

Zero Textbook Cost (ZTC) Acceleration Grant Collaboration Cohort Math Final Report

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INTRODUCTION

The Math Collaboration Cohort consisted of eighteen colleges. Fifteen are working on Math Associate of Science for Transfer (AS-T) degrees, two are working on Physics AS-Ts and one is working on an Economics Associate Degree for Transfer (AA-T). The Physics Transfer Model Curriculum (TMC) requires the same calculus courses as the MATH TMC. The Economics TMC requires one calculus course and one statistics course, with additional calculus courses included as options. Given the challenge that the need for a homework system may create when transitioning math courses to Zero Textbook Cost (ZTC) status, it is not surprising that some non-math pathways would need to focus on math courses.

The ASCCC OERI collected course level data for each of the pathways including current ZTC status, adopted resources, and plans to convert a course to ZTC to identify overlap and areas of potential collaboration. As most of the participating colleges are working on establishing a Math AS-T ZTC pathways, the courses were grouped using the Math Transfer Model Curriculum (TMC) to identify commonalities.

COLLABORATION COHORT PURPOSE

The Academic Senate for California Community Colleges (ASCCC) Open Educational Resources Initiative (OERI) facilitated the work of the ZTC Acceleration Grant Math Collaboration Cohort. Although this process was introduced to prevent the duplication of effort, it also provides a means to ensure the awareness of available OER and other sustainable means of achieving ZTC status, share OER development plans, and identify opportunities for collaboration across colleges. At the conclusion of the cohort process, the OERI will provide a report to the California Community Colleges Chancellor's Office (CCCCO) that will document the work of the cohort, verify the absence of duplicative plans, and/or delineate how duplication will be prevented or minimized.

MATH COLLABORATION COHORT – MEMBER COLLEGES AND ZTC PATHWAYS

The following colleges participated in the Mathematics Collaboration Cohort and unless otherwise stated are converting the Mathematics Associate of Science Degree for Transfer (AS-T) Zero Textbook Cost (ZTC) pathway:

- Cañada College
- City College San Francisco (CCSF)
- Coastline College
- College of Alameda (CoA)
- Compton College
- Cosumnes River College (CRC)
- Cuyamaca College
- De Anza College
- Diablo Valley College (DVC) – Economics AA-T
- Los Angeles Mission College (LAMC) – Physics AS-T
- Merritt College
- Mt San Jacinto College (MSJC)
- Napa Valley College (Napa) – Physics AS-T
- Ohlone College

- Santa Ana College (SAC)
- Southwestern College (SWC)
- Sierra College
- West Valley College (WVC)

STATUS OF COURSES SPECIFIED IN THE MATH TRANSFER MODEL CURRICULUM AT COHORT COLLEGES

The status and plans for the required Math AS-T courses are listed below. Any course that was not identified as part of the pathway for the cohort colleges has been excluded. And any college that did not identify a course as part of its pathway for a given course has been excluded from that course's data.

REQUIRED CORE

Single Variable Calculus Sequence – Early Transcendentals (C-ID MATH 900S or C-ID MATH 210 and 220) or Late Transcendentals (C-ID MATH 900S or C-ID MATH 211 and 221)

Many participants indicated the desire to adopt or create homework through MyOpenMath for the calculus sequence. In addition to the plans listed below, the cohort will create a shared homework library in MyOpenMath that participants can add to and pull content from.

- ZTC - Cañada (Creating competency- and equity-based grading and assessments in Canvas sandboxes for easy import by faculty.), CRC (Enhancing homework in MyOpenMath and adding remediation videos to remixed version of [Math 400: Calc I - Differential Calc.](#)), Cuyamaca (Created [Interactive Calculus I on Canvas](#) which embeds MyOpenMath into Canvas.), LAMC, MSJC, Ohlone, SAC, WVC
- Adapting [OpenStax Calc Volume 1 \(CC BY-NC-SA\)](#) and [OpenStax Calculus Volume 2 \(CC BY-NC-SA\)](#) – CCSF, Coastline, Compton (And adapting existing MyOpenMath problems), Sierra (Creating homework in MyOpenMath.), SWC (Creating homework in MyOpenMath.)
- Adapting [MAT 105 Interactive Calculus Q1](#), [MAT 106 Interactive Calculus Q2](#), and [MAT 107 Interactive Calculus Q3](#) – De Anza

Multivariable Calculus (C-ID MATH 230)

Many participants indicated the desire to adopt or create homework through MyOpenMath for this course. In addition to the plans listed below, the cohort will create a shared homework library in MyOpenMath that participants can add to and pull content from.

- ZTC - Cañada (Creating competency- and equity-based grading and assessments in Canvas sandboxes for easy import by faculty.), CRC [Some sections using library resources and one has adopted [OpenStax Calculus Volume 3 \(CC BY-NC-SA\)](#)], LAMC, Merritt, Ohlone, WVC
- Adopting [OpenStax Calculus Volume 3 \(CC BY-NC-SA\)](#) and existing MyOpenMath problems – Compton

- Adopting or adapting [OpenStax Calculus Volume 3 \(CC BY-NC-SA\)](#) and creating MyOpenMath homework. - SWC
- Adapting [OpenStax Calculus Volume 3 \(CC BY-NC-SA\)](#) – Coastline, Sierra (Creating MyOpenMath homework.)
- Adapting [MAT 107 Interactive Calculus Q3](#) and [MAT 202 Interactive Calculus Q4](#) – De Anza
- Adapting existing unspecified OER - CCSF
- Plan pending – CoA, DVC, Napa, SAC
- Creating new OER – Cuyamaca (*Interactive Calculus III on Canvas*. The textbook will embed MyOpenMath within Canvas.), MSJC

LIST A

Ordinary Differential Equations (C-ID MATH 240)

Many participants indicated the desire to adopt or create homework through MyOpenMath for this course. In addition to the plans listed below, the cohort will create a shared homework library in MyOpenMath that participants can add to and pull content from.

- ZTC - Cañada (Creating competency- and equity-based grading and assessments in Canvas sandboxes for easy import by faculty.), CRC (Adapting remixed version of [Math 420: Differential Equations](#) with remediation videos and creating more homework questions in MyOpenMath.), Merritt, Ohlone (Adopting MyOpenMath or written homework.), SWC
- Adapting [MAT-204: Differential Equations for Science \(Lebl and Trench\)](#) – De Anza
- Adapting [Elementary Differential Equations with Boundary Value Problems by William F. Trench](#), as well as [Differential Equations for Engineers by Lebl](#) and [Differential Equations for Science \(Lebl/Trench\)](#). Adopting and creating new material in MyOpenMath. – MSJC
- Adopting existing unspecified OER and MyOpenMath - WVC
- Looking to adopt available OER or project done by the cohort – CCSF
- Creating *Differential Equations on Canvas*. The textbook will embed MyOpenMath within Canvas – Cuyamaca
- Plan pending – Coastline, CoA, LAMC, Napa

Introduction to Linear Algebra (C-ID MATH 250)

Many participants indicated the desire to adopt or create homework through MyOpenMath for this course. In addition to the plans listed below, the cohort will create a shared homework library in MyOpenMath that participants can add to and pull content from.

- ZTC - Cañada (Creating competency- and equity-based grading and assessments in Canvas sandboxes for easy import by faculty.), CRC (May adapt existing OER or create homework.), Merritt, Ohlone, WVC
- Adopting [Linear Algebra MAT223 Workbook \(Siefken\)](#) – Cuyamaca

- Adapting [A First Course in Linear Algebra \(Kuttler\)](#) – De Anza
- Developing a course using [Linear Algebra: An Interactive Introduction](#) with auto-graded problems in [MyOpenMath](#), instructor graded proof-based problems, and content designed to be used with [GNU Octave](#). - MSJC
- Plan pending – Coastline, CoA, Cuyamaca, DVC, LAMC, Napa, SWC

Differential Equations and Linear Algebra (C-ID MATH 910S)

- Adopting existing unspecified OER and MyOpenMath problems. - Compton
- Adapting existing unspecified OER and will consider the collaborative project. – CCSF
- Remixing [Linear Algebra - Mathematics LibreTexts](#) and [Differential Equations - Mathematics LibreTexts](#) to create a custom text – Sierra
- Remixing [Linear Algebra - Mathematics LibreTexts](#) and [Differential Equations - Mathematics LibreTexts](#) to create a custom text – SAC

LIST B COURSES

Discrete Math (C-ID MATH 160)

- ZTC - CCSF
- Adopting [Discrete Mathematics \(Levin\) – LibreTexts \(CC BY-NC-SA 3.0\)](#) and the accompanying MyOpenMath course - Compton
- Plan pending - WVC

Calculus-Based Physics for Scientists and Engineers (PHYS 205)

- ZTC – Merritt, MSJC
- Adopting [University Physics Volume 1 \(OpenStax, 2020\) \(CC BY 4.0\)](#) - WVC
- OER to be adopted not yet determined – Ohlone, SAC
- No information provided – CCSF, SWC

Computer Programming

- OER to be adopted not yet determined – SAC, SWC
- No information provided – CCSF

Introduction to Statistics (C-ID MATH 110)

- ZTC - CCSF
- Compton – Adopting [Introductory Statistics 2e \(OpenStax\)](#) and existing MyOpenMath problems.
- De Anza College – Adapted [Introductory Statistics \(OpenStax\)](#) and [Inferential Statistics and Probability – A Holistic Approach](#)
- SWC – ZTC
- WVC – [Adapting Introductory Statistics 2e \(OpenStax\)](#)

CONCLUSIONS

The Math Collaboration Cohort convened synchronously via Zoom on April 1, 2024. The ASCCC OERI presented the cohort with the results of the data collection process and asked for clarity where data were missing. In addition, the ASCCC OERI presented available OER for the cohort's consideration. Two follow up meetings to discuss potential collaborative opportunities were held on April 30 and September 16, 2024.

The cohort is creating a shared MyOpenMath library for the following courses:

- Single Variable Calculus Sequence – Early Transcendentals (C-ID MATH 900S or C-ID MATH 210 and 220) or Late Transcendentals (C-ID MATH 900S or C-ID MATH 211 and 221)
- Ordinary Differential Equations (C-ID MATH 240)
- Introduction to Linear Algebra (C-ID MATH 250)

This shared library will allow the colleges to build off the work of each other in real-time and prevent duplication of efforts.

The ASCCC OERI recommends that any college with “plan pending” listed in the sections above review the cohort plans and consider adoption before OER creation. There is no evidence for duplication of efforts amongst the currently proposed plans.

APPENDIX 1 – THE MATH TRANSFER MODEL CURRICULUM

Required Core	C-ID (if applicable)
Single Variable Calculus Sequence and Multivariable Calculus or Single Variable Calculus I – Early Transcendentals and Single Variable Calculus II – Early Transcendentals and Multivariable Calculus or Single Variable Calculus I – Late Transcendentals and Single Variable Calculus II – Late Transcendentals and Multivariable Calculus	MATH 900S and MATH 230 MATH 210, MATH 220, and MATH 230 MATH 211, MATH 221, and MATH 230
List A – One Course	
Ordinary Differential Equations	MATH 240
Introduction to Linear Algebra	MATH 250
Differential Equations and Linear Algebra	MATH 910S
List B – Select additional courses/units so that List A and List B courses total a minimum of 6 units	
Discrete Math	MATH 160
Calculus-Based Physics for Scientists and Engineers: A (Any course articulated as preparation for the physics major at a CSU)	PHYS 205
Mathematical Computing Systems	
Computer Programming: <i>Any programming course that is articulated preparation for the math major at a CSU.</i>	
Proof	
Introduction to Statistics	MATH 110

APPENDIX 2 – RESOURCES IN USE OR IDENTIFIED BY MATH COLLABORATION COHORT COLLEGES

Resource	Course(s)	College(s)
MyOpenMath Homework	All math courses	Ohlone, Cañada, Coastline, De Anza, MSJC
Interactive Calculus I on Canvas	C-ID MATH 210 Single Variable Calculus I Early Transcendentals	Cuyamaca
Math 400: Calculus I - Differential Calculus (local remix)	C-ID MATH 210 Single Variable Calculus I Early Transcendentals	Cosumnes River
OpenStax Calc Volume 1 (CC BY-NC-SA)	C-ID MATH 210 Single Variable Calculus I Early Transcendentals	Ohlone, West Valley, Sierra, Cañada, Coastline, Cosumnes River, De Anza
MAT 105 Interactive Calculus Q1	C-ID MATH 210 Single Variable Calculus I Early Transcendentals; C-ID MATH 220 Single Variable Calculus II Early Transcendentals	De Anza (adapting)
Interactive Calculus II on Canvas	C-ID MATH 220 Single Variable Calculus II Early Transcendentals	Cuyamaca
Math 401: Calculus II - Integral Calculus (local remix)	C-ID MATH 220 Single Variable Calculus II Early Transcendentals	Cosumnes River
OpenStax Calculus Volume 2 (CC BY-NC-SA)	C-ID MATH 220 Single Variable Calculus II Early Transcendentals	Ohlone, West Valley, Sierra, Cañada, Coastline, Cosumnes River, De Anza
MAT 106 Interactive Calculus Q2	C-ID MATH 220 Single Variable Calculus II Early Transcendentals; C-ID MATH 230 Multivariable Calculus	De Anza (adapting)
MAT 107 Interactive Calculus Q3	C-ID MATH 230 Multivariable Calculus	De Anza (adapting)
MAT 202 Interactive Calculus Q4	C-ID MATH 230 Multivariable Calculus	De Anza (adapting)

Resource	Course(s)	College(s)
OpenStax Calculus Volume 3 (CC BY-NC-SA)	C-ID MATH 230 Multivariable Calculus	Ohlone, West Valley, Sierra, Cañada, Coastline, Cosumnes River, De Anza, MSJC
“Differential Equations” – Pauls Online Math Notes (license not clear)	C-ID MATH 240 Ordinary Differential Equations	Southwestern
Differential Equations for Engineers by Lebl (CC BY-SA 4.0)	C-ID MATH 240 Ordinary Differential Equations	MSJC (adapting)
Differential Equations for Science (Lebl/Trench)	C-ID MATH 240 Ordinary Differential Equations	De Anza (adapting) Southwestern, MSJC (adapting)
Math 420: Differential Equations (CC BY-NC-SA)	C-ID MATH 240 Ordinary Differential Equations	Cosumnes River
Elementary Differential Equations with Boundary Value Problems by William F. Trench (CC BY-NC-SA)	C-ID MATH 240 Ordinary Differential Equations; C-ID MATH 910S Differential Equations and Linear Algebra	Cañada (adapting), Compton, Ohlone, MSJC (adapting), De Anza
Interactive Linear Algebra by Dan Margalit and Joseph Rabinoff, Georgia Tech Press	C-ID MATH 250 Introduction to Linear Algebra	Cañada (adapting)
Linear Algebra: An Interactive Introduction (Davis, Zachlin) (CC-BY-SA 4.0)	C-ID MATH 250 Introduction to Linear Algebra	MSJC
Linear Algebra MAT223 Workbook (Siefken)	C-ID MATH 250 Introduction to Linear Algebra	Cuyamaca
A First Course in Linear Algebra (Kuttler) (CC BY)	C-ID MATH 250 Introduction to Linear Algebra; C-ID MATH 910S Differential Equations and Linear Algebra	Compton; De Anza (adapting) Ohlone, West Valley
Active Calculus Matthew Boelkins	C-ID MATH 900S Single Variable Calculus Sequence	Cañada
Contemporary Calculus (Hoffman)	C-ID MATH 900S Single Variable Calculus Sequence	Cañada

APPENDIX 3 – AVAILABLE OER FOR COURSES SPECIFIED IN THE MATH TRANSFER MODEL CURRICULUM (TMC) – REQUIRED CORE AND LIST A

The following list provides examples of existing Open Educational Resources (OER) that can be used for the indicated courses. The structure presented here aligns with the [Math TMC](#). Access the complete curated collections of resources for Math at [Open Educational Resources and Math](#) and [OER and the Math TMC](#).

Note – Available homework options can be found at at [Open Educational Resources and Math](#) and [OER and the Math TMC](#).

Required Core Courses

Single Variable Calculus Sequence (MATH 900S) or Single Variable Calculus I – Early Transcendentals (MATH 210) and Single Variable Calculus II – Early Transcendentals (MATH 220) or Single Variable Calculus I – Late Transcendentals (MATH 211) and Single Variable Calculus II – Late Transcendentals and (MATH 221)

- [Contemporary Calculus I \(Hoffman\) \(CC BY\)](#)
- [Community Calculus \(Guichard\) \(CC BY-NC-SA\)](#)
- [APEX Calculus 1 \(Hartman\);](#)
- [Calculus Vol 1 \(Strang, Herman\) – OpenStax](#)

And Multivariable Calculus (MATH 230)

- [Active Calculus \(Boelkins et al., 2017\)](#)
- [Calculus Volume 3 \(Strang and Herman, 2022\) – OpenStax \(CC BY-NC-SA\)](#)

List A – One Course

Ordinary Differential Equations ([MATH 240](#))

- [The Ordinary Differential Equations Project \(CC-BY-NC-SA\)](#)
- [Ordinary Differential Equations \(Wiggins\)](#)
- [Book: Differential Equations for Science \(Lebl and Trench, 2022\) – LibreTexts \(CC BY\)](#)

Introduction to Linear Algebra ([MATH 250](#))

- [Linear Algebra \(Heffron\) \(CC BY-SA 2.5\)](#)
- [Linear Algebra Bookshelf \(LibreTexts\) \(CC BY-NC-SA 3.0\)](#)
- [A First Course in Linear Algebra \(Kuttler, 2022\) – LibreTexts \(CC BY\)](#)

Differential Equations and Linear Algebra ([MATH 910S](#))

- Can use the books from both courses above (Differential Equations and Linear Algebra)

APPENDIX 4 – AVAILABLE OER FOR COURSES SPECIFIED IN THE MATH TRANSFER MODEL CURRICULUM (TMC) – LIST B

List B – Select additional courses/units so that List A and List B courses total a minimum of 6 units

Discrete Math ([MATH 160](#))

- [Mathematics for Computer Science \(Lehman, Thomson Leighton, and Meyer, 2015\) \(CC BY-SA\)](#)
- [A Spiral Workbook for Discrete Mathematics \(CC BY-NC-SA\)](#)
- [Discrete Mathematics \(Levin\) – LibreTexts \(CC BY-NC-SA 3.0\)](#)
- [Mathematical Reasoning and Proof \(Sundstrom\) \(CC-BY-NC-SA\)](#)
- [Introduction to Proofs, an Inquiry-Based approach \(Heffron\) \(CC-GNU\)](#)

Calculus-Based Physics for Scientists and Engineers ([PHYS 205](#))

See [Open Educational Resources and Physics](#) for a complete list of available resources.

- [Classical Mechanics \(Tom Weideman\) – LibreTexts \(CC BY-SA\)](#)
- [University Physics Volume 1 \(OpenStax, 2020\) \(CC BY 4.0\)](#)
- [Classical Mechanics with Numerical Methods \(Budarz\)](#)
- [University Physics I – Classical Mechanics \(Gea-Banacloche\) \(CC BY-SA 4.0\)](#)

Mathematical Computing Systems

Resources TBD.

Computer Programming

Any programming course that is articulated preparation for the math major at a CSU. See [Open Educational Resources and Computer Science](#) and [Open Educational Resources and ITIS \(Information Technology and Information Systems\)](#) for potential resource options.

Proof

Resources TBD.

Introduction to Statistics ([MATH 110](#))

- [OpenIntro Statistics \(Diez, Barr, and Cetinkaya-Rundel\) \(CC BY-SA\)](#)
- [Introductory Statistics \(OpenStax\) – LibreTexts \(CC BY 4.0\)](#)
- [Foundations in Statistical Reasoning \(Kaslik\) – LibreTexts \(CC BY-SA-NC\)](#)

APPENDIX 5 – ANTICIPATED NEW OPEN EDUCATIONAL RESOURCES

Course(s)	Project	College(s)
Single Variable Calculus Sequence – Early Transcendentals (C-ID MATH 900S or C-ID MATH 210 and 220)	Enhancing homework in MyOpenMath and adding remediation videos to remixed version of Math 400: Calc I - Differential Calc	Cosumnes River
Single Variable Calculus Sequence – Early Transcendentals (C-ID MATH 900S or C-ID MATH 210 and 220)	Created Interactive Calculus I on Canvas and Interactive Calculus II on Canvas which embeds MyOpenMath into Canvas.	Cuyamaca
Single Variable Calculus Sequence – Early Transcendentals (C-ID MATH 900S or C-ID MATH 210 and 220)	Adapting MAT 105 Interactive Calculus Q1 , MAT 106 Interactive Calculus Q2 , and MAT 107 Interactive Calculus Q3	De Anza
Single Variable Calculus Sequence – Late Transcendentals (C-ID MATH 900S or C-ID MATH 211 and 221)	Adapting OpenStax Calc Volume 1 (CC BY-NC-SA) and OpenStax Calculus Volume 2 (CC BY-NC-SA) to include content for Late Transcendentals. Creating homework in MyOpenMath.	Southwestern
Multivariable Calculus (C-ID MATH 230)	Creating new OER: Interactive Calculus III on Canvas. The textbook will embed MyOpenMath within Canvas.	Cuyamaca
Multivariable Calculus (C-ID MATH 230)	Adapting MAT 107 Interactive Calculus Q3 and MAT 202 Interactive Calculus Q4	De Anza
Ordinary Differential Equations (C-ID MATH 240)	Adapting remixed version of Math 420: Differential Equations with remediation videos and creating more homework questions in MyOpenMath.	Cosumnes River
Ordinary Differential Equations (C-ID MATH 240)	Creating new OER: Interactive Differential Equations on Canvas. The textbook will embed MyOpenMath within Canvas.	Cuyamaca
Ordinary Differential Equations (C-ID MATH 240)	Adapting Elementary Differential Equations with Boundary Value Problems by William F. Trench , as well as Differential Equations for Engineers by Lebl and Differential Equations for Science (Lebl/Trench) . Adopting and creating new material in MyOpenMath.	Mt. San Jacinto
Introduction to Linear Algebra (C-ID MATH 250)	Developing a course using Linear Algebra: An Interactive Introduction with autograded problems in MyOpenMath , instructor graded proof-based problems, and content designed to be used with GNU Octave .	Mt. San Jacinto

Course(s)	Project	College(s)
Differential Equations and Linear Algebra (C-ID MATH 910S)	Remixing Linear Algebra - Mathematics LibreTexts and Differential Equations - Mathematics LibreTexts to create a custom text	Sierra

APPENDIX 6 – ZTC ACCELERATION GRANT MATH COLLABORATION COHORT MEMO



ACADEMIC SENATE
for California Community Colleges
LEADERSHIP • EMPOWERMENT • VOICE

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SUBJECT: Math ZTC Acceleration Grant Collaboration Cohorts
ASCCC OERI FACILITATOR: Shagun Kaur, ASCCC OERI Project Facilitator

Cohort Participants and Data Collection

The following colleges participated in the Mathematics Collaboration Cohort and unless otherwise stated are converting the Mathematics Associate of Science Degree for Transfer (AS-T) Zero Textbook Cost (ZTC) pathway:

- Cañada College
- City College San Francisco (CCSF)
- Coastline College
- College of Alameda (CoA)
- Compton College – previously awarded
- Cosumnes River College (CRC)
- Cuyamaca College – previously awarded
- De Anza College – previously awarded
- Diablo Valley College (DVC) – Economics AA-T
- Los Angeles Mission College (LAMC) – Physics AS-T
- Merritt College – previously awarded
- Mt San Jacinto College (MSJC)
- Napa Valley College (NVC) – Physics AS-T
- Ohlone College
- Santa Ana College (SAC)
- Southwestern College (SWC)
- Sierra College
- West Valley College (WVC) – previously awarded

The ASCCC OERI collected course level data for each of the pathways including Zero Textbook Cost (ZTC) status, adopted resources, and plans to convert a course to ZTC to identify overlap and areas of potential collaboration. Since the majority of colleges are converting the Math AS-T, the courses were grouped using the Math Transfer Model Curriculum (TMC).

Cohort Convening

The Math Collaboration Cohort convened synchronously via Zoom on April 1, 2024. The ASCCC OERI presented the cohort with the results of the data collection process and asked

for clarity where data were missing. In addition, the ASCCC OERI presented available OER for the cohort's consideration. Two follow up meetings to discuss potential collaborative opportunities were held on April 30 and September 16, 2024.

Findings

The status and plans for the required Math AS-T courses are listed below.

Required Core

Single Variable Calculus Sequence – Early Transcendentals (C-ID MATH 900S or C-ID MATH 210 and 220)

Many participants indicated the desire to adopt or create homework through MyOpenMath for the Calculus Sequence. In addition to plans listed below, the cohort will create a shared homework library in MyOpenMath that participants can add to and pull content from.

- Cañada – ZTC. Creating competency- and equity-based grading and assessments in Canvas sandboxes for easy import by faculty.
- CCSF – Adapting [OpenStax Calc Volume 1 \(CC BY-NC-SA\)](#) and [OpenStax Calculus Volume 2 \(CC BY-NC-SA\)](#)
- Coastline - Adapting [OpenStax Calc Volume 1 \(CC BY-NC-SA\)](#) and [OpenStax Calculus Volume 2 \(CC BY-NC-SA\)](#)
- CoA – Plan pending
- Compton – Adopting [OpenStax Calc Volume 1 \(CC BY-NC-SA\)](#), [OpenStax Calculus Volume 2 \(CC BY-NC-SA\)](#), and existing MyOpenMath problems
- CRC – ZTC. Enhancing homework in MyOpenMath and adding remediation videos to remixed version of [Math 400: Calc I - Differential Calc.](#)
- Cuyamaca – ZTC. Created [Interactive Calculus I on Canvas](#) which embeds MyOpenMath into Canvas.
- De Anza – Adapting [MAT 105 Interactive Calculus Q1](#), [MAT 106 Interactive Calculus Q2](#), and [MAT 107 Interactive Calculus Q3](#)
- DVC – Not part of pathway
- LAMC - ZTC
- Merritt – ZTC
- MSJC – ZTC
- NVC – Plan pending
- Ohlone - ZTC
- SAC - ZTC
- Sierra - Adapting [OpenStax Calc Volume 1 \(CC BY-NC-SA\)](#) and [OpenStax Calculus Volume 2 \(CC BY-NC-SA\)](#). Creating homework in MyOpenMath.
- WVC - ZTC

Single Variable Calculus Sequence – Late Transcendentals (C-ID MATH 900S or C-ID MATH 211 and 221)

- SWC - Adapting [OpenStax Calc Volume 1 \(CC BY-NC-SA\)](#) and [OpenStax Calculus Volume 2 \(CC BY-NC-SA\)](#). Creating homework in MyOpenMath.

Multivariable Calculus (C-ID MATH 230)

Many participants indicated the desire to adopt or create homework through MyOpenMath for Multivariable Calculus. In addition to plans listed below, the cohort will create a shared homework library in MyOpenMath that participants can add to and pull content from.

- Cañada – ZTC. Creating competency- and equity-based grading and assessments in Canvas sandboxes for easy import by faculty.
- CCSF – Adapting existing OER
- Coastline – Adapting [OpenStax Calculus Volume 3 \(CC BY-NC-SA\)](#)
- CoA – Plan pending
- Compton – Adopting [OpenStax Calculus Volume 3 \(CC BY-NC-SA\)](#) and existing MyOpenMath problems
- CRC – ZTC. Some sections using library resources and one has adopted [OpenStax Calculus Volume 3 \(CC BY-NC-SA\)](#).
- Cuyamaca – Creating new OER: *Interactive Calculus III on Canvas*. The textbook will embed MyOpenMath within Canvas.
- De Anza – Adapting [MAT 107 Interactive Calculus Q3](#) and [MAT 202 Interactive Calculus Q4](#).
- DVC – Plan pending
- LAMC – ZTC
- Merritt – ZTC
- MSJC – Creating new OER
- NVC – Plan pending
- Ohlone – ZTC
- SAC – Plan pending
- Sierra – Adapting [OpenStax Calculus Volume 3 \(CC BY-NC-SA\)](#) and creating MyOpenMath homework.
- SWC – Adopting or adapting [OpenStax Calculus Volume 3 \(CC BY-NC-SA\)](#) and creating MyOpenMath homework.
- WVC – ZTC

List A

Ordinary Differential Equations (C-ID MATH 240)

Many participants indicated the desire to adopt or create homework through MyOpenMath for Ordinary Differential Equations. In addition to plans listed below, the cohort will create a shared homework library in MyOpenMath that participants can add to and pull content from.

- Cañada – ZTC. Creating competency- and equity-based grading and assessments in Canvas sandboxes for easy import by faculty.
- CCSF – Looking to adopt available OER or project done by the cohort
- Coastline – Plan pending
- CoA – Plan pending
- CRC – ZTC. Adapting remixed version of [Math 420: Differential Equations](#) with remediation videos and creating more homework questions in MyOpenMath.
- Cuyamaca – Plan pending
- De Anza – Adapting [MAT-204: Differential Equations for Science \(Lebl and Trench\)](#)
- LAMC – Plan pending
- Merritt – ZTC
- MSJC – Adapting [Elementary Differential Equations with Boundary Value Problems by William F. Trench](#), as well as [Differential Equations for Engineers by Lebl](#) and [Differential Equations for Science \(Lebl/Trench\)](#). Adopting and creating new material in MyOpenMath.
- NVC – Plan pending
- Ohlone – ZTC. Adopting MyOpenMath or written homework.
- SWC – ZTC
- WVC – Adopting existing OER and MyOpenMath

Introduction to Linear Algebra (C-ID MATH 250)

Many participants indicated the desire to adopt or create homework through MyOpenMath for Introduction to Linear Algebra. In addition to plans listed below, the cohort will create a shared homework library in MyOpenMath that participants can add to and pull content from.

- Cañada – ZTC. Creating competency- and equity-based grading and assessments in Canvas sandboxes for easy import by faculty.
- Coastline – Plan pending
- CoA – Plan pending
- CRC – ZTC. May adapt existing OER or create homework.
- Cuyamaca – Plan pending
- De Anza – Adapting [A First Course in Linear Algebra \(Kuttler\)](#)
- DVC – Plan pending
- LAMC – Plan pending
- Merritt – ZTC
- MSJC – Developing a course using [Linear Algebra: An Interactive Introduction](#) with autograded problems in [MyOpenMath](#), instructor graded proof-based problems, and content designed to be used with [GNU Octave](#).
- NVC – Plan pending
- Ohlone – ZTC
- SWC – Plan pending

- WVC – ZTC

Differential Equations and Linear Algebra (C-ID MATH 910S)

Only colleges that indicated this course is part of their ZTC pathway are included below.

- CCSF – Adopting existing OER and will consider the collaborative project.
- Compton - Adopting existing open text and MyOpenMath problems.
- SAC – Plan pending
- Sierra – Remixing [Linear Algebra - Mathematics LibreTexts](#) and [Differential Equations - Mathematics LibreTexts](#) to create a custom text

List B Courses aligned with a C-ID Descriptor

Only colleges that indicated a specific course is part of their ZTC pathway are included in the section below.

Discrete Math (C-ID MATH 160)

- CCSF – ZTC
- Compton – Exploring OER for adoption and MyOpenMath.
- WVC – Plan pending

Introduction to Statistics (C-ID MATH 110)

- CCSF – ZTC
- Compton – Adopting [Introductory Statistics 2e \(OpenStax\)](#) and existing MyOpenMath problems.
- De Anza College – Adapted [Introductory Statistics \(OpenStax\)](#) and [Inferential Statistics and Probability – A Holistic Approach](#)
- SWC – ZTC
- WVC – [Adapting Introductory Statistics 2e \(OpenStax\)](#)

Conclusions

The cohort is creating a shared MyOpenMath library for the most commonly enrolled courses so colleges can build off the work of each other in real-time and prevent duplication of efforts.

The ASCCC OERI recommends that any college with “plan pending” listed in the sections above review the cohort plans and consider adoption before OER creation. There is no evidence for duplication of efforts amongst the currently proposed plans.