Instructors: Dr. David Dorsey    Dr. Charles (Chuck) Keil
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e-mail: David.Dorsey@PDRI.com    Chuck.Keil@Monster.com

Office Hours: After class (7:15-8:15) or by appointment


Course Objective

To foster understanding of the fundamentals of developing measuring instruments, interpreting data relevant to those instruments, and knowing which instruments and indices are appropriate for which situations. Examples of course topics and their accompanying subareas follow:

- The construction of measuring instruments
  - Objectives of item analysis
  - Indices of item difficulty and item discrimination
  - The construction and use of scales, including Guttman and Likert scales
- Reliability
  - The various types of reliability (e.g., internal consistency, stability, interrater)
  - The difference between interrater reliability and interrater agreement
  - Issues in calculating the reliability of ratings
  - The relation between the choice of reliability index and the construct being measured
  - The concepts of parallel tests, domain sampling, and “true-and-error score” theory
- Validity
  - Why measure? What is the role of statistics in measurement (i.e., how is this course different from a statistics course?)
  - What are face validity, content validity, criterion-related validity, and construct validity? What is a nomological net?
  - Cross-validation
- Item response theory
  - Its relationship to classical test theory
  - The concepts of information and the conditional standard error of measurement
  - Computerized-adaptive testing
- Additional topics
  - Standard setting (i.e., determining cutoff scores)
  - Establishing test norms
  - Equating tests
  - Computerized testing
Course Requirements

- **Readings:** The course will depend greatly on class participation and discussion of the readings (textbook chapters and articles to be distributed). We would like to have a good bit of interaction during class. Questions and comments are greatly encouraged. To foster the realization of this goal, class participation will provide 20% of your final grade. Participation entails reading the assigned materials before class, and answering and asking questions.

- **Midquarter Exam:** A midquarter examination will be given following completion of the first half of the course. The examination will be in a short-answer and essay format and will constitute 40% of your final grade.

- **Final Exam:** The final examination will focus primarily on material presented in the second half of the course, although there will be a few questions regarding topics presented in the first half. Hence, it is “semi-comprehensive.” The final will constitute 40% of your final grade and will also be short answer and essay format.

- **Grading Scale:** Grades will follow the following percentage categories: 92-100 = A; 90-91 = A-; 88-89 = B+; 82-87 = B 80-81 = B-; <80 = C

**Honor Code**

As a student at George Mason University, each student in this course agrees to uphold the principles of honor set forth by the university, to defend these principles against abuse or misuse, and to abide the university regulations. This class will strictly enforce the stipulations and guidelines delineated in the George Mason University Honor Code. Students have the responsibility of engaging in honorable conduct at all times, including during study and examinations. To see the Honor Code, go to [http://mason.gmu.edu/%7Emontecin/plagiarism.htm](http://mason.gmu.edu/%7Emontecin/plagiarism.htm)

**Students with Disabilities**

If you are a student with a disability and you need academic accommodations, please see me and contact the Disability Resource Center (DRC) at 703-993-2474. All academic accommodations must be arranged through that office.

**Last Add and Drop Dates**

Last day to add - Feb. 7th
Last day to drop - Feb. 24th

**SCHEDULE OF CLASSES AND ASSIGNMENTS**

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Assigned Readings</th>
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</thead>
<tbody>
<tr>
<td>1/23</td>
<td>Administrative matters; course overview; purpose of measurement; statistical concepts; correlation</td>
<td>C&amp;A 1, 2, 3 (pp. 45-50); Binning &amp; Barrett; Rodgers &amp; Nicewander</td>
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<tr>
<td>1/30</td>
<td>Reliability: What it is; theories of reliability (Classical and Generalizability Theory)</td>
<td>C&amp;A, 6, 8; Dudek; Thompson &amp; Vacha-Haase; Fan &amp; Chen</td>
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<tr>
<td>Date</td>
<td>Topic</td>
<td>Assigned Readings</td>
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<tr>
<td>2/6</td>
<td>Theories (cont.); estimation of reliability</td>
<td>C&amp;A, 7; Cortina; Vacha-Haase; Schmidt &amp; Hunter (1989)</td>
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<tr>
<td>2/13</td>
<td>Interrater reliability and agreement</td>
<td>Tinsley &amp; Weiss; Shrout &amp; Fleiss; McGraw &amp; Wong; James, Demaree, &amp; Wolf (both); Schmidt &amp; Hunter; Kozlowski &amp; Hattrup</td>
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<tr>
<td>2/20</td>
<td>Validity: What it is; theories of validity</td>
<td>C&amp;A, 10; Binning &amp; Barrett; Murphy &amp; Shiarella; Messick</td>
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<tr>
<td>2/27</td>
<td>Empirical issues in demonstrating validity (bivariate versus multiple correlation; cross-validation); validity generalization</td>
<td>C&amp;A 11 (243-256); Schmidt &amp; Hunter</td>
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<td>3/6</td>
<td>Midquarter exam</td>
<td>In class</td>
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<td>3/13</td>
<td>Spring Break</td>
<td>NO CLASS</td>
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<tr>
<td>3/20</td>
<td>Test plan; strategies for test Construction;</td>
<td>C&amp;A, 4; Russell &amp; Peterson;</td>
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<tr>
<td>3/27</td>
<td>The test item: Item analysis, item difficulty, item discrimination, validity, and reliability</td>
<td>C&amp;A, 5, 14;</td>
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<tr>
<td>4/3</td>
<td>Scaling: Guttman scales, Thurstone scales, Likert scales; multidimensional scaling; Factor Analysis</td>
<td>C&amp;A, 3 (pp. 50-64); Thompson &amp; Daniel</td>
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<tr>
<td>4/10</td>
<td>Item Response Theory: Item characteristic curves; information; adaptive testing</td>
<td>C&amp;A, 15; Drasgow (IRT Lab); Hambleton &amp; Jones</td>
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<td>4/17</td>
<td>Norming, standard setting, and equating</td>
<td>C&amp;A, 18, 20</td>
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<td>4/24</td>
<td>Technology and Measurement</td>
<td>Drasgow, Luecht, Bennett</td>
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<td>5/1</td>
<td>Psychometrics and research methods trends</td>
<td>TBD</td>
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<tr>
<td>5/15</td>
<td>FINAL EXAM</td>
<td>In Class</td>
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Additional Readings


