

COLLEGE OF EDUCATION

COURSE SYLLABUS

EDF 7469

Introduction to Computer-Based Testing

“The College of Education is dedicated to the ideals of Collaboration, Academic Excellence, Research, and Ethics/Diversity. These are key tenets in the Conceptual Framework of the College of Education. Competence in these ideals will provide candidates in educator preparation programs with skills, knowledge, and dispositions to be successful in the schools of today and tomorrow.”

Course Prerequisites:

EDF 6432 (Foundations of Measurement) or equivalent; and computer skills

Course Description:

This course should serve as an introduction to the field of computer-based testing. The material covered will be applicable to most operational educational, psychological, credentialing and licensure assessments, for research and measurement. More specifically, the course will address:

- Principles of testing and measurement, applied in the computer-based mode.
- Guidelines for screen design and user interface development.
- Potential test applications of innovative items and simulations.
- Issues in the administration of computerized tests.
- Issues for examinees.
- The use of Item Response Theory (IRT) to conduct adaptive testing.
- Computer test delivery models such as: Computer Fixed Tests (CFT), Automated Test Assembly for online delivery (ATA), Computer Adaptive Tests (CAT), and Computer Classification Tests (CCT).

Course components will include lectures, discussion, primary and secondary readings; demonstrations of computer exam software; small group activities; and computer lab work evaluating CBT software and developing computer-based exams.

Goals and Objectives:

This course is intended to provide a broad coverage of the field of computerized assessment. The goal of the course is to inform students about relevant psychometric and computer issues, and to enable them to apply that learning to practical computerized testing applications.

The successful completion of the course requirements is expected to result in increased ability to (a) intelligently read and evaluate relevant computer-based testing literature, (b) recognize the strengths and limitations of methods used in practical computer-based testing situations, (c) develop computer-based tests that meet professional measurement standards, (d) critique research studies requiring the use of computer-based tests, and (e) communicate with peers and other professionals on computer-based testing topics.

Evaluation of Student Outcomes:

Grades will be based on the four distinct activity types listed below.

- Design and develop a computer-based test (CBT) and present it to the class (may work in a group)
- Locate and bring to class an article on the use of CBTs in the international arena
- Two PowerPoint Presentations – group assignments
 - Present information from an assigned NCME module
 - Present information on an assigned test delivery model (CFT, ATA, or CAT)
- Seven short written papers
 - Three software evaluations
 - A report on a testing company
 - Two research study critiques
 - A proposed plan for a Speech or Spanish certification test

A description of each of these activities, and the rubrics used for grading them, are provided below. **The completed products for these assignments will be posted on Blackboard to facilitate learning from one another and the sharing of knowledge.**

Computer-based test project/presentation (33%) – 66 points:

By the end of the course the students should have designed and developed a computerized exam in LXR. The exam should be developed for a particular test purpose and audience, using principles of measurement, CBT development, and screen design. The students may work individually or in small groups (perhaps a group of 2 or 3 students, supplying measurement, computer, and content skills). Usability analyses should be conducted on draft versions of the student projects.

The items will need to be entered in LXR, and a computer test generated. The exam should include introductory and instruction screens, test items, closing screens, and score reporting output. Alternatively, if the student or group has selected a truly ambitious project, an option would be to thoroughly conceptualize the test while entering only some sections into the computer. Some components of the CBT can be illustrated through storyboards instead of generating them within the software program, especially if innovative item types not available in LXR are desired. The final project will be presented in class.

During the class, students will do an in-depth study of three instruction modules developed by the National Council of Educational Measurement (NCME). These instructional modules contain questions and answers on the content. Students are encouraged to use these questions as a springboard to developing their tests. Other questions can be developed based on other course content. Students are encouraged to draw the content for the CBT exam from the course material in order to reinforce the learning process. If a student wishes to pursue different content for the test, please discuss the idea with the instructors.

The supporting materials for this exam should include test specifications and the LXR files. The purpose of the test should be discussed in terms of target audience, construct/domain, and test use (e.g., placement, proficiency, diagnostics, etc.). The test delivery model (i.e., CBT) should be specified with a rationale for the model chosen. Item and test development can be addressed in terms of item format (i.e., multiple choice), item development and review process, content

categories, and test specifications. The most appropriate estimates of reliability and validity for this application can be mentioned. Information about how the test would be administered (i.e., in a classroom setting, on a walk-in basis) could be included. Finally, the method for score reporting, to the examinee or others, could be addressed.

Test items should include all the item types available in LXR, items linked to cases, and descriptions or drawings of at least two innovative items that cannot be produced in LXR but that the student would use if the technology was available in LXR. The following components will be evaluated. **This rubric is incomplete will be expanded to include the inclusion of all available item types and the innovative items.**

Rubric (not yet complete):

- ___ Required supplementary materials included
- ___ CBT satisfied all requirements
 - ___ introductory screens
 - ___ instruction screens
 - ___ example items
 - ___ closing screens
 - ___ score reporting output
- ___ Presentation addressed all points appropriately
 - ___ test purpose
 - ___ test delivery model
 - ___ item and test format decisions
 - ___ consideration of reliability and validity
 - ___ test administration plan
 - ___ score reporting plan

Locate CBT article with international focus (2%) – 4 points:

Students are required to locate and bring to class on the appointed class meeting an article on the use of CBTs in the international arena. The articles will be used as part of a class discussion on the status of CBT around the world. Full points will be awarded to students who satisfy this requirement or none will be awarded to those who do not.

Develop and present a PowerPoint presentation on an assigned NCME Module (15%) – 30 points:

Students will work on a group project to develop a PowerPoint presentation on one of three NCME (National Council on Measurement in Education) Modules. Students will be assigned to a group and to a particular module to complete this work. Each group will teach the topic to the rest of the class via the PowerPoint presentation. A rubric for evaluating the PowerPoint's and the presentations will be developed in class. Presentations should last about ½ hour. Presentations will operate similar to the way they are conducted at professional conference presentations, complete with a timekeeper who will remind the presenter(s) when there are 5 minutes remaining, 1 minute remaining, and who will call time. At least one week before the presentation, students must meet with one or both of the instructors to discuss the plan for the presentation (how many slides, who will present, etc.).

Develop and present a PowerPoint presentation on an assigned test delivery model (15%) – 30 points:

Students will work on a group project to develop a PowerPoint presentation on one of three test delivery models (CFT, ATA, or CAT). Students will be assigned to a group and to a particular test delivery model to complete this work. Each group will teach the topic to the rest of the class via the PowerPoint presentation. A rubric for evaluating the PowerPoint presentations will be developed in class. Presentations should last about ½ hour. Presentations will operate similar to the way they are conducted at professional conference presentations, complete with a timekeeper who will remind the presenter(s) when there are 5 minutes remaining, 1 minute remaining, and who will call time. At least one week before the presentation, students must meet with one or both of the instructors to discuss the plan for the presentation (how many slides, who will present, etc.).

Three software evaluations (15%) – 10 points each:

Students will need to conduct a total of 3 software evaluations. Two computer test programs/demos will be available for students to view and evaluate. Students will also be expected to conduct an online search for information on an additional CBT program to evaluate. Each evaluation should be 2 pages in length. The evaluations should include both descriptive and evaluative components. The first evaluation will be on LXR and the second will be on Questionmark. The remaining evaluation should be of a program of the student's own choosing.

Rubric:

- ___ Descriptive elements fully addressed (0-5)
- ___ measurement features
- ___ use of technology
- ___ screen design
- ___ ease of use
- ___ help/information provided
- ___ Evaluative elements fully addressed (0-5)
- ___ measurement features
- ___ use of technology
- ___ screen design
- ___ ease of use
- ___ help/information provided

Testing company investigation (5%) - 10 points:

Students will choose a major testing company to investigate. Areas such as job opportunities, research, test development, publications, professional associations, size, location, parent company, association with other companies, and webpage description should be considered. Choose two other areas of interest to report.

Rubric:

- ___ Location and size (0-1)
- ___ Parent company and/or association with other companies (0-1)
- ___ Job opportunities (0-1)
- ___ Types of work the company specializes in (0-1)
- ___ Any research interests? (0-1)
- ___ Publications (0-1)
- ___ Web page description (0-1)
- ___ Professional associations (0-1)

- ___ Other (0-1)
- ___ Other (0-1)

Two research critiques (10%) – 10 points each:

Students will be expected to write two critiques of research studies from peer-reviewed journals in which CBT was either a tool or the focus on the research question. The critique should be 2 -3 pages in length, double-spaced. Students should both describe and evaluate the key elements of the study including the background/literature review, the research questions, the methods, design, and analysis, and the discussion and limitations. Also students should describe how they would have changed the study if they had been the researcher(s) or describe a follow-up study that would be of interest.

Rubric:

- ___ Descriptive elements fully addressed (0-4)
- ___ background/literature review
- ___ research questions
- ___ methods/design/analysis
- ___ discussion/limitations
- ___ Evaluative elements fully addressed (0-4)
- ___ background/literature review
- ___ research
- ___ methods/design/analysis
- ___ discussion/limitations
- ___ Plan for a follow-up study or description of how you would have done this study differently (0-2)

Proposed plan for speech or Spanish test (5%) – 10 points

Students will propose a plan to test the candidates for either a Speech or Spanish teacher certification test that has performance components. A scenario describing the test and the required elements of the assignments will be handed during the first class meeting.

Rubric:

- ___ Technology recommendation (0-2)
- ___ Describe suitable testing environment and how requirements will be met (0-1)
- ___ Plan to securely transmit/send speech or recordings to test company (0-1)
- ___ Scheduling plan for the test (0-1)
- ___ Plan to link performance data to multiple-choice data (0-1)
- ___ Cost estimate for technology purchase (0-1)
- ___ Supplier (i.e. Web site, vendor contact info) (0-1)
- ___ Appropriate length and format (approximately 2 pages in chart or outline format) (0-2)

Grading Criteria:

Grades will be based on a total of 200 points

| Assignment | Points | Percentage |
|---------------------------------|------------|-------------|
| CBT project in LXR | 66 | 33% |
| International Article | 4 | 2% |
| NCME PowerPoint | 30 | 15% |
| Test Delivery Model PowerPoint | 30 | 15% |
| Software evaluation 1 | 10 | 5% |
| Software evaluation 2 | 10 | 5% |
| Software evaluation 3 | 10 | 5% |
| Research critique 1 | 10 | 5% |
| Research critique 1 | 10 | 5% |
| Testing company investigation | 10 | 5% |
| Speech or Spanish Test Proposal | 10 | 5% |
| Total | 200 | 100% |

Course grade will then be assigned based on the total score:

| | |
|------------|-----------|
| A 90%-100% | D 60%-69% |
| B 80%-89% | F 00%-59% |
| C 70%-79% | |

ADA Statement:

Students with disabilities are responsible for registering with the Office of Student Disabilities Services in order to receive special accommodations and services. Please notify the instructor within the first week of classes if a reasonable accommodation for a disability is needed for this course. A letter from the USF Disability Services Office must accompany the request.

USF Policy on Religious Observances:

All students have a right to expect that the University will reasonably accommodate their religious observances, practices and beliefs. Students are expected to notify the instructor in writing by the second class if they intend to be absent for a class or announced examination, in accordance with this policy.

Plagiarism Detection Service:

Academic Dishonesty: More information can be found in the on-line Graduate Catalog:

<http://www.ugs.usf.edu/catalogs/0506/adadap.htm>

Plagiarism is defined as “literary theft” and consists of the unattributed quotation of the exact words of a published text, or the unattributed borrowing of original ideas by paraphrase from a published text. On written papers for which the student employs information gathered from books, articles, or oral sources, each direct quotation, as well as ideas and facts that are not generally know to the public at large must be attributed to its author by means of the appropriate citation procedure. Citations may be made in footnotes or within the body of the text. Plagiarism also consists of passing off as one’s own, segments or the total of another person’s work.

Punishment for Academic Dishonesty will depend on the seriousness of the offense and may include receipt of an “F” with a numerical value of zero on the item submitted, and the “F” shall be used to determine the final course grade. It is the option of the instructor to assign the student a grade of F or FF

(the latter indicating dishonesty) in the course.

Detection of Plagiarism

The University of South Florida has an account with an automated plagiarism detection service which allows instructors to submit student assignments to be checked for plagiarism. I reserve the right to 1) request that assignments be submitted to me as electronic files and 2) electronically submit assignments to Turnitin.com. Assignments are compared automatically with a huge database of journal articles, web articles, and previously submitted papers. The instructor receives a report showing exactly how a student's paper was plagiarized. For more information, go to www.turnitin.com.

Note. **Blackboard**. All students are expected to check Blackboard through MyUSF on a weekly basis.

Attendance. Assigned readings are to be completed prior to each class session. Everyone is expected to attend and actively participate in class (i.e., contribute ideas and solutions to problems, share unique expertise, provide constructive criticism and support). If you know that you will not be able to attend a particular class, please notify me in advance. If you miss class, you need to find out what you missed from other students.

Permission is not given to sell notes or tapes of class lectures.