**Course Title:** MYP Algebra 2 Level 5

**School: Pueblo East High School**

**Instructor:** Ms. Linda Sanchez

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1. **Course Description:**
   1. **MYP Fundamental Concepts**

The aim of all IB programs is to develop internationally minded people who, recognizing their common humanity and shared guardianship of the planet, help to create a better and more peaceful world. Student learning is guided by a focus on holistic learning through units that are guided by the MYP areas of interaction. Units in the course will also be written with a focus on intercultural awareness, open and effective communication, and international mindedness.

* 1. **Learner Profile Attributes**

Students in this course will be encouraged to develop the attributes of the IB Learner Profile through various activities including collaboration, inquiry based lessons and reflection. IB Learners strive to be inquirers, knowledgeable, thinkers, communicators, principled, open-minded, caring, risk-takers, balanced, and reflective. During each unit, students will focus on developing one or two attributes of the Learner Profile. .

1. **MYP Aims and Objectives/Common Core State Standards/Colorado Academic Standards**

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| **Aims:**  The aims of the teaching and study of MYP mathematics are to encourage and enable students to: • enjoy mathematics and to develop curiosity as well as an appreciation of its elegance and power • develop an understanding of the principles and nature of mathematics • communicate clearly and confidently in a variety of contexts • develop logical, critical and creative thinking, and patience and persistence in problem solving • develop power of generalization and abstraction • apply and transfer skills to a wide range of situations including real life, other areas of knowledge and future developments • appreciate how developments in technology and mathematics have influenced each other • appreciate the moral, social and ethical implications arising from the work of mathematicians and the applications of mathematics • appreciate the international dimension in mathematics through an awareness of the universality of mathematics and its multicultural and historical perspectives • appreciate the contribution of mathematics to other areas of knowledge • develop the knowledge, skills and attitudes necessary to pursue further studies in mathematics • develop the ability to reflect critically upon their own work and the work of others. | |
| **MYP Objectives:**  A. Knowledge and understanding   Knowledge and understanding are fundamental to studying mathematics and form the base from which to explore concepts and develop problem-solving skills. Through knowledge and understanding, students develop mathematical reasoning to make deductions and solve problems.  At the end of the course, students should be able to:  i. select appropriate mathematics when solving problems in both familiar and unfamiliar situations ii. apply the selected mathematics successfully when solving problems iii. solve problems correctly in a variety of contexts.  B. Investigating patterns   Investigating patterns allows students to experience the excitement and satisfaction of mathematical discovery. Working through investigations encourages students to become risk-takers, inquirers and critical thinkers. The ability to inquire is invaluable in the MYP and contributes to lifelong learning.  At the end of the course, students should be able to:  i. select and apply mathematical problem-solving techniques to discover complex patterns ii. describe patterns as general rules consistent with findings iii. prove, or verify and justify, general rules.  C. Communicating  Mathematics provides a powerful and universal language. Students are expected to use appropriate  mathematical language and different forms of representation when communicating mathematical ideas, reasoning and findings, both orally and in writing.  At the end of the course, students should be able to:  i. use appropriate mathematical language (notation, symbols and terminology) in both oral and written  explanations ii. use appropriate forms of mathematical representation to present information iii. move between different forms of mathematical representation iv. communicate complete, coherent and concise mathematical lines of reasoning v. organize information using a logical structure.  D. Applying mathematics in real-life contexts  MYP mathematics encourages students to see mathematics as a tool for solving problems in an authentic real-life context. Students are expected to transfer theoretical mathematical knowledge into real-world situations and apply appropriate problem-solving strategies, draw valid conclusions and reflect upon their results.  At the end of the course, students should be able to:  i. identify relevant elements of authentic real-life situations ii. select appropriate mathematical strategies when solving authentic real-life situations iii. apply the selected mathematical strategies successfully to reach a solution iv. justify the degree of accuracy of a solution v. justify whether a solution makes sense in the context of the authentic real-life situation. | **CCSS (or CAS):**  CCSS: HS: Algebra, Seeing Structure in Expressions  CCSS: HS: Functions, Interpreting Functions  CCSS: HS: Functions, Building Functions  CCSS: HS: Functions, Linear, Quadratic, and Exponential Models  CCSS: HS: Algebra, Reasoning with Equations & Inequalities  CCSS: HS: Num/Quantity, The Complex Number System  CCSS: HS: Geometry, Expressing Geometric Properties with Equations  CCSS: HS: Geometry, Expressing Geometric Properties with Equations  CCSS: HS: Algebra, Arithmetic with Polynomials & Rational Functions  CCSS: HS: Algebra, Creating Equations  CCSS: HS: Stats/Prob, Conditional Probability & the Rules of Probability  CCSS: HS: Stats/Prob, Using Probability to Make Decisions  CCSS: HS: Functions, Trigonometric Functions  CCSS: HS: Stats/Prob, Interpreting Categorical & Quantitative Data  CCSS: HS: Stats/Prob, Making Inferences & Justifying Conclusions |

1. **Global Contexts**

Global contexts direct learning towards independent and shared inquiry into our common humanity and shared guardianship of the planet. Using the world as the broadest context for learning, MYP mathematics can develop meaningful explorations of: identities and relationships, orientation in space and time, personal and cultural expression, scientific and technical innovation, globalization and sustainability, and fairness and development. Each unit will be written with a selected global context. Inquiring into subject content through a global context enables students to develop a deeper understanding of both mathematics and its application in the real world. Repeated cycles of inquiry, action and reflection can lead students from academic knowledge towards practical understanding, developing positive attitudes towards learning as well as a sense of personal and social responsibility.

1. **MYP Unit Sequence and Duration**

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| **Unit Sequence** | **Duration** |
| Algebraic and Geometric Sequences and Series: Students will be developing and justifying or proving general rules/formulae for sequences, finding the sum of a series, and finding unknowns (ratio, term, and so on).  Systems of Equations and Inequalities:  Students will be solving systems of equations and inequalities algebraically, with matrices, and using graphs.  Quadratic Equations and Relations:  Students will be identifying characteristics including the domain and range, predicting behavior of quadratic functions, understanding and performing transformations of these functions, and solving quadratic equations algebraically and using graphs.  Conic Sections Students will be building on previous knowledge of parabolas to help make sense of the equations, graphs, and translations of other conic sections including circles, ellipses, and hyperbolas.  Polynomial Functions Students will be identifying characteristics including the domain and range, predicting behavior of polynomial functions, understanding and performing transformations of these functions, and performing mathematical operations on polynomial expressions.  Radical and Rational Functions Students will be identifying characteristics including the domain and range, predicting behavior of radical and rational functions, understanding and performing transformations of these functions, and investigating extraneous roots.  Exponential Functions and Logarithms Students will be identifying characteristics including the domain and range, predicting behavior of exponential and logarithmic functions, understanding and performing transformations of these functions, and performing mathematical operations on exponential and logarithmic expressions.  Probability Students will be calculating probabilities of simple events, calculating probabilities of mutually exclusive events and combined events, and using tree diagrams to determine the probability of repeated events.  Trigonometry Students will be justifying or proving simple trigonometric identities to simplify and solve equations where 0° ≤ θ ≤ 360° and they will be defining and transforming the periodic functions.  Statistical Studies Students will be studying the design of experiments and learning to use probability, relative frequencies, and discrete distributions to develop a conceptual understanding of the normal distribution and its applications.  Choosing a Function Model Students draw upon their knowledge of linear, polynomial, power, exponential, logarithmic, and trigonometric functions to model a variety of situations. Students use regression and learn about correlation to determine the strength of a model. Students use the model to make predictions in a given situation. | Approximately 2 weeks      Approximately 3 weeks     Approximately 4 weeks        Approximately 2 weeks      Approximately 2 weeks        Approximately 3 weeks       Approximately 3 weeks         Approximately 2 weeks       Approximately 3 weeks      Approximately 2 weeks       Approximately 2 weeks |

1. **Methods of Assessment**

Assessment tasks in this class will include formative and summative assessments.  
  
Formative assessments will include but not be limited to: observation, checks for understanding, daily practice lessons, quizzes, and investigations.  
  
Summative assessments will include but not be limited to: selected response exams, open-ended tasks, performance tasks, projects, investigations, and written works.   
  
For each scored assessment given, students will receive a task oriented rubric that will be used to determine the students’ level of understanding and/or achievement based on the MYP Criteria which follows.   
  
Assessment for mathematics courses in all years of the programme is criterion-related, based on four equally   
weighted assessment criteria that match the course objectives:  
  
Criterion A: Knowing and understanding   
Criterion B: Investigating patterns   
Criterion C: Communicating   
Criterion D: Applying mathematics in real-life contexts   
  
Each of these criterion will be assessed at least twice over the course of the school year.

1. **Texts and Resources**

Explorations in Core Math for Common Core Algebra 2, Holt McDougal  
Additional Supplementary Resources as deemed appropriate

1. **Other Course Components**

Grading Scale and Policies  
90-100% = A   
80-89% = B   
70-79% = C   
60-69% = D   
Below 60% = F  
  
Student’s grades will be weighted as follows:   
  
Summative Tasks = 60%   
Formative Tasks = 40%   
  
This is an interactive course. Class discussions and student presentations will enable us to explore various methods in problem solving and the reasons they work. Whole group instruction as well as small group investigation will be used regularly with the expectation that all students will participate equally.  
  
Academic Honesty is expected of all students. For additional information on Academic Honesty, please refer to the Academic Honesty Policy.   
  
CHEATING OF ANY KIND WILL NOT BE TOLERATED AND WILL RESULT IN A GRADE OF ZERO AND LOSS OF CHANCE TO RE-TEST/SUBMIT.   
  
ATTENDANCE AND TARDIES  
  
Attendance is required. There is a direct correlation between high student achievement and good attendance.  
  
Absences: Please refer to the East High School Handbook for school policy regarding absences from school. Extended absences will be reviewed on an individual basis. In the case of an excused absence on a test day, the student must take the missing test the day of return to school. Make-up work will only be allowed for excused absences.  
  
Tardies: Students are expected to be in their seat when the tardy bell rings. In the event that they are late in excess of 5 times during a quarter, they will be referred to the Assistant Principal.  
  
Behavior: Students are expected to follow the two classroom rules which are Be Respectful and Be Responsible.   
  
Respect is expected at all times for the instructor, substitute instructor, all students and their ideas. Please refer to the Pueblo City Schools Student Conduct Code.  
  
Students are also expected to be responsible for their own learning and academic success. Students should turn in work in a timely manner, be responsible for any material missed due to an absence, be an active participant in daily learning, and should ask questions when they need clarification or assisstance.  
  
In general students should ensure that all behaviors in class promote their own learning and do not interfere with the learning of others.