



CHESTERTON ACADEMY

**CURRICULUM OVERVIEW
2011-2012 Academic Year**

MATH AND SCIENCE		FOREIGN LANGUAGE
MATH	SCIENCE	SPANISH/LATIN
9th GEOMETRY Euclid: <i>The Elements</i> Proofs: axioms, theorems, etc. Plane geometry: lines, parallel, angles, triangles, perimeter, area Solid geometry: 3-space, volume, objects of rotation Topology, fractals, higher dimension *Algebra I will be available to students who have not completed the course previously.	ASTRONOMY Basic heavenly motion, constellations, planets, sun and solar features, moon and lunar features, stars Ptolemaic and Copernican systems, Kepler's laws of planetary motion Celestial objects (nova, quasars, pulsars, nebula etc.) Celestial physics (stellar spectrometry, parallax etc.) Celestial navigation, basic optics Newton: <i>Principia</i> Galileo and the Church GEOLOGY Physical structure of the earth - history Rocks and minerals, mineral groups, plate techtonics. Oceans and oceanography, atmosphere, Gravitational mechanics Practical geology (mapping, cataloging specimens etc.)	LATIN I Basic Grammar
10th TRIGONOMETRY The unit circle Sine and cosine Properties, other functions ADVANCED ALGEBRA Solving more complex equations: quadratics, cubics, polynomials Vectors: operations, dot & cross products; 2,3, higher dimensions Complex numbers	BIOLOGY Cells (organization, division, mitosis, meiosis etc.) Basic chemistry of cells, carbohydrates, proteins etc. The plant kingdom Genetics and heredity, DNA, RNA etc. Microorganisms (bacteria viruses, fungi and protists) Human anatomy and physiology Darwin's theory of evolution and the teachings of the Catholic Church The soul as the principle of life and the philosophia perennis	Students choose whether to continue with Latin for the next two years or take Spanish for the next two years. Latin and Spanish in Senior year are offered as electives.
11th CALCULUS I Limits Differential Calculus	CHEMISTRY Atomic theory The elements: metals, semi-metals, non-metals, gases Reactions Inorganic Organic Biochemistry	Spanish or Latin
12th CALCULUS II Infinite Integral Calculus Series, convergence, asymptotes <i>or</i> STATISTICS / PROBABILITY Collection, organization, and interpretation of data Null hypothesis, error, intervals, data mining	PHYSICS Motion; tie in to calculus Mechanics Wave mechanics; sound; light (lenses, mirrors, spectra) Electricity and magnetism Thermodynamics (entropy) The atom Subatomic particles Decay, Fission, Fusion	Electives: Advanced Latin or Advanced Spanish Literature, Translation