



EGRHS Course Fair

Science & Math
AP & IB Courses



Science

- Courses:
 - AP Physics
 - IB Physics SL
 - IB Physics HL
 - AP Biology
 - IB Biology HL

AP Physics Course Description

- Course Description

- AP Physics C (Mechanics)
- One year course
- Calculus based
- College Level
- Introductory Physics
 - Motion, energy, rotation, SHM, etc...

- Prerequisites

- Students should be enrolled in PDM or higher.
- Many students will be enrolled in Calculus or IB Mathematics (SL or HL) but calculus is not required.
- Taken junior or senior year.

AP Physics Assessment Structure

- AP Test given in May
 - 35 Multiple choice questions
 - 3 Free response questions
- College credit available at many colleges

IB Physics SL Course Description

- Course Description
 - Introductory survey course in Physics
 - Two year course
 - Covers:
 - Mechanics
 - Electricity
 - Thermodynamics
 - Waves, Sound and Light
 - Modern Physics

IB Physics SL Assessment Structure

● Internal Assessments

- Group 4 Project
 - A multi-course group project where students investigate a topic from a multidisciplinary approach
- Laboratory Investigation
 - An individual scientific investigation of 10 hours where students write a 6-12 page report that is marked on personal engagement, exploration, analysis, evaluation, and communication

● External Assessments (at end of second year)

- Paper 1
 - 20% of overall score
 - 30 multiple choice questions
- Paper 2
 - 40% of overall score
 - short answer and extended response
- Paper 3
 - 20 % of overall score
 - questions on experimental work and data-based questions
 - questions on selected “option”

IB Physics HL Course Description

- Course Description
 - Introductory survey course in Physics
 - Two year course
 - Similar to SL but goes deeper and covers additional material
 - Covers:
 - Mechanics
 - Electricity
 - Thermodynamics
 - Waves, Sound and Light
 - Modern Physics

IB Physics HL

- Additional Content Requirements

- Wave Phenomenon
- Fields & Electromagnetic Induction
- Quantum & Nuclear
- Fluids & Forced Vibrations

- Additional Assessment Requirements

- The number of papers and internal assessments are the same as the SL course.
- Paper 1 has 40 questions as opposed to 30 questions.
- Paper 3 will include AHL and “option” topic.

Summary of Differences AP v. IB Physics

- AP is college level course
- AP requires higher level math
- IB has a larger breadth of topics
- IB is a two year course
- IB is more cross curricular or integrated
- Students can get college credit for BOTH AP and HL Physics
- Assessment requirements for the courses are different

AP Biology Course Description

Course Description

- Designed to be equivalent to a first year college course.
- A college text is used and the course consists of 1/3 to 1/2 laboratory time.
- The course allows for creative thought when designing laboratories and students have the opportunity to create and carry out an independent research project during the second semester.

Prerequisites

- Successful completion of Physics, Biology and Chemistry with a grade of B or better in each course, or teacher recommendation

AP Biology Assessment Structure

- Assessments
 - Two 90 minute Sections
 - Section 1 (90 minutes)
 - 63 Multiple Choice & 9 Grid-In Calculations
 - Section 2 (90 minutes)
 - 10 minute reading period
 - 6 short answer questions (approximately 1 written paragraph in length)
 - 2 free response questions (approximately 3 written paragraphs in length)
 - Exams are scored 1-5
 - Scores of 3-5 may qualify a student for college credit (varies by institution)

IB Biology HL Course Description

- Course Description
 - 2-year course
 - in-depth study of the relationship of structure, function, and interaction within and between biological systems.
 - Topics covered will include:
 - Core & AHL - cells, molecules, genetics, evolution, plant and animal physiology, and ecology.
 - Options - neurobiology, biotechnology, ecology/conservation, human physiology

IB Biology HL Assessment Structure

- Internal Assessment - 20 %

- Assessed through a single individual laboratory investigation.
 - May involve a hands-on approach, use of data-bases, modelling, simulation or a hybrid.
 - Student work is internally assessed by the teacher and externally moderated by the IB.

- External Assessment - 80 %

- The external assessment of biology consists of three written papers.
 - 1 - 40 MC questions.
 - 2 - SA & extended-response questions on the core and AHL material.
 - 3
 - A - 1 DBQ and several SA questions on experimental work on the core and AHL material.
 - B - SA and extended-response questions from each of the four options

Summary of Differences AP v. IB Biology

AP Biology

- 1 year intensive course.
- 3 hour College Board assessment in May
- College credit may be available for an AP test score of 3 or higher. (dependent upon college/university)

IB Biology

- 2 year in-depth course
- Group 4 project
 - Interdisciplinary project between biology and physics
- Assessed through
 - Internal Assessment
 - External Assessment

Math

- Courses:
 - AP Statistics
 - AP Calculus AB
 - AP Calculus BC
 - IB Math Studies SL
 - IB Mathematics SL
 - IB Mathematics HL

AP Stats Course Description

- Course Description
 - 1 year or 1 semester AP course covering 1st semester college statistics
 - Focused on investigation of data patterns and study of statistical correlation of data.
 - Includes experimental design and probabilistic analysis with discrete, continuous, binomial and geometric distributions.
 - Incorporates statistical inference for means, proportions, Chi-Square procedures and regression models.
- Prerequisites
 - Geometry, Advanced Algebra, Functions, Statistics & Trigonometry (FST)

AP Stats Assessment Structure

- Assessments
 - Two 90 minute sections
 - Part I
 - 40 Multiple Choice Questions
 - Part II
 - 5 Free Response Questions
 - 1 Investigative Task
 - Exams are scored 1-5
 - Scores of 3-5 are considered “passing” and may qualify a student for college credit

AP Calculus AB Course Description

- Course Description
 - Calculus AB is a one-year, college-level course covering the content delivered in a first-semester Calculus course at most universities.
 - Topics include development of the concepts of:
 - Limits and their applications to the derivative.
 - Derivatives, linear approximations and their applications
 - Definite integrals and their application to find areas and volumes of irregular regions and solids
- Prerequisite
 - Completion of PDM

AP Calculus AB Assessment Structure

- Assessment
 - Two Multiple Choice sections
 - Part A: 28 questions; 55 minutes (no calculator)
 - Part B: 17 questions; 50 minutes (graphing calculator allowed)
 - Two Free Response sections
 - 2 problems; 30 minutes (graphing calculator allowed)
 - 4 problems; 60 minutes (no calculator)
 - Exams are scored on a scale of 1-5
 - Scores of 3, 4 or 5 may qualify a student for college credit for 1 semester of calculus

AP Calculus BC Course Description

- Course Description

- AP Calculus BC is in a two-year sequence. Students will cover Pre-Calculus (H), AP Calculus I (AB), and AP Calculus II (BC) over two years. The BC class is equivalent to completing two or three semesters of Calculus at most universities. Students can earn college credit for two courses: Calculus I and Calculus II by completing one Advanced Placement exam.
- This course investigates integration techniques and infinite series. A study of plane, parametric, polar, vector, and differential equations is a large portion of the course content. This course concludes with the Advanced Placement Calculus BC exam. This course is the second of a two-year sequence with the PDM/Calculus Honors course.

- Prerequisites

- Completion of Pre-Calculus and Introductory Calculus Honors.

AP Calculus BC Assessment Structure

● Assessment

- Two Multiple Choice sections
 - Part A: 28 questions; 55 minutes (no calculator)
 - Part B: 17 questions; 50 minutes (graphing calculator allowed)
- Two Free Response sections
 - 2 problems; 30 minutes (graphing calculator allowed)
 - 4 problems; 60 minutes (no calculator allowed)

Students can earn college credit for two or three semesters of Calculus.

Students will receive a double score: one score for Calculus I (AB) and one score for Calculus II (BC) by taking the BC assessment.

IB Math Studies SL Course Description

● Course Description

- Two-year IB Mathematical Studies course, available in standard level only.
- Designed to build confidence and encourage an appreciation of mathematics in students who do not anticipate a need for mathematics in their future studies.
- Enable students to develop logical, critical and creative thinking.
- Develop patience and persistence in problem solving, transfer skills to alternative situations and to future developments.
- Communicate clearly and confidently in a variety of contexts, and appreciate the multiplicity of cultural and historical perspectives of mathematics.
- Topics include: Models, Statistics, Geometry, Trigonometry, Differential Calculus and Logic

● Prerequisites

- Algebra, Geometry, and Advanced Algebra

IB Math Studies SL Assessment Structure

- Internal Assessments (20%)
 - Students will choose a piece of written work based on personal research involving the collection, analysis and evaluation of data. Projects, which may involve modelling, investigations, applications or statistical surveys, must demonstrate the ability to use the mathematics learned during the course
- External Assessments (80%)
 - The external assessment requirements will be integrated throughout the entire class.
 - Paper 1
 - 15 short-response questions
 - 1.5 hours
 - Paper 2
 - 5 extended response questions
 - 1.5 hours

IB Mathematics SL Course Description

- Course Description
 - The two-year Mathematics SL explores a wide range of mathematical concepts with a particular focus on statistical techniques and introductory Calculus.
 - Topics covered in Mathematics SL are
 - Algebra
 - Functions and equations
 - Circular functions and trigonometry
 - Vectors
 - Statistics and probability
 - An introduction to Calculus
- Prerequisites
 - Completion of FST/PDM Honors, FST/AP Stats Honors, or FST

IB Mathematics SL Assessment Structure

- Internal Assessments (20%)

- A portfolio-style assessment consisting of two pieces of work on different areas of the syllabus representing mathematical investigation and mathematical modelling

- External Assessments (80%)

- The external assessment requirements will be integrated throughout the entire class.
- Paper 1
 - Short- and extended-response questions; 90 minutes
- Paper 2
 - Short- and extended-response questions; 90 minutes (graphic display calculator required)

IB Mathematics HL Course Description

- Course Description

- Two-year course designed for students interested in pursuing mathematics-based studies at the university level.
- Designed for exploration of advanced topics from Algebra, Functions and Equations, Circular Functions and Trigonometry, Vectors, Statistics and Probability, and Calculus.
- Focused on developing important mathematical concepts in a comprehensible, coherent and rigorous way.
- Encourages students to apply their mathematical knowledge to solve problems set in a variety of meaningful contexts.

- Prerequisites

- Geometry, Advanced Algebra, Functions, Statistics & Trigonometry (FST), Precalculus (PDM)

IB Mathematics HL

- Additional Content Requirements

- Statistics & Probability
- Sets, Relations & Groups
- Calculus
- Discrete Mathematics

- Additional Assessment Requirements

- Internal Assessment (as in Math SL)
- External Assessment
 - Paper 1 (2 hours - no calculator)
 - Paper 2 (2 hours - calculator req'd)
 - Paper 3 (1 hour - calculator req'd)

Summary of Differences AP v. IB Mathematics

- AP Courses are topic-specific (Calculus, Statistics).
- IB Courses cover a broad range of topics.
- AP Courses are 1 year courses. except AP Calculus BC over 2 years.
- IB Courses will be offered over 2 years.
- AP Courses have one 3 hour exam in May.
- IB Courses have both Internal and External Assessments.