



MATH-081: SUPPORT FOR IDEAS OF MATHEMATICS

Effective Term

Fall 2026

BOT Approval Date

05/15/2025

Discipline

MATH - Mathematics

Course Number

081

Course Title

Support for Ideas of Mathematics

Short Title

Support - Ideas of Math

Credit Status (CB 04)

D - Credit - Degree applicable

Units**Lab Units**

1.00

Total Units

1.00

Hours**Lab Contact Hours**

48-54

Out of Class Hours Lab

0.00

Total Contact Hours

48 - 54

Total Out of Class Hours

0 - 0

Total Student Learning Hours

48 - 54

Is this an existing Extensive Lab?

Yes

Distance Education

Yes

Distance Education**Distance Education Type**

Both Fully Online and Hybrid Online

Fully Online Delivery Requirements:



- a. Students must be notified via the college schedule of classes and the syllabus for the class if proctored tests are required for this course
- b. Any planned face-to-face meetings, such as an orientation or study session, must be optional
- c. The MSJC curriculum committee requires the use of accessible, asynchronous discussion as a component of every fully online course

Are you using publisher content?

No

Regular Substantive Interaction

Instructor-to-student, student-to-student, and student-to-content contact shall be distributed in a manner that will ensure regular substantive interaction (RSI) is maintained not only weekly but also for the duration of the course. Instructor interactions should be equivalent in time, quality and consistency to the engagement students would receive in a face-to-face course—for example, through announcements, discussion participation, personalized feedback, video messages, or other instructional communications. Instructors are expected to be responsive to student inquiries within a 24-72 hour time frame excluding holidays. RSI will be maintained through a variety of methods:

- Orientation - Students must be oriented to the online and face-to-face portions at the start of the course.
- Announcements - Announcements using the course management system must be posted at least weekly to keep students current on course events, due dates, materials, etc.
- Discussion Forums - Content-related discussion forums within the designated CMS will include appropriate instructor participation and will be initiated and maintained, with timely feedback provided. Instructors are required to monitor the discussions and related activities to provide guidance and direction. Open-ended discussion boards may be used to further learning and interaction.
- MSJC Communication – Instructor will use MSJC-administered communication tools (such as email or the designated CMS communication tools) to regularly communicate with and provide ease of access to students.
- Timely Feedback - Timely feedback on student work will be provided by the instructor, which may include comments and/or rubrics, within the Grades area of the designated CMS.
- Scheduled Meetings – Hybrid and synchronous courses will meet at regularly scheduled times.

ADA Compliance - All course interactions and content must be designed with accessibility in mind and meet ADA requirements.

Catalog Description

This course will provide students with additional support in learning the concepts and gives more time with the instructor to increase the probability of being successful in MATH-115. Concepts to be covered include truth table, statistics, probability and working with Venn diagrams.

Requisites

Corequisite(s)

Corequisite(s) (must be taken simultaneously)

MATH-115.

Codes

TOP Code (CB 03)

1702.00 - Mathematics Skills

CIP Code

27.0301 - Applied Mathematics, General.

Repeatability Code

No

Grading Option

P/NP only

Minimum Qualifications

Minimum Qualifications	And/Or
Mathematics (Masters Required)	End

Learning Objectives

Learning Objectives

Learning Objective

1. Evaluate arithmetic expressions using the correct order of operations.
2. Solve basic equations.
3. Demonstrate an understanding of basic set theory concepts, such as union, intersection, complement, and universe.
4. Solve applications involving two and three sets using Venn diagrams to explore data and relationships within diverse communities, emphasizing shared and unique experiences.
5. Calculate simple probabilities for experiments where all outcomes are equally likely.
6. Analyze and interpret probabilities in real-world contexts, considering how outcomes may reflect or challenge inequities in various societal systems.
7. Calculate the mean, median, and mode of data.
8. Calculate and interpret percentages, fractions, and decimals.
9. Analyze various kinds of charts and graphs, such as line charts, bar charts, and scatter plots, using data that addresses diversity, equity, and inclusion across different sectors of society.
10. Calculate simple interest and compound interest.
11. Develop skills related to math technology, such as with scientific calculators, spreadsheets, or other computer applications.
12. Apply effective learning strategies for college success.

Learning Outcome Information

Course Learning Outcomes

Learning Outcome

1. Students will use the order of operations to evaluate an arithmetic statement.
2. Students will determine the intersection of a pair of sets.
3. Students will compute the mean of a sequence of numbers.

Content

Course Lab Content

1. Basic calculator/computer functions
2. Algebra
 - a. Algebra Conversions between fractions, decimals and percent.
 - b. Addition, subtraction, multiplication, and division of fractions.
 - c. Ratios, rates, and proportions.
 - d. Evaluate expressions using the order of operations.
 - e. Exponents, roots, and absolute values.
 - f. Solve linear equations.
3. Sets
 - a. Set operations.
 - b. Venn Diagrams.
 - c. Explore data and relationships within diverse communities.
4. Probability and Statistics
 - a. Terms and Roles of Probability.
 - b. Calculate probability of experiments where all outcomes are equally likely.
 - c. Interpret probabilities in real-world contexts that reflect or challenge inequities in various societal systems.
 - d. Measures of central tendency (mean, median, and mode).
5. Finance
 - a. Budgeting.
 - b. Simple interest and compound interest.
6. Charts and Graphs

- a. Line charts.
 - b. Bar charts.
 - c. Pie charts.
 - d. Scatter plots.
 - e. Use charts and graphs to analyze data that addresses diversity, equity, and inclusion across different sectors of society.
7. Topics related to developing effective learning skills
- a. Study skills: organization and time management, test preparation and test-taking skills.
 - b. Self-assessment: using performance criteria to judge and improve one's own work, analyzing and correcting errors on one's test.
 - c. Use of resources: strategies identifying, utilizing, and evaluating the effectiveness of resources in improving one's own learning, e.g., peer study groups, computer resources, lab resources, tutoring resources.

Methods of Instruction

Method

Activity

Integration

Students will work in groups of 3 to 4 people in class to evaluate arithmetic expressions, solve linear equations, and analyze the diversity of their shared and unique experiences using Venn diagrams.

DE Adaptations for MOI

Group activities will be completed using group discussions and group conversations delivered through the CMS. Synchronous group interactions will take place via accessible video conferencing tools accessed via the CMS that allow for online document sharing. The instructor will ensure that accessibility requirements are met.

Method

Discussion

Integration

Diverse groups of students will discuss how to calculate simple probabilities and analyze different charts and graphs. The instructor will lead discussions of prior positive and negative experiences with mathematics and strategies for success in mathematics.

DE Adaptations for MOI

Regular substantive interaction will take place through asynchronous interaction between students through group discussion boards delivered via the CMS. The instructor will ensure that accessibility requirements are met.

Method

In-class Exercises

Integration

In-class exercises may be utilized to help students to obtain a better understanding of basic set theory concepts, such as union, intersection, complement, and universe and to learn how to calculate the mean, median, and mode of data.

DE Adaptations for MOI

Students will access exercises via the CMS. They will complete the exercises with paper and pencil, then submit their work through the CMS by uploading a photo or scan of their work, by submitting solutions typed up using a rich text editor or LaTeX, or via a mathematics assessment system such as MyOpenMath while ensuring that accessibility requirements are met. The instructor will review their work and provide feedback through the CMS to help students improve.

Method

Lecture

Integration

Lecture will be used to illustrate topics such as the use Venn diagrams, calculating and interpreting percentages, and finding the mean, median, and mode of a set of data. During lecture, the instructor will encourage student feedback and interaction with the instructor.

DE Adaptations for MOI

Lecture content will be communicated through pre-recorded videos, live teleconferencing, and/or text and images delivered through the CMS. The instructor will ensure that accessibility requirements are met.

Methods of Evaluation**Method**

Class Work

Integration

Class work will be used as a formative assessment and will be graded on completeness, correctness, and clarity. Students will solve equations, evaluate algebraic expressions, and apply set operations.

DE Adaptations for MOE

Class work assignments will be delivered to students via the CMS. Students will complete class work with paper and pencil, then submit their solutions through the CMS by uploading a photo or scan of their work, by submitting solutions typed up using a rich text editor, or via an integrated mathematics assessment system such as MyOpenMath. The instructor will ensure that accessibility requirements are met. Students will receive feedback of their work through the CMS within one week after the due date.

Method

Exams/Tests

Integration

Exams will be used as summative assessments and will be graded on completeness and correctness. Students will be evaluated for their conceptual understanding and correct calculation of probabilities, linear equations, and measures of central tendency.

DE Adaptations for MOE

Exam problems will be delivered to students via the CMS. Students will complete exams with paper and pencil, then submit their solutions through the CMS by uploading a photo or scan of their work, by submitting solutions typed up using a rich text editor, or via a mathematics assessment system such as MyOpenMath. The instructor will ensure that accessibility requirements are met. Students will receive feedback of their work through the CMS within one week after the due date.

Method

Projects

Integration

A project may be assigned as a summative assessment and will be evaluated using a rubric and/or individual instructor feedback. Students will use computers/calculators to help interpret data drawn from real-world scenarios involving inequities in society systems using charts, probability, and measures of central tendency.

DE Adaptations for MOE

Project instructions will be delivered to students via the CMS. Students will post written project reports to discussion forums within the CMS. Once their own report is posted, they will review and reply to other students' reports through the CMS. At all points, the instructor will ensure that accessibility requirements are met. Students will receive feedback of their work through the CMS via a rubric and/or individual instructor feedback within one week after the due date.

Method

Quizzes

Integration

Quizzes will be used as formative assessments and will be graded on completeness and correctness. Students will be quizzed on calculating simple probabilities, calculating the mean, median, and mode of data, and calculating percentages.

DE Adaptations for MOE

Quiz problems will be delivered to students via the CMS. Students will complete quizzes with paper and pencil, then submit their solutions through the CMS by uploading a photo or scan of their work, by submitting solutions typed up using a rich text editor, or via an integrated mathematics assessment system such as MyOpenMath. The instructor will ensure that accessibility requirements are met. Students will receive feedback of their work through the CMS within one week after the due date.

Method

Self-Evaluation

Integration

Self-evaluation essays will be used as formative assessments and will be graded on thoughtfulness, completeness of self-reflection, application of critical thinking, and clarity of presentation. Students will recognize their personal growth and plan how to improve in areas they are struggling. Students will reflect on the study skills and habits to be successful in linear algebra.

DE Adaptations for MOE

Self-evaluation instructions will be delivered to students via the CMS. Self-evaluation essays will be submitted via the CMS as an assignment. The instructor will ensure that accessibility requirements are met. Students will receive feedback of their work through the CMS within one week after the due date.

Assignments**Assignment Type**

Reading

In-class and/or outside of class

In-class

Formative or Summative

Formative

Assignment

Since 2015, the Washington Post has recorded every individual shot and killed by an on-duty police officer in the United States. Read their analysis of the data here:

<https://www.washingtonpost.com/graphics/investigations/police-shootings-database/>

Be sure to carefully study the charts used in the article to summarize the data. As you study the data, consider the following questions:

1. Which chart impacted you the most? Why?
2. How accurate and complete do you think the Washington Post's data set is?
3. Take another look at the bar chart that breaks the data down by race. If you look carefully, you will see that the total number of "White, non-Hispanic" individuals in the data is much greater than the total number of "Black" individuals in the data, yet the bar for "Black" is much higher than the bar for "White, non-Hispanic". Why?
4. This data shows many disparities between different groups of people. Choose one of these disparities, and answer one of the following questions about this disparity: Why do you think this disparity exists? or, What is one thing you think we can do to reduce this disparity?

You will use your answers to these questions to engage in a discussion with your peers about this data in class. Your participation will be evaluated using a detailed rubric.



How assignment will be adapted in online format

Assignment instructions will be delivered to students via the CMS. Students will post written responses to the assignment questions to a discussion forum within the CMS. Once their own assignment is posted, they will review and reply to other students' posts through the CMS. At all points, the instructor will ensure that accessibility requirements are met. Students will receive feedback of their work through the CMS via a rubric and/or individual instructor feedback within one week after the due date.

Assignment Type

Writing

In-class and/or outside of class

In-class

Formative or Summative

Summative

Assignment

Answer all questions below. Be sure to show all your work and justify all your answers. Your work will be graded based on the completeness and correctness of your work and answers.

1. Evaluate the expression.

$$3 + 2*(-4 - 3^2)$$

2. Solve the equation.

$$2x + 3 = 4 - 5x$$

3. Let $A = \{1, 3, 4, 5\}$ and $B = \{1, 2, 4, 6\}$. Find $A \cap B$ and $A \cup B$.

4. Millie rolls a six-sided die. What is the probability that the die does not land on 6?

5. Calculate the mean, median, and mode of this data:

-5, 3, 5, 2, -5, 0, 0, 1, -5

6. To buy a computer, Raul borrowed \$3,000 at 9% simple interest for 4 years. How much money did Raul pay in interest?

How assignment will be adapted in online format

This assignment will be delivered to students via the CMS. Students will solve the assignment problems with paper and pencil, then submit their solutions through the CMS by uploading a photo or scan of their work. The instructor will ensure that accessibility requirements are met. Students will receive feedback of their work through the CMS within one week after the due date.

Assignment Type

Writing

In-class and/or outside of class

In-class

Formative or Summative

Formative

Assignment

For this exercise, you will create a three-set Venn diagram of the students in class.

1. Choose three characteristics that apply to you. These could be any characteristics, but should not be too narrow. For example, maybe you (1) play guitar, (2) like pizza, and (3) have short hair.

2. Create a three-set Venn diagram using the three characteristics you chose in step one. Add your name to the central intersection of the Venn diagram.

3. Leave your Venn diagram on the desk. When the instructor tells you to, get up and add your name to as many of your peers' Venn diagrams as you can. If you can't add your name to any of the sets of a Venn diagram, write your name in the complement of the sets.

4. After the instructor tells you to return to your seats, write a brief summary of your results. What surprised you? What didn't surprise you?

Your work will be evaluated based on a rubric and individual instructor feedback.

How assignment will be adapted in online format

This assignment will be delivered to students via the CMS. A survey will be sent to the class through the CMS before the assignment is available. After all students have completed the survey, students will access the survey results through the CMS, and they will choose three characteristics that were polled in the survey to complete the assignment. Students will complete the assignment with paper and pencil, then submit the completed assignment through the CMS by uploading a photo or scan of their work. The instructor will ensure that accessibility requirements are met. Students will receive feedback of their work through the CMS within one week after the due date.

Course Materials

Textbooks

Allen R. Angel, Christine D. Abbott (2024). A Survey of Mathematics with Applications, 12th edition. Pearson. ISBN-13: 9780138306601

Open Educational Resources

David Lippman. Math in Society. [https://math.libretexts.org/Bookshelves/Applied_Mathematics/Math_in_Society_\(Lippman\)](https://math.libretexts.org/Bookshelves/Applied_Mathematics/Math_in_Society_(Lippman))

Inigo et al. College Mathematics for Everyday Life. [https://math.libretexts.org/Bookshelves/Applied_Mathematics/Book%3A_College_Mathematics_for_Everyday_Life_\(Inigo_et_al\)](https://math.libretexts.org/Bookshelves/Applied_Mathematics/Book%3A_College_Mathematics_for_Everyday_Life_(Inigo_et_al))

OpenStax. Contemporary Mathematics. [https://math.libretexts.org/Bookshelves/Applied_Mathematics/Contemporary_Mathematics_\(OpenStax\)](https://math.libretexts.org/Bookshelves/Applied_Mathematics/Contemporary_Mathematics_(OpenStax))

Class Size Information

Class Size

40

Class Size Category

A - Lecture/discussion 40

Diversity and Inclusion

Course Design and Materials: Course will incorporate diverse perspectives, authors, and examples that reflect a variety of cultures, identities, and lived experiences. Instructional materials will be reviewed regularly to ensure representation, inclusivity, and alignment with equity-minded practices across disciplines.

Inclusive Learning Environment: Instructors will establish classroom norms and policies that promote respect, civil discourse, and belonging in both online and face-to-face classes. Clear expectations for communication and engagement will support a learning space where all students feel valued and heard.

Accessible Instruction: Course content will be delivered using accessible design. Materials will follow accessibility guidelines within the CMS, including captioned media, readable document formats, and multiple means of engagement to support diverse learning.

Equitable Teaching Practices: Instructors will use transparent and grading criteria, varied assessment methods, and timely feedback to promote fairness and student success. Opportunities for revision, reflection, and multiple demonstrations of learning may be incorporated when appropriate to the discipline.

Culturally Responsive Pedagogies: Instructional strategies will encourage critical thinking about diverse perspectives and systems of power relevant to the course content. Faculty will foster opportunities for students to connect course material to real-world contexts.

Ongoing Reflection and Improvement: Faculty will engage in continuous professional development related to IDEAA principles and reflect on course practices using metacognition to identify opportunities for increased equity, inclusion, and accessibility.

Explain how diversity and inclusion(e.g., gender, culture/race, sexuality, etc.) is infused into the course.

In the objectives and course content, we emphasized that Venn diagrams, probabilities, and charts and graphs should include examples that address diversity and inclusion and illustrate societal inequities. In the methods of instruction, we included in-class group activities that allow students to explore the diversity of their experiences. The methods of evaluation include projects that encourage students to explore societal inequities using real-world data. An entry in the Assignments section provides an example of how students can explore societal inequities using real-world data on police shootings.

Describe how assignments, instruction, evaluation, course content, and interactions are contextualized for diverse learners promoting an equitable course.

This course is a support course. It is intended to assist students who feel underprepared for college-level mathematics by supporting students taking MATH-115 with just-in-time remediation and ample in-class instructor support. In particular, the course content includes topics related to developing effective learning skills, including study skills, self-assessment, and identifying and utilizing available resources. In the methods of instruction, we have specified that during discussions and lecture, the instructor will encourage students to share their own experiences in mathematics, discuss strategies for succeeding in mathematics, and seek student feedback of their grasp of course content. The listed methods of evaluation include multiple formative active-learning assessments, allowing students the opportunity to receive and review instructor feedback to correct mistakes/fill gaps in their understanding prior to completing summative assessments. The course materials have been revised to include OER options to allow students of all socioeconomic backgrounds to fully participate in the course.

Mathematics can be a difficult subject, and many students have developed math anxiety, a fear of making mistakes, and feelings of inadequacy towards math. The above changes are intended to encourage students of all backgrounds and abilities by communicating that mistakes are part of the process of learning mathematics, that all students struggle with mathematics to some degree, and that success in mathematics can be achieved by all students through incremental effort and improvement.

Interactions

Explain how the course will incorporate student-to-student interaction.

For both face-to-face and online modalities, group activities and group work will give students the opportunity to collaborate on and practice problems, such as evaluating arithmetic expressions, solving linear equations, and calculating probabilities. In both modalities, students will be given frequent opportunities to discuss challenges and strategies for succeeding in mathematics and their shared and unique experiences with other students in the class using Venn diagrams.

Explain how the course will incorporate instructor-to-student interaction.

In both face-to-face and online modalities, instructors will use discussions to interact with students will discuss their prior positive and negative experiences with mathematics and strategies to success in mathematics. Also, instructors will clarify and pose questions about various mathematical concepts, such as probability theory and terminology, the order of operations, and how to solve simple equations and apply set theoretic operations. In both face-to-face and online modalities, instructors will encourage student feedback and interaction with the instructor, and the instructor will provide feedback to students on formative and summative assessments.

Explain how the course will incorporate student-to-content interaction.

In both face-to-face and online modalities, students will reference accessible materials such as textbooks, written lecture materials or transcripts of lectures, illustrative images, charts and graphs, or video or audio lectures. In-class exercises and/or at-home assignments will allow students to practice content material such as calculating simple and compound interest, calculating and interpreting percentages and fractions, and calculating measures of central tendency.

Explain how the course will incorporate student-to-self interaction (metacognitive).

In both face-to-face and online modalities, students will use self-evaluation essays to reflect on their personal growth and plan how to improve in areas they are struggling. Students will reflect on the study skills and habits to be successful in math courses generally and Ideas of Math specifically. This course emphasizes logical thinking and real-world application, and it encourages students to engage in discussions, assessments, and writing activities to consider how math can be applied in real-world contexts.