurance, body composition, and musculoskeletal fitness.
Textbook:

Additional Materials: Coursepack: This is required and is available at UBE.
Calculator: Be sure the calculator has the capacity to calculate a standard deviation and can store at least one number.
Bring the coursepack and calculator to class everyday.

Attendance Policy: It is recommended that you come to class every day. In case of an absence, the student is responsible for all information presented. Try to attend class on time each session.

Grading:  
- Tests 1 - 4: 70%
- Measurement Project: 25%
- Test Review and Critique: 5%

Tests: There will be four tests in the course. Three will involve multiple choice and critical thinking problems. The other test will be a take home test on correlation and regression.

Measurement Project: This assignment consists of a double-spaced, typewritten report on a topic of interest to you (hopefully). The project should be a short statistical study presented in research journal article format (i.e., introduction, methods, results, and discussion) and, as a minimum, examine reliability and validity (or some other comparison if validity is not appropriate for your project) of some test or assessment technique. Additional analyses will improve your project. The assignment includes entering data on the computer, running the analysis, and interpreting the results. A discussion of the type of reliability and evidence of validity (or other comparison) you examined and evaluation of the results should follow. The computer printout of the results must be turned in with your project. I will work with you in a group as well as individually on your project. This project must be approved by the instructor.

Test Review and Critique: Each student is required to review and critique a test (e.g., skill test, ability test, fitness test, knowledge test, attitude test) that has been published in appropriate literature (e.g., *Research Quarterly for Exercise and Sport, Measurement in Physical Education and Exercise Science*, etc.). The review/critique must be typewritten on a computer and double-spaced. It is up to you to find a test that is of interest and hopefully of practical use to you. The review/critique should be 2 to 3 pages in length and provide a description of the test and an examination of the reliability, validity, and feasibility of the test.

Academic Integrity (taken from the Graduate Catalog): Academic integrity is expected of every East Carolina University student. Academically violating the Honor Code consists of the following: cheating, unauthorized aid or assistance, or the giving or receiving of unfair advantage on any form of academic work; plagiarism, copying the language, structure, ideas, and/or thoughts of another and adopting those as one’s original work; falsification, statement of untruth, either spoken or written, regarding any circumstances relating to academic work; and attempting any act which if completed would constitute an academic integrity violation as defined above.
Tentative Course Schedule:

January  9  Introduction of measurement and evaluation in a changing society (1)
         16  State holiday -- No class
         23  Descriptive Statistics: central tendency, variability, percentiles, standard scores (2)
         30  Standard scores, normal curve, probability, relationships between variables: graphing, correlation, prediction-regression analysis (2)

February  6  Correlation and regression (2)
        13  Test #1
        20  Review Test #1, Regression and additional statistical techniques: t-tests and ANOVA (2); Take Home Test Assigned
        27  Reliability and objectivity (3)

March  6  Reliability (3) -- Take Home Test -- Due
        13  SPRING BREAK
        20  Reliability (3)
        27  Validity (4)

April  3  Test #3
        10  Review Test #3; Validity (4); Measuring Physical Activity (12)
        17  Evaluating Youth Fitness and Physical Activity (10); Evaluating Knowledge and Item Analysis (14); Writing Test Items
           Test Review/Critique Due
        24  Evaluating Aerobic Fitness (8), Evaluating Body Composition (9); Measurement Project Due

May  1  Final Examination  (This is the only time that the final will be administered. Please do not ask to take it at another time.)