Syllabus for MATH 160
Introduction to Statistics, Fall 2015

Professor: Dr. James Rohal

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Office Hours:	See `http://jamesrohal.com/schedule/`

Description: An introduction to sampling techniques, descriptive statistics, elementary probability theory, random variables, the binomial and normal distributions, sampling distributions, and statistical inference. Emphasis on using appropriate technology to perform statistical calculations and generate statistical plots.

Prerequisite: MATH 046 or clearing developmental math skills requirement.

Course Objectives: The central goal of the course is to learn to draw meaningful and clear conclusions about a data set by extracting statistics – pieces of information that summarize the data. We will represent data graphically, learn how to extract statistics (often, have a computer do it), and see that a wide variety of phenomena follow certain patterns, or distributions. As we go along, we will emphasize correct reasoning: whether sampling data, making inferences about populations, or simply counting things. At the completion of this course, students will be able to

- understand and communicate the nature of statistics, its objectives and limitations, and provide examples of its important role in the sciences, industry, business and economics,

- summarize data sets by looking at statistics,

- correctly extrapolate from statistics of samples to conclusions about the population,

- apply basic concepts of probability,

- distinguish between continuous and discrete random variables and to explain how to find the probability that a random variable will assume specific values,

- explain why the normal distribution occurs so frequently in our experience,

- recognize correct/incorrect schemes for simple random sampling,

- distinguish between point estimates and interval estimates of parameters,

- construct confidence intervals,

- apply the basic concepts of hypothesis testing and distinguish between two types of error involved in the testing procedure.

Required Materials: *Understandable Statistics*, 11th Edition, by Brase and Brase. ISBN-13: 9781285460918. A hard copy of the text and WebAssign bundle is optional and may be purchased in the bookstore. Otherwise, you will need to purchase WebAssign online which includes an eBook. The cost of the eBook and WebAssign package is approximately $75. A calculator is required for this course. I recommend a TI-83/83+/84+.

Attendance: Attendance is mandatory. I will pass a seating chart around the first week of class. You are expected to sit in your assigned seat the remainder of the semester and attend all classes on time. Arriving late for a class or leaving early is very disruptive of class. If you need to leave early, please let me know at the beginning of class. If need to miss class due to a medical reason, religious observance, sport obligation, etc., please contact me prior to the absence so that we can discuss the matter.

Communication: All communication with your instructor will be done via University email. All announcements I post will be available on Sakai. Due dates for homework assignments, quizzes, and exams will be available under the Assignment tab on Sakai.

Homework: Homework consists of small projects and problems done online. For each section in the book, a set of problems will be assigned online via WebAssign. The due date for these assignments will be posted under the Assignments tab on Sakai. It is your responsibility for keeping track of these due dates. When we complete a section, I will assign the homework to be due two class periods after. You must complete all of the WebAssign problems to receive 100% credit for your homework grade. To get started in WebAssign:

1) Go to `http://www.webassign.net`

2) Click on the button that says ENTER CLASS KEY.

3) Use the key: westliberty 8907 6152.

4) If you do not already have a WebAssign account, follow the instructions for setting up an account. If you do already have a WebAssign account, enter your login information and continue.

Keep an organized record of problems you work online in a notebook for future reference. Working homework diligently and seriously is where learning mathematics occurs; you must spend time struggling through assignments (and seeking help when necessary). I encourage you to work together on these assignments.

Quizzes: A quiz will cover approximately two to four sections at a time and will be announced prior to the class period in which they are administered.

Exams: There will be three exams and a final. The anticipated exam dates are listed below and are subject to change:

Thu, Sep 17   Exam 1
Thu, Oct 22   Exam 2
Tue, Nov 24   Exam 3
Wed, Dec 910   Final Exam in Main Hall 206 from 8:00am – 10:00am

The final will be comprehensive.

Calculators: Bring your calculator to class every day. Calculators may be used on exams, with the exception of the TI-89 or newer models. A cell phone may not be used as a calculator.

Make-up Policy: If you are absent the day of a quiz or exam, then the score for that item will be zero unless you and I discuss it, and we both agree that a make-up is appropriate. Adjustments will be made for students who must miss class due to illness, observance of a religious holiday, and for students who miss due to a university sponsored activity (with letter from coach, sponsor, etc). I am more willing to give make-ups if *prior* permission is obtained. No late work will be accepted for WebAssign assignments.

Cheating: Don't do it. Take home exams are to be worked on individually. Students are expected to adhere to the official Academic Dishonestly Policy as stated below:

> *Academic Dishonesty, in whatever form, belies the stated philosophy of WLU "to promote the development of the intellectual, cultural, social, physical, emotional, moral, and vocational capacities of all persons within its sphere of influence." Individuals who commit acts of academic dishonesty violate the principles, which support the search for knowledge and truth. The academic community has established appropriate penalties and disciplinary action for such behavior that can include being expelled from WLU.*

Grading: There are a total of 1000 points. The standard grading scale will be used.

Homeworks   225 points
Quizzes 7×25 points
Exams 3×125 points
Final 1×175 points
Attendance $50 \times \dfrac{\text{number of attended classes}}{\text{total number of classes}}$ points

Special Attention: If you have a disability that affects your academic experience and plan to seek accommodations, it is your responsibility to inform Disability Support Services as soon as possible. Disability Support Services is located in the Learning and Student Development Center (LSDC) in Main Hall. Kateryna Forynna is the ADA representative; she can be reached at (304) 336-8216 or by email at kateryna.forynna@westliberty.edu. It is important to request accommodations early enough to provide adequate time to facilitate your request and provide faculty with written verification of eligibility.

Tutoring: Free, walk-in tutoring is available at the Learning and Student Development Center on the first floor of Main Hall. Students are strongly encouraged to take advantage of this resource. For more information, see `http://westliberty.edu/lsdc/tutoring-services/`.

Course Outline: