

# INTERNATIONAL BACCALAUREATE MAGNET PROGRAM



**Richard Montgomery High School**

2011 Edition



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## **On the International Baccalaureate Mission and Philosophy**

The International Baccalaureate (IB) is more than its three educational programs. At our heart we are motivated by a mission to create a better world through education. The IB values its hard-earned reputation for quality, for high standards and for pedagogical leadership, and promotes intercultural understanding and respect, not as an alternative to a sense of cultural and national identity, but as an essential part of life in the 21st century.

*All of this is captured in the IB mission statement...*

The International Baccalaureate aims to develop inquiring, knowledgeable and caring young people who help to create a better and more peaceful world through intercultural understanding and respect.

To this end the organization works with schools, governments and international organizations to develop challenging programs of international education and rigorous assessment.

These programs encourage students across the world to become active, compassionate and lifelong learners who understand that other people, with their differences, can also be right.

In 2006, the International Baccalaureate launched their IB Learner's Profile. The IB learner profile is the IB mission statement translated into a set of learning outcomes for the 21st century. The learners profile provides a long-term vision of education. It is a set of ideals that can inspire, motivate and focus the work of schools and teachers, uniting them in a common purpose.

***IB Learners Strive to be:***

*Inquirers*

*Open-Minded*

*Knowledgeable*

*Thinkers*

*Communicators*

*Principled*

*Caring*

*Risk-Takers*

*Balanced*

*Reflective*



For more information about the International Baccalaureate, please visit their web site at:

[www.ibo.org](http://www.ibo.org)

## **INTRODUCTION to the International Baccalaureate at Richard Montgomery**

The Magnet International Baccalaureate Diploma Program (IB) at Richard Montgomery High School (RMHS) is a countywide program that adheres to international standards. The International Baccalaureate Program is unique in that it provides students with the liberal arts, interdisciplinary education leading to a diploma that is recognized throughout the world. Students pursue studies in English, foreign language, social studies, experimental science, mathematics, and at least one academic elective. Teachers plan and provide interdisciplinary instruction and assessments focusing on common topics, themes, and materials within the subject areas. The curriculum is based on MCPS Honors objectives, Gifted and Talented practices, and the topics and goals identified by the curriculum board of the International Baccalaureate Office in Cardiff, Wales.

The International Baccalaureate Program was founded in 1968 to provide a rigorous, well-rounded education to prepare students throughout the world for university study. The broad-based curriculum is consistent in all IB schools, and student achievement is assessed by internationally developed and graded examinations. At RMHS, the International Baccalaureate Magnet Program is comprised of the IB Prep component in Grades 9 and 10 and the IB component in Grades 11 and 12. The purpose of the IB Prep classes is to prepare the students for the IB courses and the examinations required to earn the IB Diploma, and the instruction is often accelerated due to the nature of the students targeted for magnet programs county-wide.

Students who participate in the Magnet IB Program fulfill the Maryland State Department of Education (MSDE) graduation requirements as well as the IB Diploma requirements. The International Baccalaureate requirements include course work and passing scores on examinations in all six subjects, satisfying the Creativity, Action and Service (CAS) activity component, composition of a 3,500-word extended essay, and successful completion of the Theory of Knowledge assessments. These requirements are explained in this booklet. The MSDE requirements include passing state-mandated examinations and completing course work in fine arts, technology, health, and physical education. Students successfully completing the Magnet IB Program can earn an IB Diploma, a Maryland High School Diploma, and a Certificate of Merit from the state.

Although there are multiple IB Diploma Programs in Montgomery County Public Schools (MCPS), Richard Montgomery is the only program with the magnet status, and with competitive, countywide applications. The IB Magnet Program at Richard Montgomery is designed for academically talented and motivated students. Thus, all participants are enrolled in the full diploma program, and the pace, intensity and depth of instruction correspond to the academic needs of its highly able, high-achieving students. In addition, as the first IB Diploma Program in Montgomery County, The International Baccalaureate Magnet Program at Richard Montgomery has served as the model for all other MCPS IB programs that have followed.

Students are expected to pay the fees set by the IB Organization for the diploma program. These fees are collected when students register for the IB subject examinations in Grades 11 and 12. Assistance with these fees is available for families with need. Students have been selected to join this program because we believe they have the talent and desire to achieve the final outcome of an International Baccalaureate Diploma; financial need will not prevent a student from obtaining their goal.

For More information about Richard Montgomery High School and the IB Magnet Program at Richard Montgomery, visit the school web site at:

[www.montgomeryschoolsmd.org/schools/rmhs/ib](http://www.montgomeryschoolsmd.org/schools/rmhs/ib)

## COURSE OPTIONS AND SEQUENCES

	<b>Grade 9</b>	<b>Grade 10</b>	<b>Grade 11</b>	<b>Grade 12</b>
<b>English</b>	IB Prep English 9	IB Prep English 10	IB English 1	IB English 2
<b>Foreign Language</b>	IB Prep Level 2 IB Prep Level 3	IB Prep Level 3 IB Level 4	IB Level 4 IB Level 5	IB Level 5 IB Level 6
<b>Individuals &amp; Societies</b>	IB Prep Government	AP U.S. History	IB History 1	IB History 2
<b>Science</b>	IB Prep Biology	IB Prep Chemistry	IB Physics 1 IB Chemistry 1 IB Environmental-Systems & Society	IB Physics 2 IB Chemistry 1 IB Biology IB Environmental-Systems & Society
<b>Math</b>	Choose one based on Middle School Math: IB Prep Geometry IB AAF IB Pre-Calculus	See the IB Math Flow Chart for the options open to IB Students		
<b>Theory of Knowledge</b>			TOK1/EE	TOK2 (first semester)

## SIXTH SUBJECT ELECTIVES

<b>Visual Arts</b>		IB Prep Art & Culture	IB Art & Design 1	IB Art & Design 2
<b>Film Studies</b>			IB Film Studies 1	IB Film Studies 2
<b>Theater</b>			IB Theater 1	IB Theater 2
<b>Music</b>		Music Theory (grades 9-11)	IB Music (grades 11 or 12)	
<b>Computer Science</b>	Computer Programming 1 or 2 (taken in grade 9 or 10)		Computer Programming 2 or 3	Computer Programming 3 IB Computer Science
<b>Social Studies Electives</b>			IB Economics IB Psychology IB Social Anthropology IB World Philosophy and Religion (grade 11 or 12)	

The italicized courses are the prerequisites for the exam year courses and are shown in the typical year for enrollment. A second foreign language or science is also an option for the sixth subject examination.

## ASSESSMENTS AND AWARDING THE IB DIPLOMA

**Higher Level** defines courses and assessments which include two years of study and concentration in the subject area.

**Standard Level** defines courses and assessments which can be completed in a single year course of study and concentration in the subject area.

The terms “Higher” and “Standard” are not directly related to the challenge-level of instruction or difficulty of content. The terms define time, or length of time, spent in a course of study. Higher simply means a student has spent two years of study during the 11<sup>th</sup> and 12<sup>th</sup> grade year in that subject area. The exams are designed to evaluate two years worth of knowledge and study.

	HIGHER LEVEL	STANDARD LEVEL
Group 1	English	
Group 2	Foreign Language (Chinese, French, Spanish)	Foreign Language (Chinese, French , Spanish)
Group 3	History	
Group 4	Biology Physics	Chemistry Physics Environmental-Systems & Societies
Group 5	Mathematics	Math Studies Mathematics
Group 6	Visual Arts Computer Science Film Studies Music Theater	Visual Arts Computer Science Film Studies Music Theater Psychology Economics Sociology Philosophy

Internal assessments and guided course work are developed and graded by the teachers at RMHS according to the specifications established by IB. These grades contribute to the final score for each discipline.

**The International Baccalaureate examiners assign a score for each discipline. The score is based on the external examination and the internal assessment. The IB scale ranges from 1 to 7 as follows:**

**7 = excellent      5 = good      3 = mediocre      1 = very poor**  
**6 = very good      4 = satisfactory      2 = poor**

Students may also earn bonus points in Theory of Knowledge and the Extended Essay. An IB Diploma is awarded to candidates who earn at least 24 points including bonus points and who do not earn either:

- a 2 in a Higher Level subject or a 3 not compensated by a 5 in another Higher Level subject.
- a 1 in a Standard Level subject or more than one 2.
- more than three 3's.
- more than one 3 with another Standard Level grade of 2.

Regarding bonus points, 28 points overall is required to be eligible for the diploma if a student attains an “E” grade in either the extended essay or theory of knowledge. A grade “A” in one of the requirements earns an extra point even if the other is a grade “E”. Attaining a grade “E” in both the extended essay and theory of knowledge continues to represent an automatic failure. Otherwise, students may still earn their IB Diploma with a minimum of 24 points, including the bonus points, provided they do so without any failing conditions (see page 20 for additional details).

## PLANNING AHEAD WITHIN THE IB PROGRAM

Requirements for the IB Diploma:

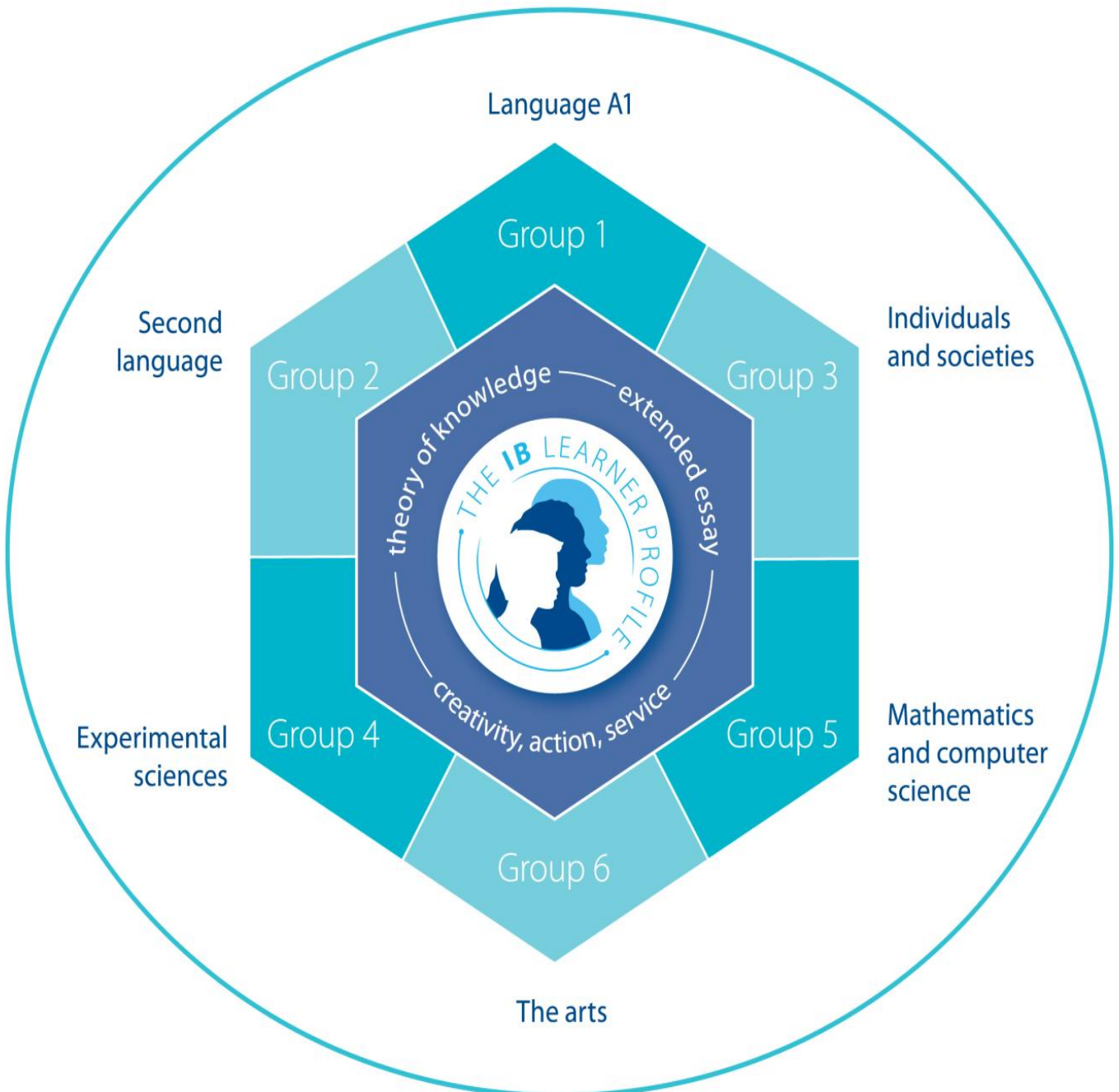
- Study of six disciplines with acceptable scores on one examination from each group.
- *Minimum* of 3 examinations at Higher Level and **maximum** of 4 at Higher Level
- **Maximum** of 3 examinations at Standard Level and *minimum* of 2 at Standard Level
- Completion of Extended Essay
- Completion of Theory of Knowledge 1 and 2
- Completion of 150 hours of Creativity, Action, and Service activities group.

Requirement	RMHS Options	Exam
Group 1	English	HL
Group 2	Chinese, French, Spanish	SL or HL
Group 3	History	HL
Group 4	Biology	HL
	Chemistry	SL
	Physics	SL or HL
	Environmental-Systems & Societies	SL
Group 5	Mathematics Studies (Math Studies and Calculus w/Application or Calculus AB)	SL
	Mathematics (Calculus AB or BC)	SL
	Mathematics (HL Mathematics)	HL
Group 6	Art and Design	SL or HL
	Computer Science	SL or HL
	Theater	SL or HL
	Film Studies	SL or HL
	Music	SL or HL
	Psychology	SL
	Economics	SL
	Sociology	SL
	Philosophy	SL
	a second science	SL
	a second language	SL

SL Exams (up to 2 in grade 11; may take more in grade 12)	HL Exams (up to 4 in grade 12 only)
1.	1. English
2.	2. History
3. (May choose to take only 2)	3.
	4. (May choose to take only 3)

## The International Baccalaureate Model The “Diploma Years” – A Hexagon

Students must complete the requirements for each of the 6 subject areas and the three components reflected inside the IB Diploma Program Hexagon. The Richard Montgomery Magnet is designed with vertical articulation grades 9 – 12. The course work is geared towards helping students achieve high marks in the six subject areas. The interior three components -- CAS, TOK, and The Extended Essay -- are achieved over the final two years of the program, which are considered the official diploma years by the International Baccalaureate.



**THE INTERNATIONAL BACCALAUREATE MAGNET**  
**At Richard Montgomery High School**

**COURSE OFFERINGS for the Magnet are listed by “Subject-Area Groupings”**

*Please Note: Courses selected or required from the mainstream MCPS offerings can be found in the Richard Montgomery High School course bulletin or in the MCPS On-Line Course Bulletin.*

**GROUP 1: LANGUAGE A**  
(English)

The general aims of the IB English curricula are to help students develop

- written and oral communication skills necessary for achievement on the oral and written IB examinations and the extended essay
- understanding of the relationships of literature to art, music, social studies, science, math, and culture
- awareness of literature as a reflection of historical events and the human experience

**IB PREP ENGLISH 9 (1022/1023)**

IB Prep English 9 begins the four-year sequence of IB English courses. Throughout the first year, an emphasis on the writing process complements the study of literature. The first semester introduces literary analysis, with a focus on world mythology and Greek, Shakespearean, and modern drama. In the second semester, the focus shifts to the study of narrative poetry and fiction as students examine the connection between the classical tradition and modern thought.

**IB PREP ENGLISH 10 (1024/1025)**

In IB Prep English 10, the theme of the universality of humanity provides a framework of an intensive study of literature. The first semester expands on the skills of literacy analysis learned in IB Prep English 9 through the study of short stories, Shakespearean drama, and modern American literature. In the second semester, students examine modern American poetry, drama and fiction and complete a personal study of an author. This course prepares students for the kind of assessments that follow in the IB English courses.

**IB ENGLISH 1-Grade 11 (1026/1027)**

The course, the first year of a required two-year sequence, involves a detailed study, including oral and written analysis of poetry, Shakespearean tragedy, and modern American fiction. The study of drama emphasizes world literature and culminates in the writing of a paper that will be externally assessed for a portion of the IB score. All work is designed to prepare students for the oral and written portions of the higher level IB English assessments.

**IB ENGLISH 2 - Grade 12 (1028/1029)**

This course completes the IB requirements for higher level English exam and guides students through the IB assessments during the year. Students complete a detailed analysis of an author and in-depth studies of selected works of fiction, drama, and poetry with an emphasis on world literature. Students refine their skills on essay responses to detailed questions and oral analysis of selected literature. The second paper for external assessment is completed. Candidates take the oral component of their higher level IB English exam in January and the written exam in May.

## **GROUP 2: LANGUAGE B**

(Modern Foreign Languages: Chinese, French, Spanish)

The general aims of the foreign language curricula are to help students develop

- proficiency in oral and written expression in a second language
- proficiency in comprehension of a spoken and written second language
- understanding of the histories, literature, cultures of the language studied within the IB prescribed themes
- critical thinking skills needed for integration and analysis of course content

Upon entering the IB Program, students register for the next level in the language they are currently studying. If a student is unsure of the appropriate level or has taken more than two years of a foreign language before Grade 9, members of the foreign language department meet with the student and together determine the appropriate level.

### **Levels 2 - 3**

The curricula of Levels 2-3 provide intensive training in the basic foundations and intermediate level language skills to enable students to become proficient in both oral and written expression and listening and reading comprehension. Students are introduced to themes required by the IB Program. The Montgomery County Public School program of study foreign language objectives are combined with the themes required by the IB Program.

### **Level 4**

IB Level 4 Language B courses comprise the first year of a two-year sequence to prepare students for the standard level foreign language Examination. Students strengthen their knowledge and fluency in oral and written language with the prescribed IB themes. Composition objectives for specific writing assignments are correlated with the prescribed IB themes.

### **Level 5**

IB Level 5 Language B courses complete the preparation of students for the Standard Level IB foreign language and the Advanced Placement language examination. Emphasis is placed on reading comprehension, interpretation, analysis, and oral, listening and writing proficiency. Written assignments are correlated with the prescribed IB themes. Candidates take an individual oral examination in February and the written examination in May.

### **Level 6**

IB Level 6 courses continue to emphasize the composition of well-constructed extended essays and oral proficiency at the near-native level. Instruction emphasizes critical oral and written proficiency. In-depth study of life and civilization of pertinent countries continues. Students are prepared for the higher level IB exam.

### **Language A2**

IB Language A2 is a unique bi-lingual offering for students who can achieve a sophisticated level of language mastery. This level of assessment is completed during level 7 of the modern language course. Students who complete the Language A2 option in Group 2, are awarded a bilingual diploma by the IBO.

### **Course Numbers**

IB Prep Chinese 2	1647/1648	IB Chinese 4	1651/1652	IB Chinese 6	1655/1656
IB Prep French 2	1609/1610	IB French 4	1619/1620	IB French 6	1629/1630
IB Prep Spanish 2	1749/1750	IB Spanish 4	1751/1752	IB Spanish 6	1755/1756
IB Prep Chinese 3	1649/1650	IB Chinese 5	1653/1654	IB Spanish 7	1658/1662
IB Prep French 3	1617/1618	IB French 5	1627/1628	IB French 7	1660/1664
IB Prep Spanish 3	1717/1718	IB Spanish 5	1753/1754	IB Chinese 7	xxxx/xxxx

## **GROUP 3: INDIVIDUALS AND SOCIETY**

(History)

The general aims of the IB social studies curricula are to help students develop

- knowledge of the past to enable better understanding of the present
- interest in the nature of history as a discipline
- understanding of the international dimension of history
- awareness of continuity and change throughout time
- empathy with people living in different places and at different times
- understanding of the relationships among history, art, music, and language

### **IB Prep GOVERNMENT - Grade 9 (Required) (2133/2134)**

This course traces the history of our form of government from the ancient world to the creation of the American Constitution. Units focus on the purpose of government; the structure, function and operations of the US government; rights and responsibilities of US citizens; and a comparison of parliamentary, socialistic, and constitutional governments. Students begin to focus on international problems between various forms of government and on critical issues that have faced America and the world since 1945. Issues such as civil rights, the Cold War, nuclear confrontation, the Vietnam War, and East-West relations are examined. This course prepares students for the Advanced Placement examination in the U.S. Government in May of their freshman year. It also fulfills the social studies graduation requirement for National, State, and Local Government.

### **AP U.S. HISTORY - Grade 10 (Required) (2114/2124)**

Students survey United States history from the Colonial era to the Cold War. The college-level work prepares students for the higher level thinking and writing skills required in IB History. This course also prepares students for the Advanced Placement examination in U.S. History in May of their sophomore year.

### **IB HISTORY 1 - Grade 11 (Required) (2230/2231)**

Students survey European/Russian and world history from the Renaissance (1450) through the Age of the Enlightenment to 1900. Emphasis is on the rise of nation states, scientific revolution, colonialism, political and industrial revolution, the "New Imperialism," unification movements, and the long-term causes of World War 1.

### **IB HISTORY 2 - Grade 12 (Required) (2403/2404)**

Students study Twentieth Century Europe/Russia from 1900 to the present. Emphasis is on causes, practices, and effects of war; rise of single-party states; Europe/Russia between the Wars; economic developments; the work of international organizations and minorities in the modern state; nationalist and independence movements; decolonization and problems of new nations; social change; religion and politics; and East-West relations after 1945. Students complete a 3,000-word research paper on a selected topic and prepare for the higher level history examination.

## **GROUP 4: EXPERIMENTAL SCIENCES**

The general aims of the IB science curricula are to help students develop

- understanding of the knowledge of science (facts, principles, and concepts)
- conceptual and practical skills resulting from involvement in scientific knowledge
- ability to analyze scientific information critically and independently and to recognize the limitations of scientific knowledge
- ability to apply knowledge and skills in order to generate new knowledge
- awareness of the impact of science on ethical, philosophical, and political issues
- understanding of the international dimension of science and recent scientific thinking from many countries

### **IB PREP BIOLOGY - Grade 9 (Required) (3634/3635)**

Students study living organisms ranging from molecular levels to the biosphere. Topics include scientific method, cytology, genetics, evolution, taxonomy, microbiology, ecology, anatomy, and physiology. Students participate in laboratory work and field study during this preparatory course.

### **IB PREP CHEMISTRY - Grade 10 (Required) (3744/3745)**

Students study the materials of our environment, their properties, and the ways in which they react with each other. Through a synthesis of laboratory work and descriptive and theoretical chemistry, students gain factual knowledge drawn from the whole field of chemistry. Topics include properties of matter, atomic theory, chemical bonds and reaction kinetics, gases, periodicity and radioactivity, organic chemistry, solutions and solubility, thermodynamics, oxidation-reduction reactions, equilibrium systems, and electrochemistry.

### **IB PHYSICS 1 - Grade 11 (Required for IB Physics 2) (3844/3845)**

In IB Physics 1, students investigate physical laws and theories, relationships of physical phenomena, and interrelationships of physics and other fields of human endeavor. Topics include vector mathematics, kinematics, dynamics, energy, momentum, waves, optics, thermodynamics, and some aspects of historical physics. IB Physics 1 prepares students for IB Physics 2. Students must take Physics 1 and 2 for the higher level exam or for the standard level exam.

### **IB PHYSICS 2 - Grade 12 (3846/3847)**

IB Physics 2 builds on and extends the topics of IB Physics 1. Additional topics include relativity, electricity and magnetism, quantum physics, atomic physics, astrophysics, and additional aspects of historical physics. Students may take either the higher level or standard level IB examination.

### **IB BIOLOGY 1 - Grade 11 (3623/3624)**

IB Biology revisits the concepts and material covered in IB Prep Biology and Chemistry. It offers extensive laboratory experiences and emphasizes critical analyses of scientific information, evaluation of biological knowledge regarding problems facing mankind, and synthesis of biological information from different areas of the field. IB Biology prepares students for IB Biology 2. Students must take Biology 1 and 2 for the higher level exam or for the standard level exam.

### **IB BIOLOGY 2 – Grade 12 (3625/3626)**

IB Biology 2 builds on and extends the topics of IB Biology 1. Additional topics and further exploration of topics include statistical analysis, cells, the chemistry of life, genetics, ecology and evolution, nucleic acids and proteins, cell respiration and photosynthesis, plant science, genetics, human health and physiology. Additionally, students will participate in a variety of laboratory experiences, use advanced lab technology, and conduct field studies. Students may take either the higher level or standard level IB examination.

### **IB CHEMISTRY 1 - Grade 11 or 12 (3746/3747)**

Students study materials of our environment, their properties, and the ways in which they react with each other. Topics include stoichiometry, atomic theory, periodicity, bonding, states of matter, energetics, kinetics, equilibrium, acids and bases, oxidation and reduction, organic chemistry, and optional studies selected from a prescribed list. This course prepares students for the IB standard level chemistry examination.

## IB ENVIRONMENTAL SYSTEMS AND SOCIETIES – Grade 11 or 12 (3757/3758)

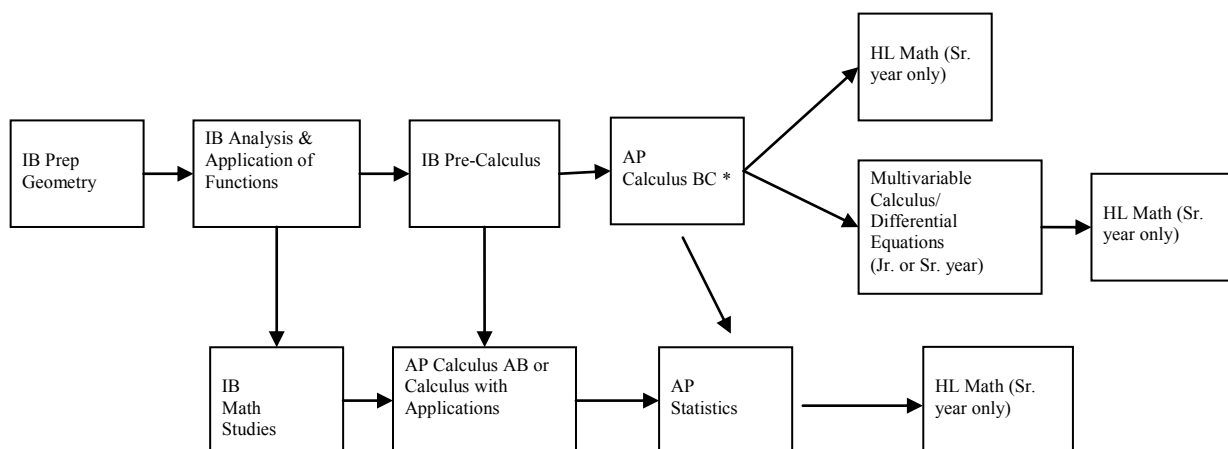
IB Environmental Systems and Societies is designed to provide students with a coherent perspective of the interrelationships between environmental systems and societies; student attention is constantly drawn to their own relationship with their environment and the significance of choices and decisions that they make in their own lives. The perspective they gain enables them to adopt an informed persona response to the wide range of pressing environmental issues that they will inevitably come to face. The course approach is conducive to students evaluating the scientific, ethical, and socio-political aspects of issues, and provides students with a body of knowledge, methodologies, and skills that can be used in the analysis of environmental issues at local and global levels. The course prepares students for the IB Environmental Systems and Societies standard level exam and the AP Environmental exam.

## GROUP 5: MATHEMATICS

The aims of the IB mathematics curricula are to help students to develop the following:

- an understanding of mathematics as a discipline
- an attitude favorable to subsequent learning and use of the subject
- the knowledge and skills to solve mathematical problems
- the ability to apply mathematical skills in a variety of ways

Students in Grade 9 select the appropriate mathematics course based on prior course work, the placement exam, and the advisement of the IB Math core teacher. All students must complete at least one calculus course to be fully prepared for the IB math exams.



### IB PREP GEOMETRY with ALGEBRA II ENRICHMENT (3208/3209)

IB Prep Geometry covers traditional units of geometry from an algebraic perspective, primarily using elements from Algebra 2. Additional topics include sets, probability, and algebraic systems. Logical reasoning is developed through inductive and deductive proofs by using symbols as well as writing. These foundations are extended in future course work, specifically in AAF, Math Studies, and IB Pre-Calculus.

### IB ANALYSIS AND APPLICATIONS OF FUNCTIONS (AAF) (3306/3307)

Each family of functions (polynomial, rational, exponential, and trigonometric) is analyzed for characteristic traits, transformations, and inverses. Students examine the relevance of the features of graphs to real-world models. Matrices, vectors, probability, and statistics are also studied as tools to use in a variety of situations. This course is an advanced Algebra II course, and sets the stage for continuing into calculus and higher mathematics.

**IB MATH STUDIES WITH PRE-CALCULUS (3410/3418)**

This Pre-Calculus course builds on the concepts of IB Analysis and Application of Functions and IB Prep Geometry in preparation for the standard level IB Mathematical Studies examination. Students examine functions (transformation and applications), probability, statistics, trigonometry, sequences and series, and solid geometry. Upon completion of this class, students enroll in AP AB Calculus or in Calculus with Applications to complete their preparation for the IB Math Studies exam.

**IB PRE-CALCULUS (3420/3424)**

This advanced Pre-Calculus course builds on the work and modeling in Analysis and Applications of Functions. Further emphasis is given to probability, circular functions, two- and three-dimensional vectors, conics, and complex numbers. The concepts of limit derivative and power series are introduced. Upon completion of this class, students enroll in either AP AB Calculus or AP BC Calculus in preparation for the IB standard level mathematics exam. Some students may choose to continue preparation for the IB higher level mathematics exams.

**CALCULUS W/APPLICATIONS (3356/3357)**

The topics of this course include limits, continuity, and derivatives of functions, the definite integral, and their real-world applications. Students find and apply derivatives numerically, graphically and symbolically. Previously studied functions will be analyzed using calculus concepts. The relationship between the derivative and the definite integral is developed. Students will model real-world situations involving rates of change using difference or differential equations.

**AP CALCULUS AB (3452/3453) or AP CALCULUS BC (3491/3492)**

The topics studied in AP Calculus are those traditionally offered in the first year of calculus in college and designed specifically for students who wish to obtain advanced placement in mathematics in college. Concepts are communicated graphically, numerically, analytically, and verbally. The basic topics studied include limits and continuity of functions, derivatives, and integrals of algebraic and transcendental functions and their applications to problems. The advanced topics covered in the BC course also include convergence tests for series, Taylor or Maclaurin series, elementary differential equations, and calculus of polar and parametric functions.

**IB HIGHER LEVEL MATHEMATICS (Grade 12 only) (3496/3497)**

This course extends the concepts of algebra, vectors, and calculus in thorough preparation for the IB Higher Level Mathematics exam. The course content includes advanced topics in statistics, probability, sets, relations, groups, differential equations, and graph theory. This course may only be taken in the senior year.

**AP STATISTICS (3320/3321)**

This elective course is the equivalent of a non-calculus-based introductory college statistics course and concentrates on four conceptual themes: exploring data, planning a study, anticipating patterns, and statistical inference. Students are engaged in the exploratory analysis of data and make use of graphical and numerical techniques to study patterns and departures from patterns. Data sets are collected according to well-developed plans: e.g., census, sample surveys, experiments, and/or observed studies from which inferences will be made. Association is distinguished from causation. Students are expected to produce models using probability and simulation. The techniques of statistical inference, confidence intervals, and hypothesis testing are studied in detail.

**MULTIVARIABLE CALCULUS AND DIFFERENTIAL EQUATIONS (3048/3049)**

The first semester covers three-dimensional analytic geometry and vectors, the calculus of functions of more than one variable including partial derivatives, vector-valued functions, multiple integrals, volumes, surface area, and the classical theorems of Green, Stokes, and Gauss. The second semester is an introduction to the basic concepts, theory, methods, and applications of ordinary differential equations. The specific topics covered are first-order equations, higher order linear differential equations, solutions by power series, and the Laplace transform.

## GROUP 6: ELECTIVES

A diploma candidate is required to complete a sixth area of study within the IB options. It is recommended that students consider possible options for this sixth area as they register for courses in Grades 9 and 10. This planning will allow the student to prepare for different options in the IB years of Grades 11 and 12. The sixth subject options for Richard Montgomery are listed below.

### RMHS IB Sixth Subject Options

Economics	(Description follows)
Psychology	(Description follows)
Visual Arts	(Description follows)
Music	(Description follows)
Film Studies	(Description follows)
Philosophy	(Description follows)
Sociology	(Description follows)
Computer Science	(Description follows)
A second science	(See pages 5 & 6)
A second foreign language*	(See page 3)

\* Students must reach Level 5 of this language to sit for the IB Examination.

## FILM STUDIES

### **PRE-IB PRODUCTION and PERFORMANCE (6993/6994)**

This course gives students opportunities to strengthen their knowledge and experience with the production and performance skills required in a variety of Media genres. Students will come to understand, appreciate and apply central principles of acting technique and directing methodology as commonly applied to Film, TV, Radio, and Theater. A survey in practical film production, camera work and stage direction will also be included. This exploratory two semester course will prepare students for either IB Film or IB Theater as the next step course in an IB sequence but is NOT a prerequisite. Any student may take the course for Arts Credit. This course satisfies the Arts Credit requirement for graduation.

### **IB FILM STUDIES I – Grade 11/12 (7702/7703)**

Through the study of film texts and projects in filmmaking and analysis, the IB Film student will explore film history and theory, enabling them to appreciate the multiplicity of cultural and historical perspectives in film. Students will learn to consider a wide variety of film texts, theories, and ideas from the point of view of different individuals, nations, and cultures. IB Film Studies explores a range of creative works in a global context and emphasized practical production by the student. Assessments include film analysis, written and oral, and a reflective and practical portfolio of student work demonstrating the creative process and use of film technique.

### **IB FILM STUDIES II Grade 12 (7204/7205)**

IB Film Studies II is the second of the two-year sequence that prepares IB students for the IB Film examinations. Students will extend their knowledge of film history and theory, and will utilize knowledge of applied film techniques in culminating assessments for the IB examinations. These assessments include film analysis, written and oral, and a reflective and practical portfolio of student work demonstrating the creative process and use of film technique. The students will also engage in dialog about the art of film making and critique, as well as produce their own film projects during the year to extend and advance their practices from the first year.

## **VISUAL ARTS**

### **PRE-IB ART AND CULTURE – Grade 10 – (7200/7201)**

This course is the entry level class for the IB visual arts elective and should be taken in Grade 10 if the student is interested in preparing for the IB visual arts examination (higher level or standard level). Students will explore and apply artistic technique as they work on a variety of projects in a variety of mediums. The focus of the course is exploring art through world cultures; thus students will study art history and forms of art as well as practice application, during this year long course. Students may also elect to complete the AP Art History exam. This course satisfies the Arts Credit requirement for Graduation.

### **IB ART AND DESIGN 1 - Grade 11 or 12 (6102/6103)**

Students develop their aesthetic, imaginative, and creative faculties. Emphasis is on visual awareness, multicultural expressions, and historical references. Students begin an expressive verbal and visual journal demonstrating the interrelationship between the student's personal research and studio work.

### **IB ART AND DESIGN 2 - Grade 12 (6107/6108)**

Students continue to develop their aesthetic, imaginative, and creative faculties. Emphasis is on visual awareness and multicultural expressions as reflected in studio work. Students complete studio work and refine verbal and visual journals begun in IB Art and Design 1 to fulfill the requirements for the standard level or higher level IB visual arts assessments.

## **MUSIC**

To participate in IB music and the RMHS music program, students must have studied and continue to study an instrument or voice. They must also be able to perform two or three pieces in contrasting styles in the examination year. Students in the music program are traditionally signed up for a performance group, instrumental or vocal, during their four-year program at Richard Montgomery. Options include orchestra, symphonic, and jazz band, as well as chorus and madrigals. Students are also often involved in the extra curricular programs, including Marching and Pep Band, pit orchestra for the musical, independent choral groups, and other instrumental ensembles.

### **AP MUSIC THEORY (6545/6546)**

AP Music Theory is the entry level class for the IB music elective and should be taken in Grade 9, 10, or 11 if the student is interested in preparing for an IB standard level or higher level assessment.

### **IB ADVANCED MUSIC - Grade 11 or 12 (6567/6568)**

IB Advanced Music is a two-semester sequence in which students learn to recognize the music of various eras and cultures through a detailed study of representative works. The study of musical scores extends students' knowledge of music fundamentals and theory and comprehension of how the changes in composition styles create the music of different times and places. Students also study the music of nonwestern culture and twentieth-century "pop" styles. These objectives are obtained through extensive music reading, listening, and score analysis, all of which help prepare students for the standard level or higher level IB music examination.

## **THEATER**

### **IB THEATER I (Grades 11-12) (8071/8072)**

IB Theater explores a range of creative works in a global context and emphasizes practical production by the student. Assessments include a practical play analysis, a reflective and analytical portfolio of their theatrical work, and research that applies theoretical and historical concepts to a contemporary production. At the end of IB Theater I, students are prepared for the standard level IB examination. On a space-available basis, non-IB advanced theatre students may enroll. Instructor permission is required.

### **IB THEATER II (Grade 12) (8073/8074)**

IB Theater II is the second of the two-year sequence that prepares IB students for the higher level IB theater examination. The two-year sequence consists of five parts: (1) performance skills, (2) world theater studies, (3) practical play analysis, (4) theater production, and (5) an individual project.

## **SOCIAL STUDIES ELECTIVES**

### **SOCIAL and CULTURAL ANTHROPOLOGY (Sociology) - Grade 11 or 12 (2242/2243)**

IB Social and Cultural Anthropology is the comparative study of culture and human societies. Anthropologists seek an understanding of humankind in all its diversity. This understanding is reached through the study of cultures and societies and the exploration of the general principles of social and cultural life. Students will evaluate comparative perspectives that challenge cultural assumptions and issues associated with the complexity of modern societies, in local, regional, and global contexts. Topics of anthropological inquiry include social change, kinship, symbolism, exchange, belief systems, ethnicity, and power relations. Through their study, students become acquainted with anthropological perspectives and ways of thinking, and develop critical knowledge about these ideas. Students will conduct field study experiments, and report and critique observations. This course prepares students for the standard level Social Anthropology examination.

### **IB WORLD PHILOSOPHY AND RELIGION - Grade 11 or 12 (2237/2238)**

IB World Philosophy and Religion, through the examination of texts and themes, explores fundamental questions that people have asked throughout human history. The course engages students intellectually and actively, with a focus on cultivating critical thinking and developing a knowledgeable mind about various cultures and world perspectives, as well as the view that there are common themes addressed by humanity on a global scale. Students will complete a variety of assessments requiring oral and written reflection. The course prepared students for the standard level IB philosophy examination.

### **PSYCHOLOGY - Grade 11 or 12 (2232/2233)**

This course focuses on the nature of human beings, appreciation of psychology, and various methods of psychological inquiry. Students study human behavior through behavioral, cognitive, humanistic/phenomenological, and psychodynamic perspectives. Students study research design, methods, statistics, and ethical issues in psychological research and application. Students must also undertake one internally assessed research study, which may be an experiment. This course prepares students for the standard level psychology examination.

### **ECONOMICS - Grade 11 or 12 (2234/2235)**

IB Economics A focuses on macroeconomics, the branch of economics that views the economy as a whole. Emphasis is on the analysis of economic problems such as unemployment and inflation and the role that government plays in maximizing economic growth while keeping prices stable. International economic topics are given particular emphasis as part of the IB curriculum. IB Economics B focuses on the microeconomics, which investigates decision-making of individual consumers and producers. The course focuses on the nature and function of the product and resource markets, with the international economy and the role of the government given particular emphasis. The course prepares students for the standard level IB economics examination and the AP economics examination.

## **COMPUTER SCIENCE**

Students should take the following courses to prepare for the standard level or higher level computer science examination (NOTE: students must be selected by the Computer Science instructor to attempt the HL Computer Science portfolio and exam). The sequence is generally: **Computer Programming 1 or 2** (Grade 9 or 10) **Computer Programming 2 or 3** (Grades 11 or 12).

**CP 1 (2989/2990)**

**CP 2 (2901/2902)**

**CP 3 (2965/2966)**

## **THEORY OF KNOWLEDGE**

**Theory of Knowledge (TOK)** is unique to the International Baccalaureate Program. Successful completion of TOK is a requirement for the IB Diploma. As stated in the IB *General Guide*, the purpose of the course is "to stimulate critical reflection upon the knowledge and experience of students both in and outside the classroom." The objectives of TOK reflect the interdisciplinary nature of the IB Program by examining mathematics, language, logic, and methodologies of disciplines from the sciences and the humanities. Students must enroll in TOK in both grades 11 and 12.

The aims of **Theory of Knowledge** are to lead students to accomplish the following:

- engage in reflection on, and questioning, of the bases of knowledge and experience
- increase awareness of subjective and ideological biases
- develop a personal mode of thought based on critical examination of evidence and argument
- formulate rational arguments

### **THEORY OF KNOWLEDGE 1/EXTENDED ESSAY (Grade 11 - 2011/2012)**

This required course combines the content of Theory of Knowledge 1 with support for IB students who are launching the extended essay process. In the fall, most of the class time is devoted to Theory of Knowledge with occasional time allocated for instruction in research techniques. As the year progresses, more and more emphasis is placed on independent work as students refine their topics, conduct their research, and create a first draft of their extended essays. Students earn a full credit for this course.

### **THEORY OF KNOWLEDGE 2 (Grade 12 – 200801) First semester only**

In this required course students first investigate the system of knowledge applied by historians, and then turn to value judgments and knowledge, focusing on moral, political, and aesthetic judgments. The final topic investigates the differences among belief, opinion, faith, knowledge, and truth.

## **EXTENDED ESSAY**

All candidates for the International Baccalaureate Diploma must submit an extended essay on a topic of their choice in one of the subjects of the IB curriculum. Students are supervised by a teacher qualified to teach the subject of their essays. The essays are graded by examiners appointed by the Chief Examiner of each subject in the IB Office in Cardiff, Wales.

### **Content and Length**

Quality, not quantity, is the focus of the extended essay. The essay is to be the authentic, personal work of the student and to provide the student with the opportunity to engage in independent research. Emphasis is placed on the development of the skills of organizing and expressing ideas logically and coherently. Candidates should select a restricted topic rather than a broad, general one. Topic selection should be preceded by preliminary research to determine if the topic is suitable for the IB criteria. **Maximum length: 4000 words.**

## Award of Diploma Points – the role of The Extended Essay, and TOK

The extended essay contributes to the overall diploma score through the award of points in conjunction with theory of knowledge. A maximum of three points are awarded according to a student’s combined performance in both the extended essay and theory of knowledge. Both the extended essay and theory of knowledge are measured against published assessment criteria. According to the quality of the work, and based on the application of these assessment criteria, a student’s performance in each of the extended essay and theory of knowledge will fall into one of the five bands described previously. The total number of points awarded is determined by the combination of the performance levels achieved by the student in both the extended essay and theory of knowledge according to the following matrix.

### The Diploma Points Matrix

		Theory of knowledge					
		Excellent A	Good B	Satisfactory C	Mediocre D	Elementary E	Not submitted
Extended essay	Excellent A	3	3	2	2	1 + Failing condition*	N
	Good B	3	2	1	1	Failing condition*	N
	Satisfactory C	2	1	1	0	Failing condition*	N
	Mediocre D	2	1	0	0	Failing condition*	N
	Elementary E	1 + Failing condition*	Failing condition*	Failing condition*	Failing condition*	Failing condition*	N
	Not submitted	N	N	N	N	N	N

A student who, for example, writes a good extended essay and whose performance in theory of knowledge is judged to be satisfactory will be awarded 1 point, while a student who writes a mediocre extended essay and whose performance in theory of knowledge is judged to be excellent will be awarded 2 points.

A student who fails to submit an extended essay will be awarded N for the extended essay, will score no points, and will not be awarded a diploma.

Performance in both the extended essay and theory of knowledge of an elementary standard is a failing condition for the award of the diploma.

**28 points overall is required to be eligible for the diploma if a student attains an “E” grade in either the extended essay or theory of knowledge. As previously, a grade “A” in one of the requirements earns an extra point even if the other is a grade “E”. Attaining a grade “E” in both the extended essay and theory of knowledge continues to represent an automatic failure. Otherwise, students may still earn their IB Diploma with a minimum of 24 points, including the bonus points, provided they do so without any failing conditions (see page 4).**

## CREATIVITY, ACTION, SERVICE

Candidates for the IB Diploma must participate in approximately 150 hours of Creativity, Action, and Service (CAS) activities. The purpose of this requirement is to develop well-rounded students. The CAS activities may be extracurricular activities at RMHS or in the community. In the spirit of the IB design, students must provide direct community service. Activities for which students are paid or receive academic credit may not be used to fulfill the CAS requirement.

CAS hours are to be balanced among the three areas of focus. Students must complete a CAS experience that spans the Diploma Years, grades 11 and 12. Students will receive specific guidance to complete this unique and rewarding experience at the end of Grade 10, detailing the process for earning their CAS hours and the documentation and reflection required.

The IB CAS requirement is a separate and different program from the Student Service Learning (SSL) hours required by the State of Maryland for high school graduation. Although some activities may qualify for both SSL and CAS credit, no activities may be considered for CAS until after Grade 10.

### Activity Options

- **Creativity:** These activities may include any form of art or craft, drama, debate, music, dance, filmmaking, photography, etc. Students must participate regularly in the activities outside of the school day and not as part of an assignment for a class. Examples include:

Debate/Forensics	Mock Trial
Chorus/Madrigals	Drama
It's Academic	Band/Orchestra
Model U.N.	The Tide (our newspaper)
Fine Lines (literary magazine)	RMBC (our television station)

- **Action:** Sports or other physical activities are included. Some examples follow:

Cross Country	Tennis
Dance	Pompons
Volleyball	Marching Band
Cheerleading	Football
Swimming	Basketball
Softball/Baseball	Horseback Riding

- **Service:** Students must give of themselves in social service to the community. This volunteer work may be done in hospitals, retirement homes, communities, the school, or at other service organizations. Examples include:

International Club	Archeology Club
Peer Tutoring	Student Government Association
Peer Counseling	Class Steering Committee
Scouts	Habitat for Humanity