



EPsy 3264 – Basic & Applied Statistics (Section 4)

325 Peik Hall, T,Th 12:45 PM - 2:00 PM

Fall 2010

Instructor

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COURSE DESCRIPTION

EPsy 3264 is designed to provide an overview of introductory statistics. The topics to be covered in this course include sampling methods, experimental design, data exploration (e.g., using graphical and numerical summaries), data modeling and simulation, normal distributions, sampling distributions, methods of statistical inference (estimation and testing), and correlation. Upon completion of this introductory course, students should be able to: (1) think critically about statistics used in magazines, newspapers, and journal articles, (2) reason about data and (3) apply the knowledge gained in the course to begin to answer simple research questions using empirical data.

This course is intended for undergraduate students who have completed a high school algebra course, but *not previously* studied statistics. Students should also have familiarity with computers and technology (e.g., internet browsing, Microsoft Word, opening/saving files, etc.).

REQUIRED MATERIALS

The following materials will need to be purchased:

- Moore, D. S., & Notz, W. I. (2009). *Statistics: Concepts and controversies (7th Ed.)*. New York: W. H. Freeman and Company.
- *FathomTM Dynamic Data Software (Version 2)* – Student Edition
- EPsy 3264 Course Packet – This is available at Alpha Prints (Dinkytown; 1407 4th Street SE)

INSTRUCTIONAL FORMAT

This is *not* a class where you come each day, listen, watch, and take notes! The primary method for learning new statistical concepts and methods will be by reading the textbook, working out problems from the



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textbook, and participating in class activities, discussions, and demonstrations. Many of these activities will include using *Fathom*, state-of-the-art statistical software designed to help students learn statistics and *eliminate much of the “math” and number crunching*, so they can focus on a conceptual understanding of statistics and on their application.

Small group and large group activities and discussions will be used to apply and deepen students' understanding. Students are expected to participate in the activities and discussions. Real data sets will be used during class to help students develop statistical thinking and learn how to analyze and interpret data.

It is essential that students attend class each day and if you have to miss a class, you should make every attempt to either attend another section of the course or make up the work by obtaining notes from other students. However it is almost impossible to learn as much on your own from an activity that was carried out and discussed in class. Instructors and TAs will not re-teach material that you missed due to an unexcused absence. *It is also important to note that there are some assignments (e.g., group quizzes) that cannot be made-up if class is missed.*

COURSE REQUIREMENTS

Homework: Each of the six homework assignments consists of problems that will help you prepare for the exams and also teach you the basics of using *Fathom*. Each homework assignment is worth 15 points. As a student of statistics, working through the homework problems is an important piece in building a complete understanding of the concepts, as well as allowing you to practice doing statistics. *All of the homework assignments must be typed.*

Article Assignments: Students will complete five assignments that include questions pertaining to articles that students are assigned to read. These assignments will help students prepare for the following class period. The article assignments are each worth 5 points. *All of the article assignments must be typed.*

Graph Assignment: Students will complete one graph assignment during the semester. This assignment will provide students with feedback on their ability to effectively read a graph presented in the media and evaluate its merit. The graph assignment is worth 10 points. *The graph assignment must be typed.*

Quizzes: Students will complete three quizzes that model individual and cooperative decision-making. Each quiz includes two parts, an *individual component worth 9 points*, and a *group component worth 6 points*. The individual component will be completed as a take-home quiz, and the group component will be completed during class in randomly assigned groups of 3-4 students. Please note that the group component of the quiz *may not* be completed at a different time, and thus, attendance is required. *All individual quizzes must be typed.*

Exams: The three exams will help assess your statistical literacy and reasoning. All three exams will consist of several short answer questions designed to test your ability to apply the knowledge you gained by reading the assigned material, working on homework problems and participating in class activities and discussions. You may use a calculator, course web applets and software, as well as a 3x5 index card during the exam. Each exam is worth approximately 30 points.



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CLASS POLICIES

Making-Up an Exam or Group Quiz: If you cannot be in class on the day of an exam or when a group quiz is completed in class, it is your responsibility to notify the instructor at your earliest convenience. *In general make-up exams and group quizzes will not be allowed. Case-by-case exceptions may be granted in only extreme cases at the discretion of the instructor.* You must provide documentation explaining your absence for the instructor to determine if an exception should be granted. If you fail to make-up the exam or group quiz at the scheduled time, you will not be able to make it up at all.

Assignment Policy: No assignment will be accepted late. (Assignments include homework assignments; graph assignment; article assignments; individual quizzes) No assignments will be accepted via e-mail or turned in to the instructor's or TA's mailbox without prior instructor approval. Any assignment submitted in either of these manners without prior approval will be thrown away or deleted and you will receive a zero for that assignment. No assignment will be accepted that is not typed. If you turn in an assignment that is not typed, it will be considered late and scored a zero.

GRADING

Percentage Cutoff	Grade	Percentage Cutoff	Grade	Percentage Cutoff	Grade
92.5%	A	80.5%	B-	59.5%	D
89.5%	A-	76.5%	C+	Below 59.5%	F
86.5%	B+	72.5%	C		
82.5%	B	69.5%	C-		

TECHNOLOGY

The course uses technology on a regular basis during both instruction and assessments (e.g., homework assignments, exams, etc.). *Student difficulty with obtaining or operating the various software programs and technologies – including printer trouble – will not be acceptable as an excuse for late or incomplete work.* Due to the variation in computer types and systems, the instructor or TA may not be able to assist in trouble shooting all problems you may have.

Course Website: Most of the course assignments, data files, etc. are available on the course website (<http://www.tc.umn.edu/~cabre031/3264.htm>). The website works best with a recent version of *Mozilla Firefox*, or *Safari* (Mac).

Mac Users: If you are using a Mac and seem to have problems downloading files, *hold the option-key* while clicking on the link. This should download the file to your desktop. You then need to erase the **.txt** suffix that is appended to the end of the file. The suffix should be **.tp**, and not **.tp.txt**. If all else fails, the materials can be downloaded and printed in the *Educational Psychology Computer Lab* (see section below).

Email: Email is the primary source of communication between instructors, TAs and students for this course. As such, you will be expected to check your email frequently (i.e., at least once per day). As per the University policy, “students are responsible for all information sent to them via their University assigned email account. If a student chooses to forward their University email account, he or she is responsible for all information, including attachments, sent to any other email account.”



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E-mailing Assignments: If approval is granted to turn in an assignment via e-mail, the *only acceptable format is a PDF file* (please see the *Creating a PDF File* document on the course website). Any other file format sent via e-mail will be deleted and you will receive a zero for that assignment.

CALENDAR

The calendar below lists the tentative dates of the course topics and readings, as well as the due dates for the assignments.

Session	Date	Topic	Reading	Assignment Due
1	7-Sept	Overview/Introduction to the Course		
2	9-Sept	An Introduction to Modeling and Simulation	Chapters 1 & 19	
3	14-Sept	Random Sampling	Chapter 2	• Lab #1
4	16-Sept	Surveys	Chapter 4	
5	21-Sept	Experiments	Chapters 5 & 6	• Article Critique #1
6	23-Sept	<i>News and Practice</i>		• Individual Quiz #1 • Group Quiz #1 (in class)
7	28-Sept	Ideas of Distribution	Chapter 10	• Lab #2
8	30-Sept	Distributions (Part II)	Chapter 11	
9	5-Oct	Exam #1		
10	7-Oct	Measures of Center	Chapter 12	
11	12-Oct	Variability: An Introduction	Chapter 8	• Lab #3
12	14-Oct	Variability: The Standard Deviation		
13	19-Oct	Comparing Groups		• Individual Quiz #2 • Group Quiz #2 (in class)
14	21-Oct	<i>News and Practice</i>	Supplemental Reading: Statistical Graphs & Graphing and Types of Graphs	• Article Critique #2
15	26-Oct	Scatterplots/Correlation	Chapter 14	
16	28-Oct	Normal Distributions I	Chapter 13	• Lab #4
17	2-Nov	Normal Distributions II		
18	4-Nov	<i>News and Practice</i>	Chapter 7	• Article Critique #3



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Session	Date	Topic	Reading	Assignment Due
19	9-Nov	Exam #2		
20	11-Nov	Sampling Variability	Chapter 3	• <i>Graph Critique</i>
21	16-Nov	Central Limit Theorem	Chapter 21 (pp. 467–469)	
22	18-Nov	Introduction to Inference	Chapter 17	• <i>Lab #5</i>
23	23-Nov	Inference: Finding p-values	Chapter 22	
--	25-Nov	NO CLASS: THANKSGIVING		
24	30-Nov	Inference: Errors	Supplementary Reading: Errors	• <i>Individual Quiz #3</i> • <i>Group Quiz #3 (in class)</i>
25	2-Dec	<i>News and Practice & Inference: Confidence Intervals</i>	Chapter 21	• <i>Article Critique #4</i>
26	7-Dec	Inference: Confidence Intervals	Chapter 23	• <i>Lab #6</i>
27	9-Dec	Inference: Two Sample t-test		
28	14-Dec	<i>News and Practice & Review</i>		• <i>Article Critique #5</i>
Final	22-Dec	Final Exam (1:30 p.m. - 3:30 p.m., Wednesday, December 22 in Peik Hall 325)		

STUDENT RESOURCES

Course Website: The course website (<http://www.tc.umn.edu/~cabre031/3264.htm>) is the storehouse for all the resources you will need during the class. On the website, you can access the course syllabus, labs, individual quizzes, web links, and datasets.

Educational Psychology Computer Lab: The Peik Hall Computer Labs (Peik Hall 325 and Peik Hall 355) will have some open times during the week. These times will be posted on the respective doors. All the machines in the computer lab of Peik Hall 325 and 355 have the course software installed on them. The other various computer labs on campus *do not* necessarily have this software installed on them.

Technology Support: The University Academic and Distributing Computing Services (ADCS) offers and supports a wide range of information technology-related services, functions, and processes through their website (<http://www1.umn.edu/adcs/help>). While most support is free to the University community, selected services or extensive consulting may be offered on a fee basis.

Writing Support: The University Center for Writing provides free writing instruction for all University of Minnesota students at all stages of the writing process. For more information, or to set up an appointment, visit their website (<http://writing.umn.edu>).



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A FEW WORDS OF ADVICE

- Many students approach mathematical material with apprehension. It would be dishonest to claim that statistics employs no math, but this course requires only the most elementary mathematics -- arithmetic and very simple algebra. Do not be put off by this minimal math: You can do it!
- It is a bad idea to fall behind in any course, but it is fatal to do so in this course: The course teaches skills and techniques, and the material is cumulative. Attend the classes regularly and do the readings and assignments on time. If you miss classes, skip assignments, and cram for the exams, you will almost surely not do well.
- Although you are encouraged to work with other students on the class activities, the lab assignments, individual quizzes, and exams must be your own work. Academic dishonesty will be treated very seriously (see section on Scholastic Misconduct). Do not put yourself *and* another student in jeopardy by cheating.
- Do not hesitate to get in touch with one of the instructors or TAs if you are experiencing problems, need help, or have any questions or other course-related concerns. You can contact any of them via an email message or by coming to office hours.

Only by trying to apply the concepts can you be sure that you really understand them. Lab assignments should be regarded as a genuine “learning experience.” We urge you to form study groups to work on these problems and master the concepts. You should, however, be sure that the effort is truly collaborative. The best strategy for completing the assignment is to begin tackling the questions alone, then discussing with others, and finally writing up your answers by yourself. Feel free to consult the teaching assistant and instructors when you are stuck – but try not to ask for more help than you need to get started.

MISSION STATEMENTS

Quantitative Methods in Education (QME)

The Quantitative Methods in Education (QME) track offers educational opportunities in both quantitative and qualitative methods with a broad array of introductory and advanced coursework. Students who choose QME as their track within educational psychology may specialize in any of four areas: *measurement, evaluation, statistics, and statistics education*. The goal of QME is to provide students with broad but rigorous methodological skills so that they may conduct research on methodologies, may help to train others in methodology, or will have the skills necessary to conduct research in related fields.

Psychological Foundations of Education Program Mission Statement

To apply and generate knowledge of psychological processes and methodological procedures involved in learning and teaching for the betterment and improvement of humans in a wide range of situations.

Department of Educational Psychology Mission Statement

Educational psychology involves the study of cognitive, emotional, and social learning processes that underlie education and human development across the lifespan. Research in educational psychology advances scientific knowledge of those processes and their application in diverse educational and community settings. The department provides training in the psychological foundations of education, research methods, and the practice and science of counseling psychology, school psychology, and special education. Faculty and students provide leadership and consultation to the state, the nation, and the international community in each area of educational psychology. The department's scholarship and teaching enhance professional practice in schools and universities, community mental health agencies, business and industrial



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organizations, early childhood programs, and government agencies. *Adopted by the Dept. of Educational Psychology faculty October 27, 2004.*

College of Education & Human Development Mission Statement

The new College of Education and Human Development is a world leader in discovering, creating, sharing, and applying principles and practices of multiculturalism and multidisciplinary scholarship to advance teaching and learning and to enhance the psychological, physical, and social development of children, youth, and adults across the lifespan in families, organizations, and communities.

UNIVERSITY OF MINNESOTA POLICIES AND PROCEDURES

Diversity: It is the University Policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities that may affect their ability to participate in course activities or to meet course requirements. Students with disabilities are encouraged to contact me when possible to discuss their individual needs for accommodations.

University Grading Standards

- A achievement that is outstanding relative to the level necessary to meet course requirements.
- B achievement that is significantly above the level necessary to meet course requirements.
- C achievement that meets the course requirements in every respect.
- D achievement that is worthy of credit even though it fails to meet fully the course requirements.
- S achievement that is satisfactory, which is equivalent to a B- or better.
- F (or N) Represents failure (or no credit) and signifies that the work was either completed but at a level of achievement that is not worthy of credit, or was not completed and there was no agreement between the instructor and the student that the student would be awarded an I.
- I (Incomplete) Assigned at the discretion of the instructor when, due to extraordinary circumstances, e.g., hospitalization, a student is prevented from completing the work of the course on time. *Requires a written agreement between instructor and student.*

Scholastic Misconduct: Academic integrity is essential to a positive teaching and learning environment. All students enrolled in University courses are expected to complete coursework responsibilities with fairness and honesty. Failure to do so by seeking unfair advantage over others or misrepresenting someone else's work as your own, can result in disciplinary action. The University Student Conduct Code defines scholastic dishonesty as follows:

Scholastic Dishonesty. *Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic grades, honors, awards, or professional endorsement; or altering, forging, or misusing a University academic record; or fabricating or falsifying of data, research procedures, or data analysis.*

Within this course, a student responsibility for scholastic dishonesty can be assigned a penalty up to and including "F" or "N" for the course. If you have any questions regarding the expectations for a specific assignment or exam, ask.

Credits and Workload Expectations: Generally, when a one-credit course is taken, an average of three hours of learning effort per week (over a full semester) is necessary to achieve an average grade. A student



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taking a three-credit course that meets for three hours a week should expect to spend an additional six hours a week on coursework.

Additional Statements: This publication/material is available in alternative formats upon request. Please contact *Psychological Foundations Program, Education Sciences Building 250, 612-624-0042*. The University of Minnesota is an equal opportunity employer and educator.