A Beginner's Guide to Surviving and Conquering MATH 143
Spring 2016

Instructor Info
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Degrees:
- Minor in Mathematics
- B.S. in Computer Science
- M.S. in Computer Science
- 3/4 of a M.S. in Mathematics
(In Progress!)

When and where do we meet?
Tuesdays: 7:30-8:45pm in MB 115
Thursdays: 7:30-8:45pm in MB 104

Note: If for some odd reason you can't reach me or if you have any further questions, then you can contact the Director of the MLC, Dr. Gary Hagerty, at garyhagerty@boisestate.edu or visit the MLC tutoring lab in MB 120.

Why should you care about algebra?
Which essential tools of algebra will be useful to you? What about your discipline of interest, future career, and beyond? How can you learn, develop, acquire, and apply these tools to help you solve problems, make decisions, conquer mighty challenges, and achieve your goals? These are examples of how earning tools of algebra can be advantageous. For this, algebra (and mathematics in general) is an powerful vehicle for training your brain to solve problems and puzzles. In this course, you'll learn to train your "math brain" to attack and defeat both theoretical and practical problems in a wide variety of contexts and situations, many of which have real-world application. Yes, math is everywhere, and we're always using it---even when we're not aware of it! So let's get to it and train that brain!

How will this course help you succeed?
Admittedly, years after you've completed this course, there is a good chance that you won't remember every single topic that we covered... but this isn't the point! Learning math activates and strengthens the regions of the brain involved with decisive mental attributes, such as focus, memory, spatial awareness, critical thinking, and puzzle solving skills. Such earned characteristics for your math brain can be useful for effectively combating a broad spectrum of great challenges to obtain solutions; it may be that conquering such challenges will be required for you to advance along your desired career path and succeed in the achievement of your goals. If it was easy, then everybody would do it.

The interactive, computer-based "textbook" that we'll use in this course, namely ALEKS, has proven to be an effective tool for training the math brain. This course will help you acquire a conceptual and practical framework that you can apply to solve puzzles and problems in your current and future work, and beyond. By the end of this course, you'll be able to answer the following questions:
- How can I use algebra tools to solve problems in multi-disciplinary realms such as business or STEM (science, technology, engineering, and mathematics)?
- When and how can I manipulate equations and functions to piece puzzles together?
- How can I effectively graph equations, inequalities, and functions to gain a visual sense of problems, strategies, and solutions?
- When and how can I perform a regression analysis to model real-world data with points on a graph to make predictions?

- How can I "learn how to learn" the challenging topics of algebra and develop a deeper mathematical insight?
- How can I use fancy adaptive learning computer software---in this case ALEKS---to effectively train my math brain?

What can you do to survive and conquer this course?

What is success to you? Every individual has their own goals, so take a moment and think about how you will succeed in this course. Here are some helpful tips for success:

- ***Participate!*** Each week, show up to class and do your best to tackle the in-class challenges.
- ***Run Solo!*** Connect to your online ALEKS account from anywhere in the world with internet access and interactively solve puzzles day or night, at light speed! (Just remember that you still have to show up to class in person!)
- ***Collaborate!*** Form teams with your peers and work interactively to openly discuss, analyze, and solve in-class puzzles. In the workforce and in countless other "real-life" situations, the confidence and ability to collaborate with others in order to attack challenging problems is imperative.
- ***Make Mistakes!*** Everybody makes mistakes, especially when it comes to math! Your instructors will make mistakes, your tutors will make mistakes, your classmates will make mistakes, and even math big shots like Stephen Hawking and Albert Einstein made countless mistakes. In fact, it's impossible to learn math without making mistakes! You've just got to get out there and give it your best shot. Making mistakes, and learning from those mistakes, is a fundamental component of the training process.
- ***Communicate!*** Keep the comm lines open with your instructor, your classmates, and your friendly tutors at the MLC. Don't be afraid to ask questions and openly discuss a topic that has you bogged down. Not only can you receive help from others (who are often struggling just as much as you are), but often just talking through the problem can help organize it in your brain and lead to a strategy or solution that you may not have thought of before. Being able to verbalize and write down your thought process is absolutely essential.
- ***Find a Plan and Discipline Yourself!*** Math is arguably one of the most challenging subjects to learn, but it is also often considered to be one of the respected and rewarding. Come up with a training plan that works for you and stick to it. Each week, be consistent and don't be afraid to work hard and push yourself on a regular basis in order to obtain your math goals.
- ***Pace Yourself and Take Breaks!*** Don't try to solve every problem in a single, epic marathon (for example, avoid being a "weekend warrior"). Eventually, your math brain will get exhausted and it'll be *significantly* more difficult to process, absorb, and retain the new material. Break up your training workload and spread it over multiple days throughout the week. Just take it one step at a time. If you get frustrated or confused, or find yourself repeatedly making silly mistakes, then it might be good time to take a break and do something completely different.
- ***Attitude!*** When faced with a tough math problem under dire circumstances, a positive, persevering attitude can help you maintain focus, stay relaxed, and build confidence so you can get the job done and move on.
- ***Don't Procrastinate!*** In order to conquer this class and reach your goals you've got a certain amount of work to accomplish. You can start early or wait until the last minute---its up to you. But regardless of your choice, you'll still need to get it done eventually, so why not start early and make life easier later on?
- ***... Find Something that Motivates YOU to Succeed!***

Math 143: College Algebra Spring 2016

Course Description and Foundational Studies Program Objectives

Boise State's Foundational Studies Program provides undergraduates with a broad-based education that spans the entire university experience. Math 143: College Algebra satisfies three credits of the Foundation Program's Disciplinary Lens-Mathematics (DL-M) requirement. It supports the following University Learning Outcomes, along with a variety of other course-specific goals.

> ULO 7. Apply knowledge and the methods of reasoning characteristic of mathematics, statistics, and other formal systems to solve complex problems.

Math 143: College Algebra is designed to introduce students to the principles, techniques and applications of polynomials, exponential functions, logarithmic functions, inverse functions and composition of functions. This course helps to achieve the goals of the Foundations program by focusing on the following course learning outcomes. After successful completion of this course, you will be able to:

- Solve standard mathematical problems relating to algebraic functions including but not limited to polynomials, logarithms and exponential functions and make reasonable assessment to the accuracy of solutions.

- Convert data relating algebraic functions into appropriate graphical and symbolic representations and be able to state appropriate conclusions regarding the data with emphasis on data from science and business.

- Choose appropriate polynomial equations of degree one through four, logarithms and exponential functions to solve problems related to business and science.

- Explain why the algebraic equation is appropriate to the solution and how the solution addresses the problems questions.

- Apply mathematical strategies, both graphical and symbolic, for solving problems based in business and/or science.

- Use technology to interpret data sets from business and science to solve problems and interpret results.

Instructor

Your instructor will email you with his/her contact information.
If you have further questions, please contact: Dr. Gary Hagerty, Director of the Math Learning Center
garyhagerty@boisestate.edu

Textbook

ALEKS (One semester 18-week stand-alone access code). This is available at the BSU bookstore and also online. The course is based on the following text but it is an optional purchase. *Precalculus*, Second Edition; John Coburn, McGraw-Hill, 2010.

Calculators

Graphing calculators are required and we highly recommend you purchase a TI-84.

Shared Values, Academic Excellence and Academic Integrity

Boise State University has a statement of Shared Values of Academic Excellence (https://deanofstudents.boisestate.edu/statement-of-shared-values/). The statement discusses areas of Academic Excellence, Caring, Citizenship, Fairness, Respect, Responsibility and Trustworthiness. The Math Learning Center at Boise State University recognizes that student success is positively influenced through a commitment to the university's Shared Values.

Academic Excellence is defined as "each individual engaging in our own learning and participating fully in the academic community's pursuit of knowledge". The Math Learning Center has designed it's program around this ideal. Each student has the expectation to fully engage in their academic pursuit and their academic success. Based on the student's success both in the classes they are currently enrolled in and their success in future classes, students at Boise State are actively pursuing their dreams and their futures.

Academic Integrity follows nicely from academic excellence and all of the values of the Shared Value statement.

- Unfortunately, with all the positives the internet has brought our society, it has also brought an ease to practices that do not follow the principles of Shared Values. When this happens, students tend not to be successful. At this point the Math Learning Center will ask students to work with the Math Learning Center on an individual basis to develop positive strategies.
- This process will begin with the student's instructor or a member of the Math Learning Center staff asking a student to complete an assessment under supervision.
- As the student is embarking on an individual plan, the student's instructor will enter zeros for all work until the student completes the individualized assessment and meets with the MLC staff to develop an individualized plan, focused on success.
- When strong evidence indicates a complete lack of Academic Integrity, such as using cell phones during tests or paying others to complete assignments, appropriate action will be taken.
- When a student violates the Boise State Academic Integrity policy, the Math Learning Center follows the university policy and begins by submitting a report. The criteria for cheating during exams as with all violations of the code of conduct is that it is "more likely than not" or 51% that the violation occurred.

Assessments

The ALEKS program prepares students for the next course by periodically assessing a student's algebraic skill set. Assessments take the place of a traditional in class quiz. It is the student's responsibility to take the assessment like it is a test. Ideally there should be no help from notes, friends, tutors, internet websites, cell phones, etc. It is also the student's responsibility to make up any topics that are placed back onto the pie in any given week which means it is a good idea to work ahead of the goal and not wait till the last minute to finish time or topics. Assessments will not be canceled.

The MLC instructors and staff strive to assist each student's success at Boise State University. One way the MLC supports student success is by requiring some students to complete assessments with the MLC. ALEKS routinely generates assessments, however, the in-person assessments provide much greater insight into a students' learning and success. Some indicators for assessments are outlined below:

- Concerns about a student who has missed several class periods.
- Student displays inconsistent or sporadic work habits.
- Work in ALEKS and test scores don't appear to be of the same quality.
- Student appears to fall into an academic category which the MLC is trying improve success in.

Classroom Etiquette and Expectations:

Technology is becoming prevalent in the classroom. As the access to technology grows, we must ensure that a quality educational environment is maintained. Students must understand that visiting electronic sites that do not pertain to the purpose of the classroom is at some level a distraction to the student and often to the class as a whole. While it is understood that visiting sites such as Facebook and YouTube and activities such as texting are a distraction, we must also point out that visiting homework pages for the math classes at times when working on homework is not the focus of the class is also a distraction. In order to maintain a proper distraction free environment, it is the obligation of the instructor to ensure that students only visit electronic sites pertaining to the task at hand. The instructor may do this on an individual basis or ask the entire class to put away all electronic devices. This decision needs to be respected. If you have any concerns with this policy, then please discuss your concerns with Dr. Hagerty, Director of the Math Learning Center.

- Visiting Websites not associated with the current classroom activity is not allowed.
- Working on assignments for other classes or for math outside the current activity is not allowed.
- If the instructor finds visiting other websites or misuse of technology a disruption, the instructor may assign a zero for the day's attendance. Repeated disruptions may result in being asked to leave the classroom.

The Keys to Success

Success means putting forth the time, effort, and energy required to complete this course. Based on the past several years of analyzing student success, we have found that appropriate work completion and attendance are the biggest keys to success. Following these simple guidelines should ensure success:

1) Homework completion. More than 95% of the students who complete 80% or more of the homework pass the course. Aim to complete your work at 100%.
2) Make sure you are learning. When you obtain help, make sure that you are learning and able to do the work without help.
3) Review for every test. The biggest difference we see in test scores is between students who review and those who don't.
4) Put forth the effort to attend every class. This may be one of the best signals we have to a student being successful.

Students who spend at least 12 hours working on ALEKS in the first two weeks are significantly more likely to pass the course than students who spend less than 6 hours in the first two weeks.

If you are doing all of the above and struggling, make an appointment with Dr. Hagerty, Director of the Math Learning Center. He will work with you to find the best possible path to creating your success.

Tutoring

Free tutoring is available in the Math Learning Center, room MB120. For detailed hours of operation, including holiday closures, visit: https://math.boisestate.edu/math-learning-center/hours/

Standard hours are (subject to change):

Sunday	2pm-8pm
Monday-Thursday	9am-8pm
Friday	9am-5pm
Saturday	Noon-6pm

Grading Scheme

Weekly Topic Goal 18% of total grade
Weekly Time Goal 8% of total grade
Attendance and Group Activities 7% of total grade
In-Class Exams and Quiz 33% of total grade
Final Exam 30% of total grade
Notebooks 4% of total grade

A+ - 98%   B+ - 88%   C+ - 78%   D+ - 68%
A - 92%   B - 82%   C - 72%   D - 62%
A- - 90%   B- - 80%   C- - 70%   D- - 60%

Any final grade lower than 60% will be recorded as an F. To use Math 143 to meet a prerequisite in another course, then the student must earn a grade of C- or better to move to the next course.
The MLC staff members have access to all students' ALEKS and Blackboard account information. The MLC staff members are here to promote student success. If you are struggling, then it is likely that MLC staff will reach out to you, and you are encouraged to seek help with all concerns regarding your course.

Weekly Topic and Time Goals (homework)

Homework will be completed using ALEKS. This is a software based approached. You will be asked to complete virtually the same set of problems as if you were assigned problems out of a textbook. The advantages to ALEKS as an online homework system include:
1) Improved assistance when you need it.
2) The opportunity to work at your pace and complete the work necessary for you to be successful.
3) An opportunity to develop a complete understanding before moving ahead. This means that you will not be asked to perform work that for which you are not ready (as would happen in a traditional environment where everybody does the same thing).

Grading of homework is based on your commitment to success. It has been found that once a student has been properly placed in a curriculum, their success is based on their willingness to put forth time and effort into the class. The grading of the homework will be based on time and effort as follows:

1) Time: 6 hours on ALEKS learning math each week. If you spend 4.5 hours on ALEKS, then you would receive a 75% on that assignment.

2) Effort: After the first week, you are expected to complete the number of objectives needed necessary each week in order to complete all of the topics by the end of the semester. (This will be explained frequently throughout the course and your instructor will give you your assignment on an individual basis.) The two lowest weeks' time scores and the two lowest weeks' topic scores will be dropped from the weighted grade column on BlackBoard at the end of the semester.

Attendance and Group Activities

Class attendance will be taken daily and computed into your grade. One of the strongest indicators of student success is attendance. Attendance has the strongest correlation of any indicator when considering student success. Thus, we have placed attendance at a high level of importance in this class. One meeting per week will be focused on Group Activities found on the MLC web page. You will be responsible for printing each week's activity and bringing it to class. These will be counted as part of your attendance score for the week. The two lowest weeks' attendance scores will be dropped from this category in the weighted grade column on BlackBoard at the end of the semester. Please see an explanation of the Attendance Policy below. Class attendance is earned by being in class and appropriately participating.

Attendance Policy

Attendance points are earned at the discretion of the instructor. Students receiving full attendance points are attending class for the full amount of time and remaining on task during that time. The instructor has the right to deny attendance points to any student who does not attend the full amount of time or to a student who does not participate. Using technology in an inappropriate form is considered non-participation. If you have any concerns with this policy, then please discuss your concerns with Dr. Hagerty, Director of the Math Learning Center.

Excused Absences and Adding a Course Late

The Math Learning Center is supportive of all University sponsored events. If you must miss a class period for a University sponsored event, please remind your event organizer (club advisor, director, coach...) that you need a note for your teacher so that we may excuse your absence.

Students missing the first two days of class may be administratively un-enrolled from the course based on university policy.

The Math Leaning Center will only excuse absences for University sponsored events. Rather than trying to decide if another reason for missing class is worthy of being excused, we drop the lowest two weeks of attendance at the end of the semester for everyone. If you need to miss more than two weeks of class, please speak with Dr. Hagerty in the MLC main office, MB121.

Adding a course late is not a university sponsored event, therefore any class periods and course work missed before adding the class will not be excused. Once again, rather than trying to decide if a reason for adding a class late is worthy of being excused, we drop the lowest two weeks of time, topic and attendance grades.

Exams

There will be two in-class exams. Sixty percent of the score will come from an online portion, thirty-six percent of the score will come from a written portion, and four percent will come from a single written question based on the activities. These will be given in the weeks of Feb 14th and April 3rd. Your instructor will provide more information as to the exact dates. You may be required to present valid BSU ID at each exam. Late tests can be made up in MB121 on the Friday directly following the missed test. Tests can begin as early as 10am and must begin no later than 4pm. The Final exam will be comprehensive and given at the specified time, during finals week (May 2nd-6th). The Final will be on paper only with ninety-six percent coming from the course material and four percent coming from a single written question based on the activities. Make sure you obtain the exact location, date, and time from your instructor.

Quiz

You will also have a 4-point quiz that will count in the exam category. The quiz will be over regressions, interpreting data, and using your calculator, related to your group projects. It will happen around the 10th week.

Partial Credit

You will be given scratch paper for your test. The only way to earn partial credit on a test for answers you wish to challenge is to have the work supporting your answers on your scratch paper neat and organized, based on mathematically approached standards. Your notebooks should reflect these standards as well.

Finishing Early

If you finish your pie before week 12, then immediately speak to Dr. Gary Hagerty, the director of the MLC, about your testing options. To request an early final you must meet the following conditions:

- Work in a notebook and be prepared to present your notebook for inspection. Your notebook must rate competent or proficient in all categories according to the rubric provided on the MLC website.
- Attend class on a regular basis.
- Complete all topics on the pie for your course.
- Be passing your course at the time you request an early final.
- Take a proctored assessment if asked.

Notebooks

Success in math (as well as all other endeavors) is greatly improved by following steps prescribed by the instructor. This implies keeping careful notes and writing step-by-step solutions. We are asking that you keep these notes and the problems you work in a notebook, using correct mathematical notation. You will find that this greatly enhances your ALEKS experience and your success in future courses. This notebook will be graded based on organization and completion/content. There is a rubric to help you included at end of this syllabus. If you need additional help setting up your notebook, then talk to your instructor.

Notebook Rubric:

	Unacceptable	Novice	Competent	Proficient
Regular use	Does not have a dedicated notebook.	Often absent from class or doesn't bring notebook. Lots of work missing from notebook.	Sometimes absent from class or doesn't bring notebook. Dates are missing or inconsistent.	Always brings notebook to class. All ALEKS work is in notebook. Dates are clearly and consistently labeled.
Topic formatting	Looks like "chicken scratch".	No obvious organization.	Obvious where one topic stops and another starts.	Each topic is labeled with topic name and pie slice.
Problem formatting within each topic	Does not contain at least one: problem, explanation or example.	Can't tell where one problem stops and another starts.	Obvious where one problem stops and another starts.	Obvious where one problem stops and another starts. Answer is easy to find and marked correct or incorrect.
Mathematical notation	Non-sequential work. Instructor struggles to follow logic.	Works math horizontally. "Loses" pieces of the problem.	Mixed horizontal and vertical math. Doesn't appear to be losing parts of the problems.	Using vertical math almost exclusively. No obvious notation errors.
	0 points each	15 points each	20 points each	25 points each

Disability Resources

The instructor will work with the Disabilities Resource Center to provide reasonable accommodations to students upon request. Students making such requests are required to provide documentation from the Disability Resource Center, located on the first floor of the Lincoln parking garage.

Communication Expectations

Email, an acceptable and appropriate medium for communications, is an official mode of communication. Since "upon sending, it is expected that email will be received and read by the recipient," students are expected to check their official Boise State University email frequently. Please see Boise State University Manual Policy Number 2280. The Math Learning Center also communicates through the Math Learning Center Website and the Boise State University BlackBoard Course Management System.