Math 160 – Finite Mathematics
Summer 2015 Course Syllabus

James Jones, Professor of Mathematics

Mathematics & Sciences Division – Richland Community College

Course Meeting Information

MATH 160-V1 is an online course and does not meet face-to-face. Instead, the course will use Canvas and MyMathLab as the learning environments.

The course runs from June 1, 2015, through June 23, 2015. It will open a week early in Canvas to allow students to get up to speed before the term officially begins.

There are some programs for the graphing calculator that will need installed. This can be done on your own if you have the proper cables and expertise, but if you are on campus or in town, the easiest and most convenient method will be to find the instructor and have him transfer the programs to your calculator (this usually takes less than one minute).

Work will be submitted using Canvas and MyMathLab. To get into MyMathLab, students should first go into Canvas and then follow the navigation link for "My Lab and Mastering".

Instructor Information

James Jones, Professor of Mathematics

Email: james@richland.edu

Web: https://people.richland.edu/james/

Phone: 217-875-7211, ext 490

Office: C223

Canvas: https://richland.instructure.com

The best way to contact the instructor 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

This is an online course so you will not be seeing your instructor on a regular basis, if ever.

Faculty are not required to hold office hour during the summer term. However, the instructor has another course on campus from 8:00 – 9:50 am, Monday – Thursday. If you need to meet face-to-face with the instructor for additional help, he can be available for most of those days at 10:00 am in room S137. Please let him know ahead of time so that he can make childcare arrangements.

You are always welcome to email the instructor. In certain cases, explanations may take more than the text of an email allows, so the instructor may respond with a video explanation.

Text

The textbook for this course is *Finite Mathematics for Business, Economics, Life Sciences, and Social Sciences, 13th edition*, by Barnett, Ziegler, and Byleen.

This course will be using MyMathLab, which is a collection of online homework, tutorial, and assessment products designed to improve the results of college students. MyMathLab includes an electronic version of the textbook, but it should be considered like a textbook rental and valid only while you're taking the course. An access code to MyMathLab is required for this course, but a printed copy of the textbook is not.

Choose ONE of the following options.

Option 1: MyMathLab access code only

MyMathLab with Pearson eText – Instant Access – for Finite Mathematics for Business, Economics, Life Sciences, and Social Sciences, 13th Edition. Raymond A. Barnett, Michael R. Ziegler, Karl E. Byleen. Copyright 2015, Pearson Education, Inc. ISBN-13: 978-0-321-94757-4 (Required)

The entry above is an instant purchase option available online only through the Publisher. It is not available in the Richland Bookstore. For those wishing to purchase a printed access card through the Richland Bookstore, you should use the following package.

MyMathLab – Standalone Access Card, 4th Edition. Copyright 2012, Pearson Education, Inc. ISBN-13: 978-0-321-19991-1 (Required)

Option 2: Printed textbook with MyMathLab access code

Finite Mathematics for Business, Economics, Life Sciences, and Social Sciences Plus NEW MyMathLab with Pearson eText – Access Card Package, 13th edition. Raymond A. Barnett, Michael R. Ziegler, Karl E. Byleen. Copyright 2015, Pearson Education, Inc. ISBN-13: 978-0-321-94762-8 (Required)

Textbook Notes

If you buy a used textbook, the MyMathLab access code my already be used. In this case, you will need to use option 1 to get a new access code.

Here is a list of related materials and their ISBNs.

\# ISBN-13: 978-0-321-94552-5 is a hardcover stand-alone version of the textbook. It does not include a MyMathLab access code, which is required for the course. This is not a viable solution for the course, so avoid this ISBN if you are purchasing materials online. The one case it may be useful is if you already have a MyMathLab access code and later decide you want a printed textbook as well.

\# ISBN-13: 978-0-321-94662-1 is an electronic copy of the textbook through CourseSmart and does not include access to MyMathLab and so it is not a viable solution for the course. However, when the course is over, you will lose access to the electronic book published with MyMathLab, so this

is an option to purchase the book so you can have it outside of MyMathLab.

ISBN-13: 978-0-321-94746-8 includes the MyMathLab access code and printed copy of the textbook. This is a viable option for the course as it includes the MyMathLab code. The difference from option 2 is that this printed book is an unbound, three-hole-punch version of the textbook.

ISBN-13: 978-0-321-94672-0 is the unbound, three-hole-punch version of the textbook without the MyMathLab access code. It is not a viable option for the course, but a cheaper alternative to a long-term textbook.

Student Audience

Most students taking Finite Mathematics are business, accounting, or psychology majors and many are planning on taking introductory statistics. Most will transfer to another school.

Others will take this course because it is a general education mathematics course.

Prerequisite

The prerequisite is successful completion of Math 116, College Algebra, equivalent competencies, or the consent of the Dean of Mathematics and Sciences division.

Course Description

MATH 160 - Finite Mathematics   Hours: 4 lecture - 0 lab - 4 credit

Mathematics 160, Finite Mathematics, is an introductory level course covering mathematical ideas needed by students of business management, social science, or biology. The topics include sets and counting, functions, introduction to probability and statistics, interest and annuities, matrix theory, linear systems, and linear programming.

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 - Mathematics

Illinois Articulation Initiative (IAI)

The mathematics component of general education focuses on quantitative reasoning to provide a base for developing a quantitatively literate college graduate. Every college graduate should be able to apply simple mathematical methods to the solution of real-world problems. A quantitatively literate college graduate should be able to:

interpret mathematical models such as formulas, graphs, tables, and schematics, and draw inferences from them;
represent mathematical information symbolically, visually, numerically, and verbally;
use arithmetic, algebraic, geometric, and statistical methods to solve problems;

- # estimate and check answers to mathematical problems in order to determine reasonableness, identify alternatives, and select optimal results; and
- # recognize the limitations of mathematical and statistical models.

Courses accepted in fulfilling the general education mathematics requirement emphasize the development of the student's capability to do mathematical reasoning and problem solving in settings the college graduate may encounter in the future. General education mathematics courses should not lead simply to an appreciation of the place of mathematics in society, nor should they be merely mechanical or computational in character.

To accomplish this purpose, students should have at least one course at the lower-division level that emphasizes the foundations of quantitative literacy and, preferably, a second course that solidifies and deepens this foundation to enable the student to internalize these habits of thought.

Math 160, Finite Mathematics, satisfies the Illinois Articulation Initiative Definition of a General Education Mathematics Course. It corresponds to M1 906, Finite Mathematics.

Topical Outline

Unit 1: Weeks 1–2

Finance

- # Simple interest
- # Compound interest
- # Future value annuities
- # Present value annuities

Systems of Linear Equations and Matrices

- # Review of solving systems of linear equations
- # Augmented matrices
- # Gauss-Jordan elimination
- # Equality, addition, subtraction, and multiplication of matrices
- # Matrix equations and systems of equations
- # Leontief Input-Output analysis

Unit 2: Weeks 3–4

Linear Programming

- # Systems of linear inequalities
- # Geometric approach to linear programming
- # Geometric approach to the Simplex method
- # Standard maximization problems using Simplex
- # Standard minimization problems using the Dual problem

Non-standard maximization and minimization problems

Unit 3: Weeks 5-6

Logic, Sets, and Counting

Logic
Sets
Basic counting principles
Permutations, combinations, and distinguishable permutations

Probability

Sample spaces, events, and probability
Joint frequency tables, Venn diagrams
Unions, intersections, complements, odds, mutually exclusive events
Conditional probability, intersections, independence
Bayesian type problems
Random variables, probability distributions, expected values
Decision theory: expected value, maximax, maximin, minimax criteria

Unit 4: Weeks 7-8

Markov Chains

Properties of Markov chains
Regular Markov chains
Absorbing Markov chains

Two-Player, Zero-Sum Games

Strictly determined games
Mixed strategy games
Geometric approach to 2×2 games using linear programming
Simplex approach to 2×2 games using linear programming
Extension of simplex method to m×n games

General Course Objectives

While learning Finite Mathematics is certainly one of the goals of this course, it is not the only objective. Upon completion of this course, the student should be able to ...

demonstrate comprehension and understanding in the topics of the course through symbolic, numeric, and graphic methods[1,2]
demonstrate the use of proper mathematical notation[1]
use technology when appropriate and know the limitations of technology[4]

work with others towards the completion of a common goal[1,3]

use deductive reasoning and critical thinking to solve problems[2]

Superscripts refer to the Richland Cross-Disciplinary Outcome addressed by this objective. A list of the Cross-Disciplinary Outcomes can be found at the end of this document.

Specific Course Objectives

Upon completion of this course, the student should be able to …

solve finance problems involving compound interest, future value annuities, and present value annuities

apply ordinary annuities to plan retirement or purchase of a house

solve a system of linear equations having an unique solution, no solution, and many solutions

transform between a system of linear equations and an augmented matrix

read the solution to a system of linear equations from an augmented matrix

use matrices to solve applied problems such as network flow, incidence matrices, and the Leontief input-output model

graph a system of linear inequalities in two variables

solve a linear programming problem with two decision variables graphically

solve a linear programming problem using a table

explain the simplex method

apply the simplex method to solve a standard maximization problem

apply the dual method to solve a standard minimization problem

solve non-standard minimization and maximization problems

understand basic logic

find the union, intersection, complement of sets

apply basic counting principles to determine the number of ways an event can occur

use permutations and combinations

find probabilities of simple and compound events

find conditional probabilities including Bayesian probabilities

find the expected value of a probability distribution

apply the Bayesian (expected value), maximax, maximin, and minimax criteria to decision making

solve regular Markov chain problems to find the long term probabilities of being in any state

solve absorbing Markov chain problems to find the expected number of states encountered before exiting the system and find the long term probabilities of ending in any absorbing state

solve strictly determined two player, zero sum games

solve 2×2 non-strictly determined games

apply the simplex procedure to solve larger games

A detailed topical outline of the content covered and its alignment to the textbook was included earlier in the syllabus.

Course Expectations

Student Expectations of Instructor

Here are some things you can expect from the instructor.

The instructor will be present in the course. This is not a correspondence course; the instructor will be checking the course daily. The instructor may occasionally provide guidance in the discussions, but the goal is for the students to run with those.

Responses to email will occur in a timely manner. At times, you will find the instructor at the computer and have a response to simple questions within 15 minutes. That is not, by any means, a guaranteed response time, but don't be surprised if it happens. A more reasonable expectation is to have a response within 12 hours during the week and 36 hours on the weekend. I do not have a smartphone and am not connected to email 24-7. I do take my laptop with me while traveling, but sometimes hotel internet is flaky. In other words, don't wait until something is due to ask about it. When the problem is too difficult to answer within 12 hours, the instructor will send you a message notifying that it will take longer.

Assignments will be graded within 3 days of submission. The instructor may withhold release of exam grades until all students have completed their exams.

The instructor will provide guidance and direction on assignments, but will usually steer the student towards the answer rather than just providing the correct answer. Understanding the problem and process is more important than just getting the answer.

When the instructor makes a mistake, he will admit it and not blame Canvas or MyMathLab for his mistakes. Be aware that the explanation of the mistake may include his frustration with the technology, but he will accept blame if it is really is his mistake. If the mistake warrants, adjustments may be made.

The instructor will treat students with civility and respect. As an online course, there is great potential for misunderstanding. Electronic communication is more difficult than in-person communication and communicating mathematics electronically is even more difficult because of the special symbols, formatting, and language. It is easy to mistake something said and blow it out of proportion. The instructor does not intend to offend anyone, so if you're taking something that way, please accept my apologies ahead of time and then ask for clarification.

Instructor Expectations of Student

Here is what is expected out of students in this course.

Students will be civil and respectful of all persons in the course.

Students will be present in the course on near-daily basis. There may be a few times where you miss a day, but you should be in the course at least 5 times a week. This is not a course where you

can check in every few days or just on the weekend and succeed.

\#   Students will respond to the instructor or other classmates in a timely fashion.

\#   If a student contacts the instructor for help and then figures it out before the instructor has a chance to respond, the student will notify the instructor that the problem has been resolved or that help in a different area is needed.

\#   Students will read the book, watch the online videos, and use the help in MyMathLab before contacting the instructor for help. Many of the questions that students have are already answered in the online material and you can find them faster yourself than you can by contacting the instructor and waiting for a response.

\#   When a student contacts the instructor for help, the student should be prepared to show what has been attempted or already accomplished. The student should be specific in his or her requests. Do not send a request for help that just says, for example, "I don't understand Linear Programming." While you may be lost, that is a larger request than can be solved by email and it provides no place for the instructor to begin. It may require meeting with the instructor or a tutor to address.

\#   Students will be academically honest in their work. Among other things, this means that you will complete your own homework and take your own exams. You are welcome to receive help on homework, projects, and discussions, but the work should be your own. You may use your calculator, textbook, notes, homework, and projects on your exams, but you may not seek additional help on exams.

\#   Students will notify the instructor as soon as possible if technology issues keep you from submitting an exam on time. The student should also submit a Help ticket through Canvas or MyMathLab; they may be able to provide help faster than the instructor. Note that the instructor is subscribed to the technical issues mailing list for both Canvas and MyMathLab.

\#   Students will use the weekends to work ahead on upcoming material rather than using it to try and catch up on past due material.

Type of Instruction

Video lectures, book readings, discussions, problem solving, and group work will be used.

Method of Evaluation

Written Exams – 50% of grade

Traditional paper and pencil exams will be used in this course rather than online testing. You may use your calculator, textbook, notes, homework, and projects on your exams, but you may not seek or obtain additional help on exams. You may complete the exam from home, provided that certain qualifications are satisfied, or in the Richland Testing Center.

There will be a time frame of several days during which you may complete the exam. For most exams, this means the exams become available at the start of the day on Thursday and must be

completed by the end of the day on the following Monday. The final exam is different and it must be completed during the two day final exams period.

Exams must be completed and returned by the due date and time, so do not wait until they are due to start them. Once you start an exam, you must complete and return the exam within two (2) hours unless otherwise noted.

Exams will not be accepted late. You have several days in which to complete the exam. If you procrastinate until the end and then something comes up where you cannot attempt the exam, you will receive a 0 for it.

Option 1: Take Exam at Home

This is an online course and coming to Richland during business hours may be difficult for some students. You have the option to take your exams at home, but you must have the technology available to do it.

You will need the ability to download and print your exam. After completing the exam, you will need some way of scanning and returning the exam to the instructor. For most people, this means that a printer and a smartphone are the two technologies that are required. For those who have have access to a multifunction printer that prints, scans, copies, and faxes, that one device will be sufficient.

If you are taking the exam at home, you have five full days to complete all of the exams except for the final. However, once you begin, you only have two hours from the time you download the exam to complete it and return it. This includes the time necessary to print, scan, and email the completed exam.

A trial document will be available for you before the first exam to test and verify that you have the technology required to take exams at home. If you do not have the required technology, you will need to come to campus to take the exams.

Option 2: Take Exam in Richland's Testing Center

Richland's testing center, located on the main campus in room S116, is open Monday – Thursday from 7:00 am to 7:00 pm during the summer term. This means that for most exams, which open on Thursday and close on Monday, that you will have two days to use the testing center to complete the exam.

Exams taken in the testing center must be completed before the center closes at 7:00 pm. They will not allow you start an exam if there is insufficient time to complete it.

You will need a photo identification to use the testing center.

A copy of the exam will be placed in the testing center unless you notify the instructor ahead of time

that you wish to complete the exam at home. Failure to notify the instructor does not obligate you to use the testing center. On the other hand, telling the instructor that you want to take it at home will prevent you from taking it in the testing center, but it will save paper.

Homework – 20% of grade

Homework will be submitted electronically using MyMathLab by Pearson Education. There is extensive help and videos available in MyMathLab to assist with completing the homework.

Homework will be due throughout the week. Look in Canvas or MyMathLab for the due dates. All of the homework for the course will be open when the course begins, so you can always work ahead.

> *In this course, it is expected that students will use the weekend to work ahead on the next chapter rather than using it to catch up on the work not completed earlier in the week.*

Late homework will be accepted up until the final, but loses 20% of the value on the unanswered portion for each calendar day it is late.

Homework Philosophy

Homework is crucial to your success in this course. There is a correlation between doing your homework and success in the course. Not only does the homework directly count towards your grade, but it also prepares you for the tests.

Many students are aware, even if some instructors aren't, that answers to homework are widely available on the Internet or that there are web sites that will do you homework for you for a fee. This tempts the student to circumvent the traditional homework model and think it's just about getting the points. The real benefit to homework is to practice and solidify the understanding. Professional athletes did not get great by having someone else do their practice. That said, students often fail to see the benefit in doing something when they are not assessed (get points) on it.

This course incorporates technology. The TI-83/84 calculators, either natively or through instructor-written programs, will do much of the time-consuming problems in the text. When that is the case, students wonder why they should "waste" their time doing homework when the calculator will do it for them. These are valid concerns and the instructor realizes that with other life events, students don't want to be doing "busywork".

There are typically three groups of homework in each section of this textbook. The "A" set are preparatory, the "B" set are to practice skills, and the "C" set are application problems. Rather than focusing on the working lots of skill-development problems that can easily be accomplished with the calculator, the assigned homework in this course focuses on a few application problems.

The homework is completed using MyMathLab, which has extensive online help and videos to help you get through the problems. The problems that students struggle with are often the problems that are worked as examples in the textbook and have accompanying videos in the online textbook. Be

sure to read the book before attempting the homework.

Projects – 15% of grade

There are several projects in this course that go beyond the typical problem found in the textbook.

A convenient way to think of the projects is as extended homework problems. Some projects will require that you look up information on the Internet, while others are just larger versions of applications like those in the textbook.

Questions similar to those found on the projects often appear on the exams and you should always finish and understand your projects before attempting the exam.

All of the projects, with the exception of the first one, are designed to be worked in teams of up to three students. Students will be able to self-select their groups.

Projects are due two days, ignoring weekends, after we have covered the material needed to complete the project. Projects may be turned in late, up until the final, but they lose 20% of their original value for each calendar day, including weekends, that they are late.

Discussions and Quizzes - 10% of grade

There will be weekly discussion questions in Canvas.

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.

In a post-first discussion, there will be two due dates. At this time, Canvas only allows one due date for an assignment, which will be the date the discussion ends. The initial post will be due by Wednesday of each week, which will allow time for the followup discussion before the discussion ends on Sunday. Each discussion will open a week early, so there will be two weeks to consider each discussion question and two discussion questions will be available at most times.

During a discussion, you should establish a pattern of on-going 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.

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

discussions.

There may be a few quizzes or other assignments in Canvas, although not enough to warrant another category and a distinct percentage of the grade. Those assignments and quizzes will be included in the discussions and quizzes category.

Mathematical Notation – 5% of grade

One goal of any course is to properly use the language of that subject. The mathematical notations are designed to provide you that opportunity while reinforcing important concepts from the unit at the same time. They are a series of documents that contain important formulas and summarize major concepts or difficult topics from the unit. In some cases, they condense an entire chapter of formulas down to one page and identify which concepts students should study.

Your assignment is to recreate these documents using Microsoft Word and then submit them through Canvas. There are no mathematical calculations to be performed on the pages. The assignment is just to recreate the document and properly construct the mathematical content.

Learning how to properly create mathematical content will also benefit you when you contact the instructor with questions or work on the projects.

Mathematical notations are due by the end of the day on the Sunday that falls in the middle of each unit. Mathematical notations will be accepted late, up until the final, but it will lose 20% of its original value for every calendar day it is late.

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".

All grades are subject to audit and correction. Sometimes mistakes are made entering grades, other times mistakes are made in the grading itself. Your grade may increase or decrease when this happens. For this reason, you should strive to do better than the minimum needed for the grade you desire.

Consideration may be given to such qualities as participation, attitude, and cooperation to produce the optimal learning situation for everyone.

Grades will be kept inside the Canvas learning management system. Pearson also supplies a gradebook with their MyMathLab products, but the official course grade book will be inside Canvas. The synchronization between MyMathLab and Canvas is wonky at best, so grades will manually be transferred from MyMathLab to Canvas after a chapter is completed. Please double check your grades to make sure that there were no typos during the transfer.

Assignments are due at the dates and times posted in Canvas.

Late work will be accepted for homework, projects, and mathematical notations, as long as the assignment is submitted before the final. No late work will be accepted after the final. When late work is accepted, assignments lose 20% of their original value per calendar day, so that after 5 days, assignments become worth 0 points. In the case of homework, the 20% deduction applies only to the portion that is turned in after it is due.

Exams must be taken during the allotted time period.

Absolutely no late work will be accepted after the final.

Attendance Policy

Participation vs Attendance

Online students are subject to the same attendance requirements as a traditional face-to-face course, but since there are no class meetings to attend, it must be redefined to mean active participation in the course.

Student attendance in an online course is defined as *active participation* in that course as described in the course syllabus. Here is that definition:

> Active participation may include posting to discussion forums, submitting assignments, and completing quizzes or exams. Logging into the course or viewing content does not satisfy the definition of active participation.

Online Attendance Policy

Regular attendance and participation is essential for satisfactory completion of this course. You need to be actively involved in this course several times a week, if not daily. You need to regularly monitor your Canvas inbox and Richland email for notifications and information.

Any student who fails to participate within the first two calendar days of the course may be dropped. After the start of the course, any student who fails to participate for more than one week may be dropped.

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 participating and assume that you will be withdrawn from the class by the instructor.

Although dropping students for non-attendance at midterm is required, students whose participation in the course is occasional or sporadic may be dropped from the class at any point during the semester at the instructor's discretion. The safest way to make sure you're not dropped for

non-attendance is to continue to actively participate in the course.

The student is responsible for all assignments, changes in assignments, or other information given in the course. Regularly and frequently monitor your communications for updates or changes.

Exams will be open for several days at a time. Extensions are not granted on exams so plan your time accordingly and wisely. If you procrastinate and wait until the last minute and then something comes up where you cannot submit or complete the exam, you will receive a 0 for that exam.

Time Requirements

The often-quoted expectation is that the typical student will need to spend an average of two hours outside of class for each hour in class. While we don't officially meet in a classroom, the expectation for the amount of work required for an online course is based of that same expectation as a traditional course. This means that a 4 hour course that meets for 15 weeks will require about 180 hours of time. This is a summer course, which moves twice as fast as a regular semester. When you divide those 180 hours by 7.5 weeks, you find that a typical student should expect to spend 24 hours, a full day, out of each week working on this course this summer.

That 3 hours of clock time for each credit hour is an average, some students may require less time and some may require more. At face value, it sounds overwhelming and impossible, but it includes reading the book, watching videos, working on homework and projects, participating in discussions, and completing exams.

The point is to manage your time effectively so that you don't feel the course is overwhelming.

Technology

High-Speed Internet (required)

This course is offered online and you will be expected to watch videos to obtain some of the content. This means that you need a reliable, high-speed Internet connection to take the course.

Richland has computers that can be used, but Richland is only open Monday – Thursday. However, it is highly recommended that you have Internet access at home. I would not recommend relying on Richland's computers for an online course.

You should have a back-up plan for connectivity issues. Many of you will have a smartphone with a data plan that might be your backup plan. But be aware of locations such as Richland, neighbors, friends, or restaurants that have an internet connection you can use if you lose yours.

Generally speaking, you should not be waiting until something is due to work on it and turn it in. Assignments, with the exception of weekly discussions, are open to the student at the beginning of the course, which means that a crisis when it is due is not a valid excuse for being late. With the exception of exams and discussions, late work is accepted, but you lose 20% of the original point value for each calendar date it's late. No late work will be accepted after the final.

TI-83 or TI-84 Graphing Calculator (required)

This course will focus on the applications of Finite Mathematics instead of the arithmetic skills or mechanical steps needed to solve the problem. To facilitate that, we will be using programs, written by the instructor, for the graphing calculator. Use of these programs will allow the student to solve more problems in less time as well as tackle the more difficult problems, which would be too time consuming by hand.

Your calculator must be a Texas Instruments TI-83, TI-84, TI-85, or TI-86 graphing calculator. Variants like the plus, silver, or color editions are fine. Other calculators, including the TI-nspire family, are not supported.

It is expected that you will have a suitable calculator and use it for homework, quizzes, projects, and exams.

Some of you may be curious about the software that is used in the calculator videos created by the instructor. It is called WabbitEmu and is an emulator for the calculator, which you already own, that runs on Windows, Mac, or Android, but not iOS, operating systems. Some students like to load the software on their Android phone and then they have their calculator and phone in a single device. If you have a touch screen monitor or tablet, it may be convenient to load on your PC. WabbitEmu has the ability to take a screenshot or video of the calculator screen, but if you wish to record the keystrokes or add narration, then you should use a separate screen capture program. If you're having difficulty with the calculator, then this is an option for showing him exactly what you're doing that isn't working. WabbitEmu is not required for the class. More information about WabbitEmu is available at https://wabbit.codeplex.com/

Printer and SmartPhone (recommended)

If you wish to take your exams without coming to campus, then you will need the ability to print and return them within the allotted time.

A printer is needed to print out the exam. It is not acceptable to read the exam off the screen and write answers on a separate piece of paper. The exams given to you will likely have color on them, but the printing in color is not required. You should, however, make sure that your printouts are dark enough, so you may need to replace the ink or toner cartridge if you are running low.

After printing and completing the exam, you need a way to get it back to the instructor. If you have a smartphone with a high-resolution camera, then you can use an app to take a picture of the exam, convert it to PDF, and then email it to the instructor. CamScanner is a smartphone app that has been tested and worked fairly well. It is available for both Android and iOS operating systems. CamScanner has offers a basic account for free that will do everything that we need it to do in this course, you do not need to buy the paid account for this course. The entire process took less than 3 minutes for my wife to download and install the app, and then scan and email a document on her iPhone. More information about CamScanner is available at https://www.camscanner.com/

You may also use a multifunction printer or computer scanner to scan your document. For example, I have an HP Office Jet Pro 8600 printer that will print the exams. But when I am done, I can use the automatic document feeder to scan both sides of multiple sheets of paper, convert them into a PDF, and email it to someone – all from the printer without using a computer.

There will be an assignment within the course to test this process ahead of time to make sure it works before you start taking an exam.

If you do not have access to this technology, you may still come to campus to take the exams in the testing center. You may come to campus to take the exams even if you do have all of the required equipment.

However, taking the exams from home offers you more flexibility in scheduling as the testing center is only open Monday – Thursday from 7:00 am to 7:00 pm in the summer.

Other Software

Here is a list of some additional computer software. This list is not intended to be comprehensive; it is a list of software the instructor is aware of and has used.

Microsoft Office (required)

Microsoft Word will be required to type the Mathematical Notation assignments. Microsoft Excel may be beneficial for working with some of the larger matrices.

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/

Google Drive (recommended)

Google Docs is a free online collaboration suite that in some cases will serve as an alternative to Microsoft Office. The word processor is not as powerful as Word and it's equation capabilities are insufficient for the mathematical notations. But one area where it is clearly better than Microsoft Word is in its ability for real-time collaboration. This means that students may work together on a document such as a project and as one student types, it automatically shows up on the other students' screens. You can leave comments in the document and hold a chat session while you're collaborating.

Google Docs works best with a Gmail account, which can be created for free. It also integrates with Canvas and students can start a new Google Doc collaboration directly from within Canvas and choose the other students for their project.

Google Spreadsheets is an alternative to Microsoft Excel that also provides the real-time collaboration that Excel doesn't. Google Spreadsheets does not integrate directly with Canvas and you will need to manually share documents among your group.

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

Jing (optional)

Techsmith's Jing software is a free screen snapshot and video recording software. It can be used to take snapshots of what you see on the screen or capture and narrate a short video of your screen.

This is useful if you want the instructor to see exactly what it is that you're seeing and trying. It is also useful for reporting problems in Canvas so they can see exactly the problem you're encountering, otherwise they like to say "we cannot reproduce that on our end."

Jing is software that must be installed on your computer, but it is available for both Windows and Mac systems. More information about Jing is available at https://www.techsmith.com/jing.html

Screencast-O-Matic (optional)

Screencast-O-Matic is a free and online version that provides the ability to create and narrate videos from your computer screen. It does not require you to install software on your computer, as Jing does, as long as Java is available to your browser. Note that Google Chrome is removing support for Java, so this option may not be available to Chrome users without installing their software.

You do not need Screencast-O-Matic if you install Jing.

Screencast-O-Matic runs from a web browser on both Windows and Mac systems. More information on Screencast-O-Matic is available at http://www.screencast-o-matic.com/

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.

MyMathLab

MyMathLab is part of Pearson's My Lab and Mastering product. It provides an electronic version of the textbok, videos, practice problems. Most of the problems include a "show me" that will demonstrate how to work a problem and then give you another version of the problem to work.

There is no MyMathLab course code required for this course. Instead, go into Canvas first, then click on the MyLabs and Mastering link on the side navigation menu. From there you may either go to the assignments to work the homework or to the Pearson eText course home to view the textbook. Do *not* go directly to the MyMathLab website and log in like you might have in other courses. If you are getting asked for a course code, you are going to the wrong location.

The instructor's experience is that the problems that students struggle with the most are the ones that are worked out in the examples. If you're running into problems, you might want to go back and re-read the section.

Instructor

I am on campus Monday – Thursday from 8:00 am to 9:50 am for another course. I have asked the division to keep room S137 available following that course from 10:00 am to 11:50 am in case students have questions and want to meet. Advanced notice, the day before is usually fine, is needed so that I can make childcare arrangements.

It may also be possible, if schedules allow, for interactive conferencing with the instructor via the Conference navigation link inside Canvas. These sessions may be recorded and made available to other students.

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.

Meeting in a study group may be difficult within an online environment, but there are some collaboration tools that can help.

Students may use the Conference link in Canvas to create a BigBlueButton collaboration session. This collaboration will allow students to share their desktops, use a whiteboard, communicate by voice (if their computer has a microphone), and even see each other by sharing their webcams.

Other chat programs exist like Google Hangouts or Skype. Recent versions of Firefox even include built-in video conversations.

Even with the multiple electronic options available, you may find that it is easier to meet with other students in person and discuss things or work on projects.

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.

The testing center is open Monday – Thursday from 7:00 am - 7:00 pm during the summer term. The testing center is closed Friday, Saturday, and Sunday during the summer.

The testing center is open Monday – Thursday from 8:00 am - 7:00 pm, Friday from 8:00 am – 5:00 pm, and Saturday from 9:00 am - 12:00 noon during the fall and spring semesters. The testing center is closed on Sundays during the regular semesters.

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.

If you have problems with Canvas, contact Online Learning and your instructor immediately.

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

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.

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. Remember that Richland is only open Monday–Thursday during the summer.

Student Service	Location	Extension
Accommodations	C148	379
Advising and Registration	WDI	267
Campus Life	C131	243
Career Services	WDI	305, 243
Counseling Services	WDI	252
Financial Aid and Veteran Affairs	WDI	274
Library	C152	303
Online Learning Support	W143	376
Mathematics Enrichment Center	W117	383
Student Employment	WDI	205
Student Records	WDI	257
Student Support Services/TRiO Program	C143	440
Testing	S116	238
Transfer Center	WDI	222
Tutoring	S118	419
Veteran Services	WDI	307, 205

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.