San José State University  
Department of Psychology  

Elementary Statistics  
Stat 095, Section 06  
Fall 2011

Instructor: Dr. Ron Rogers  
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Email: Ronald.Rogers@sjsu.edu

Office Hours: Tuesday 1:45 pm – 3:00 pm  
Or, by appointment  
Class Days/Time: T R 3:00 – 4:15 pm  
Classroom: DMH 353

Prerequisites: By California State University policy, passage of the Entry Level Math (ELM) Exam is a prerequisite to enroll in this course. Failure to satisfy this prerequisite will result in the retroactive assignment of a “U” grade in this course. Information on the ELM can be obtained on the web at http://testing.sjsu.edu/teptelm.html

GE/SJSU Studies Category: Intended for majors in education, nursing, personnel administration, psychology, social service and sociology, and psychology minors. GE: B4 (Mathematical Concepts) and CAN STAT 2.

Course Description

The major purpose of this course is to provide you with a solid foundation in elementary statistics, by introducing you to the various types of statistics used in psychology and other social sciences. In this course, you will learn the “what, when, and how” of statistics. That is, you will learn what statistics are available, when to use specific statistics, and how to interpret results.

Course Goals and Student Learning Objectives

1. Stat 95 requires students to write a minimum of 500 words in a manner appropriate to quantitative analysis. The writing requirement will be met via written projects (described below). Writing will be assessed for grammar, clarity, conciseness, and coherence.
2. Stat 95 will incorporate issues of diversity in many ways (e.g., in lectures, films, assignments)

3. In terms of Mathematical Concepts (Area B-4), Stat 95 will focus on:
   a. Basic mathematical techniques for solving quantitative problems
   b. Elementary numerical computation
   c. The organization, classification, and representation of quantitative data in various forms, such as tables, graphs, rates, percentages, measures of central tendency and spread
   d. Applications of mathematics to everyday life
   e. Applications of mathematical concepts in statistical inference

GE/SJSU Studies Learning Outcomes (LO)

Upon successful completion of this course, students will be able to:

- LO1 – To use statistical methods to solve quantitative problems, including those presented in verbal form
- LO2 – To demonstrate the ability to use mathematics and statistics to solve real-life problems
- LO3 – To arrive at conclusions based on numerical and graphical data.

Assessment of student learning objectives: The learning objectives will be assessed via in-class and homework assignments, quizzes, exam questions, and written papers. These assessment items will involve solving verbal and symbolic quantitative problems, including those that involve real-world situations. Students will be required to arrive at conclusions using numerical and graphical data. For example, students may view a scatterplot depicting data for the amount of caffeine consumed (X) and the quality of sleep (Y) and will determine whether a relationship exists between these variables, and, if so, the nature and strength of this relationship (LO 3). In addition, students will compute appropriate statistical measures that describe the relationship (LO 1) and then determine the practical implications of the observed relationship (LO 2, 3).

Course Web Page

Copies of the course materials such as the syllabus, major assignment handouts, etc. will be distributed through the course web site on Desire2Learn (D2L), SJSUs learning management system. I recommend viewing some of the online tutorials if you’ve never before taken a course using D2L.

Online Tutorials: [http://www.sjsu.edu/ecampus/students/D2L_students/index.htm](http://www.sjsu.edu/ecampus/students/D2L_students/index.htm)

How to Begin:
1. Visit the course Welcome page: [https://sjsu.desire2learn.com/](https://sjsu.desire2learn.com/)
2. Click the System Check link before you login to make sure your system is configured properly. Note: Be sure that your browser pop-up blocker is disabled for D2L.
3. Login to the system:
   a. **Username:**
      i. Your Desire2Learn username can be found by logging into your mySJSU account
      ii. Click on Self Service > Campus Personal Information > Names, and locating your Desire2Learn name (look for Name Type called D2L) from the list.
      iii. Usernames will generally be in the form of firstname.lastname, but may have an appended number (e.g., firstname.lastname#) if there is more than one person with that name at SJSU.
   b. **Password:**
      i. Your initial Desire2Learn password is your 9-digit SJSU ID number.
      ii. After your initial login, change your password to one that is meaningful and memorable to you.

4. Problems?
   a. If you forget your password, use the "Forgot Password?" link in the "Login" box on the left side of the D2L login page.
   b. For other login or password issues, please contact the Help Desk at 408-924-2377 or submit an "incident ticket" online at http://www.sjsu.edu/helpdesk/ticket/.

**Required Texts, Readings, and/or Materials**

- Paperback $151
- eBook $84.00
- eChapters $9.00 /chapter

**Other REQUIRED equipment and materials**
1. Computer, printer, internet and library access
2. Scantron (882) forms
3. Access to Statistical Package for the Social Sciences (SPSS) software (v. 16.0 or later). See “Student Technology Resources” below for additional information.
4. Calculator (must have square root and exponent buttons)

**Classroom Protocol**
Classes will be comprised of lectures, in-class activities, and question-and-answer periods. Attendance is expected and is critical for success in this course. If you miss a class, you are responsible for getting the information covered. It is vital that you complete all scheduled readings and assignments before each class. **Always bring your textbook and calculator to class.**
To get the most out of the lectures, you should read the assigned material prior to the lecture (see Course Schedule). If you have not read the textbook, you may have difficulty following lectures. Furthermore, the textbook (at the end of each chapter) has exercises with which you can practice. In addition to homework assignments, you should work as many exercises as you can to make sure that you understand the concepts and computations. “Doing” really is “learning” when it comes to statistics. The more you practice, the more it will make sense. The material in the course is cumulative and it becomes more complex as the semester progresses. If you miss several lectures, it will become extremely difficult for you to catch up with class. Thus, it is very crucial that you attend all of the class periods.

**Classroom Environment and Electronics Policy:** In an effort to create a classroom environment conducive to sharing one’s thoughts, I require the following classroom etiquette:

- Be polite and respectful to the other people in the class.
- Do not carry on conversations with others during class.
- Please turn off your cell phone. If you need to receive an emergency call, let me know about it in advance. Never take a call and start talking during class.
- Do not use electronic devices to check email, visit web sites, play games, or send text messages. Doing so is a distraction to other students and the instructor and will result in expulsion from class.
- Do not work on any other course material during class, including studying for other exams.
- Do not sleep during class.

**Assignments and Grading Policy**

Your grade will be determined by your performance in four categories of the coursework and examination:

<table>
<thead>
<tr>
<th>Assessment Item</th>
<th>How Many</th>
<th>% of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams</td>
<td>7</td>
<td>70%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>12</td>
<td>15%</td>
</tr>
<tr>
<td>Homework/Exercises</td>
<td>10</td>
<td>10%</td>
</tr>
<tr>
<td>Writing Projects</td>
<td>2</td>
<td>5%</td>
</tr>
</tbody>
</table>

A letter grade will be assigned based on a standard distribution of points. Your final grade will be calculated by summing your scores on the above criteria and a letter grade will be assigned based on the following grading distribution.
Grading Distribution

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percent (%)</th>
<th>Grade</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>100 – 97.5</td>
<td>C</td>
<td>77.4 – 72.5</td>
</tr>
<tr>
<td>A</td>
<td>92.5 – 97.4</td>
<td>C-</td>
<td>70.0 – 72.4</td>
</tr>
<tr>
<td>A-</td>
<td>90.0 – 92.4</td>
<td>D+</td>
<td>69.9 – 67.5</td>
</tr>
<tr>
<td>B+</td>
<td>89.9 – 87.5</td>
<td>D</td>
<td>67.4 – 62.5</td>
</tr>
<tr>
<td>B</td>
<td>87.4 – 82.5</td>
<td>D-</td>
<td>60.0 – 62.4</td>
</tr>
<tr>
<td>B-</td>
<td>80.0 – 82.4</td>
<td>F</td>
<td>&lt; 60%</td>
</tr>
<tr>
<td>C+</td>
<td>79.9 – 77.5</td>
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Exams & Challenge Exams: Each Learning Module ends with a 30-min, in-class examination (seven in all). They may consist of multiple choice, short essay, and/or computational questions. The exams are meant to assess your knowledge of the statistical concepts and calculations covered during a given module. More specifically, there are typically three to seven learning objectives for each module (see Course Schedule below). These learning objectives represent the concepts and abilities you should have mastered by the end of that module. Module exam questions will be constructed to assess your understanding and/or abilities for each of these objectives.

You are required to bring the following to each exam:

- #2 pencil with an eraser
- Calculator (cell phones will NOT be allowed)
- Your textbook or photocopies of the relevant statistical tables
- An 882-E Scantron form

There will be NO scheduled makeup exams. Make-up exams will only be given under special circumstances (e.g., written medical excuse, prior approval by the instructor, etc). If deemed necessary, a single make-up exam will be given at the instructor’s convenience and discretion. Any student that fails to contact the instructor by the next class meeting following the missed exam forfeits their eligibility to take a make-up exam.

Challenge Exams. My goal as an educator is for you to learn the concepts that make up the content of this class. With that in mind, I let my students “challenge” a subset of their exam grades. This is meant to recognize and reward your efforts to continue learning…even after the exam has passed. A challenge exam is a second, new exam on a previously covered topic. Essentially, I allow you to take a certain number of exams over. Here are the rules:

1. You can challenge a maximum of three exams
2. The challenge exam score replaces your first exam score (better or worse!)
3. You cannot challenge an exam that you missed (i.e., this is not a make-up)
4. All challenge exams will given during the Final Exam period
5. You must declare which exams you will challenge by the specified date

Quizzes/Homework Sets: The quizzes are meant to stimulate your reading of the text and to help you self-assess your knowledge of the concepts covered in each chapter. Staying on track with the reading is critical and will greatly facilitate your understanding of the
terminology and many concepts addressed in the course. All quizzes will be multiple-choice and will be based on the assigned readings.

Each quiz will be available online during a specific window of time using the Desire2Learn system. You can begin a quiz as soon as it becomes available, but you must save and submit your answers prior to the due date/time to receive credit. Once the online availability period has expired, a quiz cannot be submitted unless prior arrangements have been made with the instructor. Finally, each quiz can be taken up to two times with the highest of the two scores counting toward your grade. This should allow you to identify areas of weakness in your understanding (attempt 1) and strengthen those areas before any final points are assigned (attempt 2).

Homework sets and exercises will also be assigned throughout the semester. This material will be available for download from the course web site, but will be handed-in at the beginning of class according to the Course Schedule below. Late homework and exercises will have 10% deducted from the total points earned for each class meeting they are late. Homework and exercises will not be accepted beyond seven calendar days from their due date unless other arrangements have been made with the instructor.

Papers: While I am committed to teaching you how to calculate statistics, I am particularly interested in you developing the skills of interpreting and discussing the meaning of the statistics you have calculated, i.e., tell me what the numbers mean! To that end, the writing projects in this class will serve three specific functions:

1. Teach you how to communicate statistical findings and interpretations (Project 1).
2. Allow you to demonstrate your proficiency in written communication (Project 2).
3. Fulfill the GE requirement of writing a minimum of 500 words in a manner appropriate to quantitative analysis.

I will be discussing the details of these writing projects as their dates grow closer. Suffice to say that the reports will be at least 250-500 words in length (typed, double-spaced, 12-point font, 1” margins) and will include at least one graph or table (software generated). Correct grammar, punctuation, and statistical style (as described in the Publication Manual of the American Psychological Association, 6th ed.) are expected and will represent a portion of your grade on the assignment. All papers will be subject to plagiarism evaluation using Turnitin.com.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. Information on add/drops is available at http://info.sjsu.edu/web-dbgen/narr/soc-fall/rec-324.html. Information about late drop is available at http://www.sjsu.edu/sac/advising/latedrops/policy/. Students should be aware of the current deadlines and penalties for adding and dropping classes.
University Policies

Academic integrity

Students should know that the University’s Academic Integrity Policy is available at http://www.sa.sjsu.edu/download/judicial_affairs/Academic_Integrity_Policy_S07-2.pdf. Your own commitment to learning, as evidenced by your enrollment at San Jose State University and the University’s integrity policy, require you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The website for Student Conduct and Ethical Development is available at http://www.sa.sjsu.edu/judicial_affairs/index.html.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism will lead to grade penalties and a record filed with the Office of Student Conduct and Ethical Development. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include in your assignment any material you have submitted, or plan to submit for another class, please note that SJSU’s Academic Policy F06-1 requires approval of instructors.

Plagiarism is the use of someone else's language, images, data, or ideas without proper attribution. It is a very serious offense both in the university and in your professional work. In essence, plagiarism is both theft and lying: you have stolen someone else's ideas, and then lied by implying that they are your own. If you are unsure what constitutes plagiarism, it is your responsibility to make sure you clarify the issues before you hand in draft or final work.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the DRC (Disability Resource Center) to establish a record of their disability.

Resources for Success

Student Technology Resources

SPSS Software: You will find a brief introduction to SPSS in your textbook. You may also consult the Graduate Student Teaching Assistants in the Statistics Laboratory in DMH 350. Additionally, information on using SPSS is available online. There are several avenues for gaining access to the SPSS software:

1. The University Help Desk, located on the first floor of Clark Hall in room 102, sells install media for $15 for either Mac or Windows. You must provide a photo ID and a tower card at the time of purchase.
2. The Statistics Laboratory in DMH 350 during the posted office hours
3. SJSU Student Computer Service (SCS) provides eligible SJSU borrowers with laptop equipment and software for use inside the King Library (see http://www.sjlibrary.org/services/computers/equipment.htm for more information).
Learning Assistance Resource Center

The Learning Assistance Resource Center (LARC) is located in Room 600 in the Student Services Center. It is designed to assist students in the development of their full academic potential and to motivate them to become self-directed learners. The center provides support services, such as skills assessment, individual or group tutorials, subject advising, learning assistance, summer academic preparation and basic skills development. The LARC website is located at http://www.sjsu.edu/larc/.

SJSU Writing Center

The SJSU Writing Center is located in Room 126 in Clark Hall. Professional instructors and upper-division or graduate-level writing specialists from each of the seven SJSU colleges staff the Center. Our writing specialists have met a rigorous GPA requirement, and they are well trained to assist all students at all levels within all disciplines to become better writers. The Writing Center website is located at http://www.sjsu.edu/writingcenter/.
# Course Schedule

**Elementary Statistics – Fall 2011**

<table>
<thead>
<tr>
<th>Dates</th>
<th>Learning Modules</th>
<th>Learning Objectives (You should…)</th>
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<tbody>
<tr>
<td>Aug/25</td>
<td>Fear and Loathing in Statistics</td>
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<tr>
<td><strong>Module 1 – Data: What is it and how can we organize it?</strong></td>
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</tbody>
</table>
| Aug/30 – Sep/08 (4 classes) | Statistical Concepts:  
• Introduction to Statistics  
• Frequency Distributions  
Learning Aids:  
• Gravetter & Wallnau, Chapters 1 & 2  
• Homework 1 & 2  
Learning Assessments:  
• In-class “Learning Checks”  
• Online quizzes 1 & 2  
Module Assessment:  
• 30-minute exam 1 (Sep. 8th) | 1. …be familiar with the terminology and special notation of statistical methods.  
2. …understand the purpose of statistics.  
3. …understand and compute basic mathematical operations.  
4. …understand the concept of a frequency distribution.  
5. …be able to organize data into a frequency distribution table and graph.  
6. …understand that most population distributions are drawn as smooth curves showing relative proportions.  
7. …be able to identify the shape of a distribution. |
| **Module 2 – Tools for describing and summarizing our data** |                                       |                                    |
| Sep/13 – 22 (4 classes) | Statistical Concepts:  
• Central Tendency  
• Variability  
Learning Aids:  
• Gravetter & Wallnau, Chapters 3 & 4  
• Homework 3 & 4  
Learning Assessments:  
• In-class “Learning Checks”  
• Online quizzes 3 & 4  
Module Assessment:  
• 30-minute exam 2 (Sep. 22nd) | 1. …understand the purpose of measuring central tendency.  
2. …be able to define and compute each of the three measures of central tendency.  
3. …understand how the mean is affected when a set of scores is modified.  
4. …understand the circumstances in which each of the three measures of central tendency is appropriate.  
5. …understand the general purpose for measuring variability.  
6. …understand the concept of standard deviation as measuring the standard distance from the mean.  
7. …be able to calculate SS (sum of squared deviations), variance, and standard deviation for a sample and for a population. |
| **Module 3 – What was the chance of me ending-up here?** |                                       |                                    |
| Sep/27 – Oct/06 (4 classes) | Statistical Concepts:  
• Z-scores  
• Probability  
Learning Aids:  
• Gravetter & Wallnau, Chapters 5 & 6  
• Homework 5 & 6 | 1. …understand that a z-score provides a precise description of a location in a distribution.  
2. …be able to transform X values into z-scores, and transform z-scores into X values.  
3. …understand and be able to describe the effects of standardizing a distribution by transforming the entire set of X values into |
<table>
<thead>
<tr>
<th>Dates</th>
<th>Learning Modules</th>
<th>Learning Objectives (You should…)</th>
</tr>
</thead>
</table>
| Learning Assessments: | - In-class “Learning Checks”  
- Online quizzes 5 & 6 | 4. …be able to use z-scores to transform any distribution into a standardized distribution. |
| Module Assessment: | - 30-minute exam 3 (Oct. 6th) | 5. …understand the basic definition of probability and the underlying assumption of random sampling. |
|            |                                                                                 | 6. …be able to use the unit normal table to find probabilities and proportions for specific scores in a normal distribution. |

**Module 4 – Testing our inferences about the world**

| Oct/11 – 20  | Statistical Concepts:  
- Probability and Samples  
- Hypothesis Testing | 1. …be able to define the distribution of sample means. |
| (4 classes)  | Learning Aids:  
- Gravetter & Wallnau, Chapters 7 & 8  
- Homework 7 & 8 | 2. …be able to, for a specific sampling situation, describe the distribution by identifying its shape, the expected value of M, and the standard error of M. |
|             | Learning Assessments:  
- In-class “Learning Checks”  
- Online quizzes 7 & 8 | 3. …should understand that each sample mean, M, has a location in the distribution of sample means that can be described by a z-score. |
|             | Module Assessment:  
- 30-minute exam 4 (Oct. 20th) | 4. …be able to determine probabilities corresponding to specific sample means using the concepts above. |
|             |                                                                      | 5. …understand the logic of hypothesis testing. |
|             |                                                                      | 6. …be able to conduct a hypothesis test (including directional tests) using a z-score statistic and make a statistical decision. |
|             |                                                                      | 7. …be able to define and differentiate Type I and Type II errors. |

**Module 5 – Our first set of tools for testing**

| Oct/25 – Nov/08  | Statistical Concepts:  
- The t Statistic  
- t Test for Independent Samples  
- t Test for Related Samples | 1. …be able to perform a hypothesis test using the t statistic. |
| (5 classes)      | Learning Aids:  
- Gravetter & Wallnau, Chapters 9, 10,  
& 11  
- Homework 9  
- Writing Project 1 | 2. …understand the structure of a research study that produces data appropriate for an independent- AND repeated-measures t tests. |
|                  | Learning Assessments:  
- In-class “Learning Checks”  
- Online quizzes 9 & 10 | 3. …be able to use the independent- AND repeated-measures t statistics to test hypotheses about the mean difference between treatment conditions. |
|                  | Module Assessment:  
- 30-minute exam 5 (Nov. 8th) | 4. …understand the relative advantages and disadvantages of repeated-measures studies compared to independent-measures studies. |
<table>
<thead>
<tr>
<th>Dates</th>
<th>Learning Modules</th>
<th>Learning Objectives (You should…)</th>
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</thead>
<tbody>
<tr>
<td><strong>Module 6 – Getting involved in more complex relationships</strong></td>
<td></td>
<td></td>
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<tr>
<td>Nov/10 – Nov/22 (4 classes)</td>
<td>Statistical Concept:</td>
<td>1. …understand the basic purpose for analysis of variance and the general logic that underlies this statistical procedure.</td>
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<tr>
<td></td>
<td>- Analysis of Variance (ANOVA)</td>
<td>2. …be able to perform an analysis of variance to evaluate the data from a single-factor, independent-measures research study.</td>
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<tr>
<td></td>
<td>Learning Aids:</td>
<td>3. …understand when post tests are necessary and the purpose that they serve.</td>
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<tr>
<td></td>
<td>- Gravetter &amp; Wallnau, Chapter 13</td>
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<td></td>
<td>- Homework 10</td>
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<tr>
<td></td>
<td>Learning Assessments:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- In-class “Learning Checks”</td>
<td></td>
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<tr>
<td></td>
<td>- Online quizzes 11</td>
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<td></td>
<td>Module Assessment:</td>
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<td></td>
<td>- 30-minute exam 6 (Nov. 22nd)</td>
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<td><strong>Note: No Class on Nov. 24th – Thanksgiving Holiday</strong></td>
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<tr>
<td><strong>Module 7 – Predictable relationships</strong></td>
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<tr>
<td></td>
<td>- Correlation and Regression</td>
<td>2. …be able to compute the Pearson correlation using either the definitional or computational formula for SP.</td>
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<tr>
<td></td>
<td>Learning Aids:</td>
<td>3. …be able to use a sample correlation to evaluate a hypothesis about the correlation for the general population.</td>
</tr>
<tr>
<td></td>
<td>- Gravetter &amp; Wallnau, Chapter 15</td>
<td>4. …recognize the general form of a linear equation and be able to identify its slope and Y-intercept.</td>
</tr>
<tr>
<td></td>
<td>- Writing Project 2</td>
<td>5. …be able to compute the linear regression equation for a set of data.</td>
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<tr>
<td></td>
<td>Learning Assessments:</td>
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<tr>
<td></td>
<td>- In-class “Learning Checks”</td>
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<tr>
<td></td>
<td>- Online quizzes 12</td>
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<td></td>
<td>Module Assessment:</td>
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<td></td>
<td>- 30-minute exam 7 (Dec. 8th)</td>
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<tr>
<td><strong>Challenge Exams</strong></td>
<td><strong>Friday, December 16th, 2:45 – 5:00 pm in DMH 353</strong></td>
<td>Note: You must identify the exam you wish to challenge (if any) in an email to me no later than 5:00 pm on Tuesday, December 6, 2011</td>
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<td></td>
<td><strong>Note:</strong></td>
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