

**Suggested teaching order for
MAA SL and HL (combined class)**

*Christos Nikolaidis
IB Math teacher*

Topics

Topic 1: Number and Algebra	(1.1-1.14)
Topic 2: Functions	(2.1-2.16)
Topic 3: Geometry and Trigonometry	(3.1-3.18)
Topic 5: Statistics and Probability	(4.1-4.13)
Topic 5: Calculus	(5.1-5.20)

(paragraphs are according to my lecture notes)

Plan

Year 1	Year 2
60% of the syllabus	40% of the syllabus

YEAR 1

SL

HL

Topic 1	Number and Algebra (part of the topic)
1.1	Numbers – rounding – scientific form
1.2	Methods of proof
1.3	Sequences in general - Series
1.4	Arithmetic sequences
1.5	Geometric sequences
1.6	Applications of G.S. – Percentage growth)
1.7	The Binomial Theorem – $(a+b)^n$
1.8	Mathematical induction
1.9	Systems of linear equations

Topic 2	Functions
2.1	Lines (or Linear functions)
2.2	Quadratics (or Quadratic functions)

Topic 1	Complex Numbers (only the Cartesian part)
1.10	Complex numbers – basic operations
1.11	Only the fundamental theorem of Calculus

Topic 2	Functions
2.11	Polynomial functions
2.12	Sum and Product of roots
2.3	Functions, domain, range, graph
2.4	Composition of functions: $f \circ g$
2.5	The inverse function: f^{-1}
2.6	Transformations of functions
2.7	Asymptotes
2.13	Rational functions – Partial fractions
2.14	Polynomial and rational inequalities
2.15	Symmetries of $f(x)$ – More transformations
2.8	Exponents – the exponential function a^x
2.9	Logarithms – the logarithmic function $\log_a x$
2.10	Exponential Equations
2.16	Modulus equations and inequalities

Topic 3	Trigonometry (part of the topic)
3.1	3D Geometry
3.2	Triangles – Sine and Cosine rules
3.3	Applications in 3D Geometry – Navigation
3.4	The trigonometric circle – Arcs and Sectors
3.5	$\sin\theta$, $\cos\theta$, $\tan\theta$ on the unit circle
3.6	Trigonometric identities and equations
3.7	Trigonometric functions
3.8	More trigonometric equations – identities
3.9	Inverse trigonometric functions

Topic 1	Complex Numbers (only the Polar part)
1.11	Polynomials over the Complex field
1.12	The complex plane
1.13	De Moivre's theorem
1.14	Roots of $z^n = a$

Topic 5	Calculus (part of the topic)
5.1	The limit $\lim f(x)$ – The derivative $f'(x)$: A rough idea!
5.2	Derivatives of known functions – Rules
5.3	Tangent line – Normal line at some point x_0
5.4	The chain rule
5.12	Continuity and differentiability
5.13	L'Hôpital's rule
5.14	Implicit differentiation (without kinematics)
5.15	Rate of change problems

YEAR 2

SL

HL

Topic 5	Calculus (part of the topic)
5.5	Monotony – max, min
5.6	Concavity – points of inflection
5.7	Optimisation
5.8	The indefinite integral
5.9	Integration by substitution
5.16	Further integration by substitution
5.17	Integration by parts
5.10	The definite integral - Areas between curves
5.18	Further areas between curves - Volumes
5.11	Kinematics (+last paragraph of 5.14)
5.19	Differential equations
5.20	Maclaurin series – Extension of Binomial Theorem

Topic 4	Statistics and Probability
4.1	Basic concepts of Statistics
4.2	Measures of central tendency – Measures of spread
4.3	Frequency tables – Grouped Data
4.4	Regression
4.5	Elementary Set Theory
4.6	Probability
4.7	Conditional probability – Independent events
4.8	Tree diagrams
4.9	Distributions – Discrete random variables
4.12	Continuous random variables
4.10	Binomial distribution – $B(n,p)$
4.11	Normal distribution – $N(\mu,\sigma)$
4.13	Counting – Permutations – Combinations

Topic 3	Vectors (part of the topic)
3.10	Vectors: Geometric representation
3.11	Vectors: Algebraic representation
3.12	Scalar (or Dot) product – angle between vectors
3.13	Vector equation of a line in 2D
3.14	Vector equation of a line in 3D
3.15	Vector (or Cross) product
3.16	Planes
3.17	Intersections among lines and planes
3.18	Distances