INTRODUCTION TO STATISTICS

The University of Toledo
Department of Mathematics & Statistics
College of Natural Sciences and Mathematics
MATH 2600-XXX, CRN ENTER

Instructor:	ENTER	Term:	ENTER
Email:	ENTER	Class Location:	ENTER
Office Location:	ENTER	Class Day/Time:	ENTER
Office Phone:	ENTER	Credit Hours:	3
Office Hours:	ENTER		

Catalog Description:
An introduction to descriptive and inferential statistical methods including point and interval estimation, hypothesis testing and regression.

Course Overview:
People around the world have one thing in common- they all want to figure out what's go on. You'd think that amount of information available to everyone today this would be an easy task , but actually, as the amount of information grows, so does our need to understand what it can tell us. Statistics is the study of DATA that provide information about something. This course is to help you make sense of the concepts and methods of Statistics and to turn it into a powerful, effective approach to understanding the world.

PREREQUISITES
The prerequisite for this course is Intermediate Algebra. You can demonstrate that you have met this prerequisite in one of 3 ways. (1) ACT math score of 20 or higher (2) Sufficient score on the Math Placement Exam or (3) Passing Math 1200.

Student Learning Outcomes:
After the completion of this course, students will have developed a statistical literacy in conjunction with each objective below:

- **Descriptive Statistics & Graphs**: Summarize and interpret data visually through appropriate statistical graphs. Calculate and summarize descriptive statistics through analytical and technological means.
- **Correlation & Regression**: Analyze bivariate data through scatterplots and test the strength of linearity between the two variables using correlation. Determine whether a regression line is appropriate for the relationship and compute predictions from regression lines.
- **Normal Probability Distribution**: Calculate probability dealing with the normal distribution. Convert a normal distribution into a standard normal distribution by computing the z-score. Apply the Central Limit Theorem appropriately.
- **Data & Sampling**: Recognize the different types of data and methods of collecting data. Determine whether a study or sampling technique provides a representative sample and thus yielding valid results.
- **Basic Probability**: Calculate basic probabilities (complement, conditional probability) and determine what the range of probability values means. Calculate probability using addition rule for disjoint events and multiplication rule for independent events.
- **Sampling Distribution**: Construct a sampling distribution of a statistic (mean and proportion) through generation of repeated simple random samples.

- **Estimation**: Estimate a population proportion and mean by using a point estimate and confidence interval. State the correct interpretation of a confidence interval and also explain the effect margin of error has on sample size and the confidence level.
- **Sample Size**: Determine the appropriate sample size for estimating a proportion and mean given a specific margin of error and confidence level.
- **Hypothesis Testing**: Perform all steps of a hypothesis test for a proportion and mean: state the null and alternative hypotheses; calculate the right test statistic; find critical region(s), calculate the p-value, and determine whether to reject the null hypothesis; and state the conclusion in a clear, simple manner that relates back to the original claim being tested.

Teaching Strategies:

This is a traditional, face-to-face course that meets ENTER MEETING DAYS/TIME. Class time will be a mix of lecture and group activities. For lectures you are expected to print out the lecture notes which are posted in Blackboard and bring them to class and fill them out as we cover the material. The beginning of class is dedicated to student questions about the material, HW, exams, or projects. Therefore, it is essential to keep up with the homework in order to ask questions in a timely manner.

Required Materials:

1. *Intro Stats* (looseleaf), Fifth Edition by Richard D. De Veaux, Paul F. Velleman, and David E. Bock with MyStatLab. ISBN: 9780134210247. You do not need to purchase anything for this course. The text/course materials will be provided and the cost ($111.49) is included in your course fees.

2. Calculator.

3. Lecture Notes: The lecture notes for this class will be posted in Blackboard. You are expected to print the notes before coming to class.

Technology Requirements:

Browser Check Page
Students need to have access to a properly functioning computer throughout the semester. The Browser Check Page will enable you to perform a systems check on your browser, and to ensure that your browser settings are compatible with Blackboard, the course management system that hosts this course: http://www.utdl.edu/utlv/Bb9BrowserCheck/innovation/blackboard/browsercheck.html

Use of Public Computers
If using a public library or other public access computer, please check to ensure that you will have access for the length of time required to complete tasks and tests. A list and schedule for on-campus computer labs is available at http://www.utoledo.edu/it/CS/Lab_hours.html.

UT Virtual Labs
Traditionally, on-campus labs have offered students the use of computer hardware and software they might not otherwise have access to. With UT's Virtual Lab, students can now access virtual machines loaded with all of the software they need to be successful using nothing more than a broadband Internet connection and a web browser. The virtual lab is open 24/7 and 365 days a year at http://www.utoledo.edu/it/VLab/Index.html.

Grading Policy:
The grade for this course is the result of many components such as in-class activities, online HW, online Quizzes, three projects, and three exams.

Assignment Type	Weight
Homework	15%
Quizzes	10%
In Class Activities	10%
Projects	5%
Exam 1	15%
Exam 2	15%
Final Exam	30%

Grade	−	A-F	+
A	90-92	93-96	97-100
B	80-82	83-86	87-89
C	70-72	73-76	77-79
D	60-62	63-66	67-69
F	< 60		

- **Homework [weight: 15%]**: Online homework will be assigned and submitted via Pearson My Lab. You can access Pearson My Lab through our Blackboard course (https://blackboard.utdl.edu). Each assignment will have a due date. If the online homework is not finished by the due date, then students will still have the opportunity to complete it **with a 30% penalty**. In addition, students are given unlimited attempts for homework problems. If you get a question wrong then you can correct it by clicking on the "Similar Exercise" button below the problem you got wrong. This means students have the ability of earning 100% on all online HW assignments, so take advantage of this.

- **In-Class Activities [weight: 10%]**: This category includes in-class activities and any written homework which is different from the online homework. There is an activity for each chapter covered in class. The lowest in-class activity will be dropped for the final grade calculation. These cannot be made up unless your absence is excusable with documentation.

- **Projects [weight: 5%]**: There will be three projects that require you to input data and carryout a statistical analysis using StatCrunch. Each project must be typed with the statistical output also copied and pasted into your report. The guidelines for each project will be posted in Bb > Projects. Projects must be submitted online via Blackboard: Bb > Projects. **Each project must be in PDF or WORD format.**

- **Quizzes [weight: 10%]**: Online quizzes will be assigned via Blackboard using Pearson My Lab. There will be a quiz for almost each chapter of material and each will have a due date. Students are allowed *three* attempts for each quiz until the due date. Once the deadline passes, then the quiz is no longer available. The material on the quizzes will be very similar to the online homework problems and examples in the lecture notes.

- **Exams [weight: 60%]**: There will be two mid-term exams and a final exam. At least a one-week notice will be given for each of the midterm exams however a rough time frame for the date for each exam is given below and in the detailed schedule at the end of the syllabus:

Exam 1	weight = 15%	chapters 1, 2, 3, 5, 6	~ Week 5
Exam 2	weight = 15%	chapters 6-7, 10-13	~ Week 11
Final Exam	weight = 30%	all chapters	ENTER

The dates of the mid-terms may shift slightly

ACADEMIC POLICIES:

Missed Class Policy:
If a student knows he/she will be missing an exam then he/she must contact the instructor in a timely fashion before the exam and provide valid documentation to support his/her absence. Whether an absence is "excused" or not is determined by the instructor using the University's missed class policy. _Once the student's excused absence is verified, then the exam missed must be made up within one week after the class has taken that exam_. If the student does not make up the exam during that time period then the grade for that item will become a zero.
- If a student does not contact the instructor after a week has passed on the missed exam, then that grade turns into a zero. No extensions!
- Make-up exams may differ from those given in class, but will cover the same material.
- If the student misses a non-exam day (just lecture), it is his/her responsibility to cover all the missed material. The instructor will NOT make her notes available to students looking to fill in missed notes.
- The testing center is located in the Field House 1080. It is the student's responsibility to check the hours of the testing center to ensure they will be open late/early enough to accommodate your schedule. In other words, if you show up to the testing center late and they are closed or near closing time and you are unable to take your exam, then I am *not* obligated to extend your exam deadline. Here is the contact information for the Testing Center:
  o Phone: 419-530-2011
  o URL: http://www.utoledo.edu/call/testingservices/MCtestcenter.html

Exams will NOT be given early (i.e. before the rest of the class takes it).

No make-ups for the final exam. If you have scheduled a trip before finals and want to make it up early, I will not allow it. It is University Policy that final exams be taken during finals week. Please be aware of this now at the beginning of the semester so you can avoid this situation.
Reference: http://www.utoledo.edu/facsenate/missed_class_policy.html

Academic Integrity:
Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. It's a basic guiding principle for all academic activity and all members of the University community are expected to act in accordance with this principle. I expect that all students act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts. Academic integrity includes a commitment not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the University community and compromise the worth of work completed by others. Any act of academic dishonesty as defined by the University of Toledo policy will result in an F in the course or an F on the item in question – this will be determined by the instructor.

Please note that any use of, or visibility of, a cell phone or smart watch (or any other device capable of connecting to the internet or storing information) during a test, quiz or exam will be considered academic dishonesty. http://www.utoledo.edu/catalog/2000catalog/admissions/academic_dishonesty.html .

Student Privacy:
Federal law and university policy prohibits instructors from discussing a student's grades or class performance with anyone outside of university faculty/staff without the student's written and signed consent. This includes parents and spouses. Also, I do not discuss grades through email. If you would like to discuss your grade please see me. For details, see the "Confidentiality of Student Records (FERPA)" section of the University Policy Page.
Reference: http://www.utoledo.edu/policies/academic/undergraduate/index.html

Incomplete Grade Policy:
An incomplete grade is given only in **EXTRAORDINARY** circumstances that do not allow the student to complete the course work (i.e. being hospitalized for several weeks or amnesia). And if this is the case it is the responsibility of the student to notify the instructor and show documentation. Refer to the link for more information: http://www.utoledo.edu/catalog/2000catalog/admissions/grade_options.html

Classroom Guidelines:
- Laptops/Tablets/Phones may **NOT** be used in the classroom during lecture time. During group activity time these may be used ONLY for viewing the eBook or notes online.
- Phones need to be turned off or silenced.
- For exams:
  - Phones must be silenced/off and put away off of desks. Remember that the use of a phone or smart watch during an exam is grounds for cheating.
  - Calculators are allowed. Phones cannot be used, calculators cannot be shared. The instructor will not supply you with a calculator. Students must come prepared!
  - For the last mid-term exam and final, supplements will be provided for students: a z distribution chart, t distribution chart and a formula sheet.

COMMUNICATION GUIDELINES:
Students are expected to check their UT email account frequently for important course information. When sending an email to me, please state your full name and the course you are enrolled in, such as "Math 2600 online". Then proceed to write the rest of your email. I plan on checking my email every evening and during scheduled office hours. I do not use my office phone very much. Often times students leave a call back number on my office phone which I can listen to through my email, but I do not call students back unless I am in my office using my office phone. So, if you need a quick response, then please send an email instead.

In addition to announcements through UT emails, major announcements will also be posted in Blackboard so please do check it frequently.

Math Resources:
Students needing help understanding the material and homework problems can get help through the following: (1) Instructor. There are many ways to contact your instructor for help such as office hours, email and before/after class. (2) Fellow classmates. Students are encouraged to help each other out with the concepts in this class. (3) MLRC: Math Learning and Resource Center offers free tutoring (both math and statistics) and is located in the basement of the Carlson Library.

UNIVERSITY POLICIES:

Policy Statement on Non-Discrimination on The Basis of Disability (ADA)
The University is an equal opportunity educational institution. Please read The University's Policy Statement on Nondiscrimination on the Basis of Disability Americans with Disability Act Compliance.

Students with Disabilities:
The University will make reasonable academic accommodations for students with documented disabilities. Students should contact Student Disability Services (Rocket Hall 1820; 419-530-4981; studentdisabilitysvs@utoledo.edu) as soon as possible form more information and/or initiate the process for accessing academic accommodations For the full policy, go to:
Reference: http://www.utoledo.edu/offices/student-disability-services/index.html

TECHNICAL SUPPORT

Pearson My Lab

If you have any technical issues with Pearson, there are two ways to contact Pearson for Help: call the Pearson help line at 1-888-883-1299 or chat at http://247pearsoned.custhelp.com/app/chat/chat_launch Most issues are usually minor log in issues. If you have this problem try one or more of the following:

- First thing you should do is restart your computer
- Configure your internet browser:
  http://247pearsoned.custhelp.com/app/answers/detail/a_id/7557
- Clear your browser history and cache: http://kb.iu.edu/data/ahic.html

Blackboard

If you encounter technical difficulties with Blackboard, please contact the UT Online Help Desk at (419) 530-8835 or utdl@utoledo.edu. The Help Desk offers extended hours in the evenings and on weekends to assist students with technical problems. When calling after hours, leave a detailed message, including your Rocket Number and phone number, and an Online Learning staff member will respond on the next business day. The UT Online Help Desk website is available at:
http://www.utoledo.edu/dl/helpdesk/index.html

Other Technical Issues

Technical questions related to on-campus Internet access, virtual labs, hardware, software, personal website hosting, and UTAD account management can be directed to UT's IT Help Desk at (419) 530-2400 or ithelpdesk@utoledo.edu. The IT Help Desk website is available at http://www.utoledo.edu/it/CS/HelpDesk.html.

LEARNER SUPPORT

The University of Toledo offers a wide range of academic and student support services that can help you succeed:

On Campus Tutoring

Free math tutoring on a walk-in basis is available in the Math Learning and Resources Center located in room B0200 in the lower level of Carlson Library (phone ext 2176). MLRC hours can be found at http://www.math.utoledo.edu/mlrc/MLRC.pdf

eTutoring Services

The Ohio eTutoring Collaborative, in partnership with The University of Toledo, now provides online tutoring support for all UT students. eTutoring Services are offered in a wide array of subjects, including Writing, Math, Calculus, Statistics, Accounting, Biology, Chemistry, and Anatomy and Physiology.
Learn more at: https://www.etutoring.org/login.cfm?institutionid=232&returnPage

eLibrary Services Portal

The eLibrary is a customized gateway to UT Libraries for online students. It was designed to help you locate the best online library resources without leaving Blackboard.
Learn more at: http://www.utoledo.edu/dl/students/elibrary.html

Counseling Center

The Counseling Center is the university's primary facility for personal counseling, psychotherapy, and psychological outreach and consultation services. The Counseling Center staff provide counseling (individual and group), mental health and wellness programming, and crisis intervention services to help students cope with the demands of college and to facilitate the development of life adjustment strategies.
Learn more at: http://www.utoledo.edu/studentaffairs/counseling/

Important Dates:
- **Final Exam**: ENTER
- The last day to Add/Drop a class is ENTER.
- The last day to Withdraw is ENTER.

TENATIVE SCHEDULE (by chapter):

Part I: Exploring and Understanding Data		[Total: 11 hours]
1 Stats Starts Here	*Data & Sampling*	1
2 Displaying and Describing Data	*Descriptive Statistics & Graphs*	3
3 Relationships between Categorical Variables – Contingency Tables	*Descriptive Statistics & Graphs*	3
4 Understanding and Comparing Distributions	*Descriptive Statistics & Graphs*	1
5 Standard Deviation as a Ruler and Normal Model	*Descriptive Statistics & Graphs*	3

Part II: Exploring Relationships between Variables		[Total: 7 hours]
6 Scatterplots, Association and Correlation	*Correlation & Regression*	3
7 Linear Regression	*Correlation & Regression*	3
8 Regression Wisdom	*Correlation & Regression*	1

Part III: Gathering Data		[Total: 4 hours]
10 Sample Surveys	*Data & Sampling*	2
11 Experiments and Observational Studies	*Data & Sampling*	2

Part IV: From the Data at Hand to the World at Large		[Total: 18 hours]
12 From Randomness to Probability	*Basic Probability*	3
13 Sampling Distributions and Confidence Intervals for Proportions	*Sampling Distribution, Normal Probability Distributions, Estimation, Sample Size*	6
14 Confidence Intervals for Means	*Normal Probability Distributions, Estimation, Sample Size*	2
15 Testing Hypotheses	*Hypothesis Testing*	6
16 More About Tests and Intervals	*Estimation, Hypothesis Testing*	1
	OVERALL TOTAL HOURS:	**40**

	Tuesday	Thursday
Week 1:	**AUGUST 28**	**AUGUST 30**
	Syllabus; Chapter 1	Chapter 1 / Chapter 2
Week 2:	**SEPTEMBER 4**	**SEPTEMBER 6**
	Chapter 2	Chapter 2
Week 3:	**SEPTEMBER 11**	**SEPTEMBER 13**
	Chapter 3	Chapter 5
Week 4:	**SEPTEMBER 18**	**SEPTEMBER 20**
	Chapter 5	Chapter 6
Week 5:	**SEPTEMBER 25**	**SEPTEMBER 27**
	Chapter 6 *REVIEW for EXAM 1 (Chps. 1, 2, 3, 5, 6)*	**EXAM 1 (Chapters 1, 2, 3, 5, 6)**
Week 6:	**OCTOBER 2**	**OCTOBER 4**
	Chapter 7	Chapter 7
Week 7:	**OCTOBER 9**	**OCTOBER 11**
	Chapter 10	FALL BREAK; NO CLASS
Week 8:	**OCTOBER 16**	**OCTOBER 18**
	Chapter 10/11	Chapter 11
Week 9:	**OCTOBER 23**	**OCTOBER 25**
	Chapter 12	Chapter 12
Week 10:	**OCTOBER 30**	**NOVEMBER 1**
	Chapter 12/13	Chapter 13
Week 11:	**NOVEMBER 6**	**NOVEMBER 8**
	Chapter 13	*Chapter 13* *REVIEW for EXAM 2 (Chapters 6, 7, 10-13)*
Week 12:	**NOVEMBER 13**	**NOVEMBER 15**
	EXAM 2 (Chapters 6, 7, 10-13)	Chapter 14
Week 13:	**NOVEMBER 20**	**NOVEMBER 22**
	Chapter 14	Chapter 15/16
Week 14:	**NOVEMBER 27**	**NOVEMBER 29**
	Chapter 15/16	THANKSGIVING BREAK
Week 15:	**DECEMBER 4**	**DECEMBER 6**
	Chapter 15/16	*REVIEW for FINAL EXAM*
Week 16:	**DECEMBER 11**	**DECMEBER 13**
	FINALS WEEK	FINALS WEEK