

INTRODUCTION TO STATISTICS
EVERETT COMMUNITY COLLEGE MATH & 146 HONORS

INSTRUCTOR: Tophe Anderson **OFFICE HOURS:** 10-10:50 M and 12:30 – 1:30 M-Th (RAI 325)
COURSE WEBSITE: <http://wamap.org> (I respond to messages/posts within 24 hours Sunday through Wednesday and within 72 hours Thursday through Saturday)
ADDITIONAL MEANS OF CONTACT: email: cranderson@everettcc.edu tel: (425) 388-9365

COURSE DESCRIPTION: Each student will:

1. Summarize and describe distributions of data with statistics
2. Determine probabilities using sampling distributions (binomial or normal)
3. Use inferential statistics to estimate, determine significance and predict

The course catalog describes Math &146 as “an introductory course in statistics for students in any major, to include descriptive methods, probability, sampling distributions, confidence intervals, hypothesis testing, correlation, ANOVA and chi-square tests.”

ABOUT THIS HONORS COURSE: The primary goal of the course will be to develop critical thinking. The context will be statistical description and inference. This is a different emphasis than many non-Honors statistics courses which focus on procedures of descriptive and inferential statistics with only informal and indirect engagement with critical thinking. For example, students in non-Honors statistics are asked to create and interpret graphs and compute numerical statistics, but few assignments directly elicit critical thinking. In Honors statistics, we will “shine a light” on the very elements and standards of critical thinking with tasks that refer to them, using statistics as a context.

TEXT: *Online Statistics Education: A Multimedia Course of Study* (2nd Version) by Lane. Chapters 1-12, 14. The book is free and can be downloaded or read online at <http://onlinestatbook.com/2/index.html>. Each section of the book online includes self-quiz questions (which are required) and each chapter includes exercises (some of which will be required).

TECHNOLOGY: In addition to internet access, you will need access to a spreadsheet program (like Microsoft Excel) to complete assignments and a calculator that performs statistical operations such as the TI-83 or TI-84 for exams. Tutorials for using these technologies will be posted on the course website as relevant. Campus computers provide Excel, and if you wish to rent a calculator from the EvCC Library, TI-83 calculators are available for \$15/quarter. Contact the instructor for a form. There will be no sharing of calculators allowed on in-class tests.

WHAT YOU WILL BE LEARNING: The course comprises three units, whose learning outcomes include:

DESCRIPTIVE STATISTICS:

1. Demonstrate how to display data using several types of statistical graphs
2. Compare population parameters and sample statistics

PROBABILITY DISTRIBUTIONS:

3. Solve basic (discrete) probability problems
4. Apply the appropriate binomial distribution to basic problems
5. Apply the Central Limit Theorem to approximate binomial and other probabilities with appropriate normal distributions

INFERENCE STATISTICS:

6. Estimate using confidence intervals
7. Formulate hypothesis tests to determine statistical significance
8. Test differences among populations using appropriate distributions for means and proportions
9. Calculate least-squares regression lines and use the correlation coefficient to infer and predict relationships between quantities with paired data

WEEKLY ASSIGNMENTS:

- **READING AND HOMEWORK:** (Due most Sundays at 11:00 pm PST*). Each week you must read the relevant sections in the textbook, view any online videos or tutorials and complete homework exercises. See the CALENDAR on WAMAP for each week's assignments.
- **QUIZZES:** (Due most Tuesdays at 11:00 pm PST*.) You only get two attempts per problem, so make sure that you have mastered the Homework first! If you get the correct answer on your first attempt, your score will be 100% on that question. If you get the correct answer on the second attempt, your score will be 75% on that question.

*PST means Pacific Standard Time, the time zone in which Everett resides. If your computer's clock is on a different time-zone, WAMAP will automatically adjust the due date to reflect whatever time your computer thinks it is at 11:00 pm here in Everett. Do not be fooled! The assignments are due at 11:00 pm regardless of what time your computer displays.

- **TESTS:** There will be three in-class tests (see schedule). These tests are cumulative. Students will need calculators (see technology note above) and *may be* permitted notes, depending on the material covered. Details will be posted on the course website. **NO MAKE-UP TESTS** will be given unless a note from a health care provider documents that you were too sick to come to campus on the date of a test.

Tentative Test Schedule	
Test 1	10/11
Test 2	11/1
Test 3	12/10 (from 8-9:50)

- **TAKE-HOME TESTS:** There may be take-home tests due throughout the quarter. Students are encouraged to collaborate on these. The tutors and instructor will NOT assist. See WAMAP for details. Riddle Clue #2 "It is in most of the food we eat."

GRADES: Rather than categorizing grades by type of assignment (quiz, test, etc.) your grade for this class will be categorized by **learning objective**. To earn grades within each learning objective you submit *evidence of your understanding* in the form of problems on your homework, quizzes, tests, etc. Work that you complete individually, such as in-class tests and timed quizzes, will be considered stronger evidence and thus worth more points in their respective categories. The learning objectives are:

Descriptive Statistics
Probability

Inferential Statistics

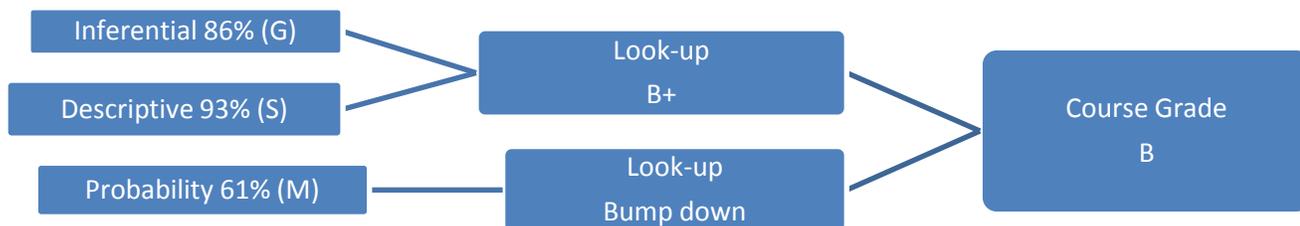
- Each piece of evidence (problem on quiz, test, etc.) will be graded on a 5-point scale:
 - 5 = superb
 - 4 = good
 - 3 = marginal
 - 2 = complete but inadequate
 - 1 = submitted but poor
- Depending on the relative weight of a particular problem, the score will be multiplied by a scaling factor and then recorded in the appropriate category. This will result in percentage grades for each category that are weighted averages of all graded problems.

Percentage	Summary	Percentage	Summary
[90,100]	Superb	[30,50)	Developing
[70,90)	Good	[0,30)	Poor
[50,70)	Marginal		

- Course grades will be assigned by combining the percentage grades from the two categories:

		Descriptive							
		S	G	M	I	P			
Inferential	Superb(S)	A	A-	B	C-	D+	Probability	S	Bump up
	Good(G)	B+	B	B-	C-	D		G	No Change
	Marginal(M)	B	C+	C	D	D		M	Bump down
	Developing(I)	C-	C-	D	D	D		I	Drop one letter
	Poor(P)	D+	D	D	D	E		P	Drop two letters

Example:



GETTING HELP: The **main discussion board** is a forum where you can ask questions about the reading or homework, and get help from the instructor or your classmates. Ideally the class website should operate like a study group - with students working *together* to further their learning.

- When you ask questions about homework exercises, type the section number and problem number in the subject line For example:

SUBJECT: Need help on #11 in Chapter 5

- Use the Main Discussion Board to ask for help on problems you don't understand how to do *before* contacting the instructor. Chances are you're not the only student who could benefit from the response, but also the opportunity to *explain* your thinking to each other helps you to learn better. Both the question-asker and the question-answerer gain something! If no one is responding, or if responses have incorrect information, the instructor will intervene.
- Because not everyone is online at the same time, the more detailed your question is the better. If you simply post the message "Help" or "I'm stuck," then you'll probably get the response "What have you done so far? Where are you stuck?" With the 24-hour response time, this can be an inefficient exchange. A much better post is demonstrated by this example:

SUBJECT: Need help on #11 in Chapter 5

MESSAGE: Why isn't the correct answer 0.3214?

RESPONSE: I think you used binompdf but it should be binomcdf.

STUDENT CONDUCT:

- We will all treat one another with respect at all times. Any student causing disruptions will be asked to leave the classroom for the day, and will be counted as non-participating.
- Registering for a class implies a commitment to the time. Students should avoid scheduling other appointments during class time. Vacations or transportation issues are not an excuse for long term absences. The instructor will not repeat class material. Students who arrive late or leave early and miss the lecture/discussion portion of class will be counted as non-participating. Absentees are responsible for getting information on their own.
- Academic dishonesty here includes using materials that are not allowed on graded assignments. The consequences may include a zero on the assignment, a failing grade in the course or even expulsion from the school. If ever in doubt about what materials are allowed, ASK the instructor!

RESOURCES:

- **RAINIER 122** provides a comfortable place and supportive atmosphere for students to come together and study in groups or individually. The center is staffed by tutors. They will NOT assist with graded assignments, but they will help with understanding the concepts for this course.
- The third floor of Rainier also provides a great space for study groups and is conveniently located near my office (room 325).
- Everett Community College complies with all federal and state laws and regulations regarding discrimination, including the ADA Act of 1990. If you have a documented disability, a reasonable accommodation for equal access to educations or services can be made through the Dean of Students Office. For concerns regarding discrimination of any kind, please contact your advisor, department head, or affirmative action office. Please request a letter verifying your status from the **CENTER FOR DISABILITY SERVICES** (Parks 267) 425-388-9272(V), 425-388-9438(TTY), cds@everettcc.edu