Psychology 892
Measurement Methods in Psychological Research, Spring 2006
Syllabus

Contact Information
Jonathan Templin
449 Fraser Hall
jtemplin@ku.edu
785-864-4261

Course Information
Tuesdays and Thursdays, 1:00 pm – 2:15 pm
- 547 Fraser Hall

Office Hours
Thursdays, 11am – 1pm, 4pm – 5pm,
and by appointment.

Online Communications
MSN Messenger: jtemplin@ku.edu
Blackboard Enabled: http://courseware.ku.edu

Course Objectives
This course covers what is commonly referred to as classical and modern test theory (theory of psychological measurement and theory of mental tests). The course is intended to provide students with the conceptual and technical skills needed to develop and evaluate psychological tests and measures, and to provide foundations for further study of measurement theory.

The topics presented in the course follow a unified framework featuring the factor model, as presented by Rod McDonald in our textbook. This method for presenting the material allows us to cover a great deal of information in this course.

Textbook
R.P. McDonald, *Test theory: a unified treatment*. Lawrence Erlbaum Assoiciates, 1999.

Course Website/Technology
This course will feature extensive use of Blackboard. All necessary information will be posted on Blackboard, which is accessible to students who have registered for the course at http://courseware.ku.edu.

I plan to make use of the message board features of Blackboard to allow for additional comments and questions. Finally, if you use MSN messenger, you may instant message me your questions if you find me online. If you have a webcam, you are welcome to have video conferences with me, too.

Statistical Computing

SAS will be the primary statistical package used for this course, with several other freeware programs used whenever necessary. Unlike many point-and-click packages (such as SPSS), SAS is a code based language that does many statistical procedures. Of course, if you are already familiar with another package, you may use that package. Be advised that all examples and solutions will feature SAS, and I cannot provide you any help with any other package. Note I **strongly** recommend you complete the course assignments in SAS due to the specific nature of information requested by homework assignments.

SAS is available to you in two ways:

1. You can purchase SAS through campus at http://www.ku.edu/acs/stats/StatisticalSoftware.shtml.
2. The Budig and Fraser computer labs have SAS installed on all computers; for a list of labs and hours visit http://www.computerlabs.ku.edu/, and select "Labs on Campus" from the top left.

Course Grading System

The final grade will be determined based on the weighted average of the homework assignments, and the two tests using the following weights:

Homework	20%
Midterm	20%
Final	20%
Project	40%

Course grades will be determined by the weighted average of the homework, midterm, final, and project grades, and will be given according to the following scale (pluses and minuses will be given for the differing thirds of a grade category). I reserve the right to round grades upward in the event I misjudge the difficulty of the course, but grades will never be rounded downward.

My goal is for everyone to succeed in this course, learn the material, and receive an A. Here is a rough picture of the grading scale I will use:

A	B	C	D	F
85% - 100%	70%-84%	60%-70%	50-60%	Below 50%

Course Structure

Homework

This course will feature several homework assignments to allow for sufficient practice of the principles discussed (approximately three total assignments). A typical assignment will consist of a set of practice problems, expected to be completed within two weeks. All assignments are posted online, and the homework is expected to be completed by the beginning of class on the due date. All late homework will have a 10% penalty per day late.

Students are allowed and ***encouraged*** to collaborate with each other on homework assignments, however, each student must turn in an *original* piece of work. Homework is your time to learn the material with heavy guidance from the instructor. A random set of problems will be graded on a 3-point scale, with deductions for non-needed computer output (basically, submit only what was used in answering each question).

The points received divided by the total points possible will be your homework percentage for any given week. Each week's homework will count the same weight toward your final grade (i.e. weighted averages will be used).

Homework Grading Scale

Points	Expectation
3	Answer is correct and concise. You demonstrate you know the content area
2	Effort is made, but answer has some errors. You show you are on the right track and trying.
1	Minimal effort for the problem. Do not demonstrate you know the concepts. OR -- Way too much computer output (if applicable)
0	No answer given

Tests

There will be two tests: a midterm and a final (the final being is comprehensive over the whole course). Both tests will be taken in class. The exams will cover material in the assigned readings, lectures, and laboratory sections up to and including those preceding the exam. The final will be comprehensive, with greater emphasis on the second half of the course. A typical test will consist of several types of items (e.g. multiple choice, fill in the blank, etc…).

Course Project

To successfully complete this course, you must submit a course project. The course project is an important part of this course, accounting for 40% of the total grade. More importantly, the course project is where you will gain practical experience in applying the measurement method taught in this course. As an ultimate goal for the project, consider choosing a topic that will lead to a publishable paper rather than a topic that will just allow you to complete the course.

The requirement for the course project is an empirical research project, accompanied by an APA-style research paper describing it. For the research project, you may work in a small group with other students (at most, three students per group), but each student must turn in an individually written paper. The project is described in further detail on another handout.

Course Style and Content

Lecture Format

All lecture notes will be available digitally, with notes available online the morning prior to the lecture. If you have a data set you would like to see included in the in-class examples, I encourage you to submit it to me.

Computing

Because SAS can be complicated to learn, I have reserved time in the Fraser Hall lab (in the basement). Our second class (1/26) will be to cover SAS for those of you who may not be familiar.

Reading Assignments

To be fully successful in this course, I **strongly** encourage you to read the assigned chapter(s) prior to the course when we will cover the topic. I believe the book is written in a very readable style so that people with only a minimal statistical background can understand (undergraduate statistics – Psych 300), and should become an excellent reference for you in the future.

Furthermore, there are many portions of the book the author mentions as optional. These sections are not optional for this course, we will cover everything.

Tentative Course Schedule (subject to change as necessary)

Date	**Topic**	**Chapter(s)**
1/24	Course Overview	-
1/26	Introduction to SAS (Fraser Hall computer lab)	-
1/31	General Introduction/Historical Perspectives	1
2/2	Items and Item Scores	2
2/7, 2/9	Item and Test Statistics	3
2/14	The Concept of a Scale	4
2/16	**No Class (I am at a conference on measurement)**	
2/21, 2/23	Reliability Theory for Total Test Scores	5
2/28, 3/2, 3/7	Test Homogeneity, Reliability, and Generalizability	6
	Initial Project Proposal Due Tuesday, 3/7	
3/9	Reliability – Applications	7
3/14	Prediction and Multiple Regression	8
	Midterm Examination Tuesday, 3/16	
3/21, 3/23	**No Class (Spring Break)**	
3/28, 3/30	The Common Factor Model	9
4/4, 4/13	Validity	10
4/6, 4/11	**No Class (I am at NCME)**	
4/18	Classical Item Analysis	11
	Final Project Proposal Due Tuesday, 4/18	
4/20, 4/25, 4/27	Item Response Theory	12, 13
5/2	Multidimensional Item Response Models	14
5/4	Alternate Forms and the Problem of Equating	16
5/9	Comparing Populations	15
5/11	Some Scaling Theory	18
	Course Project Due Tuesday, 5/16	
	Final Examination, Tuesday, 5/16 1:30pm – 4:00pm	