



Tohoku International School

Secondary School Course Syllabus

Course Title: Integrated Mathematics	Teacher: Mr. Zane Clifford Email: zclifford@tisweb.net
Grade Levels: Grade 12	Time Frame: 37 weeks
Course Description: <p>The key concepts in Integrated mathematics are measurement, modeling, and working with data (collecting, analyzing, and communicating). This course explores in greater depth many of the concepts already encountered in Grade 8 Math, Algebra, and Geometry. Students who complete this course successfully should be ready to take Trigonometry and Math Analysis or other higher math courses in college.</p> <p>This course will prepare students for success in college, and in their careers and daily lives in the 21st century. Students will develop their abilities to understand and solve mathematical problems, think critically, and communicate ideas clearly. As students explore the material presented in this course, they should begin to see the connections and applications between mathematics and the world around them.</p>	
Course Philosophy: <p>What is Integrated Mathematics?</p> <p>How can a lawyer make sure that a jury understands evidence based on probabilities? Do the heights of the students at a school really follow a bell-shaped normal distribution? What is the maximum volume of a box made from a piece of card with squares cut from each corner? Can you work out with rate gives the most interest on your savings? How much should a new car cost? How can meteorologists estimate the area affected by a hurricane? Answering these questions requires tools that let us measure, understand and interpret real world data so as to improve our lives and the lives of those around us.</p>	
Course Objectives: <p>By the end of this course, students will be able to:</p> <ul style="list-style-type: none">• Use diagrams and formulas to describe uncertainty.• Test hypotheses and determine whether two variables are dependent or independent.• Model real life situations using power, exponential logarithmic and trigonometric functions.• Understand the basics of integration and differentiation and how to apply this knowledge to real world scenarios.	
Units of Study: <ul style="list-style-type: none">• Quantifying uncertainty: probability, binomial and normal distributions• Testing for Validity: Spearman's, hypothesis testing and χ^2 test for independence• Modelling relationships with functions: power functions• Modelling rates of change: exponential and logarithmic functions• Modelling periodic phenomena: trigonometric functions• Analysis rates of change: differential calculus• Approximating irregular spaces: integration	

Mathematics: Applications and Interpretation Standard Level (SL)

Assessments :

Project – 15%

Each student will be expected to complete a major project at the end of the school year. The project is an opportunity to show that the student can apply mathematics to an area that interests him/her. A good project should be clear and easily understood by a non-mathematician, and self-explanatory all the way through. Students will present their projects to each other in class. More detailed information, including criteria for grading, will be provided later this school year.

Quizzes – 20%

Students should expect several quizzes per unit. They will always be announced in advance. Students may use their graphing calculator and math notebook on most quizzes. When a quiz is returned to a student, s/he has the option of revising any mistakes on that quiz, re-submitting it, and receiving up to half the points missed. Students will have **one week** to submit revisions.

Tests – 40%

At the end of each chapter or unit of study, there will be a test to assess each student's understanding. They will always be announced in advance. Students may use their graphing calculator and math notebook on most tests. When a test is returned to a student, s/he has the option of revising any mistakes on that test, re-submitting it, and receiving up to half the points missed. Students will have **one week** to submit revisions.

Final Exam – 15%

At the end of each semester, there will be a 90-minute exam on all of the major topics covered during that term. Students may use their graphing calculator and one page (A4 size) of handwritten notes, front and back. Their page of notes will be turned in along with their exam.

Learning Skills – 10%

Attendance, organization, homework completion and the ability to take initiative and work independently and in groups all play a role in student success and are important for achieving the course expectations.

Course Specific Materials Required

- Graphing calculator (TI-84 Plus or equivalent)
- Pencils, erasers, etc.
- Graph paper notebook
- Homework/handout folder
- Ruler/straightedge
- Textbook: Mathematics: Applications and Interpretations