

Math 113 – Intro to Applied Statistics

Fall 2016 Course Syllabus

James Jones, Professor of Mathematics
Mathematics & Sciences Division – Richland Community College

Course Meeting Information

The Fall 2016 semester begins August 22, 2016, and concludes December 17, 2016.

- MATH 113-01 meets Monday, Wednesday, and Friday from 9:30 – 10:40 am in room S137.
- MATH 113-02 meets Monday, Wednesday, and Friday from 3:00 – 4:10 pm in room S137.

This is a face-to-face course, but the Canvas learning management system will be used.

Instructor Information

James Jones, Professor of Mathematics

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Canvas: <https://richland.instructure.com>

The best way to contact the instructor outside of class is through Canvas or by email. Please do not leave a voice mail as it will not reach the instructor in time to help you.

Office Hours

I spend most of my office hours in the classroom, room S137. Meeting in the classroom provides greater access for students to get help with their assignments, homework, projects, quizzes, exams, and questions.

- Monday: 9:00-9:30 am, 10:45-10:55 am, 12:50-1:15 pm, 2:45-2:55 pm, 4:15-4:30 pm
- Wednesday: 9:00-9:30 am, 10:45-10:55 am, 12:50-1:15 pm, 2:45-2:55 pm, 4:15-4:30 pm
- Friday: 9:00-9:30 am, 10:45-10:55 am, 12:50-1:15 pm, 2:45-2:55 pm

Students are encouraged to come to class early each day and use that time to ask questions of the instructor, work on projects, or just socialize with other students in the course.

Text

Introductory Statistics with Randomization and Simulation, 1st edition. David M. Diez, Christopher D Barr., and Mine Çetinkaya-Rundel. OpenIntro. ISBN 978-1-50057-669-1 (required)

To download a free PDF version of the textbook, go to <https://www.openintro.org>. If you would like a printed (non-color) version of the textbook, it is [available on Amazon for \\$8.49](#).

Student Audience

Transfer students in all disciplines. This is a general education course that meets the mathematics requirements for graduation, it does not lead to another course in statistics.

Prerequisite

All of the following: (1) Successful completion (C or better grade) in MATH 098 - Intermediate Algebra, an ACT mathematics score of at least 22, or a satisfactory score on the Mathematics placement exam, (2) successful completion (C or better grade) in MATH 095 - Geometry or one year of high school geometry, and (3) eligibility for ENGL 101 - Composition 1.

Course Description

MATH 113 - Introduction to Applied Statistics

Hours: 4 lecture - 0 lab - 4 credit

Math 113 is a general education statistics course that uses current technology to allow focusing on mathematical understanding instead of routine calculations. Descriptive statistics covered include frequency tables, graphs, and measures of location and variation. Topics from probability include probability rules, counting techniques, and probability distributions. Inferential statistics will cover estimation, confidence intervals, hypothesis testing, and probability values. Statistical methods covered include the one and two sample t-tests, one and two proportion tests, chi-square goodness of fit and test for independence, correlation, regression, and analysis of variance. This course makes heavy use of technology to solve problems involving real data.

Applicable toward graduation where program structure permits.

- Certificate or degree: All certificates, A.A.S., A.L.S., A.A, A.S.
- Group requirement: Mathematics
- Area of Concentration: Not applicable.

Illinois Articulation Initiative (IAI)

The Illinois Articulation Initiative is a statewide transfer agreement. Their website is at <http://www.itransfer.org>.

Math 113, Introduction to Applied Statistics, satisfies the Illinois Articulation Initiative Definition of a General Education Mathematics Course. It corresponds to M1902, General Education Statistics.

Guidelines for Assessment and Instruction in Statistics Education (GAISE)

The [GAISE College Report](#) was written in 2005 and is endorsed by the American Statistical Association (ASA) and the American Mathematical Association of Two-Year Colleges (AMATYC). It

presents a guideline of what should be contained in an introductory statistics course.

GAISE Recommendations

There are six recommendations of the GAISE report. This course follows these recommendations:

- Emphasize statistical literacy and develop statistical thinking.
- Use real data.
- Stress conceptual understanding, rather than mere knowledge of procedures.
- Foster active learning in the classroom.
- Use technology for developing concepts and analyzing data.
- Use assessments to improve and evaluate student learning.

GAISE Goals

In addition, there are 22 goals listed in the GAISE report. This course seeks to meet these goals:

Students should believe and understand why:

- Data beat anecdotes
- Variability is natural, predictable, and quantifiable
- Random sampling allows results of surveys and experiments to be extended to the population from which the sample was taken
- Random assignment in comparative experiments allows cause-and-effect conclusions to be drawn
- Association is not causation
- Statistical significance does not necessarily imply practical importance, especially for studies with large sample sizes
- Finding no statistically significant difference or relationship does not necessarily mean there is no difference or no relationship in the population, especially for studies with small sample sizes

Students should recognize:

- Common sources of bias in surveys and experiments
- How to determine the population to which the results of statistical inference can be extended, if any, based on how the data were collected
- How to determine when a cause-and-effect inference can be drawn from an association based on how the data were collected (e.g., the design of the study)
- That words such as "normal," "random," and "correlation" have specific meanings in statistics that may differ from common usage

Students should understand the parts of the process through which statistics works to answer questions, namely:

- How to obtain or generate data

- How to graph the data as a first step in analyzing data, and how to know when that's enough to answer the question of interest
- How to interpret numerical summaries and graphical displays of data—both to answer questions and to check conditions (to use statistical procedures correctly)
- How to make appropriate use of statistical inference
- How to communicate the results of a statistical analysis

Students should understand the basic ideas of statistical inference, including:

- The concept of a sampling distribution and how it applies to making statistical inferences based on samples of data (including the idea of standard error)
- The concept of statistical significance, including significance levels and p-values
- The concept of confidence interval, including the interpretation of confidence level and margin of error

Finally, students should know:

- How to interpret statistical results in context
- How to critique news stories and journal articles that include statistical information, including identifying what's missing in the presentation and the flaws in the studies or methods used to generate the information
- When to call for help from a statistician

Course Objectives

In addition to the goals and objects defined in the GAISE report, upon successful completion of this course, a student should be able to:

- Create and interpret graphical representations of data.³
- Use technology when appropriate and know the limitations of technology.³
- Work collaboratively with others towards the completion of a common goal.^{1,3,4}
- Use deductive reasoning and critical thinking to solve problems.²
- Apply common sense to mathematical problems.²
- Determine whether a statement can be proved or must be assumed.²
- Plan an experiment, gather and analyze the data, and interpret the results.^{1,2,3}
- Explain the statistical results using common language.^{1,3}
- Read a scenario and determine the proper statistical method for analyzing the data.^{2,3}
- Effectively communicate the student's understanding of the subject.^{1,3}

The numbered superscripts refer to the [Richland Cross-Disciplinary Outcomes](#) addressed by that objective. These Cross-Disciplinary Outcomes are listed at the end of this syllabus.

Topical Outline

This course will cover the topics listed below, which are tied to the textbook. The times spent on each topic are approximate as material may be reordered, intermixed, or repeated. In particular, the textbook introduces inference early and includes many of the ideas from probability that are used in inference there, rather than in the separate chapter on probability.

Data – 10 hours

- Introduction to the statistical process
- Context of data including cases and variables
- Classification of data: numeric vs categorical; levels of measurement
- Population vs Sample; Types of sampling, Anecdotal evidence
- Charts and graphs: Frequency tables, scatter plots,
- Relationships between variables: association, causation, scatter plots, explanatory vs response variables
- Observational studies vs experiments.
- Experiments: Control vs treatment, randomized experiments, role of random assignment in establishing cause
- Graphing numeric data: scatter plots, dot plots, histogram, boxplots, choropleths
- Describing numeric data: mean, median, mode, variance, standard deviation, interquartile range, symmetry, skewness, outliers
- Graphing categorical data: frequency tables, contingency tables, bar charts, segmented bar charts, mosaic plots, alternatives to pie chart
- Describing categoric data: proportions, joint probabilities, conditional probabilities

Foundation for Inference – 17 hours

- Null and alternative hypotheses
- Bootstrapping and randomization testing to simulate null hypothesis and create the null distribution
- Probability values and statistical significance
- Type I and II decision errors
- Choosing a significance level and why $\alpha = 0.05$ is the default
- Two-sided hypotheses, two-tailed p-values, and why hypotheses should be formed before looking at the data
- Sampling distributions and the Central Limit Theorem for means and proportions
- Normal distributions, 68-95-99.7 rule
- Standardizing scores, looking up probabilities
- Graphical means of checking normality assumption including histograms and probability plots
- Standard errors vs standard deviations.

- Confidence intervals including 2SD rule of thumb for estimating margin of error
- Three approaches to hypothesis testing: confidence intervals, probability values, and classical
- Importance of checking conditions

Probability – 4 hours

- Defining probability: relative frequency, law of large numbers.
- Probability rules: complements, addition rule, multiplication rule
- Conditional probabilities
- Counting techniques: factorials, partitioning (distinguishable permutations)
- Demonstrating difficulty finding exact probabilities and establishing need for simulation and modeling
- Random variables and probability distributions
- Finding the mean, variance, and standard deviation of a discrete probability distribution

Categorical Data – 8 hours

- Inference for a single proportion, 1 proportion z-test
- Difference of two proportions, 2 proportion z-test
- Testing for goodness of fit using chi-square, chi-square goodness of fit test
- Testing for independence in two-way tables, chi-square test for association

Numerical Data – 11 hours

- Student's T distributions
- Inference for a single mean, 1 sample t-test
- Paired data, paired samples t-test, dependent means
- Difference of two means, 2 sample t-test, independent means,
- Difference in several means, 1-way ANOVA, 2-way ANOVA

Correlation & Regression – 13 hours

- Line Fitting, residuals, and correlation
- Fitting a line by least squares regression, finding slope and y-intercept
- Types of outliers and their potential problems.
- Inference for linear regression, ANOVA table
- Introduction to multiple regression, table of coefficients, ANOVA table, summary statistics
- Choosing an appropriate multiple regression model

Type of Instruction

Instruction in this course will primarily occur through project-based learning. Along with this, we will use discussion, problem solving, activities, individual and group work, student questions, student participation, reading, interactive quizzing, and lecture. Students are expected to have read the material before class and are strongly encouraged to come to class with a list of questions and to ask

these questions. A substantial portion of this class will involve collaborative work with other students.

Students learn the material at a deeper level of processing when they are required to think and draw connections between things. The instructor will rarely answer a question directly because it often leads to superficial memorization and not deeper understanding. Instead, when the student asks a question, the instructor will usually ask one back in an effort to guide students toward making the connections needed to answer the question. In other circumstances, the instructor will direct the student towards asking the correct question to increase understanding.

Method of Evaluation

Evaluation could include any of the following: problem solving exams, objective exams, essays, research papers, oral presentations, group projects, individual projects, classroom participation, classroom activities, quizzes, and homework.

General Philosophy

There will be no traditional, high-stake exams in this course. Those encourage students to put off studying until the exam and statistics, as well as all mathematics, is cumulative in nature. Failure to learn material one week means that you will have trouble understanding the material the next week.

Instead of a few high-pressure exams after a month of material, this course takes the opposite approach and strives to have many frequent, but low-stake assignments. There will be multiple quizzes, projects, weekly discussions, and even some participation points. There will be enough of them that doing poorly on one or two shouldn't seriously impact your final score.

In contrast, that means that you won't be able to sit back and do nothing for a month until the exam comes. There will almost always be something going on in the class. Attendance and active participation in the class will be crucial to your success.

Holistic Grading

This class will involve a lot of writing and explanation of the statistics. There is not always a single correct answer and so interpretation plays a bigger role than it would in an algebra class. That means that much of what you do in this class is subjective, not objective, and that makes grading a little more ambiguous.

To help define grading a little better, there is a rubric that will be applied to discussions and projects in the class. That rubric has just a single row, the overall score. This is called holistic grading – grading on the entire project, not on individual components.

Rating	Score	Description
Awesome	105%	Exceptional job that really impresses the teacher
Good	90%	Beyond what was required
Okay	75%	Satisfactory completion of requirements
Fair	60%	Almost there, but needs some development
Poor	45%	Minimal attempt
None	0%	Did not participate

There is also the opportunity for extra credit with each assignment that is graded using this rubric. To get an A, you need to do mostly *good* with an occasional *awesome*.

Concepts (35-70% of grade)

This course will use a non-traditional approach to evaluation. There will be no exams, instead we will use classroom activities and quizzes to assess your progress and understanding of the material.

The lowest scoring assignment in this category will be dropped. The final may not be dropped.

Interactive Quizzing

These regular assessments will, for the most part, be incorporated into the class presentation. The instructor will ask questions; you will provide feedback, and that will be used to help determine your grade. You will provide your responses electronically so that you can get immediate feedback on whether or not you understand the material and the instructor can get a sense of where the class is. The instructor can then use this information to make adjustments in the schedule. Because these are incorporated into the course, there is no way to make up these assessments if you miss class.

At other times, the feedback will be used to assess how well you have learned and can apply the concepts being taught. In these cases, you will be awarded points for providing the correct answers to the questions. Some instructors drop the lowest quiz (or two), but because these assessments will be worth different amounts of points, that becomes difficult to do. Instead, there will be a 10% grace factor applied to these in-class assessments. That means that if you take a 10 point quiz, it will get recorded in the grade book as being a 9 point quiz. If you happen to score 10 points on it, then you have a little extra to help your grade. These points cannot be made up if you miss class.

Canvas Quizzes

Quizzes within Canvas may be used to assess concepts as well. These are usually untimed with multiple-attempts and are open for more than one day. The answers become available after the quiz closes, so quizzes cannot be made up or completed after the due date. There is no 10% discount applied to the Canvas quizzes.

Most of the quizzes start off with instructions about where to look for help working the quiz. You

should make sure you read and understand that material before you attempt the quiz. If you miss questions on the quiz, figure out what went wrong before you attempt it again.

Some quizzes have multiple-part questions. When you miss these, Canvas will tell you the score so you can figure out how many parts were right, but not which parts you missed. This is a source of frustration to the students who want to know what they did right so they can focus on what they did wrong. This approach is not good for learning and mastering the material as it discourages establishing the relationships between the parts. Instead, review and rework the entire problem.

In this course, Canvas quizzes may be printed and worked out on paper. There is no time limit and if you print it out and come back later, you'll be given the same quiz. The quiz only changes once you submit it.

Final Challenge

There are no exams in this course and that includes the final. Instead, the final will consist of an interactive activity covering the material in the course.

As an interactive event, the final may not be made up if you are absent.

The final challenge may not be dropped from the grades.

Projects (25-45% of grade)

Another major component of the course will be projects.

Some of these projects will be individual and some of them will involve group work.

Some of the projects will be short-term and groups will usually be randomly assigned based on the people who are in class that day.

You will get to pick your own teams for most of the longer projects. Note that if you miss a lot of days or haven't contributed to your previous groups, you may find it difficult to find a group who wants to work with you and so you may end up working on these projects alone.

Projects may be turned in late, but your grade may suffer since it's hard to be *awesome* when it's late.

If a project involves a class presentation, the presentation portion of the project cannot be made up.

No late work will be accepted after the final.

Projects will be graded using the holistic grading rubric described earlier.

No project grades will be dropped.

Discussions (5-20% of grade)

There will be weekly discussions in this course. These discussions will take place within the Canvas learning management system outside of the classroom environment.

Most of these discussion questions are in post-first format. That means that you post your initial response before you can see what other students have said. Then you carry on a discussion with the class about the question and responses.

Each discussion, except those at the beginning of the semester, will become available two weeks before it is due.

Participating in the discussions is not simply a matter of going in and make a post. Neither is there a set number of posts that you must make. Instead, you should establish a pattern of on-going and meaningful communication throughout the allowed time frame. Students who wait until the assignment is almost due to post their comments end up robbing the other students of the ability to reply to their comments, effectively getting the "last word" because of timing, not because of merit.

The purpose of the discussions is to assist in learning the material. It is not to attack other students or make them feel stupid, but to help them understand while strengthening your own understanding of the material. If you need to disagree with what someone else has posted, then do so with a civil and respectful tone. Understand that your issue is with what the other person has written, not with the other person.

In previous semesters, there was due date for the initial post and a due date for the follow-up discussion. However, multiple due dates for a single assignment are not supported by Canvas and students found it very confusing. This semester, discussions will be graded holistically, rather than specifying a certain portion of your grade for the initial post, the follow-up discussion, turning things in on time, and participating on multiple days. So there will be one due date, at the end of the discussion, but realize that you need to be participating in the discussion all week long, not just the day it's due, if you want to get a good grade for it.

Since holding a discussion requires more than one person, late work will not be accepted for discussions.

Discussions will be graded using the holistic grading rubric described earlier.

The lowest scoring discussion will be dropped.

Classroom Activities (0-10% of grade)

Sometimes your responses to quizzes will be used as a participation grade. When this happens, you are awarded points for being actively involved in class and providing feedback. It doesn't matter whether or not you get the right answer and sometimes there won't even be a right answer.

Other times we will be gathering data to use and your participation is needed to help obtain the information. Your level of involvement will help determine the grade for these activities.

There may be activities or worksheets designed to assess how well students are grasping the material. These will be typically be worked at the end of class to provide immediate feedback of a

student's understanding.

These points cannot be made up if you are not present to participate.

The lowest scoring activity will be dropped.

Grading Policy

Letter grades will be assigned to final adjusted scores as follows:

A: 90–100% B: 80–89% C: 70–79% D: 60–69% F: below 60%

Normal rounding will occur, so a 79.5% will round up to 80% and be considered a "B".

Assignment Category Weighting

The students will get to choose what percentage to weight each of the four assignment categories. A survey will be conducted the second week of class to ask what percentages to use and the course averages from the valid surveys will determine the weight. The results from all sections taught by the instructor will be combined together (section 01 will have the same grading weights as section 02) as there is no provision in Canvas for combining sections but using different assignment weights.

The percentages chosen by the students must fall in the range specified in the interval column. For example, the Concepts category must be between 35% and 70% of the final course grade. The previous semester category averages are provided so that you can get a sense of how students have done with that category. The grades listed are for all students, including those who complete the assignment.

Category	Interval	Previous semester category averages
Concepts	35%-70%	76%, 72%
Projects	25%-45%	86%, 83%
Discussions	5%-20%	74%, 71%
Activities	0%-10%	95%, 89%

Gradebook

All grades will be entered into and maintained within the Canvas learning management system.

When you look at your grades in Canvas, there may be a + or - after the letter grade (example, B+ or C-). The plus or minus after the letter grade is informational and intended to be used as an encouragement or a warning that you might be able to move up or that you are in danger of slipping down. However, the final grades in the course will not contain a + or a -, just the letter grade, and an 80.1% is as much of a B as an 88.7% is.

Canvas has a What-If feature that allows you to play around with your grades. If you are concerned about your grades, see the instructor.

Grade Changes

Scoring is subject to revision if mistakes are found in the grading. This is especially true with Canvas quizzes where there may be problems with questions that need regrading. Your grade may increase or decrease when this happens. For this reason, you should strive to do better than the minimum needed.

The potential for some extra credit is already built into the system as the grading rubrics for projects and discussions have an *Awesome* category that awards 105% of the possible points. The interactive classroom quizzes get a 10% discount, so that is another opportunity for recovering points.

Late Work

Full details about each type of grade, including the late work policy, can be found in the Method of Evaluation section. This is a summary of the late work policies described there.

Generally speaking, technology or life issues are not an excuse for accepting late work, especially when you have several days to work on something. Procrastination is not conducive for effective learning and should not be encouraged; it has a cascading effect where students continue to fall farther and farther behind.

- Canvas quizzes (quizzes taken inside Canvas) are open for several days and often allow multiple attempts. Answers are given to the students as soon as the quiz is over and so late work will not be accepted on quizzes inside Canvas.
- In-class quizzes are often given orally with the correct answers given during the quiz and cannot be made up if you are absent.
- Classroom activity points are for active involvement and participation in a class activity. If you are not in class, or physically in class but mentally absent or you are working on something else, you will not receive the points. These points cannot be made up.
- Discussions are designed to be conversations between people. If you wait until the discussion is over to make your posts, it is no longer a discussion, but a monologue or someone getting in the last word. Any posts made after the due-date for a discussion will not be considered in grading.
- Some projects will involve a presentation of your findings or analysis to the class. Because class time is set aside for these presentations, they cannot be made up at another date or time. No points will be awarded for the presentation if you are not present for the presentation.
- The written portion of projects may be turned in late, but they will not be *awesome* if they are late.

No late work will be accepted after the final.

Written Work

All written work should be submitted in electronic form. There should be a cover page with the title of the assignment and the student's name. Headings should be used appropriately to mark-up the

document. All reference works used, including books, videos, websites, etc., are to be cited using APA style – do not use MLA. All work is to utilize the English language correctly. It is suggested that the Academic Success Center be utilized for assistance in the preparation of written work. If written work is submitted late, the instructor may take appropriate deductions from the grade.

Attendance Policy

If you miss the first day of class or any two consecutive days after that without communicating with the instructor, you may be dropped.

Attendance is recorded every class period. Since the course does not directly follow a textbook, attendance is the primary method of obtaining the information in the course. Statistics is a cumulative subject and each day builds on the previous day's material.

Students who, because of excessive absences, cannot complete the course successfully, are required to be administratively dropped from the class at midterm. If a student stops attending after midterm, it is the student's responsibility to withdraw to avoid an "F". Do not stop attending and assume that you will be withdrawn from the class by the instructor.

The student is responsible for all assignments, changes in assignments, or other verbal or written information given in the class, whether in attendance or not. There will be some kind of assessment almost nearly every day as part of the classroom presentation. These may not be made up if you miss class (you may attend the other section of the course on the same day provided that there are available seats).

If a student must miss class, the student should notify the instructor by email (preferred) or phone.

Calculators

A calculator is required for this course. It does not have to be a graphing calculator, but it should be a scientific calculator with the ability to square a number and find the square root of a value. You are responsible for knowing how to use your calculator; if you do not know how to use your calculator, then ask. Bring the calculator every day to class.

Most of you will have a smartphone that has a suitable calculator app. The official Mathematics & Sciences division policy is to not allow the use of "non-learning electronic devices" within the classroom. While a calculator is preferred, you may use your smartphone as long as it does not become a distraction or impediment to learning.

Collaborative Work

This is an *applied* statistics course. We will be doing several activities and projects in this course that require group work. Some of this time will be spent in the classroom, but there will also be time outside of class required. Computer software will be used for analysis of the data.

Some of these projects will be designed by the instructor and involve the entire class working on the same material. In these cases, the groups will usually be formed using random assignment based on those in attendance. Some of you may get assigned to work with people you would rather not work with. If this happens, please make the best of the situation.

While the teams for the short-term projects are usually randomly assigned, there will be some longer projects that are designed by the students. These projects will incorporate the statistical process of forming of a question, gathering of the data, analyzing the data, and then drawing and presenting the results. For these projects, students will be able to choose their own groups. If you have sporadic attendance or have demonstrated poor teamwork skills in previous groups, you may find that some teams are unwilling to accept you into their group and there is a possibility that you will end up doing the project alone.

Technology

The use of technology in this course is consistent with the Technology Statement in the [Illinois Mathematics & Computer Science Articulation Guide](#) (IMACC, 2016, p. 4). Technology is used to enhance the learning of Statistics, but it is not the focus of the instruction.

This course makes heavy use of technology. It is highly recommended that students be familiar with the following software before attempting this course: e-mail, internet web browser, word processor, spreadsheet, and presentation software. In addition, students should be able to perform file navigation and understand the different types of files and the role of file extensions in naming. Richland offers free workshops for students who need additional computer literacy skills. Students who have weak technology skills may feel overwhelmed by the technology used in the class.

Most of the technology we're going to use is free, open source, or web-based so that there is no additional cost to the students and you can use them after you leave this course. Some software is commercial, but in those cases, Richland Community College has a license to use them. Here is a list of some of the computer packages we may use in this course.

Canvas

Instructure's Canvas project is the learning management system used by Richland Community College.

If there are non-technical issues inside Canvas, like content not appearing or wrong answers on a quiz, please contact the instructor.

If you are experiencing technical issues with Canvas, please click the "Help" link and choose "Report a Problem". The reporting of problems by users is a vital part of how Canvas becomes aware of issues with the system.

Canvas is available at <https://richland.instructure.com>

Minitab

Minitab, version 17, is the statistical software package of choice for this class. It is powerful and makes decent graphs. Minitab is fairly easy to use if you are familiar with a spreadsheet like Excel.

Minitab is installed on the computers in S137, the Academic Success Center, and the Open Computer Lab. Richland's license for Minitab does not allow for home use, but students will be able to get most of their work done at school. There is a 30 day trial version of Minitab available on the web for downloading at <http://www.onthehub.com/minitab>. You may also purchase a six month copy that will last the entire semester. Minitab 17 is available only for Windows.

You might see a program called Minitab Express. Although it works with both Windows and Macintosh, it is not as full-featured and they have simplified the interface to the point that it becomes unable to do all that we need it to do.

Google Drive

This class is very collaborative in nature; there will be a lot of group work. In previous semesters, we've used MediaWiki as a collaboration tool, but the learning curve on it was pretty steep and students began to feel the class was about the technology rather than about statistics. Google Drive is very easy for most students to use and so time can be spent on the statistics rather than the technology.

Google has an online system called "Google Drive" (*formerly called Google Docs*) that provides access to documents, spreadsheets, presentations, forms, and drawings. With the exception of the forms, these can be shared and edited by more than one user at a time.

Google Docs also integrates directly with Canvas, so that you can start a Google Doc collaboration from within Canvas and pick the classmates you would like to work with. For this to work, you need a Gmail address and to perform a one-time integration between Canvas and Google Docs.

Google Drive is available at <https://drive.google.com>

Question Press

Question Press is a web-based classroom and audience response system. It allows for interactive quizzing, feedback, and participation. It works from desktop computers and mobile devices and will be the main instrument used for assessing classroom performance.

The instructor's Question Press page is at <http://www.questionpress.com/james>

StatKey

StatKey is an online statistics package written by Lock, Lock, Lock, Lock, and Lock. Although we're not using their textbook, they've made the tool freely available over the Web. We will use this package for randomization testing.

The StatKey software is at <http://lock5stat.com/statkey/>

Microsoft Excel

Microsoft Excel is a spreadsheet. Since Minitab is commercial software and not widely available, we'll do some work in Excel. Once you leave this class, you are much more likely to use Excel than Minitab or StatKey.

Microsoft Office 365, which includes Word, Excel, PowerPoint, Access, and Publisher, is available free to students enrolled in credit courses at Richland through the Microsoft Student Advantage program. More information is available at <https://jics.richland.edu/MicrosoftStudentAdvantage/>

Other Software and Websites

This course is fluid and other software packages or websites may be incorporated into the class.

Additional Supplies

The student should bring a pencil, paper, and calculator to class each day. You may occasionally want a ruler or graph paper. There will be a paper punch and stapler in the classroom.

Additional Help

The student is encouraged to seek additional help when the material is not comprehended. Mathematics is a cumulative subject; therefore, getting behind is a very difficult situation for the student. There are several places where you can seek additional help in your classes.

You may use a recording device to record the lectures. Feel free to use a camera or cell phone to take pictures of the boards if you have trouble getting all of the information into your notes.

Instructor

I try to make myself as available to the students as I can. My office hours are listed at the beginning of this syllabus, but those are just the times I'm scheduled to be in my office. Grab me and ask me questions if you see me in the hallway. Ask questions before or after class. If I'm in my office and it's not my scheduled office hours, go ahead and stop in.

The instructor should be considered the authoritative source for material related to this class. If a tutor or other student says something that disagrees with the instructor, believe the instructor.

Study Groups

Probably the best thing you can do for outside help is to form a study group with other students in your class. Work with those students and hold them accountable. You will understand things much better if you explain it to someone else and study groups will also keep you focused, involved, and current in the course.

Mathematics Enrichment Center

The Mathematics Enrichment Center, located in W117, provides free walk-in tutoring for mathematics courses. There are additional locations available at the Clinton and Fairview extension centers.

Academic Success Center

The Academic Success Center consolidates several student services into one area. It is located in the south wing of the first floor next to the Kitty Lindsay Learning Resources Center (library).

Testing

The testing center is located in room S116. You must provide a photo identification and know the name of your instructor to use this service.

Tutoring

The tutoring center provides tutoring on a walk-in or appointment basis in room S118. Students seeking mathematics tutoring should visit the Mathematics Enrichment Center.

Accommodations

There are accommodations available for students who need extended time on tests, note takers, readers, adaptive computer equipment, braille, enlarged print, accessible seating, sign language interpreters, books on tape, taped classroom lectures, writers, or tutoring. If you need one of these services, then you should see Learning Accommodation Services in room C148. If you request an accommodation, you will be required to provide documentation that you need that accommodation.

Online Learning

Despite the title, Online Learning provides help with much more than just your online courses. They provide technical support for students including answering questions about Canvas, myRichland, e-mail, cell phones, tablets, and laptops. They can also help troubleshoot your computer issues and make sure your computer is ready for course work.

They are located in room W143, but the best way to contact them is through the "Help" link in the upper-right corner of Canvas or at <http://www.richland.edu/online/helpdesk>.

Open Computer Labs

Students often wish to know where, besides the classroom, they can go to use the software. There are computers located in the Learning Resources Center and in the Academic Success Center that you may use.

College & Division Policies

Academic Dishonesty Policy

Each student is expected to be honest in his/her class work or in the submission of information to the College. Richland regards dishonesty in classroom and laboratories, on assignments and examinations, and the submission of false and misleading information to the College as a serious offense.

A student who cheats, plagiarizes, or furnishes false, misleading information to the College is subject to disciplinary action up to and including failure of a class or suspension/expulsion from the College.

Non-Discrimination Policy

Richland Community College policy prohibits discrimination on the basis of race, color, religion, sex, marital or parental status, national origin or ancestry, age, mental or physical disability (except where it is a bonafide occupational qualification), sexual orientation, military status, status as a disabled or Vietnam-era veteran.

Electronic Communication Devices Policy

The Mathematics and Sciences Division prohibits the use of cell phones, pagers, and other non-learning electronic communication equipment within the classroom. All equipment must be turned off to avoid disturbances to the learning environment. If a student uses these devices during an examination, quiz, or any graded activity, the instructor reserves the right to issue no credit for these assignments. The instructor needs to approve any exceptions to this policy.

Other College Services

There are some additional services that Richland provides to its students. While they may not directly pertain to this class, you may benefit from them.

Learning Feedback System

At the end of each semester, students are invited to provide feedback to their instructors about the course. This includes things that went well and opportunities for improvement. This online feedback is anonymous and the instructor won't see it until grades have been turned in.

The Learning Feedback System (LFS) is primarily intended to provide feedback to the instructor. However, if you have a issues or concerns, you should not wait until the end of the semester to talk to your instructor. Please come to me at any time. The feedback system is available at <https://people.richland.edu/feedback>.

myRichland

myRichland is the student information system portal and is located at <https://my.richland.edu>.

You may use it to find the course schedule, register for classes, check your grades, obtain unofficial transcripts, review financial aid, and other student services.

Library

The Learning Resources Center (LRC) has print and electronic resources available. They offer research assistance and information literacy sessions; they also have individual and group study areas.

Student Success Center

Temporarily located in the Workforce Development Institute (WDI) building, the Student Success Center is designed to be a one-stop shop for most student services. These include advising and registration, career services, counseling services, financial aid, veteran affairs, student records, and the transfer center.

There are a few other student services that are still in the main building. These include Campus Life, which supports new student orientation, clubs, organizations, and student leadership, and the TRiO program that offers academic and personal support to first-generation, low-income, and students with disabilities.

Directory of Student Services

The main phone number for Richland Community College is 217-875-7211. This is an automated system available 24 hours a day. If you would like to speak to an operator, then call 217-875-7200 during normal business hours.

Student Service	Location	Extension
Accommodations	C148	6379
Advising and Registration	WDI	6267
Campus Life	C131	6243
Career Services	WDI	6305, 6243
Counseling Services	WDI	6252
Financial Aid and Veteran Affairs	WDI	6274
Library	C152	6303
Online Learning Support	W143	6376
Mathematics Enrichment Center	W117	6383
Student Employment	WDI	6205
Student Records	WDI	6257
Student Support Services/TRiO Program	C143	6440
Testing	S116	6238
Transfer Center	WDI	6222
Tutoring	S118	6419
Veteran Services	WDI	6307, 6205

Richland Cross-Disciplinary Outcomes

The course objectives listed in this document make reference to these items.

1. The degree-seeking student will be able to communicate effectively (read, write, speak and listen).
2. The degree-seeking student will think critically and creatively.
3. The degree-seeking student will act professionally and responsibly.
4. The degree-seeking student will manage technology and evaluate information in various research and applied contexts.