

Course Title	Mathematics IB HL1	Course Code	Code
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**Newport-Mesa Unified School District
Office of Secondary Curriculum and Instruction
High School Course of Study**

Department	Mathematics		Course Title	Mathematics IB HL1 (and HL2)			
Course Code			Grade Level(s)	11 (and 12)		Course Length	2 years (4 sem)
Credits/Semester	5	Required for Graduation?		No	Elective Credit?		No
Prerequisites	Algebra 2; Trigonometry; Pre-Calculus						
Community College Articulation?			Name of College				
UC/CSU Articulation?			Name of University				
Meets UC/CSU “a-g” Requirement?			Meets NCAA Requirement?			Weighted Course Credit?	

COURSE DESCRIPTION

The Mathematics HL 1 & HL2 course sequence is intended for students with a good background in mathematics who are competent in a range of analytical and technical skills. This sequence is appropriate for those who intend to study in fields which include a major component of mathematics like engineering, the physical or biological sciences, business, and technology. Students intending to study in other fields may choose this sequence to learn about a broad range of mathematics and its applications. A student would also choose this sequence as a means of satisfying their own natural curiosity of the subject, of improving their critical thinking and problem solving skills, or be a risk-taker and explore a subject in which they may be challenged.

The Mathematics HL1 & HL2 courses will complement the Theory of Knowledge class by encouraging students to gain strong understanding of a broad base of mathematics by exploring new ideas through the four ways they acquire knowledge: senses, reason, language, and emotion. Real world problems will be discussed as means of launching mathematical inquiry into new mathematical concepts as a way of balancing applied and theoretical approaches to mathematics. The courses will cover how many mathematical achievements or mathematicians impacted the international scene, influenced public policy, and how the historical and cultural context in which a mathematical discovery was made may have spawned its discovery or influenced the emotional state of a particular mathematician. Statistics will be analyzed for their validity and their use to ethically or unethically manipulate public opinion. Students will collect information on real world problems using their senses and find solutions in laboratory experiments. Mathematics will be studied as a universal language that can be used to communicate ideas internationally.

The preparation for the Mathematics HL papers and portfolio is accomplished by completing the course sequence is Honors Algebra 2AB, Honors Precalculus 1AB, Math IB HL 1, and Math IB HL. All of the courses will have written examinations where students demonstrate knowledge of mathematical skills using correct terminology, notation, critical thinking and problem solving strategies, clear communication, and how to determine the reasonableness of their solutions even when faced with real world problems in which they are unfamiliar. The Mathematics IB HL class will require a portfolio which is a collection of two pieces of work focusing on two different areas of content in the syllabus. The portfolio will require mathematical investigation and modeling of a real life problem in which the student has a natural inquiry. Students will demonstrate an in-depth knowledge of two or more concepts directly studied in the topic outline. Students will explore and reflect upon multiple strategies that could be used to solve the problem and determine the most effective method(s) and the reasonableness of their conclusions. The portfolio will be an internal assessment and be worth 20% of the overall assessment. The

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external assessment will be worth 80% of the overall assessment and will consist of three written papers. Paper 1 and 2 will assess the core content of the syllabus and Paper 3 will assess the option syllabus content (Topic 10).

GOALS: (Expected performance outcomes for students)

The goal of this course is to:

1. Develop critical, logical, and creative thinking skills
2. Develop patience and persistence in problem solving and an ability to determine the of results to real world problems
3. Communicate clearly and confidently using mathematics
4. Develop an appreciation of mathematical achievements and their impact on the globe
5. Analyze and interpret data and its uses both ethically and unethically

California Content Standards

This course is an IB course and meets all the requirements for the International Baccalaureate. The calculus components of the course meet California State standards for calculus.

Evaluation

External assessment 5 hrs 80%

Written papers

Paper 1: 2 hrs 30%

No calculator allowed. Section A 15%. Compulsory short-response questions based on the compulsory core of the syllabus. Section B 15%. Compulsory extended-response questions based on the compulsory core of the syllabus

Paper 2: 2 hrs 30%

Graphic display calculator (GDC) required. Section A 15%. Compulsory short-response questions based on the compulsory core of the syllabus. Section B 15%. Compulsory extended-response questions based on the compulsory core of the syllabus.

Paper 3: 1 hr 20%

Graphic display calculator (GDC) required. Extended-response questions based mainly on the syllabus options.

Internal assessment 20%

Portfolio

A collection of two pieces of work assigned by the teacher and completed by the student during the course. The pieces of work must be based on different areas of the syllabus and represent the two types of tasks: mathematical investigation, and mathematical modeling. The portfolio is internally assessed by the teacher and externally moderated by the IBO. Procedures are provided in the *Vade Mecum*.