All Fields Report

Basic Course Information

College	Cañada College
Discipline	MATH-Mathematics
Course Number	145
Full Course Title	Liberal Arts Mathematics
Catalog Course Description	This course is designed for majors with no specific math requirement. The goal is to develop in students an appreciation for the beauty and utility of mathematics. Topics include logic, problem solving, probability, statistics, geometry, mathematics of finance, systems of numeration, mathematical modeling, and computers.

Proposal Information

Proposed Start	Year: 2022 Semester: Fall
Proposed Curriculum Committee Meeting Date:	05/13/2022
Deadline for submission to Dean's Queue:	04/07/2022
Deadline for submission of curriculum proposal to the Technical Review Committee:	04/19/2022
Proposal Origination Date:	11/09/2021
Justification For Board Report OR Curriculum Inventory update:	1. For NEW Courses: Provide a brief justification statement describing the need for the course, its place in the curriculum, and pertinent information such as the role of advisory committees. New courses require approval of the SMCCCD Board of Trustees. The justification statement will be included on the annual Curricular Board report. Use complete sentences and present tense. 2. For all types of Course MODIFICATIONS (modifications, banking, deletions and reactivations): Provide a brief justification statement describing the need for the change. The justification statement will be used for course updates in the State Curriculum Inventory as necessary. Use complete sentences and present tense. This course is replacing MATH 140 which was previously banked, and is equivalent to MATH 145 from College of San Mateo. It is being added in order to provide an alternative transfer course for students, and help us meet the requirements of AB 705. The course is a selective requirement for the Pathways to Student Success Certificate of Achievement.
Honors Course	No
Open Entry/Open Exit	No 0

Equivalent Courses

Will this course replace an existing course in the catalog, or an experimental course?	Yes
If yes, identify and explain.	MATH 145 is active at CSM.

Similar Courses

Is there a similar or equivalent course in SMCCCD?	Yes
Added Similar Courses	MATH 140 (Cañada College) MATH 145 (College of San Mateo)

Units/Hours

Unit Types	Fixed
Units	Min: 3.00
Variable Range	Range (or)

Hours

Please enter hours as per term values

Method	Min Hours	Max Hours	Min Faculty Load	Min Units
Lecture	48.00	54.00	3.00	3.00
Lab	0.00	0.00	0.00	0.00
TBA	0.00	0.00	0.00	0.00
Work Experience	0.00	0.00	0.00	0.00
Field Experience	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00
Homework	96.00	108.00	0.00	0.00

Other Hours	

Course Details

Repeatable for Credit	No
Grading Methods	Letter Grade Only
Audit	Yes

Materials Fee

Fee Required?	No

Student Learning Outcomes

Upon successful completion of this course, a student will meet the following outcomes:

1. Apply mathematical principles and techniques to solve problems in areas such as systems of numeration, algebraic modeling, basic trigonometry, probability, statistics, and mathematics of finance.

2. Demonstrate a knowledge of probability and statistics by solving a variety of counting problems, by calculating the probability of games of chance, and by analyzing statistical data.

3. Relate a knowledge of the people, history and uses of mathematics through research papers, projects, presentations, and class discussions.

Course Objectives

Upon successful completion of this course, a student will be able to:

1. Apply the simple interest, compound interest, annuity, and amortized loan formulas

2. Create an amortization schedule for a loan.

3. Calculate a basic probability (one without permutations or combinations)
4. Calculate a compound inequality using the addition rule, multiplication rule, or both
5. Calculate a conditional probability
6. Calculate the expected value for a game
7. Apply probability theory to games, business, and/or genetics
8. Calculate the Mean, Median, Mode, Standard Deviation, and range for a set of data
9. Make probability calculations for a normal distribution
10. Recognize examples of poor statistical reasoning
11. Identify and name polygons with up to 12 sides
12. Recognize and state the properties of concave, convex, and regular polygons
13. Determine if a tiling is regular or semi regular
14. Create a tiling
15. Identify numbers using historical systems of numeration such as the Mayan, Egyptian, Babylonian and Roman systems.
16. Identify numbers using modern systems of numeration such as the hexadecimal and binary systems

Course Lecture Content

1. Number Theory
   1. Types of Numbers
      1. Natural Numbers
      2. Whole Numbers
      3. Integers
      4. Rational Numbers
      5. Irrational Numbers
   2. Cardinality
      1. countable sets
      2. uncountable sets
   3. Sequences
      1. Arithmetic sequences
      2. Geometric sequences
      3. Fibonacci sequence
   4. Historical systems of numeration
      1. Egyptian
      2. Babylonian
      3. Mayan
      4. Roman
   5. Modern systems of numeration
      1. binary
      2. hexidecimal
2. Probability
   1. Basic proability
      1. Sample space
      2. Event
      3. Calculating probability
      4. Certainty
      5. Impossible events
   2. Counting
      1. Fundamental Counting Principal
      2. Factorials

2. simple interest
        3. compound interest
    2. Ammoritzed loans
        1. calculating the monthly payment
        2. ammortization schedules
    3. Consumer Credit
        1. Revolving charge account
        2. Unpaid balance versus average daily balance
        3. Periodic interest rates
    4. Future value of an annuity
        1. ordinary annuities
        2. calculating the future value
        3. finding the total interest earned
    5. Present value of an annuity
        1. Calculating the present value of an annuity
        2. Present value and Lotto prize payments
6. Other topics
    1. Voting systems
        1. Plurality Method
        2. Plurality with elimination
        3. Borda count method
        4. Pairwise comparison
    2. Apportionment
        1. Rounding method
        2. Hamilton's method
        3. Jefferson's method
    3. History of mathematics
    4. Venn diagrams
    5. Set theory
    6. Truth tables

Course Lab Content

TBA Hours Content

Frequently Recommended Preparation

Frequently Recommended	

Justification for Frequently Recommended Preparation

Why is the knowledge of the recommended course(s), skill(s) or information necessary for students to succeed in the "target" course? Specify the relationship between the recommended knowledge and skills required of students and those taught in the "target course? (Please list the specific proficiencies students must possess in order to succeed in the "target" course.)

Other Recommended Preparation

You have no defined requisites.

Prerequisites/Corequisites

Edit/Delete	Requisites	Analysis
	Prerequisite Completion of Intermediate Algebra or equivalent, or placement by appropriate assessment.	

Content Review

You have not defined content review.

Mode of Delivery

Modes of Delivery

Online
Hybrid
Lecture

Representative Instructional Methods

Methods	Lecture Discussion
Other Methods	

Representative Assignments

Writing Assignments
(List all assignments, including library assignments. Outside assignments are not required for lab-only courses, although they can be given.)

- 3 to 4 essays that are 3 to 5 pages long. These would be assigned about once per month.

- Final project produced by groups of 2 to 4 students. The final project is up to 10 pages and may include a presentation. The final project would be assigned once near the end of the semester.

Reading Assignments
(List all assignments, including library assignments. Outside assignments are not required for lab-only courses, although they can be given.)

- Readings will include several sections in the textbook each week of 10 - 20 pages.

Other Outside Assignments
(List all assignments, including library assignments. Outside assignments are not required for lab-only courses, although they can be given.)

- Outside assignments include homework problems, viewing videos that support or supplement understanding of the current topic.

To be Arranged Assignments	
(List all assignments, including library assignments. Outside assignments are not required for lab-only courses, although they can be given.)	

- Not Applicable

Representative Methods of Evaluation

This section defines the ways students will demonstrate that they have met the student learning outcomes.

Student grades will be based on multiple measures of student performance. Instructors will develop appropriate classroom assessment methods and procedures for calculating student grades, including the final semester grade. The following list displays typical assessment methods appropriate for this course. The actual assessment methods used in a particular classroom and section will be listed in the instructor?s syllabus.

Methods must effectively evaluate critical thinking. Credit courses must include written communication, problem solving, and/or skills demonstrations.

Multiple measures may include, but are not limited to, the following:

Methods	
	- Class Participation - Exams/Tests - Group Projects - Homework - Oral Presentation - Papers - Projects - Quizzes - Written examination

Representative Texts

Textbooks such as the following are appropriate:

Formatting Style	APA

Textbooks	
	1. Miller, Charles. *Mathematical Ideas*, 14th ed. Pearson, 2020
	2. Tannenbaum, Peter. *Excursions in Modern Mathematics*, 9th ed. Pearson, 2018
	3. Burger, Edward B and Michael Starbird. *The Heart of Mathematics: An Invitation to Effective Thinking*, 4th ed. John Wiley and Sons, 2012

Manuals	
	You have no manuals defined.

Periodicals	
	You have no periodicals defined.

Software	

Other	
	1. Lippman, David Math in Society downloadable free at http://dlippman.imathas.com/mathinsociety/index.html or in paper form from: http://www.lulu.com/shop/david-lippman/math-in-society/paperback/product-15218575.html

Degree/Certificate Applicability

Designation	Degree Credit
Proposed For	AA/AS Degree Certificate/Skill Award
Course Designation Text	Are there degrees/certificates to which this course applies? Pathways to Student Success Certificate of Achievement

General Education/Degree/Transfer Course

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By Jose Pena

CSU GE Area B: SCIENTIFIC INQUIRY AND QUANTITATIVE REASONING

B4 - Mathematics/Quantitative Reasoning Pending

CSU Transfer Course

Transfers to CSU Approved

Cañada GE Area A: ENGLISH LANGUAGE COMMUNICATION AND CRITICAL THINKING

A3: Critical Thinking Requirement Pending

Cañada: BASIC COMPETENCY REQUIREMENTS

Math Approved

IGETC Area 2: MATHEMATICAL CONCEPTS AND QUANTITATIVE REASONING

A: Math Pending

UC Transfer Course

Transfers to UC Pending

Course Distance Education

Distance Ed Supplement	Revision to existing distance education supplement
Distance Education	Distance education component was developed by an instructor with training in online pedagogy. Training: This course was designed in consultation with, and will be taught by, faculty who have received STOTs, @One, Cañada's QOLT (Quality Online Training), Cañada's QOTL (Quality Online Teaching & Learning) or equivalent certifications.
Method of Distance Education	Online, Hybrid, Web Assisted Course; (If there are limitations on how this course would be offered please explain below)
Online Method Limitations	
Other Methods	

Course Content and Methodology	The objectives and content of the course are adequately covered by the methods of instruction, assignments, evaluation of student outcomes, and instructional materials. If this course is currently taught in a lecture mode, the department faculty have determined that the same objectives can be achieved in a distance learning mode. The instructional equipment and materials are sufficient. The preparation and training of faculty are sufficient. Regular personal contact between students and instructor is sufficient. Methods of student evaluation are designed to maintain examination security. Evaluation of student outcomes is sufficient to permit review and assessment of the effectiveness of distance education for this course and to provide information for the annual distance education report.
Instructional Methodologies (How will you deliver the course content?):	Announcements/Bulletin Boards Chat Rooms E-mail Electronic Forum Online Presentations Resource Links Two-Way Video conferencing (Two-way interactive video and audio) Video one-way (ITV, Video cassette,radio, ect.)
Representative Courseware/Textbooks Materials:	Possible textbooks include: Burger, Edward B and Michael Starbird. The Heart of Mathematics: An Invitation to Effective Thinking, 4th ed.John Wiley and Sons, 2012 Tannenbaum, Peter. Excursions in Modern Mathematics, 9th ed.Pearson, 2018 Other: Lippman, David Math in Society downloadable free at http://dlippman.imathas.com/mathinsociety/index.html or in paper form from: http://www.lulu.com/shop/david-lippman/math-in-society/paperback/product-15218575.html
Methods of Evaluation of Student Performance:	• Online Homework Problem Sets (about 1 / week) • End of Week Online Quizzes (about 1 / week) • Online Midterm Tests (about 4 / term) • Final Exam
How are you ensuring that students with disabilities can access your course in accordance with Section 508?	1. Videos are captioned 2. Lecture screen-casts are captioned 3. Transcripts are provided for all multi-media files (audio and visual) 4. Alt-text is used for embedded images 5. Standardized formatting is used to support screen readers 6. All files are assessed with Accessibility Check options in Microsoft Office 7. Course is evaluated using the OEI Rubric (Online Education Initiative) 8. Faculty will work with DRC to ensure that proper accommodations are provided for students (e.g., extended time, Kurzweil, other UDI supports)

Plan for Regular Effective Communication Contact Between Faculty and Student (Title 5, 55204). "Local policies should establish and monitor minimum standards of regular effective contact."
Announcements/Bulletin Boards - The instructor will make course announcements as emails or Canvas announcements and retain them on the course bulletin board.
Discussion Boards - Discussion boards will be maintained for each chapter or Unit of content, allowing students to ask and answer course content questions. The instructor will review boards at least once every 24-48 hours and respond as appropriate.
Email Communication - Instructor will reply to student emails within 24-48 hours.
Resource Links - Instructors will supply ample resource links to curated videos, websites, and web-based tools to help students learn the content.
Office hours - Instructor will offer weekly office hours through video conference or chat.
Scheduled Face-to-Face Meetings - Regular video-conference or in-person meetings will be held with the students to lecture, perform group assignments, or answer homework questions

Resources Needed

Adequate Library Resources	Consultation with the Coordinator of Library Services regarding the adequacy of campus and online information resources to fulfill course objectives is required prior to course approval. Inadequate to support the course Please Specify:
Affected Resources	Which of the following resources do you expect to be affected by the offering of this class? Check as many as appropriate. None of the above
Explain what effect the areas you have checked will have upon this college:	

Comparable Transfer Course Information

Are there comparable courses?	Yes
Edit/Del	**College Info**

Minimum Qualification

No Minimum Qualifications For this Course

CB Codes

CB03 TOP Code	1701.00 - Mathematics, General
CB04 Course Credit Status	D - Credit - Degree Applicable
CB05 Course Transfer Status	A = Transferable to both UC and CSU
CB08 Course Basic Skill Status (PBS Status)	2N = Course is not a basic skills course.
CB09 SAM Code	E - Non-Occupational
CB11 California Classification Codes	Y - Credit Course
CB21 Levels Below Transfer	Y = Not Applicable
CB23 Funding Agency Category	Y = Not Applicable
CB25 Course General Education Status	B - Course meets any of the following: CSU General Education Breadth Area B4: Mathematics/Quantitative Reasoning UC IGETC Area 2: Mathematical Concepts and Quantitative Reasoning

	OR
	Course has a general education certification or articulation agreement that ensures the course fulfills mathematics or quantitative reasoning requirements at an accredited four-year institution
	OR
	Course fullfills local general education requirements for Analytical Thinking or Mathematics Competency as outline in Title 5 Section 55063
CB26 Course Support Course Status	N - Course is not a support course

Codes/Dates

Entry of Special Dates

Instruction Office Review	05/13/2022
Last Outline Revision	
Content Review	05/13/2022
CC Approval	05/13/2022
DE Approval	05/13/2022
Effective Term	Term: Fall Year: 2022

Web Catalog

Course Family	
Web Catalog	☐ Exclude from Web Catalog

Instructional Services

Implementation Date	

Originator	Evan Innerst
Origination Date	11/09/2021
Proposal Type	Cañada New Course
C-ID Numbers	
CB00 State ID	
CB03 TOP Code	1701.00 - Mathematics, General
CB04 Course Credit Status	D - Credit - Degree Applicable
CB05 Course Transfer Status	A = Transferable to both UC and CSU
CB08 Course Basic Skill Status (PBS Status)	2N = Course is not a basic skills course.
CB09 SAM Code	E - Non-Occupational
CB10 Course COOP Work Exp-ED	N = Not part of Coop Work Exp
CB11 California Classification Codes	Y - Credit Course
CB13-Special Class Status	N - Not Special
CB21 Levels Below	Y = Not Applicable

Transfer	
CB22 Non Credit Course Category	Y - Not Applicable
CB23 Funding Agency Category	Y = Not Applicable
CB24-Program Course Status	1 = Program Applicable
CB25 Course General Education Status	B - Course meets any of the following: CSU General Education Breadth Area B4: Mathematics/Quantitative Reasoning UC IGETC Area 2: Mathematical Concepts and Quantitative Reasoning OR Course has a general education certification or articulation agreement that ensures the course fulfills mathematics or quantitative reasoning requirements at an accredited four-year institution OR Course fullfills local general education requirements for Analytical Thinking or Mathematics Competency as outline in Title 5 Section 55063
CB26 Course Support Course Status	N - Course is not a support course

Web Catalog Metadata