People also ask ⋮

What does OER mean? ∧

Open Educational Resources

Open Educational Resources (OER) are teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions.

Open educational resources for math on USG's OpenALG

Perimeter College Math OER Committee

Robert Blitzer), which costs $119.95. In fall 2019 and spring 2020, we will pilot a low- or no-cost option for homework assignments, which will provide a savings of about $100 per student (a total of $ 30,000 savings). We will share our course

Post-Project Savings per Student
$190.74

Projected Total Annual Student Savings per Academic Year
$181,584.48

Post-Project Savings per Student
at least $104

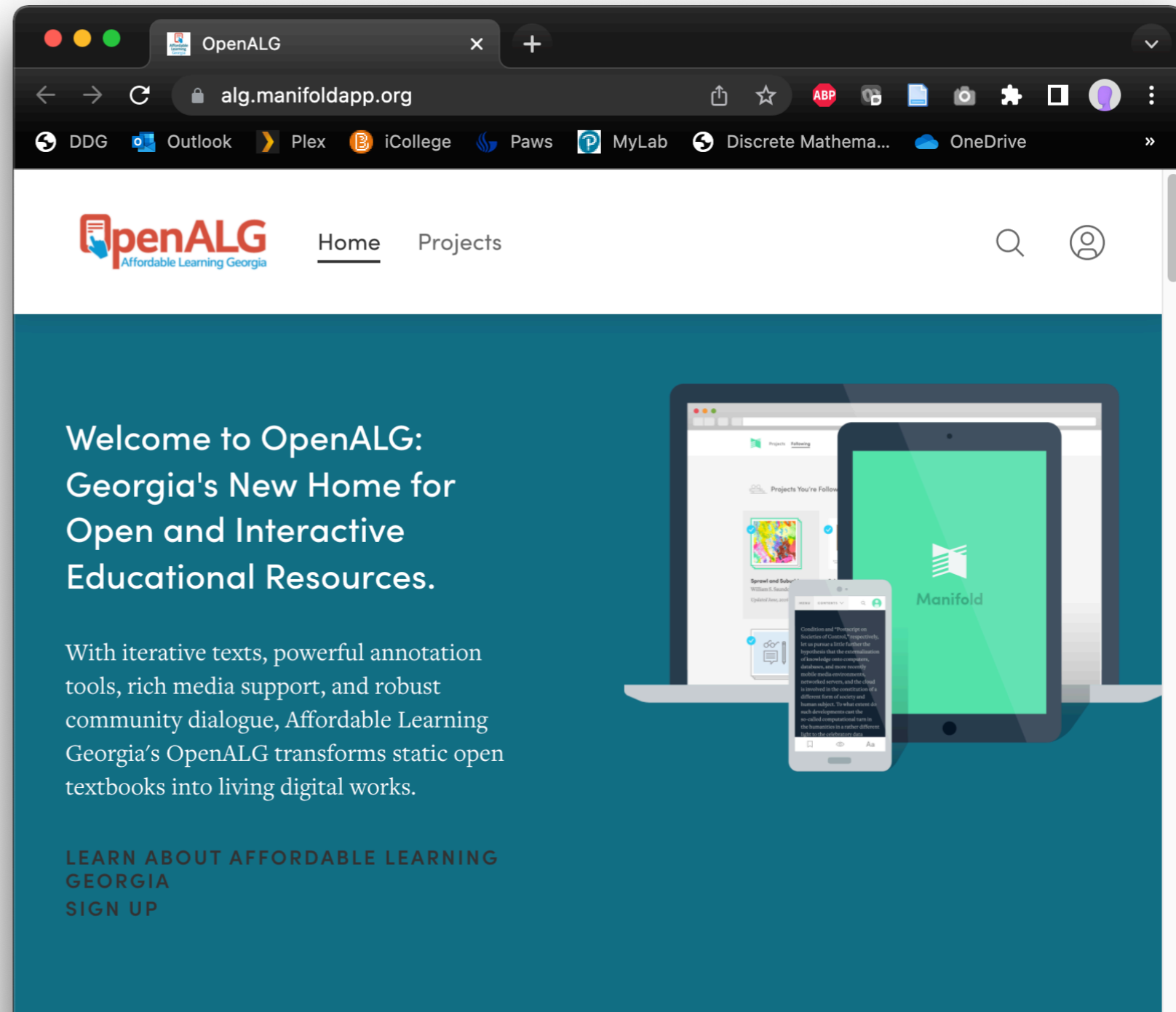**Projected Total Annual Student Savings per Academic Year**
$34,320

This document and any errors therein: Julie La Corte (Dunwoody Math)
Last revised: Jan. 30, 2022

Overview of OpenALG

OpenALG is USG's repository for free and open educational materials *created and used by USG instructors*.

Schools producing OpenALG math materials
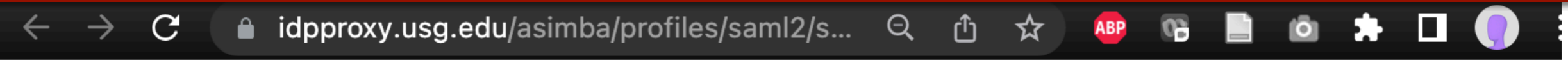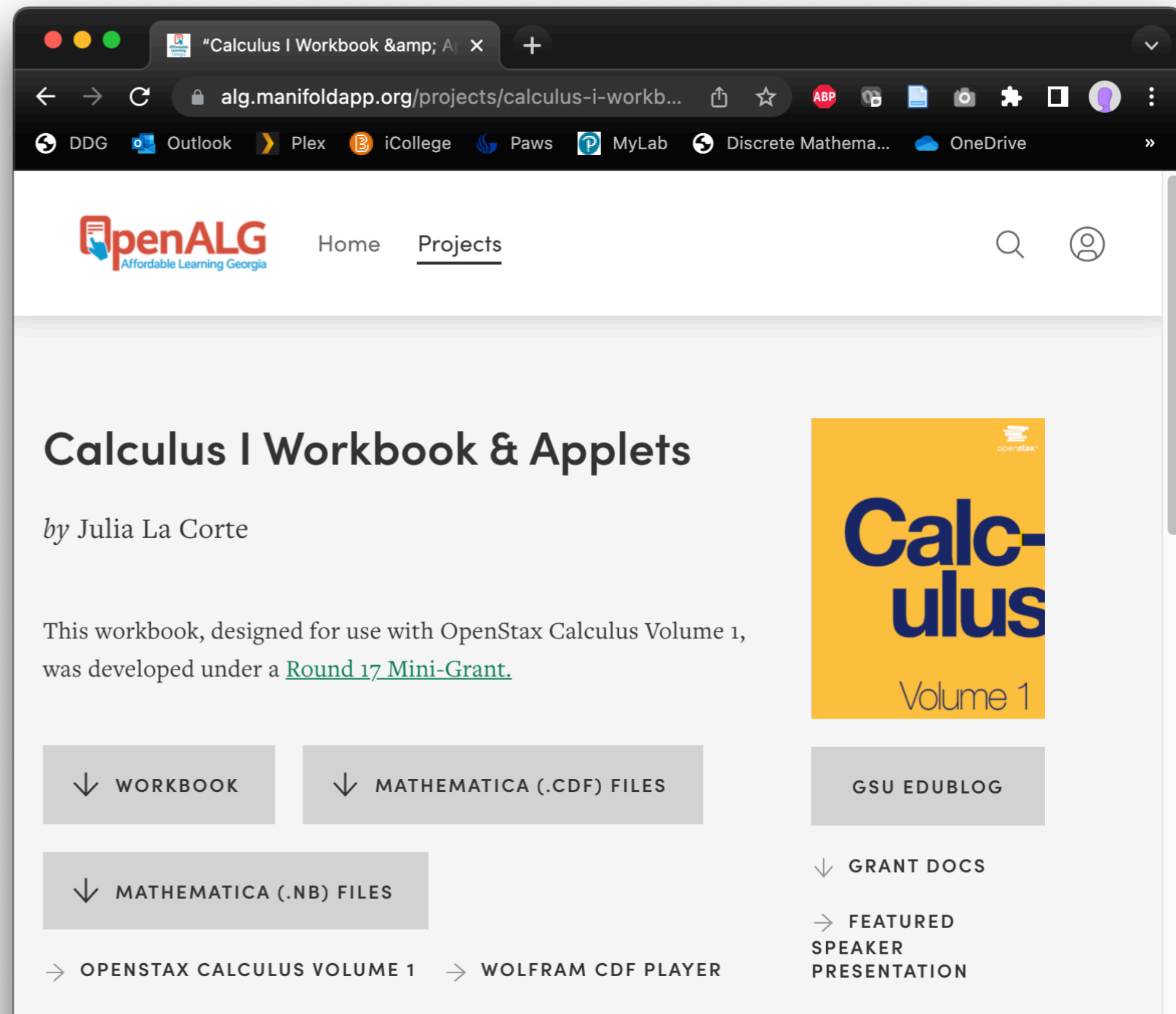
Select your institution:

these schools are among the most *community-oriented* in USG

Overview of OpenALG

Each project was piloted in the classroom.

Projects were funded by **Affordable Learning Georgia**, a USG initiative.

Overview of OpenALG

An initial proposal and a final report is linked from each project page.

Overview of OpenALG

Different projects provide different types of materials.

This document lists all OER math pilot projects on OpenALG which provide *at least one* of the following*:*

- a **textbook** covering an entire course,

- **online homework** assignments covering an entire course, or

- **supplementary materials** (videos, guided notes, etc.).

Overview of resources surveyed

		textbook?	homework?	more?
Quantitative Reasoning	Sykes et al.	✔	☐	☐
	Fang et al.	☐	☐	✔
	Abbott et al.	☐	☐	✔
	Lippman et al.	✔	☐	☐
	Onkonkwo et al.	☐	☐	☐
College Algebra	Dolo and Muche	☐	☐	☐
	Chiorescu et al.	✔	✔	✔
Precalculus	Epstein and Chiorescu	☐	☐	✔
Elementary Statistics	Muse et al.	☐	☐	☐
	Onkonkwo et al.	☐	☐	☐
	Dancs and Matos	☐	✔	☐
	Pace and Ralston	☐	✔	✔
	Pace et al.	☐	☐	✔
Calculus 1	La Corte	✔	☐	✔
	Chapman and Royal	☐	✔	☐
	Pinzon and Roberts	☐	✔	✔
	Marion and Kunwar	☐	☐	✔
Calculus 2 and 3	Tiemeyer and Schlieper	✔	✔	☐
Discrete Math	Jamaloodeen et al.	✔	✔	☐
	Levin	✔	✔	☐

Quantitative Reasoning

Quantitative Reasoning

Summary of available resources:

		textbook?	homework?	more?
Quantitative Reasoning	Sykes et al.	✔	☐	☐
	Fang et al.	☐	☐	✔
	Abbott et al.	☐	☐	✔
	Lippman et al.	✔	☐	☐
	Onkonkwo et al.	☐	☐	☐

"Quantitative Skills and Reasoning" (2021)

S. Sykes, J. Bellon, R. Burnham, K. Carter, W. Gay, N. Rehfuss
(University of West Georgia)

Type of resource:	Textbook
Scope of coverage:	Complete course
ALG repository:	Quantitative Skills and Reasoning
Format:	PDF

Here is the scatter plot of the data set with the regression line that we've created.

Example: Adam is a personal trainer with 6 clients. He's reviewing their progress and notices the more cardio days per week (x) his clients have, the lower the body fat percent (y) they have. He records this data in the table below.

x (Cardio Days Per Week)	1	2	2	3	4	4
y (Body Fat Percent)	23	18	16	12	9	4

Construct the linear regression line for the data set. Round your slope and y-intercept to two decimal places.

"Quantitative Skills and Reasoning" (2020)

H. Fang, N. Shukla, E. McInnis
(Columbus State University)

Type of resource:	Slideshows and videos
Scope of coverage:	Complete course
ALG repository:	Quantitative Skills and Reasoning
Videos:	HoubinFang.com

KALTURA

"Quantitative Reasoning Workbook" (2021)

A. Abbott, E. Coston, G. Dicks, J. Gregus, S. McLendon, A. Urquhart
(Abraham Baldwin Agricultural College)

Type of resource:	Practice exercises
Scope of coverage:	Complete course
ALG repository:	Quantitative Reasoning Workbook
Author(s) presentation:	ALG Featured Speaker Series, Jan. 2021

License

"Math in Society" (2017)

D. Lippman, et al.
(Pierce College)

Type of resource:	Textbook
Scope of coverage:	Complete course
Link to textbook:	Math in Society Edition 2.5
Formats:	PDF, MS Word, print

Open Textbook Library

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Open Education Network

Math in Society
Edition 2

David Lippman

Math in Society - Edition 2.5

(15 reviews)

★★★★⯪

David Lippman, Pierce College

Copyright Year: 2017

Publisher: David Lippman

Language: English

Contents

"Math in Society" (2020)

Z. Okonkwo, A. Devarapu, A. Smith, J. Swords, V. Kunwar, L. Paudel
(Albany State University)

Type of resource:	Pilot program report
Scope of coverage:	Complete course
Author(s) presentation:	Report (mirrored on Julie's Edublog)

College Algebra

(...for completeness's sake)

Summary of available resources:

		textbook?	homework?	more?
College Algebra	Dolo and Muche	☐	☐	☐
	Chiorescu et al.	☑	☑	☑

"OpenStax College Algebra and Trigonometry Adoption" (2021)

S. Dolo, T. Muche
(Savannah State University)

Type of resource:	Pilot program report
Scope of coverage:	Complete course
Link to textbook:	OpenStax Algebra and Trigonometry
Author(s) presentation:	ALG Featured Speaker Series, Mar. 2021

"College Algebra"

OpenStax

Type of resource:	Textbook
Scope of coverage:	Complete course
Link to textbook:	[OpenStax College Algebra](#)
Available formats:	Kindle, PDF, print

With philanthropic support, this book is used in **740** classrooms, saving students **38,299,811** dollars this school year. Learn more about our impact and how you can help.

Does the Kindle format provide accessibility options for the visually impaired?
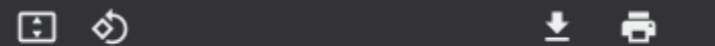
Brief Contents
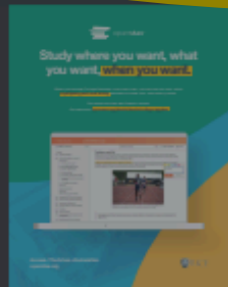
"College Algebra Open Course" (2021)

M. Chiorescu, R. Shahbaz, J. Alves, B. Kidane
(Georgia College and State University)

Type of resource:	Open course; Guided notes
Scope of coverage:	Complete course
Link to course:	https://libguides.gcsu.edu/math1111
Link to guided notes:	Guided Notes for OpenStax College Algebra

License
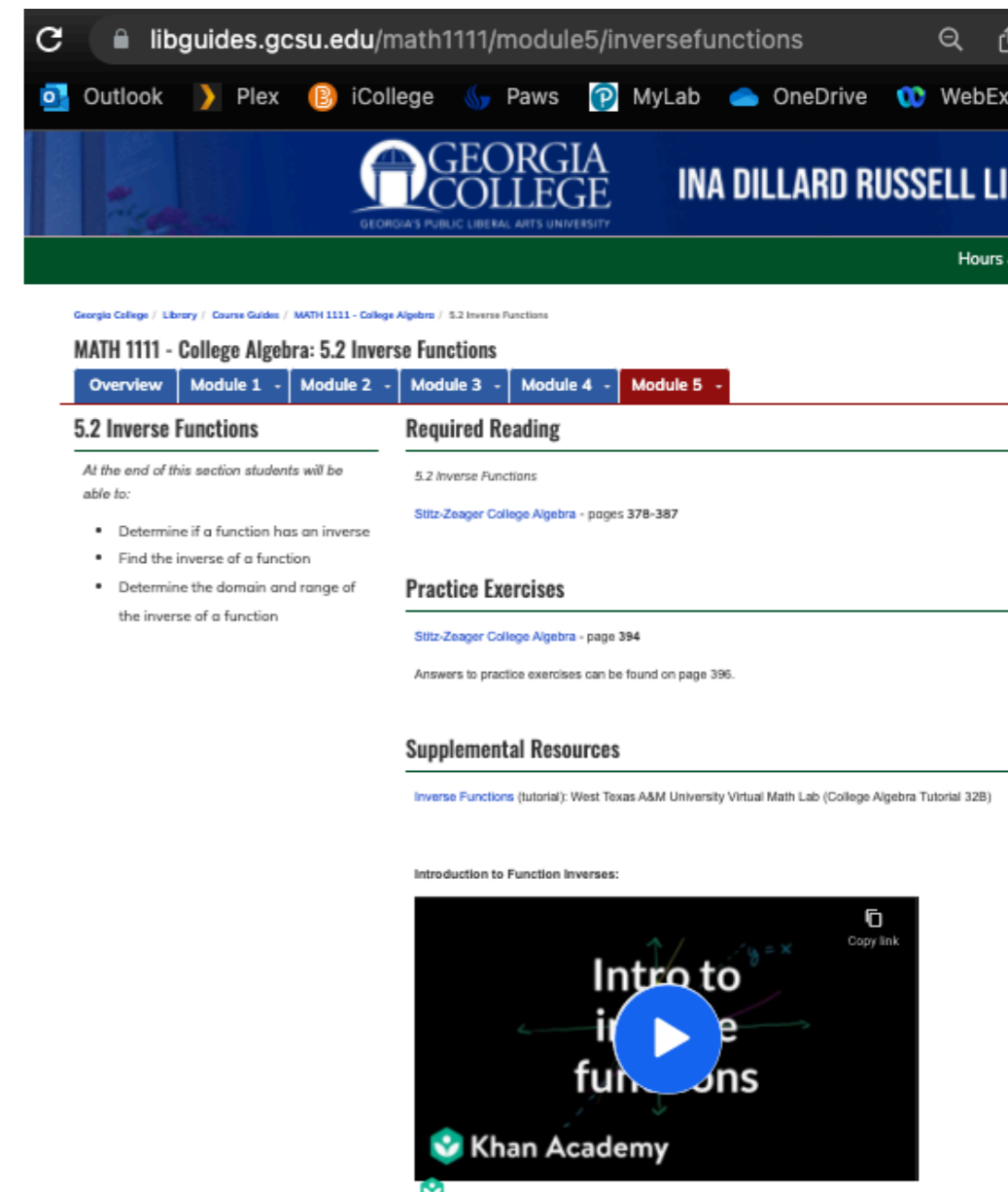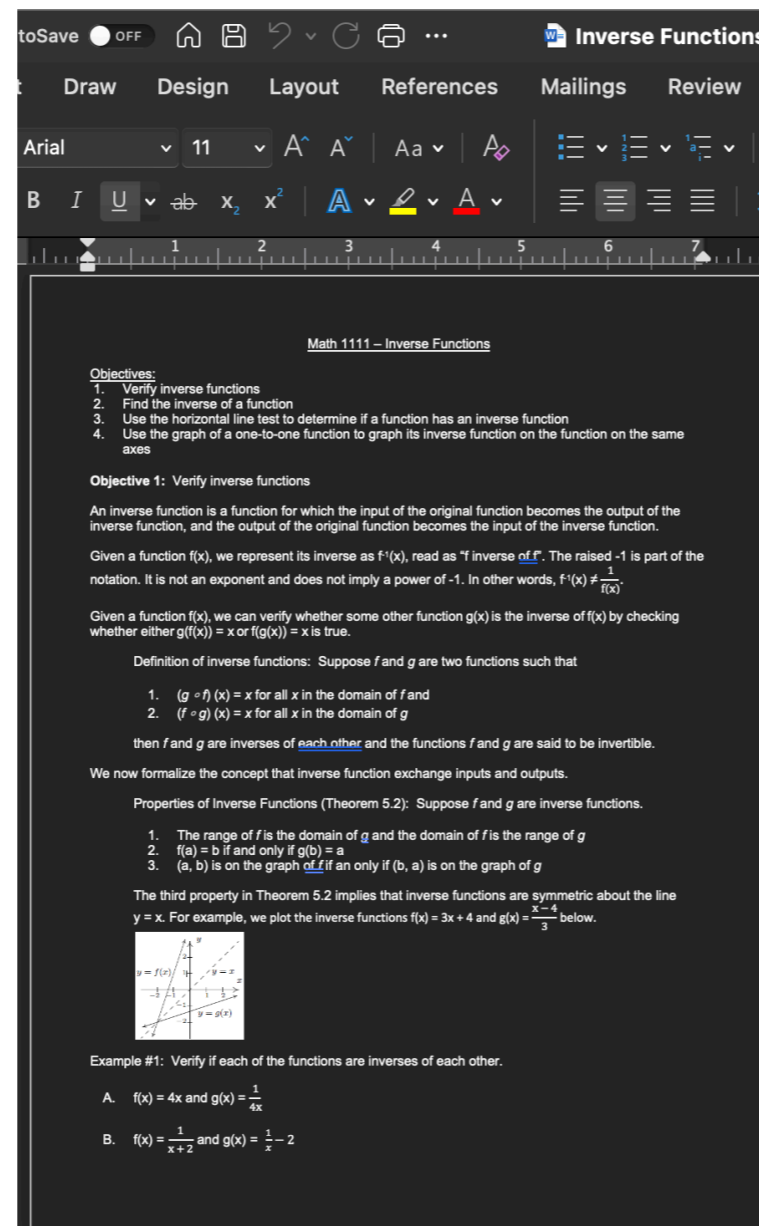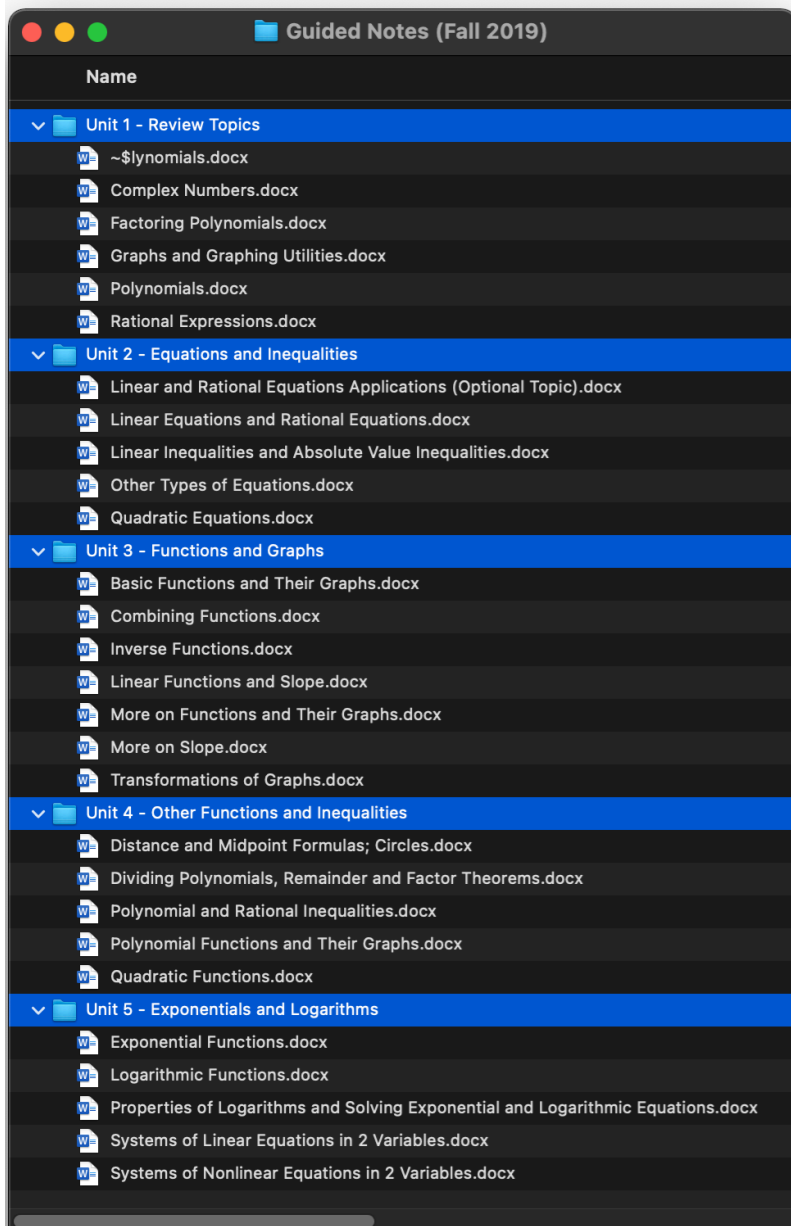
Precalculus

Precalculus

Summary of available resources:

		textbook?	homework?	more?
Precalculus	Epstein and Chiorescu	☐	☐	☑

"OpenStax Precalculus Ancillary Materials" (2020)

R. Epstein, M. Chiorescu
(Georgia College and State University)

Type of resource:	Pilot program report; Worksheets; Activities; Homework
Scope of coverage:	Complete course
ALG repository:	OpenStax Precalculus Ancillary Materials (OpenALG)
Link to Libguide:	How to use these materials

In her sections, Chiorescu put the students in groups of 3-4 depending on the size of the class to work on the group activity designed for the day. At the end of the activity, one of the team members (chosen by the team by rotation) shared the team answers with the class.

We also created several written homework assignments, which ask the students to write about math in complete sentences. We used the Transparency in Learning and Teaching (TILT) method developed by Dr. Mary-Ann Winkelmes to make these assignments more transparent and equitable. Two of the assignments involved some history of mathematics.

For more standard homework, we researched online homework systems. Epstein was planning to use Rover by OpenStax in Fall 2019, but their launch was delayed, so she used Edfinity instead. She ended up liking Edfinity, so decided not to switch to Rover for Spring 2020. The cost for the students was $12.65. One of the Edfinity assignments was an optional practice assignment to help students review material necessary for the course. Epstein did not make the assignment worth any credit and consequently found that few students completed it and many did not even start it. Chiorescu made the assignment worth some credit to encourage students to review the basics algebra skills needed for the course.

Elementary Statistics

Summary of available resources:

		textbook?	homework?	more?
Elementary Statistics	Muse et al.	☐	☐	☐
	Onkonkwo et al.	☐	☐	☐
	Dancs and Matos	☐	✔	☐
	Pace and Ralston	☐	✔	✔
	Pace et al.	☐	☐	✔

"OpenStax Introductory Statistics Adoption" (2021)

B. Muse, C. Almada, M. Bhandary, K. Lilly
(Columbus State University)

Type of resource:	Pilot program report
Scope of coverage:	Complete course
ALG repository:	Saylor Introductory Statistics and OpenStax Introductory Statistics Adoption
Links to textbooks:	OpenStax text (PDF, print, iBooks, Kindle) — Saylor text

Another key outcome was reducing technology costs for calculations. The premium online homework system includes an application for calculations (StatCrunch) and WebAssign with the OpenStax book does not. So, to avoid additional technology costs for this group of students we used free RStudio and free online statistics calculators (list is attached). 94 TI-83 graphing calculators were purchased for the purpose of offering students using the free textbook a $10/semester calculator rental option at a savings of about $87 per student compared to the Amazon calculator purchase price. So far, savings from rental calculators has been less than we had hoped. We didn't receive them until late fall and only managed to rent 7 of them in the spring for a savings of $609. Beginning summer, we will do a better job of informing students early about this rental option.

The free textbooks we used include: Introductory Statistics, at https://saylordotorg.github.io/text_introductory-statistics/index.html and OpenStax Introductory Statistics, at https://openstax.org/details/books/introductory-statistics

Of course, it is challenging to change our ways. We each had taught STAT 1401 many times before and felt that our courses were well oiled machines that shouldn't be changed. However, we understood the importance of making education more affordable and so agreed to the effort of making different materials work. Overall, the new materials were received well and student performance improved.

http://onlinestatbook.com/2/calculators/calculators.html

https://stattrek.com/ calculators are listed under Stat Tables

https://burymathstutor.co.uk/AllMyJavascript.html

https://goodcalculators.com/statistics-calculators/

https://www.mathsisfun.com/data/index.html
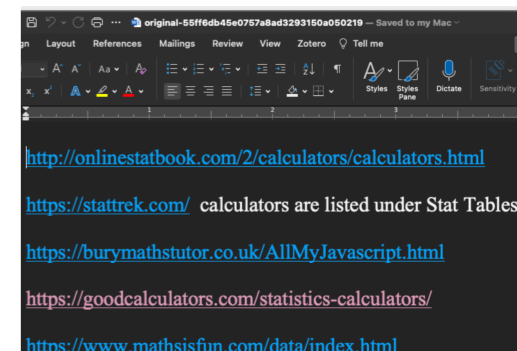
"OpenStax Introductory Statistics Adoption" (2021)

Z. Okonkwo, A. Devarapu, C. Ofodile, A. Smith, L. Feng, V. Kunwar, L. Paudel, E. Benson
(Albany State University)

Type of resource:	Pilot program report
Scope of coverage:	Complete course
ALG repository:	OpenStax Introductory Statistics Adoption

| 3 | To motivate students' interest in the use of online based technology to solve real-life problems encountered in Statistics, including large scale data analysis using R-Studio. | (i) | Due to COVID -19 pandemic, many stud[ents] completed all assignments virtually. Class[es] delivered synchronously using Cisco Web[ex] teaching and learning availed instructors [to] increase course engagement. |

M. Dancs, C. Matos
(Clayton State University)

Type of resource:	Online problem sets
Scope of coverage:	Partial
ALG repository:	WeBWorK Problems for OpenStax Intro Stats
General info about WeBWorK:	https://webwork.maa.org/

WebWorK Problems for OpenStax Introductory Statistics

by Michael Dancs, Catherine Matos

This problem set for Chapters 8-12 of OpenStax Introductory Statistics was created through a Round 14 ALG Mini-Grant. The set uses the open-source homework platform WeBWorK by the Mathematical Association of America.

↓ **GRANT DOCS**

Topics include mean with a known or unknown sigma, proportion, two-sample mean and proportion, goodness of fit, homogeneity, independence, correlation, and regression.

Although the WeBWorK software is free to use, students sometimes struggle due to a lack of features available on commercial platforms, e.g.: guided solutions, similar examples, and personalized feedback. While WeBWorK does provide a framework for these features, individual problems must be specifically designed and written to leverage this functionality, and there are very few that currently do so.

"OpenStax Introductory Statistics Ancillary Materials" (2020)

C. Pace, L. Ralston
(Georgia Highlands College)

Type of resource:	Online homework and practice problems; Notes
Scope of coverage:	Partial
ALG repository:	WeBWorK Problems for OpenStax Intro Stats

Proposed Grant Funding Amount: *

This is the total (in a dollar amount) of funding you are requesting for the mini-grant. There is a maximum of $4800, with a maximum of $2000 per team member and $800 for project expenses.

$4800

Currently-Existing Resource(s) to be Revised / Ancillaries Created *

Please provide a title and web address (URL) to each of the currently-existing resources that you are either revising or creating new ancillary materials for below.

LibGuide will be updated (https://getlibraryhelp.highlands.edu/MATH1401)

Homework and Practice Problems in Desire-to-Learn

PowerPoints, extra notes and videos in Desire-to-Learn and on the LibGuide
(https://getlibraryhelp.highlands.edu/MATH1401)

MATH 0996 Activities (2021)

L. Ralston, C. Pace, T. Suswal
(Georgia Highlands College)

Type of resource:	MATH 0996 discussion activities, assignments
Scope of coverage:	Partial
ALG repository:	Elementary Statistics Activities
Discussion topics:	Link to assignments

High Impact Discussions including Growth Mindset and Metacognition

Discussion #1

Students are asked to answer the following questions: what techniques have you found successful in learning the statistics vocabulary and other introductory content? With what have you struggled---time management, learning/applying vocabulary, or other content issues? Additionally, students must reply to at least two classmates' initial posts.

Discussion #2

Students are asked to answer the following questions: As the course introduces concepts you may not have seen before, consider how has this course is different from other Math courses you have taken in high school or college? Have you developed new ways to understand the concepts? Additionally, students must reply to at least two classmates' initial posts.

Discussion #3

Students are asked to answer the following: the topic of Hypothesis Testing, is often a challenging, yet important, concept in Statistics. Hypothesis Testing is the ultimate procedure used to verify your proposed answer to a research question, much like an experiment in a Chemistry class. Using the problem assigned based on the first letter of your last name, demonstrate how you would dissect the problem. What roadblocks or issues do you encounter? Think about which test you should conduct, the necessary information, stating the hypothesis, making a decision, and the final conclusion. Additionally, students must reply to at least two classmates' initial posts.

Discussion #4

Students are asked to answer the following: You are in the homestretch of the course, please reflect on and describe what strategies or activities have helped you learn the vocabulary, concepts, and/or procedures. What would you do differently? Additionally, students must reply to at least two classmates' initial posts.

Learning or Study Skill Strategy Assignments including Growth Mindset and Metacognition

Learning or Study Skill Strategy Assignment #1

Students are asked to create a vocabulary study plan using the following guidelines: Your vocabulary study plan should be for a 4-5 day period (Monday through Thursday, Tuesday through Saturday). Think about what days are best for you. Please use complete sentences to describe what you plan to do each day. Be as detailed as

possible. The plan should be at most 1 page in length. Please use at least size 11 font. (I am old and have bad eyes) Consider the following as you make your plan:

1. What strategies have you used in the past to learn vocabulary? Did those strategies work well for you?
2. What strategy or strategies are you going to try this time?
3. How much time will you devote to studying vocabulary before the first test? Keep in mind that there's a lot of vocabulary in Module 1.
4. Make time in your study plan to complete the Practice Problems for MATH 0996 and Homework for MATH 1401

Learning or Study Skill Strategy Assignment #2

Students are asked to watch a short 2-minute video on Growth Mindset, and then create their own personal mantra using Padlet. This is the Padlet link for Spring 2021.

Learning or Study Skill Strategy Assignment #3

Students are asked to watch a short video on Note-Taking Strategies and Techniques. Examples of some of the techniques created Mrs. Ralston are provided: Guided Notes, Mind Maps-Graphic Organizer, Outlining, and Mind Maps-Flowcharts. A second video that discusses scientific study tips is included. Students are required to complete a midterm exam practice that is formatted with questions similar to those on the MATH 1401, Elementary Statistics, midterm exam.

Learning or Study Skill Strategy Assignment #4

focuses on reading comprehension skills as we begin the discussion of one of the main statistical concepts: Hypothesis Testing. Students are provided with a variety of strategies and asked to complete a Key Words Quiz. Students struggle with translating words to the appropriate mathematical symbols.

Learning or Study Skill Strategy Assignment #5

Students are provided with some advice and information from Dr. Saundra McGuire's Metacognition Presentation at Georgia Highlands College in Fall 2020 and from Dr. McGuire's books, "Teach Students How to Learn" and "Teach Yourself How to Learn." Students are asked to reflect on their experience in MATH 0996 by answering the following two questions:

1. Which of the students' actions have been YOUR actions throughout the semester---students who did not do well or students who made an A?
2. What learning or study skill strategy (discussed throughout this course) do you plan to use in other courses to help you be successful?

Time Management

Time Management Video and PowerPoint

Calculus 1

Calculus 1

Summary of available resources:

		textbook?	homework?	more?
Calculus 1	La Corte	✔	☐	✔
	Chapman and Royal	☐	✔	☐
	Pinzon and Roberts	☐	✔	✔
	Marion and Kunwar	☐	☐	✔

"Calculus I Workbook & Applets" (2021)

J. La Corte
it's lonesome not collaborating

(Georgia State University, Dunwoody Campus)

Type of resource:	Textbook (draft PDF); Applets; iCollege module
Scope of coverage:	Complete course
ALG repository:	Calculus I Workbook & Applets
Author(s) presentation:	ALG Featured Speaker Series, Nov. 2021

Course materials

Brightspace/iCollege Module

Links to applets I wrote appear in iCollege alongside links to applets hosted outside USG.

§2.1: Introduction to Calculus

Upload / Create   Existing Activities

Workbook Lesson 1: Introduction to Calculus
PDF document

Applet (Mathematica): Exhaustion of the unit circle
CDF File

Textbook Reading §2.1
Link

Applet (GeoGebra): The slope of a secant line
Link

Project narrative

Skills for exercises in problem areas

$f(x) = x^2 + 1$

$f(x)$

a x
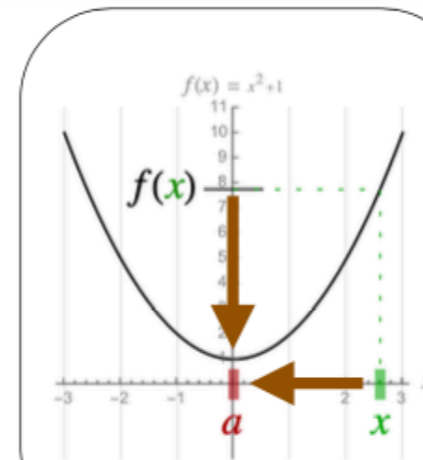
Part of my job as a teacher is to get my students to see the pictures I have in my head.

These pictures often have moving parts.

"WeBWorK Problems for OpenStax Calculus 1" (2019)

K. Chapman, J. Royal
(Georgia Gwinnett College)

Type of resource:	Online problem sets
Scope of coverage:	Complete course
ALG repository:	WeBWorK Problems for OpenStax Calculus 1
Format:	MS Word

All sections of Calculus I used the OpenStax-compatible WeBWorK sets in Fall 2019 and in Spring 2020.

Materials Description

We created a database of WeBWorK problems, sectioned to align with the OpenStax calculus 1 textbook.

Timeline   March 2019: Evaluate current Calculus I materials on Galileo to determine aspects most in need of editing or expanding to coincide with UGA intentions.
March-April 2019: Creation of draft of WebWork problem set structure for Calculus II OpenStax textbook using problems from UGA WebWork database and other WebWork databases as needed.
May 2019: Editing of WebWork databases for both courses to ensure consistency with both textbook and departmental goals. Post materials to the Galileo repository. Compile final report

Dr. Chapman will be responsible for creating databases, while Dr. Royal will be responsible for reviewing the materials and determining necessary adjustments. Dr. Chapman will also post materials after completion and write final reports, while Dr. Royal will ensure proper incorporation of the new materials into the pilot program.

"OpenStax Calculus I Ancillary Materials"

K. Pinzon, J. Roberts
(Georgia Gwinnett College)

Type of resource:	Edfinity homework (low cost); Guided notes
Scope of coverage:	Complete course
ALG repository:	OpenStax Calculus I Ancillary Materials
Format:	MS Word

Section 2.3: The Limit Laws

Evaluating Limits with the Limit Laws

In the previous section we estimated limits using a table and graph. In addition to estimating, we look at some properties of limits that will allow us to evaluate limits of many types of algebraic functions.

Basic Limits

For any real number a and any constant c,

$$\lim_{x \to a} x = a$$

$$\lim_{x \to a} c = c$$

Examples: Evaluate each of the following limits using the Basic Limits.

1) $\lim_{x \to 2} x$

2) $\lim_{x \to 2} 5$

We now look at the limit laws, the individual properties of limits, and practice using them.

Limit Laws

Let $f(x)$ and $g(x)$ be defined for all $x \neq a$ over some open interval containing a. Assume that L and M are real numbers such that

$$\lim_{x \to a} f(x) = L \text{ and } \lim_{x \to a} g(x) = M.$$

Let c be a constant. Then, the following statements hold:

Sum law for limits: $\lim_{x \to a}(f(x) + g(x)) = \lim_{x \to a} f(x) + \lim_{x \to a} g(x) = L + M$

Difference law for limits: $\lim_{x \to a}(f(x) - g(x)) = \lim_{x \to a} f(x) - \lim_{x \to a} g(x) = L - M$

Constant multiple law for limits: $\lim_{x \to a} c f(x) = c \cdot \lim_{x \to a} f(x) = cL$

Product law for limits: $\lim_{x \to a}(f(x) \cdot g(x)) = \lim_{x \to a} f(x) \cdot \lim_{x \to a} g(x) = L \cdot M$

Quotient law for limits: $\lim_{x \to a} \frac{f(x)}{g(x)} = \frac{\lim_{x \to a} f(x)}{\lim_{x \to a} g(x)} = \frac{L}{M}$ for $M \neq 0$

Power law for limits: $\lim_{x \to a}(f(x))^n = \left(\lim_{x \to a} f(x)\right)^n = L^n$ for every integer $n > 0$

Root law for limits: $\lim_{x \to a} \sqrt[n]{f(x)} = \sqrt[n]{\lim_{x \to a} f(x)} = \sqrt[n]{L}$ for all L if n is odd and for $L \geq 0$ if n is even and $f(x) \geq 0$

Media: Watch this video example on determining a limit analytically.

Media: Watch this video example on using the limit laws.

Examples

1) Use limit laws to evaluate each of the following. In each step, indicate the limit law applied.

   a. $\lim_{x \to -3}(4x + 2)$

   c. $\lim_{x \to 6}(2x - 1)\sqrt{x + 4}$

   b. $\lim_{x \to 2} \frac{2x^2 - 3x + 1}{x^3 + 4}$

2) For each of the following, assume that $\lim_{x \to 6} f(x) = 4$, $\lim_{x \to 6} g(x) = 9$, and $\lim_{x \to 6} h(x) = 6$. Use these three facts and the limit laws to evaluate each limit.

   a. $\lim_{x \to 6} \frac{g(x) - 1}{f(x)}$

   c. $\lim_{x \to 6}(f(x) \cdot g(x) - h(x))$

   b. $\lim_{x \to 6}[(x + 1) \cdot f(x)]$

"Calculus Ancillary Videos" (2020)

P. Marion, I. Kunwar
(Fort Valley State University)

Type of resource:	Videos
Scope of coverage:	Partial
ALG repository:	Calculus Ancillary Videos
Author(s) presentation:	ALG Featured Speaker Series, May 2021

Derivatives of Inverse Functions

https://www.youtube.com/watch?v=20SJE_rwaG0#action=share

Derivatives of Exponential Functions

https://youtu.be/tZc51GMOCOE

https://youtu.be/3YnwN1HeXIQ

https://youtu.be/LdcBo3hno6Q

Integration of Exponential Functions

https://youtu.be/NwP7Is0WlN0

Calculus 2 & 3

Calculus 2 & 3

Summary of available resources:

		textbook?	homework?	more?
Calculus 2 and 3	Tiemeyer and Schlieper	✔	✔	☐

"Armstrong Calculus"

M. Tiemeyer, J. Schlieper
(Georgia Southern University, Armstrong Campus)

Type of resource:	Textbook
Scope of coverage:	Complete course
Link to textbook:	Armstrong Calculus

Our goal was to adopt an open-source textbook and online homework system for calculus 1, 2, & 3 to bring down the cost of higher education while maintaining academic integrity and success in those courses. While we accomplished this goal by using Active Calculus and Apex Calculus as the text and using WebWorK for the homework system, we also decided to adapt the two referenced texts into our own open source textbook in the Calculus sequence. We have finished Calculus 1, and we are in the process of completing the chapters covered in Calculus 2, which will have the remaining chapters completed before fall semester begins in August 2015.

OpenALG — Affordable Learning Georgia

Home   Projects

Armstrong Calculus

A Remix of Active Calculus and APEX Calculus

by Michael Tiemeyer, Jared Schlieper

This text is an adaptation of two very excellent open-source textbooks: Active Calculus by Dr. Matt Boelkins and APEX Calculus by Drs. Gregory Hartman, Brian Heinold, Troy Siemers, Dimplekumar Chalishajar, and Jennifer Bowen. Topics include integrals, volume, arcs, density, physics applications, differential equations, and hyperbolic functions.

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START READING

→ GITHUB   ↓ EPUB VERSION   ↓ WORD VERSION   ↓ ACCESSIBLE PDF

Discrete Math

Discrete Math

Summary of available resources:

		textbook?	homework?	more?
Discrete Math	Jamaloodeen et al.	✔	✔	☐
	Levin	✔	✔	☐

"Discrete Math" (2019)

M. Jamaloodeen, K. Pinzon, D. Pragel, J. Roberts, S, Siva
(Georgia Gwinnett College)

Type of resource:	Textbook
Scope of coverage:	Complete course
ALG repository:	Discrete Math
Link to textbook:	Discrete Math (hosted on GitHub)

Project Goals

[...]

One drastic consideration that has been a reality at several institutions is that information technology (IT)/computer science (CS) programs are increasingly displeased with the discrete mathematics courses that math departments are servicing their majors with and have, in some cases, taken back these courses into their own departments in order to service their IT and CS majors better.

B) Encourage the wider use of free online textbooks within the GGC math program. Currently, the GGC math program subscribes to several very expensive commercial vendor textbooks and platforms, in their multiple section courses. A major project goal, then would be to use the success in transforming the textbook in a multiple section course like MATH 2300, discrete math, as a pilot to stimulate conversations about low/no cost options in multiple section math courses, such as MATH 2450 linear algebra, MATH 2220 multivariable calculus, and potentially even high student enrollment courses like MATH 1113 precalculus. Particularly in MATH 2300, students often do not buy the textbook or wait until very late in the semester to purchase. At times, they download pirated versions of the textbook. This is true in other courses as well.

"Discrete Math Edfinity Homework Course"

M. Jamaloodeen, K. Pinzon, D. Pragel, J. Roberts, S, Siva
(Georgia Gwinnett College)

Type of resource:	Edfinity homework for GGC's Discrete Math textbook
Scope of coverage:	Complete course
ALG repository:	Discrete Math
Link to textbook:	Discrete Math (hosted on GitHub)

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Discrete Math Edfinity Homework Course

Resource added March, 2021

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FULL DESCRIPTION

This is a low-cost online homework companion mapped to the OER Discrete Math textbook authored by faculty by Georgia Gwinnett College. It is comprised of algorithmic problems carefully organized into problem sets mapped to textbook sections. Edfinity is WeBWorK-compatible - existing WeBWorK courses can be automatically imported, and you can author new WeBWorK problems using the problem authoring tool.

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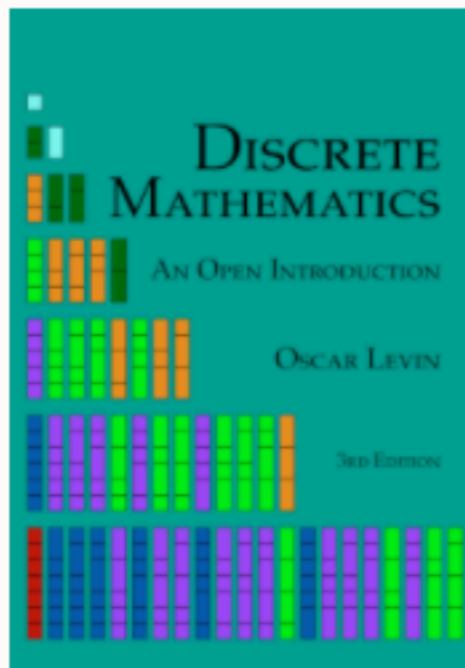MARCH 11, 2021

"Discrete Mathematics: An Open Introduction" (2020)

O. Levin
(University of Northern Colorado)

Type of resource:	Textbook; Edfinity/WeBWorK homework
Scope of coverage:	Complete course
ALG repository:	Discrete Math
Link to textbook:	Discrete Math (hosted on GitHub)

This is the new 3rd edition of the book. The previous version is available at the 2nd edition's site.

Discrete Mathematics: An Open Introduction is a free, open source textbook appropriate for a first or second year undergraduate course for math majors, especially those who will go on to teach. Since Spring 2013, the book has been used as the primary textbook or a supplemental resource at more than 75 colleges and universities around the world (see the partial adoptions list). The text is endorsed by the American Institute of Mathematics' Open Textbook Initiative and is well reviewed on the Open Textbook Library.

This 3rd edition brings many improvements, including nearly 100 new exercises, a new section on trees in the graph theory chapter, and improved exposition throughout. Previous editions will continue to be available indefinitely. A few times a year, the text is updated with a new "printing" to correct errors. See the errata list for more information.

New for Fall 2019: Online homework sets are available through Edfinity or as WeBWorK sets from the author. Additional exercises have been added since Spring 2020.

- Read online
- Download PDF
- Buy paperback

Linear Algebra, Differential Equations,

...

Summary of available resources:

- none on OpenALG

- no OpenStax textbook at this time

- others exist though

Peer-reviewed. Openly licensed. 100% free.

And backed by additional learning resources. Review our OpenStax textbooks and decide if they are right for your course. Simple to adopt, free to use. We make it easy to improve student access to higher education.
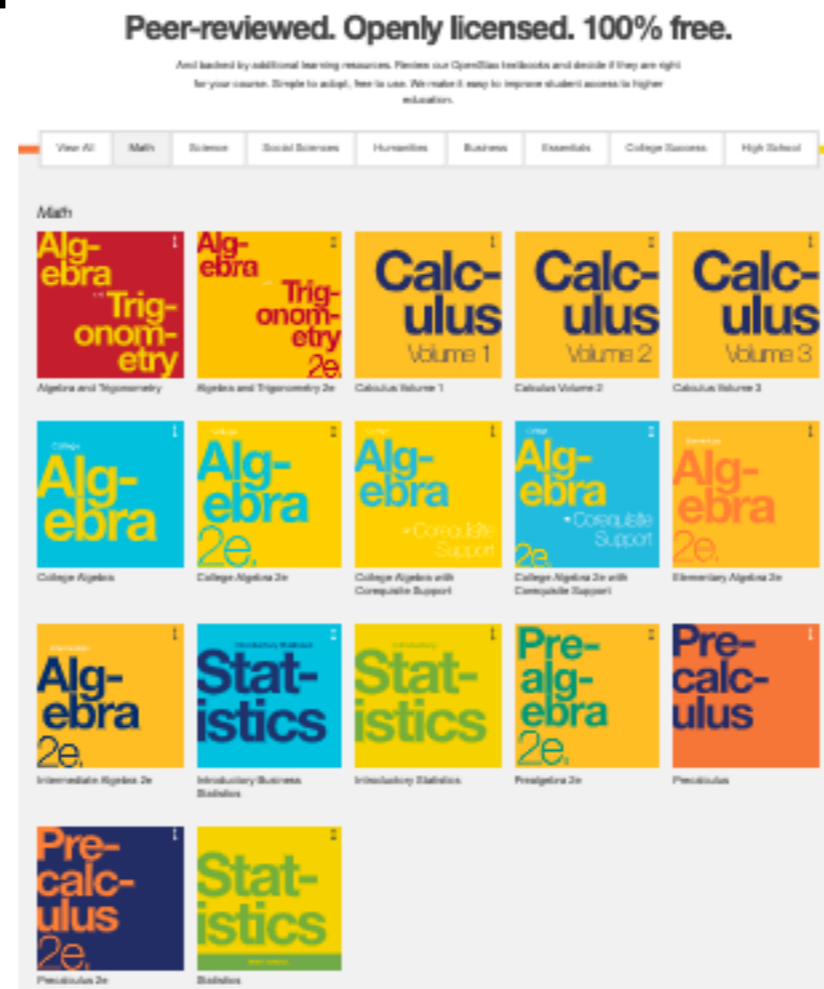
Math 1410
Elementary Linear Algebra

Spring 2020 Edition, University of Lethbridge
(This edition is essentially unchanged from the Spring 2018 edition.)

Editor: Sean Fitzpatrick

Department of Mathematics and Computer Science
University of Lethbridge

Contributing Textbooks

Precalculus
Version $\lfloor \pi \rfloor = 3$
Carl Stitz and Jeff Zeager
www.stitz-zeager.com

Fundamentals of Matrix Algebra
Third Edition, Version 3.1110
Gregory Hartman
www.vmi.edu

APEX Calculus
Version 3.0
Gregory Hartman et al
apexcalculus.com

Some links to free and open source textbooks outside of USG

Lists of links to free and open-source textbooks

Dana C. Ernst's list:

- Calculus, Diff Eq, Discrete Math, Intro Proof, Lin Alg, Combinatorics, Abstract Alg, Real An, Computational Math

American Institute of Mathematics's list:

Approved Textbooks

The list below groups open textbooks by course title. All the books have been judged to meet the evaluation criteria set by the AIM editorial board.

- ⌄ Liberal Arts Math

- ⌄ Elementary and Intermediate Algebra

- ⌄ College Algebra and Precalculus

- ⌄ Trigonometry

- ⌄ Calculus

- ⌄ Differential Equations

- ⌄ Linear Algebra

- ⌄ Introduction to Proofs

- ⌄ Discrete Math

- ⌄ Combinatorics

- ⌄ Computing and Numerical Analysis

- ⌄ Number Theory

- ⌄ Abstract Algebra

- ⌄ Real Analysis

- ⌄ Complex Analysis

- ⌄ Geometry and Topology

- ⌄ Probability

- ⌄ Statistics

- ⌄ Logic

American Institute of Mathematics's list

˄ Liberal Arts Math

Math in Society
David Lippman

Mathematical Discovery
Andrew M. Bruckner, Brian S.
Thomson, Judith B. Bruckner

˄ Elementary and Intermediate Algebra

ORCCA: Open Resources for Community College Algebra
Portland Community College

Elementary Algebra
Katherine Yoshiwara

Intermediate Algebra: Functions and Graphs
Katherine Yoshiwara

OpenStax Intermediate Algebra
Lynn Maracek, Senior
Contributing Author

˄ College Algebra and Precalculus

Modeling, Functions, and Graphs: Algebra for College Students
Katherine Yoshiwara

Precalculus
David H. Collingwood, K. David
Prince, Matthew M. Conroy

Precalculus / College Algebra / Trigonometry
Carl Stitz and Jeff Zeager

˄ Trigonometry

Trigonometry
Katherine Yoshiwara

College Trigonometry
Carl Stitz and Jeff Zeager

˄ Calculus

Calculus
David Guichard

Active Calculus
Matt Boelkins

APEX Calculus
Gregory Hartman, Brian Heinold,
Troy Siemers, Dimplekumar
Chalishajar

CLP Calculus
Joel Feldman, Andrew Rechnitzer,
Elyse Yeager

Calculus in Context
James Callahan, lead author

Calculus I, II, III
Jerrold E. Marsden and Alan
Weinstein

Calculus
Gilbert Strang

OpenStax Calculus
Gilbert Strang and Edwin
Herman, lead authors

Elementary Calculus
Vector Calculus
Michael Corral

American Institute of Mathematics's list

^ Probability

Introduction to Probability
Charles M. Grinstead and J. Laurie Snell

Probability: Lectures and Labs
Mark Huber

^ Statistics

OpenIntro Statistics
David M. Diez, Christopher D. Barr, Mine Çetinkaya-Rundel

Introduction to Modern Statistics
Mine Çetinkaya-Rundel and Johanna Hardin

Introductory Statistics for the Life and Biomedical Sciences
Julie Vu and David Harrington

SticiGui
Philip Stark

Online Statistics Education
David Lane, lead author

^ Differential Equations

Notes on Diffy Qs
Jiří Lebl

Elementary Differential Equations (with Boundary Value Problems)
William F. Trench

^ Linear Algebra

A First Course in Linear Algebra
Rob Beezer

Introduction to Applied Linear Algebra
Stephen Boyd and Lieven Vandenberghe

Linear Algebra
Jim Hefferon

Linear Algebra Done Wrong
Sergei Treil

^ Discrete Math

Applied Discrete Structures
Alan Doerr and Kenneth Levasseur

Discrete Mathematics: An Open Introduction
Oscar Levin

Discrete Mathematics: First and Second Course
Edward A. Bender and S. Gill Williamson