Glendale College

Course Outline of Record Report

Course ID 010582

Revision - November 2024

Created - November 2021

MATH134 : Decision Mathematics

General Information

Author:	• Suzanne Palermo • Allen, Michael
Course Code (CB01) :	MATH134
Course Title (CB02) :	Decision Mathematics
Department:	MATH
Proposal Start:	Fall 2025
TOP Code (CB03) :	(1701.00) Mathematics, General
CIP Code:	(27.0101) Mathematics, General.
SAM Code (CB09) :	Non-Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000653844
Curriculum Committee Approval Date:	11/13/2024
Board of Trustees Approval Date:	01/21/2025
Last Cyclical Review Date:	11/01/2021
Course Description and Course Note:	MATH 134 is a one-semester course in quantitative reasoning about decisions. Students learn mathematical techniques including solving algebraic equations and inequalities, Cartesian graphs, probability, and game theory to analyze individual and group decision-making under the conditions of certainty, risk, and uncertainty. Students not only learn these techniques, but also interpret and communicate their results.
Justification:	Content Change
Academic Career:	• Credit
Mode of Delivery:	No value
Author:	No value
Course Family:	No value

Academic Senate Discipline

Primary Discipline:	• Mathematics
Alternate Discipline:	No value
Alternate Discipline:	No value

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

☐ Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

- Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is not a support course

General Education and C-ID

General Education Status (CB25)

GE Status (CSU) B4, (UC) 2

Transferability

Transferable to both UC and CSU

Transferability Status

Approved

CSU GE-Breadth Area	Area	Status	Approval Date	Comparable Course
B4-Mathematics/Quantitative Reasoning	Mathematics/Quantitative Reasoning	Approved	08/29/2022	No Comparable Course defined.

IGETC Area	Area	Status	Approval Date	Comparable Course
2-Math	Mathematical Concepts and Quantitative Reasoning	Approved	08/28/2023	No Comparable Course defined.

Units and Hours

Summary

Minimum Credit Units (CB07)	3.5
Maximum Credit Units (CB06)	3.5
Total Course In-Class (Contact) Hours	81
Total Course Out-of-Class Hours	108
Total Student Learning Hours	189

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Funding Agency Category (CB23)

Not Applicable.

Cooperative Work Experience Education Status (CB10)

☐ Variable Credit Course

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	3	6
Laboratory Hours	1.5	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	54
Course In-Class (Contact) Hours	
Lecture	54
Laboratory	27
Studio	0
Total	81
Course Out-of-Class Hours	
Lecture	108
Laboratory	0
Studio	0
Total	108

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Prerequisites, Corequisites, Recommended Corequisites, and Recommended Preparation

Prerequisite

MATH90 - Intermediate Algebra for BSTEM (in-development)

Objectives

- Solve absolute value equations and inequalities.
- Solve linear equations and compound inequalities.
- Solve rational equations.
- Solve equations with radicals.
- Solve applied problems.
- Solve quadratic equations with real and complex solutions.
- Graph functions (linear, quadratic, exponential, logarithmic).

OR

Prerequisite

Placement is based on an academic background or satisfactory completion of MATH 90, or equivalent.

AND

Advisory

ABSE121 - Basic Algebra Review (in-development)

Recommended Corequisite

Entry Standards

Entry Standards	Description
No value	No value

Course Limitations

Cross Listed or Equivalent Course	Description
No value	No value

Specifications

Methods of Instruction

Methods of Instruction	Lecture
Methods of Instruction	Laboratory
Methods of Instruction	Discussion
Methods of Instruction	Multimedia
Methods of Instruction	Collaborative Learning

Methods of Instruction	Demonstrations
Methods of Instruction	Guest Speakers

Out of Class Assignments

homework (e.g. problem sets related to course content);
reading assignments

Methods of Evaluation	Rationale
Project/Portfolio	Projects
Exam/Quiz/Test	Quizzes
Exam/Quiz/Test	Three or more chapter examinations are required
Exam/Quiz/Test	A comprehensive final examination is required

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Allen, Michael	Choice Mathematics	Michael Allen	2024	978-1-300-9729 1-4

Other Instructional Materials (i.e. OER, handouts)

No Value

Learning Outcomes

Course Objectives

Identify optimal values of functions.

Compute probabilities and expected value.

Identify optimal strategies in games.

Determine group choices with voting systems and optimal voting strategies.

Solve personal finance problems using algebra techniques.

SLOs

Identify optimal choices for individuals under conditions of certainty, risk, and uncertainty using mathematical techniques, including solving algebra equations and inequalities, Cartesian graphs, probability, and game theory. Expected Outcome Performance: 0.0

ILOs Core ILOs	Communicate clearly, ethically, and creatively; listen actively and engage respectfully with others; consider situational, cultural, and personal contexts within or across multiple modes of communication.
	Use quantitative and/or analytical mathematical skills to solve problems and to interpret, evaluate, and process information and data to draw logical conclusions and support claims.

Identify group choices using various voting methods, the pitfalls of each method, and the optimal choices for individuals voting as members of a group. Expected Outcome Performance: 0.0

ILOs Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
	Use quantitative and/or analytical mathematical skills to solve problems and to interpret, evaluate, and process information and data to draw logical conclusions and support claims.

Additional SLO Information

Does this proposal include revisions that might improve student attainment of course learning outcomes?

No

Is this proposal submitted in response to learning outcomes assessment data?

No

If yes was selected in either of the above questions for learning outcomes, explain and attach evidence of discussions about learning outcomes.

No Value

SLO Evidence

No Value

Course Content

Lecture Content

Algebra review, and individual choice under the assumption of certainty (13 hours)

- Algebra equation-solving
- Personal finance math
- Graphing of 2-variable equations and inequalities
- Linear programming via graphing
- Polynomial factoring
- The Extreme Value Theorem for polynomial functions

Probability, and individual choice under risk (19 hours)

- Discrete probability models
- Techniques for calculating probabilities
- Expected value and expected utility
- Variance

Game theory, and individual choice under uncertainty (11 hours)

- Dominated strategies
- Pure-strategy solution concepts
- Mixed-strategy solution concepts

Voting systems, and group choice (11 hours)

- Equal-weight voting
- Weighted voting
- Impossibility theorems about group choice
- Strategic voting

Total hours: 54

Laboratory/Studio Content

Algebra review, and individual choice under the assumption of certainty (12 hours)

- Algebra equation-solving
- Personal finance math
- Graphing of 2-variable equations and inequalities
- Linear programming via graphing
- Polynomial factoring
- The Extreme Value Theorem for polynomial functions

Probability, and individual choice under risk (5 hours)

- Discrete probability models
- Techniques for calculating probabilities
- Expected value and expected utility
- Variance

Game theory, and individual choice under uncertainty (5 hours)

- Dominated strategies
- Pure-strategy solution concepts
- Mixed-strategy solution concepts

Voting systems, and group choice (5 hours)

- Equal-weight voting
- Weighted voting
- Impossibility theorems about group choice
- Strategic voting

Total Hours: 27

Additional Information

Repeatability

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Is it possible this course will have a material fee?

No Value

I have contacted my library liaison (https://campusguides.glendale.edu/faculty/liaisons):

No Value

What term(s) will this course be offered?

No Value

Will any additional resources be needed for this course? (Click all that apply)

No Value

If additional resources are needed, add a brief description and cost in the box provided.

No Value

Resources

Did you contact your departmental library liaison?

No

If yes, who is your departmental library liason?

No Value

Did you contact the DEIA liaison?

No

Were there any DEIA changes made to this outline?

No

If yes, in what areas were these changes made:

No Value

Will any additional resources be needed for this course? (Click all that apply)

- No

If additional resources are needed, add a brief description and cost in the box provided.

No Value