QSI Mathematics

Advanced Math II Syllabus

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Introduction

Hello, my name is Emily Hinman. I will be the teacher for Advanced Math II (also known as PreCalculus) through QVS this school year. I look forward to working with your children. I am a licensed school psychologist as well as a certified mathematics and special education teacher. This will be my 16th year working in international schools. I spent four years working at QSI Tbilisi, five years at The American International School of Vilnius, two years at QSI Skopje, and this is my fifth year working for QVS.

I would like to provide you with some basic information in this syllabus as well as let you know that you can always follow along with the course on my Moodle page. Also, I will always let you know what the essential outcomes are (i.e. what your child is learning at school), what the assignments are,due dates for assignments, as well as test dates on a shared Google doc. If your child struggles to complete an assignment or needs additional help, I will send a quick email letting you know.

If you ever have any questions or concerns about the class, please contact me at emily-hinman@qsi.org.

Course Overview

QSI mathematics students take risks, collaborate, and persist to become creative problem solvers. Conceptual understandings are developed through well-designed activities allowing students to explore, communicate, and reflect on their mathematical knowledge. Students apply and connect their understandings to relevant concepts both in and out of the classroom.

The Advanced Mathematics II course is designed to continue to expand students' knowledge of functions and polynomials as they apply to real-world situations. The course includes a review of sequences and series as well as polynomial, rational, exponential, logistic, logarithmic, and trigonometric functions and their inverses. In the Advanced Mathematics II course students are expected to engage in mathematical modeling with an emphasis on exploring and extending the ideas.

The Advanced Math II is designed for students who are in the secondary program. This course is for students who have mastered previous Advanced Math I or equivalent thereof.

Advanced Math II is divided into 7 essential units and 3 selective units. *The normal pace and expectation for the course leads to mastery of **10 units in one school year**.* Advanced Math II is designed to use 5 class periods per week or the equivalent. A class period is a minimum of 45 minutes. Mastery of 10 units of Advanced Math II is a requirement to take AP Calculus. Advanced Math II counts as an elective credit to graduate.

Resources/Materials

- *Precalculus: Graphical, Numerical, Algebraic*. Pearson, 2019 - I will provide students with an etext and schools may be able to provide students with a hard copy of the textbook.
- Students need to have access to a **TI-83/84 Calculator** or use of DESMOS website
- Access to IXL - https://www.ixl.com/math/precalculus - students will be provided a login and password

Assessment

Students will be provided with a rubric at the beginning of each unit to help determine if a student has reached 'A' level mastery or 'B' level mastery. **Mastery means** that the student has learned the facts and/or concepts to such an extent that they are usable tools in future endeavors. The grade of 'A' not only indicates that the student has mastered the material well, but is able to consistently demonstrate higher order thinking and performance skills such as problem solving, analysis, creativity, *etc*. In more practical terms, students will be given specific assignments with each unit that will be labeled "A" assignments. Students will also have specific questions on tests that are labeled "A" questions. Students will receive a "P" if they are currently working on a unit and/or need more time and practice to attain mastery. Students will be assigned an H if they have worked

very hard to master a unit but haven't been able to master the content. Students will be assigned a D if they do not work consistently on the course or otherwise fail to make sufficient effort towards mastery.

I will use two different types of assessments, formative and summative. Formative assessments are labeled as lessons and quizzes. Students should take quizzes alone. They will either be online or paper and pencil tasks that the students send back to me. These assessments simply tell me what the students need more practice on. There is NO concept of averaging quiz and lesson grades into a final unit grade. The final unit grade will be assessed using an end of the unit summative assessment or project.

Teacher Expectations for Students

(1) Have the goal that you want to learn the course material. This is quite different from having the goal that you want to earn A's or B's. If we share the goal that you can use the content of this course in future mathematics courses, then we will always be working toward the same goals
(2) Be respectful of all students in the class. When posting on Moodle keep in mind that students only know you by what you write and it is easy to misunderstand each other when we do not have body language to help guide intentions.
(3) Take responsibility for your learning. It is my job to give you all the tools and content to be successful. It is your job to use the tools and want to be successful. We have to trust each other a lot in an online learning environment. I put the faith in you to follow the directions that I give in the lessons and assignments rather than trying to find a shortcut around the assignment.
(4) Students should have to finish lessons including practice problems in order to unlock the next lesson. At the end of each lesson, I give students a chance to ask questions. Students need to ask questions when they do not understand something.
(5) **Complete practice problems from the lessons neatly in a notebook**. Show what you can do without the provided answers in one color and show corrections in another color. This way you will be able to see what you need to practice more later. I will ask that you upload a video journal of your notes and worked out problems on Friday of each week. Uploading these images will unlock the assignment on Monday morning.
(6) Complete quizzes from memory or if you feel like you need to check something in your textbook then leave me a note/comment saying that you looked up something because you forgot. Quizzes are not graded so you do not need to worry about making mistakes. I will provide students with additional explanations and practice for non-mastered skills.
(7) Complete Unit Tests to a mastery level. Students need to be able to demonstrate mastery on all the essential outcomes of a unit at the same time. When students have not mastered a TSW, then I will provide additional examples, IXL practice, and/or video conferencing calls to go over the mistakes.
(8) Complete any Projects that are given to the standard set forth by the rubric.
(9) Complete the weekly assignments by the end of each week. QSI does not believe that time should be a limitation on student learning when learning takes additional time. This is different from taking additional time because you have other "things" that you want to do. If you are struggling with a concept and it is taking you more time, tell me right away.
(10) Let me know if you have a break that is different from QVS so I understand why you are not completing online assignments.

Homework

There is nothing that is specifically called homework in this class. There are practice problems built into the SCORM package. If students complete the SCORM lesson as it is assigned then students do not have any work to take home. If students were unable to finish the lesson, IXL practice, or project during class time then students will need to finish it at home. If students are using their assigned class time at school and still spending more than 45 minutes at home completing a lesson please let me know. It is not my intention that they miss sleep or are overly stressed by the assignments in the course.

Essential Units - In the order of instruction

SO9 - Portfolio - A Unit that will be completed throughout the year

E01 – Functions and Graphs

E02 – Polynomial and Power Functions

E03 – Rational Functions

E04 – Exponential and Logarithmic Functions

E05 – Trigonometric Functions

E06 – Analytic Trigonometry

E07 – Discrete Mathematics (Sequences and Series)

S07 - Analytic Geometry in Two and Three Dimensions

SO3 - Math Investigations (Limits)