

# Precalculus CP

## Course Compendium

### UNITS OF STUDY\*

Unit 1- *Essentials for Precalculus*

Unit 2- *Functions and Graphs*

Unit 3- *Polynomial Functions*

Unit 4- *Rational Functions*

Unit 5- *Exponential and Logarithmic Functions*

Unit 6- *Trigonometric Functions*

Unit 7- *Analytic Trigonometry*

Unit 8- *Conic Equations*

### INTERDISCIPLINARY CONNECTIONS

#### **NJSLS Companion Standards Grades 9-12 (Reading & Writing in Science & Technical Subjects)**

**RST.9-10.3.** Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.

**RST.9-10.7.** Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

**RST.9-10.8.** Determine if the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.

**RST.11-12.1.** Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions.

**RST.11-12.3.** Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

**RST.11-12.4.** Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.

**RST.11-12.8.** Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

#### **21st Century Life and Careers**

**CRP1.** Act as a responsible and contributing citizen and employee.

**CRP2.** Apply appropriate academic and technical skills.

#### **Precalculus CP Credits: 5 Grades: 10, 11, 12**

This course merges the previous study of algebra, geometry, and mathematical functions into a preparatory course for calculus. The course focuses on mastery of critical skills and exposure to new skills necessary for success in subsequent math courses. Throughout the course, Common Core standards are taught and reinforced as the student learns how to apply the concepts in real life situations. Topics include fundamental concepts of Algebra, functions and graphs, polynomials and rational functions, exponential and logarithmic functions, trigonometric functions, analytic trigonometry, topics in trigonometry, conic sections and analytic geometry and an introduction to Calculus.

*\*See individual units for Pacing Guide, NJSLS Standards, Transfer Skills, Enduring Understandings, Essential Questions, Learning Objectives, Key Vocabulary, Skills, Resources, & Assessments*

**CRP4.** Communicate clearly and effectively and with reason.

**CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them.

**CRP11.** Use technology to enhance productivity.

**9.3.ST.2** Use technology to acquire, manipulate, analyze and report data.

**9.3.ST.5** Demonstrate an understanding of the breadth of career opportunities and means to those opportunities in each of the Science, Technology, Engineering & Mathematics Career Pathways.

**9.3.ST.6** Demonstrate technical skills needed in a chosen STEM field.

## Technology

**8.1 Educational Technology:** All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

**A. Technology Operations and Concepts:** Students demonstrate a sound understanding of technology concepts, systems and operations.

**8.1.12.A.CS1** Understand and use technology systems.

**8.1.12.A.CS2** Select and use applications effectively and productively.

**8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming:** All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment

**E. Computational Thinking: Programming:** Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.

**8.2.12.E.1** Demonstrate an understanding of the problem-solving capacity of computers in our world.

## MODIFICATIONS / ACCOMMODATIONS

GENERAL CONSIDERATIONS FOR DIVERSE LEARNERS		
English Language Learners	Students Receiving Special Education Services	Advanced Learners
<ul style="list-style-type: none"><li>- Personal glossary</li><li>- Text-to-speech</li><li>- Extended time</li><li>- Simplified / verbal instructions</li><li>- Frequent breaks</li></ul> <p><a href="#">WIDA Can Do Descriptors for Grade 9-12</a> <a href="#">WIDA Essential Actions Handbook</a> <a href="#">FABRIC Paradigm</a> <a href="#">Wall Township ESL Grading Protocol</a></p> <p>Use WIDA Can Do Descriptors in</p>	<ul style="list-style-type: none"><li>- Small group/One to one</li><li>- Additional time</li><li>- Review of directions</li><li>- Student restates information</li><li>- Space for movement or breaks</li><li>- Extra visual and verbal cues and prompts</li><li>- Preferential seating</li><li>- Follow a routine/schedule</li><li>- Rest breaks</li><li>- Verbal and visual cues regarding directions and staying on task</li><li>- Checklists</li><li>- Immediate feedback</li></ul>	<ul style="list-style-type: none"><li>- Use of high level academic vocabulary/texts</li><li>- Problem-based learning</li><li>- Pre-assess to condense curriculum</li><li>- Interest-based research</li><li>- Authentic problem-solving</li><li>- Homogeneous grouping opportunities</li></ul> <p><a href="#">Knowledge and Skill Standards in Gifted Education for All Teachers</a> <a href="#">Pre-K-Grade 12 Gifted Programming Standards</a></p>

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coordination with Student Language Portraits (SLPs).	<p>Students receiving Special Education programming have specific goals and objectives, as well as accommodations and modifications outlined within their Individualized Education Plans (IEP) due to an identified disability and/or diagnosis. In addition to exposure to the general education curriculum, the instruction is differentiated based upon the student's needs. The IEP acts as a supplemental curriculum guide inclusive of instructional strategies that support each learner.</p> <p><a href="#">Considerations for Special Education Students 6-12</a>  <a href="#">National Center on Universal Design for Learning - About UDL</a>  <a href="#">UDL Checklist</a>  <a href="#">UDL Key Terms</a></p>	<a href="#">Gifted Programming Glossary of Terms</a>
		<b>Students with 504 Plan</b>
		Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.

**At Risk Learners / Differentiation Strategies**

<p>Alternative Assessments  Choice Boards  Group Investigations  Learning Contracts  Leveled Rubrics  Personal Agendas  Homogeneous Grouping  Online Math Practice</p>	<p>Independent Research &amp; Projects  Multiple Intelligence Options  Varied Supplemental Activities  Tiered Activities/Assignments  Tiered Products  Graphic Organizers  Choice of Activities  Think-Pair-Share by readiness  Use of Collaboration of Various Activities</p>	<p>Jigsaw  Think-Tac-Toe  Flexible Grouping  Goal-Setting with Students  Homework Options  Open-Ended Activities  Varied Product Choices  Stations/Centers  Work Alone/Together</p>
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