

MATH R101: MATHEMATICS FOR THE LIBERAL ARTS MAJOR

Originator

ptrujillo

College

Oxnard College

Discipline (CB01A)

MATH - Mathematics

Course Number (CB01B)

R101

Course Title (CB02)

Mathematics for the Liberal Arts Major

Banner/Short Title

Math for Liberal Arts Major

Credit Type

Credit

Start Term

Fall 2023

Catalog Course Description

This is an advanced course in algebra for majors in the liberal arts (English, Art, History, Philosophy, Foreign Languages, Music, Theatre, Dance, Film). This course focuses on how to solve and apply equations that include rational, linear, absolute value, polynomial, exponential, and logarithmic equations; solve linear and nonlinear systems of equations and inequalities; apply functions and other algebraic techniques to model real world applications. This course includes applications to many areas within liberal arts fields.

Taxonomy of Programs (TOP) Code (CB03)

1701.00 - Mathematics, General

Course Credit Status (CB04)

D (Credit - Degree Applicable)

Course Transfer Status (CB05) (select one only)

A (Transferable to both UC and CSU)

Course Basic Skills Status (CB08)

N - The Course is Not a Basic Skills Course

SAM Priority Code (CB09)

E - Non-Occupational

Course Cooperative Work Experience Education Status (CB10)

N - Is Not Part of a Cooperative Work Experience Education Program

Course Classification Status (CB11)

Y - Credit Course

Educational Assistance Class Instruction (Approved Special Class) (CB13)

N - The Course is Not an Approved Special Class

Course Prior to Transfer Level (CB21)

Y - Not Applicable

Course Noncredit Category (CB22)

Y - Credit Course

Funding Agency Category (CB23)

Y - Not Applicable (Funding Not Used)

Course Program Status (CB24)

1 - Program Applicable

General Education Status (CB25)

B - Satisfies Math/Quantitative Reasoning req (CSUGE-B B4, IGETC 2, or 4-yr)

Support Course Status (CB26)

N - Course is not a support course

Field trips

Will not be required

Grading method

(L) Letter Graded

Does this course require an instructional materials fee?

No

Repeatable for Credit

No

Is this course part of a family?

No

Units and Hours

Carnegie Unit Override

No

In-Class

Lecture

Minimum Contact/In-Class Lecture Hours

52.5

Maximum Contact/In-Class Lecture Hours

52.5

Activity

Laboratory

Total in-Class

Total in-Class

Total Minimum Contact/In-Class Hours

52.5

Total Maximum Contact/In-Class Hours

52.5

Outside-of-Class

Internship/Cooperative Work Experience

Paid**Unpaid****Total Outside-of-Class****Total Outside-of-Class****Minimum Outside-of-Class Hours**

105

Maximum Outside-of-Class Hours

105

Total Student Learning**Total Student Learning****Total Minimum Student Learning Hours**

157.5

Total Maximum Student Learning Hours

157.5

Minimum Units (CB07)

3

Maximum Units (CB06)

3

Prerequisites

Course taught at the level of intermediate algebra or placement as determined by the college's multiple measures assessment process

Entrance Skills**Entrance Skills**

Algebraic fluency with expressions and equations. Understanding functions and graphs.

Requisite Justification**Requisite Type**

Prerequisite

Requisite

Course taught at the level of intermediate algebra or placement as determined by the college's multiple measures assessment process

Requisite Description

Course in a sequence

Level of Scrutiny/Justification

Content review

Student Learning Outcomes (CSLOs)

Upon satisfactory completion of the course, students will be able to:

- | | |
|---|---|
| 1 | Students will graph polynomial equations |
| 2 | Students will apply transformations to the graph of functions |

Course Objectives

Upon satisfactory completion of the course, students will be able to:

- | | |
|---|--|
| 1 | Analyze and investigate properties of functions |
| 2 | Synthesize results from the graphs and/or equations of functions |
| 3 | Solve and apply equations including rational, linear, absolute value, polynomial, exponential, and logarithmic equations |
| 4 | Solve linear and nonlinear systems of equations and inequalities |
| 5 | Apply functions and other algebraic techniques to model real world applications |
| 6 | Apply transformations to the graphs of functions |
| 7 | Use linear programming to solve problems |
| 8 | Solve and apply linear systems using matrices and determinants |

Course Content**Lecture/Course Content**

1. Functions including linear, polynomial, absolute value, rational, radical, exponential, logarithmic: definitions, evaluation, domain and range
2. Algebra of functions
3. Graphs of functions including asymptotic behavior, intercepts, vertices
4. Equations including rational, linear, absolute value, polynomial, radical, exponential, logarithmic
5. Linear and nonlinear inequalities
6. Systems of equations
7. Complex numbers
8. Introduction to the following:
 - a. Linear programming
 - b. Matrices and determinants

Laboratory or Activity Content

None

Methods of Evaluation

Which of these methods will students use to demonstrate proficiency in the subject matter of this course? (Check all that apply):

Written expression
 Problem solving exercises
 Skills demonstrations

Methods of Evaluation may include, but are not limited to, the following typical classroom assessment techniques/required assignments (check as many as are deemed appropriate):

Computational homework
 Group projects
 Individual projects
 Mathematical proofs
 Objective exams
 Problem-solving exams
 Quizzes
 Problem-Solving Assignments

Instructional Methodology

Specify the methods of instruction that may be employed in this course

Audio-visual presentations
 Class activities
 Class discussions
 Collaborative group work
 Computer-aided presentations
 Demonstrations
 Distance Education
 Group discussions

Instructor-guided interpretation and analysis
 Instructor-guided use of technology
 Lecture
 Small group activities

Describe specific examples of the methods the instructor will use:

1. Instructor-led class discussion on theories and processes used to analyze functions and their graphs.
2. Instructor lecture and/or demonstration of concepts such as the various techniques used to generate sequences and series.
3. Small group practice utilizing mathematical skills and problem-solving techniques. For example, given a function, analyze the attributes of the function and sketch the graph.
4. Use of technology, such as graphing or online calculators.

Representative Course Assignments

Writing Assignments

1. Written responses (for example, use your own words to explain how to determine if two functions are inverses of each other).

Critical Thinking Assignments

1. Participate in class and small group discussions discussing, debating, and developing problem solving techniques in real world applications.
2. Developing error-analysis skills to find any algebraic mistakes in a problem.

Reading Assignments

1. Textbook readings of definitions, rules, properties, processes, and helpful hints.
2. Critical reading and thinking in application problems (for example, a person standing close to the edge of an 80-foot cliff throws a rock upward with an initial speed of 64 feet per second. The height of the rock is described by the function $y = -16x^2 + 64x + 80$. After how many seconds will the rock reach its maximum height above the water?).

Problem-Solving and Other Assignments (if applicable)

1. Student projects permitting more in depth exploration of course topics.

Outside Assignments

Representative Outside Assignments

1. Homework skill building exercises.
2. Preparation for exams (including review of notes, watching video, practice exams) logarithmic properties.

Articulation

C-ID Descriptor Number

MATH 150

Status

Approved

Comparable Courses within the VCCCD

MATH V04 - College Algebra

MATH M11 - College Algebra for the Liberal Arts

District General Education

A. Natural Sciences

B. Social and Behavioral Sciences

C. Humanities

D. Language and Rationality

E. Health and Physical Education/Kinesiology

F. Ethnic Studies/Gender Studies

CSU GE-Breadth

Area A: English Language Communication and Critical Thinking

Area B: Scientific Inquiry and Quantitative Reasoning

Area C: Arts and Humanities

Area D: Social Sciences

Area E: Lifelong Learning and Self-Development

Area F: Ethnic Studies

CSU Graduation Requirement in U.S. History, Constitution and American Ideals:

IGETC

Area 1: English Communication

Area 2A: Mathematical Concepts & Quantitative Reasoning

Area 3: Arts and Humanities

Area 4: Social and Behavioral Sciences

Area 5: Physical and Biological Sciences

Area 6: Languages Other than English (LOTE)

Textbooks and Lab Manuals

Resource Type

Textbook

Description

Karl J. Smith (2016). *The Nature of Mathematics* (12th). Brooks Cole.

Resource Type

Textbook

Description

Fleron, J., Hotchkiss, P., Ecke, V., & Von Renesse, C. (2020). *Discovering the Art of Mathematics*. National Science Foundation.

Resource Type

Other Instructional Materials

Description

Graphing Calculator

Distance Education Addendum**Definitions****Distance Education Modalities**

Hybrid (1%–50% online)
 Hybrid (51%–99% online)
 100% online

Faculty Certifications

Faculty assigned to teach Hybrid or Fully Online sections of this course will receive training in how to satisfy the Federal and state regulations governing regular effective/substantive contact for distance education. The training will include common elements in the district-supported learning management system (LMS), online teaching methods, regular effective/substantive contact, and best practices.

Yes

Faculty assigned to teach Hybrid or Fully Online sections of this course will meet with the EAC Alternate Media Specialist to ensure that the course content meets the required Federal and state accessibility standards for access by students with disabilities.

Common areas for discussion include accessibility of PDF files, images, captioning of videos, Power Point presentations, math and scientific notation, and ensuring the use of style mark-up in Word documents.

Yes

Regular Effective/Substantive Contact**Hybrid (1%–50% online) Modality:**

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Students will post a discussion board topic on the process of finding the maximum height of a projectile, and they will respond to other classmates with the intent of dialogue.
Video Conferencing	Video tools such as ConferZoom may be used to provide live synchronous or asynchronous sessions with students. ADA compliance will be upheld with Closed Captioning during the session or of the recorded session. Student-to-student group meetings will also be encouraged.
Other DE (e.g., recorded lectures)	Students will watch lecture videos.
E-mail	Responses to specific questions.

Hybrid (51%–99% online) Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Students will post a discussion board topic on the process of finding the maximum height of a projectile, and they will respond to other classmates with the intent of dialogue.
Video Conferencing	Video tools such as ConferZoom may be used to provide live synchronous or asynchronous sessions with students. ADA compliance will be upheld with Closed Captioning during the session or of the recorded session. Student-to-student group meetings will also be encouraged.
Other DE (e.g., recorded lectures)	Students will watch lecture videos.
E-mail	Responses to specific questions.

100% online Modality:

Method of Instruction	Document typical activities or assignments for each method of instruction
Asynchronous Dialog (e.g., discussion board)	Students will post a discussion board topic on the process of finding the maximum height of a projectile, and they will respond to other classmates with the intent of dialogue.
Video Conferencing	Video tools such as ConferZoom may be used to provide live synchronous or asynchronous sessions with students. ADA compliance will be upheld with Closed Captioning during the session or of the recorded session. Student-to-student group meetings will also be encouraged.
Other DE (e.g., recorded lectures)	Students will watch lecture videos.
E-mail	Responses to specific questions.

Examinations**Hybrid (1%–50% online) Modality**

On campus
Online

Hybrid (51%–99% online) Modality

On campus
Online

Primary Minimum Qualification

MATHEMATICS

Review and Approval Dates**Department Chair**

05/10/2023

Dean

05/10/2023

Technical Review

05/10/2023

Curriculum Committee

05/10/2023

DTRW-I

MM/DD/YYYY

Curriculum Committee

MM/DD/YYYY

Board

MM/DD/YYYY

CCCCO

MM/DD/YYYY

Control Number

CCC000570373

DOE/accreditation approval date

MM/DD/YYYY