



Coeur d'Alene Public Schools  
DIVISION OF TEACHING AND LEARNING  
INVEST | INSPIRE | INNOVATE

# NEW COURSE PROPOSAL FORM - 2100F1

**Due: December 22, 2023**

Date of Last Update: 31 October 2022

Course Title: AP PreCalculus			
Initiator:	Derek Edwards	School/Department:	Coeur d Alene High School Math Dept.

## NATURE OF REQUEST

New Course - select one:	<input type="checkbox"/>	Standard credit	<input type="checkbox"/>	Special Education	<input type="checkbox"/>	Honors
	x	Advanced Placement (AP)	<input type="checkbox"/>	Intervention	<input type="checkbox"/>	Magnet
	<input type="checkbox"/>	Career/Technical	<input type="checkbox"/>	Gifted and Talented	<input type="checkbox"/>	Hybrid / Online

OR

Change in Course - select one:	<input type="checkbox"/>	Change in course description	<input type="checkbox"/>	Change in title (will require a new code)
	<input type="checkbox"/>	Change in prerequisites	<input type="checkbox"/>	Change in credit distribution (will require a new code)
	<input type="checkbox"/>	Change in course length		

Student Prerequisites for Placement: Math 3	
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## MEETING STATE AND FEDERAL REQUIREMENTS-

Follow this [LINK](#) to find required information to include in the box below for State Courses and Assignments.

Follow this [LINK](#) to find required information to include in the boxes below for CTE Industry Certifications..

State Course Assignment Code:	02110	State Requirements for Teaching Course:	7300 Mathematics (6-12)
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CTE Industry Certifications:		CTE Director initials	
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**REQUIRED DOCUMENTS** (please provide as an *attachment*; templates available on MyCdaSchools > Curriculum)

**FROM COURSE PACING GUIDE** –Year at a Glance and Scope and Sequence (pages 3 & 4 of this document) **Please only use district template.**

**NOVEL RATIONALE:** *required for new courses that use fictional / non-fictional novels for whole group instruction.*

## COURSE DESCRIPTION

Required for new courses. New course description to be included in the school catalog and/or handbook. When appropriate include old course description with changes. Schools are encouraged to use the state course description.

Pre-Calculus courses combine the study of Trigonometry, Elementary Functions, Analytic Geometry, and Mathematic Analysis topics as preparation for calculus. Topics typically include the study of complex numbers; polynomial, logarithmic, exponential, rational, right trigonometric, and circular functions, and their relations, inverses and graphs; trigonometric identities and equations; solutions of right and oblique triangles; vectors; the polar coordinate system; conic sections; Boolean algebra and symbolic logic; mathematical induction; matrix algebra; sequences and series; and limits and continuity. Review topics: structure of the real number system, solutions of linear and quadratic equations and systems of these equations. Enhancement topics: elementary probability and statistics, derivatives, and integrals.

Credits:	2	Course length:	<input type="checkbox"/> Semester    xYear <input type="checkbox"/> Trimester
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## ADVANCEMENT / GRADUATION REQUIREMENTS

Please identify the advancement / graduation requirements that the course meets.

<input type="checkbox"/>	Electives (General)	x	Math (High School)	<input type="checkbox"/>	Science (Elective)
<input type="checkbox"/>	English / Language Arts	x	Math (Elective)	<input type="checkbox"/>	Social Studies (United States History)
<input type="checkbox"/>	Health and Wellness	<input type="checkbox"/>	Math – Middle school	<input type="checkbox"/>	Social Studies (American Government)
<input type="checkbox"/>	Humanities (Fine / Perf. Arts)	<input type="checkbox"/>	Physical Education	<input type="checkbox"/>	Social Studies (Economics)
<input type="checkbox"/>	Humanities (World History)	<input type="checkbox"/>	Career Technical Ed.	<input type="checkbox"/>	Social Studies (Elective)
<input type="checkbox"/>	Humanities (World Languages)	<input type="checkbox"/>	Science (Biological Science)	<input type="checkbox"/>	Other – Please explain:



# NEW COURSE PROPOSAL FORM - 2100F1

## Due: December 22, 2023

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Language Arts  
- Middle school

Intended grade levels:	<input type="checkbox"/> 6	<input type="checkbox"/> 7	<input type="checkbox"/> 8	<input type="checkbox"/> 9	<input checked="" type="checkbox"/> 10	<input checked="" type="checkbox"/> 11	<input checked="" type="checkbox"/> 12
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Follow these links to fill in the box below for this section: **IDAHO CONTENT STANDARDS** and / or **INDUSTRY STANDARD REFERENCE** (please navigate to the page with the program area you are proposing. Pathways and standards documents are linked at the bottom.) *If no state, national, or industry standards exist, attach other standards documentation, such as organizational standards.*

Idaho content standards for 9-12 grade including the following domains: Number and Quantity, Algebra, Functions, Modeling, Geometry, Statistics and Probability. These domains are described in more detail at <https://www.sde.idaho.gov/topics/admin-rules/files/negotiated-rulemaking/Idaho-K-12-State-Standards-for-Mathematics.pdf> on pages 117-165.

**DISTRICT ADOPTIONS** *Identify district / state approved textbooks, ancillary materials with cost for each item, listing the vendor and the source of funding that will be used*

Title	ISBN	Cost	Vendor	Source of Funding
PreCalculus Enhanced with Graphing Utilities	13-9780135813416	74.99	Pearson	Won't need funding as district already owns these

**FINANCIAL IMPACT** *Identify the potential cost of offering the course including staffing, supplemental and laboratory materials.*

There will be no additional cost - we will use the books we already own in the district and will utilize resources offered from AP.

### ALIGNMENT OF ADOPTIONS TO STANDARDS

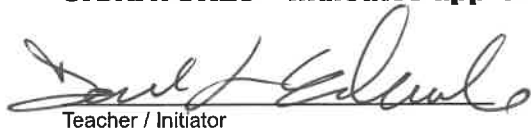
Follow these links to fill in the box below for this section:

This adoption will align with the standards already in place for Honors PreCalculus but will allow students to take the AP test.

### OPTIONAL DOCUMENTS FOR SUBMISSION

- Statement of articulation with colleges or universities
- Lesson examples
- Ancillary materials: films, multimedia, authentic documents, etc.

### SIGNATURES – Indicates approval

 2/23/24  
Teacher / Initiator Date

Deputy Superintendent

Date

Building Administrator

Date

Curriculum Coordinator

Date

### SUBMISSION

New course proposals may be submitted **no later than December 23, 2022.**

Send electronic copies of documentation via district email to **Katie Graupman at the District Office.**

Send **original copy** of this **fully completed** and **signed** document to **Katie Graupman, District Office**

District Office Use Only:

Course #: \_\_\_\_\_ Date: \_\_\_\_\_ Initials: \_\_\_\_\_

# Course at a Glance

## Plan

The Course at a Glance provides a useful visual organization for the AP Precalculus curricular components, including:

- Sequence of units, along with approximate weighting and suggested pacing. Please note, pacing is based on 45-minute class periods, meeting five days each week for a full academic year.
- Progression of topics within each unit.

## Teach

### MATHEMATICAL PRACTICES

- |  |                                      |
|--|--------------------------------------|
| <b>1</b> Procedural and Symbolic Fluency | <b>3</b> Communication and Reasoning |
| <b>2</b> Multiple Representations        |                                      |

## Required Course Content

Each topic contains required Learning Objectives and Essential Knowledge Statements that form the basis of the assessment on the AP Exam.

## Assess

Assign the Progress Checks—either as homework or in class—for each unit. Each Progress Check contains formative multiple-choice and free-response questions. The feedback from the Progress Checks shows students the areas where they need to focus.

UNIT 1		Polynomial and Rational Functions
6–8 weeks		30–40% AP Exam Weighting
2 3	1.1	Change in Tandem
2 3	1.2	Rates of Change
3	1.3	Rates of Change in Linear and Quadratic Functions
2 3	1.4	Polynomial Functions and Rates of Change
1 2	1.5	Polynomial Functions and Complex Zeros
3	1.6	Polynomial Functions and End Behavior
1 3	1.7	Rational Functions and End Behavior
1	1.8	Rational Functions and Zeros
2	1.9	Rational Functions and Vertical Asymptotes
3	1.10	Rational Functions and Holes
1 3	1.11	Equivalent Representations of Polynomial and Rational Expressions
1 3	1.12	Transformations of Functions
2 3	1.13	Function Model Selection and Assumption Articulation
1 3	1.14	Function Model Construction and Application

Progress Check Unit 1 Part 1:  
Topics 1.1–1.6

Multiple-choice: 18  
Free-response: 2

Progress Check Unit 1 Part 2:  
Topics 1.7–1.14

Multiple-choice: 24  
Free-response: 2

UNIT 2		Exponential and Logarithmic Functions
6–9 weeks		27–40% AP Exam Weighting
1 3	2.1	Change in Arithmetic and Geometric Sequences
1 3	2.2	Change in Linear and Exponential Functions
3	2.3	Exponential Functions
1 3	2.4	Exponential Function Manipulation
1 3	2.5	Exponential Function Context and Data Modeling
2 3	2.6	Competing Function Model Validation
1 2	2.7	Composition of Functions
1 2	2.8	Inverse Functions
1	2.9	Logarithmic Expressions
1 2	2.10	Inverses of Exponential Functions
3	2.11	Logarithmic Functions
1 3	2.12	Logarithmic Function Manipulation
1	2.13	Exponential and Logarithmic Equations and Inequalities
1 3	2.14	Logarithmic Function Context and Data Modeling
2 3	2.15	Semi-log Plots

Progress Check Unit 2 Part 1:  
Topics 2.1–2.8

Multiple-choice: 24  
Free-response: 2

Progress Check Unit 2 Part 2:  
Topics 2.9–2.15

Multiple-choice: 24  
Free-response: 2

# UNIT 3

## Trigonometric and Polar Functions

**7–10** weeks

**30–35%** AP Exam  
Weighting

<b>2</b> <b>3</b>	<b>3.1</b> Periodic Phenomena
<b>2</b> <b>3</b>	<b>3.2</b> Sine, Cosine, and Tangent
<b>2</b> <b>3</b>	<b>3.3</b> Sine and Cosine Function Values
<b>2</b> <b>3</b>	<b>3.4</b> Sine and Cosine Function Graphs
<b>2</b> <b>3</b>	<b>3.5</b> Sinusoidal Functions
<b>1</b> <b>2</b>	<b>3.6</b> Sinusoidal Function Transformations
<b>1</b> <b>3</b>	<b>3.7</b> Sinusoidal Function Context and Data Modeling
<b>2</b> <b>3</b>	<b>3.8</b> The Tangent Function
<b>1</b> <b>2</b>	<b>3.9</b> Inverse Trigonometric Functions
<b>1</b> <b>2</b> <b>3</b>	<b>3.10</b> Trigonometric Equations and Inequalities
<b>2</b> <b>3</b>	<b>3.11</b> The Secant, Cosecant, and Cotangent Functions
<b>1</b> <b>3</b>	<b>3.12</b> Equivalent Representations of Trigonometric Functions
<b>1</b> <b>2</b>	<b>3.13</b> Trigonometry and Polar Coordinates
<b>2</b> <b>3</b>	<b>3.14</b> Polar Function Graphs
<b>3</b>	<b>3.15</b> Rates of Change in Polar Functions

Progress Check Unit 3 Part 1:  
Topics 3.1–3.7

**Multiple-choice: 21**  
**Free-response: 2**

Progress Check Unit 3 Part 2:  
Topics 3.8–3.15

**Multiple-choice: 24**  
**Free-response: 2**

# UNIT 4

## Functions Involving Parameters, Vectors, and Matrices

**7** weeks

**0%** AP Exam  
Weighting

<b>1</b> <b>2</b>	<b>4.1</b> Parametric Functions
<b>3</b>	<b>4.2</b> Parametric Functions Modeling Planar Motion
<b>3</b>	<b>4.3</b> Parametric Functions and Rates of Change
<b>1</b>	<b>4.4</b> Parametrically Defined Circles and Lines
<b>2</b> <b>3</b>	<b>4.5</b> Implicitly Defined Functions
<b>1</b> <b>2</b>	<b>4.6</b> Conic Sections
<b>1</b> <b>2</b>	<b>4.7</b> Parametrization of Implicitly Defined Functions
<b>2</b> <b>3</b>	<b>4.8</b> Vectors
<b>3</b>	<b>4.9</b> Vector-Valued Functions
<b>1</b> <b>3</b>	<b>4.10</b> Matrices
<b>1</b> <b>3</b>	<b>4.11</b> The Inverse and Determinant of a Matrix
<b>1</b>	<b>4.12</b> Linear Transformations and Matrices
<b>1</b> <b>2</b> <b>3</b>	<b>4.13</b> Matrices as Functions
<b>1</b> <b>3</b>	<b>4.14</b> Matrices Modeling Contexts

Progress Check Unit 4 Part 1:  
Topics 4.1–4.7

**Multiple-choice: 24**  
**Free-response: 2**

Progress Check Unit 4 Part 2:  
Topics 4.8–4.14

**Multiple-choice: 21**  
**Free-response: 2**



# Help More Students Go Further by Offering AP Precalculus



## The Power of High School Precalculus

**The Problem:** A third of college students end up spending time and money on remedial math courses that don't count toward their degrees because they lack sufficient math skills.

**The Solution:** Precalculus is one of the most powerful math courses in American high schools—taking it increases a student's likelihood of completing a bachelor's degree by 155%.

## Why AP Precalculus?

AP® Precalculus is a new course designed to prepare more students for the math they'll encounter in college, and it can be offered in place of your current precalculus or trigonometry course. Your school can begin offering AP Precalculus for the 2023-24 academic year. The first AP Precalculus Exam will be administered in spring 2024.

The course has a unique mission: to make the benefits of AP coursework broadly accessible, particularly to those students who've never been in an AP course. Taking even one AP course changes student outcomes, substantially improving their first-year college GPA and on-time college graduation rates.

It's designed for students who've completed Geometry and Algebra 2, or for students who've completed Integrated Math 3. Students who've taken these courses at any level have covered all the content necessary for AP Precalculus. This means **every** student ready for precalculus is ready for AP Precalculus.

AP Precalculus contains content similar to existing high school precalculus courses—which are, by nature, already advanced. Teachers can continue to use their existing textbooks and follow along with the *AP Precalculus Course and Exam Description*. They'll also have access to digital instructional supports through AP Classroom and professional learning opportunities.

## BENEFITS FOR STUDENTS:



### Powerful Incentives

AP Precalculus students can earn college advanced placement, credit, or both—a powerful motivator to take 4 years of math. **Students who take math continuously in high school are 140.5% more likely to be considered "college ready" and "calculus ready."**



### More Time

AP Precalculus students have more time with their teacher to better develop content knowledge and skills. **They gain 140 hours of time with their AP teacher versus about 48 hours in a traditional college course and in a smaller, familiar setting.**



### Free Supports

AP Precalculus students get access to digital learning and practice resources to use with their existing textbook.

Learn more at: **[cb.org/ap-precalculus](https://cb.org/ap-precalculus)**