Proposed Changes to the 2014-2015 Program of Studies

The following is an overview of recommended changes to the 2014-2015 Secondary Program of Studies. The 2014-2015 Program of Studies will be published online. A limited number of printed copies will be available at each secondary guidance office and at the School Board Office.

REFORMATTING:
The Program of Studies has been reformatted to improve flow of information and readability for users. Some of the major changes resulting from the reformatting include:

- Explanation of an Academic and Career Plan based upon VDOE language
- Definition and explanations of terms used within the Program of Studies, such as verified credit, credit accommodations, and graduation requirements.
- Alignment of Specialty Program information with the division website and program brochures
- New Tables for Recommended Course Sequences, Advanced Courses, etc.

NEW COURSE OFFERINGS:

GENERAL TOPICS

982806 ADVANCED COURSE EXPERIENCE
Grades 7 & 8
Semester
This course is designed to motivate and prepare students for advanced course work in high school. Students are exposed to rigorous, Advanced Placement-level course work through project based learning experiences. The course goal is to develop foundational skills, key strategies, and content knowledge that students need to be successful in challenging courses such as, Advanced Placement and International Baccalaureate courses.

984010 STUDENT TECHNOLOGY LEADERSHIP CORPS
Grades 10 - 12
Year Long
1 Credit
Prerequisite: Application and Interview
The course is uniquely designed to offer students an opportunity to advance their technological skills and leadership skills by supporting staff and students with the productive use of technology. Students will model online safety and responsible use of devices and applications. Viewed as the technology gurus of the school community, students will provide assistance with hardware, software, networking, troubleshooting, and provide instructional support for the integration of technology. *This course will satisfy the virtual course requirement.*

982807 INTRODUCTION TO PROGRAMMING AND GAME DESIGN
Grades 7 & 8
Semester
This course provides an introduction to programming and the theory and practice of game design. Students will focus on elements of programming and design to create interactive games to include robotics. This course offers students opportunities to expand technology skills through analysis and development of games, graphics, audio, animation, and robotics.

INTERNATIONAL BACCALAUREATE

IB5330  IB CLASSICAL LANGUAGES LATIN (SL)
Grade 11
Year
1 weighted credit
This course continues the study of grammar and ancient cultures in previous levels while focusing on translation of extended passages. Course expectations include a systematic study of grammar, text handling, and written assessments geared toward the successful completion of Internal Assessments and IB Examinations. Particular attention is paid to understanding classical texts in their original language as well as appreciating these texts in their social, political, and historical contexts. The second year of this course is competed in 12th grade. NOTE: Only students admitted into the IB Diploma Programme or receiving teacher recommendation may enroll in this course.

IB5340  IB LANGUAGES LATIN (SL)
Grade 12
Year
1 weighted credit
NOTE: Refer to IB Classical Languages - Latin (SL) under Grade 11 for course description.

INTERNATIONAL BACCALAUREATE MIDDLE YEARS PROGRAMME

984011M  MYP DESIGN
Grades 7 & 8
Semester
This course gives students further practical work with the MYP Design cycle. Through the Design Cycle, students investigate real-life problems, plan and create feasible solutions to those problems, and then evaluate their own designs. This course fulfills the MYP Design requirement and prepares students for future MYP Design courses.

NEW HORIZONS REGIONAL EDUCATION CENTER

8533/8534  ELECTRICITY AND RENEWABLE ENERGY
Grades 11 – 12
3 Credits
Prerequisites: Completion of Algebra I and English 10 with a grade of “C” or above. Electricity and Renewable Energy is a 1-year program that teaches the basic concepts used by electricians to install, maintain and repair wiring, equipment and fixtures. Students in this program will also explore alternative renewable energy sources and will learn to install hydrogen
fuel cells, solar panels and communication cable and wiring. As our electricity and alternative renewable energy resource needs continue to grow, so will the career opportunities in this field. Because we depend so much on electricity and other energy sources for the way we live and work, careers in this field will always be in high demand. Location: Butler Farm (am and pm) (NOTE: This course is being recommended by new Horizons Regional Education Center)

REVISED COURSE CODE, COURSE TITLE, OR DESCRIPTION CHANGES:

GENERAL TOPICS

982956 ACADEMIC TUTORIAL
Grades 9 - 12
.5 Credit
This course assesses specific academic needs in the areas of reading, writing and mathematics and provides structured remediation during the school day. Content is designed to increase the academic success of students in their regular high school course work. In addition to basic academic fundamentals, this course also includes note-taking strategies, reading/writing across the curriculum, organizational skills, test-taking strategies, time management, and career preparation. (May be continued)
(NOTE: Added availability to 9th grade students and removed “targeted, academically at-risk students” from the description.)

V98408 PROGRAMMING & GAME DESIGN I
Grades 9 - 12
1 Credit
This course provides a solid foundation in the essentials of programming and game design. Students will use programming language and game-development software to create engaging, interactive games in a variety of styles. In addition to learning about game genres, students will study all aspects of the game-design process utilizing hands-on projects that teach all elements of game development. This virtual course offers students opportunities to expand technology skills through analysis and development of online games, graphics and animation. (NOTE: Course name changed to be commensurate with the new middle school course, Introduction to Programming & Game Design. Course description revised to reflect enhanced curriculum that includes programming. Course will also be offered to 9th grade students.)

V98409 PROGRAMMING & GAME DESIGN II
Grades 10 - 12
1 Credit
Prerequisite: Programming & Game Design I
Students expand their knowledge of the game design industry while mastering event-driven game development through a series of interactive projects. Students use programming techniques to include control structures, functions, parameters, objects, and classes. Analysis and understanding of game elements are used as a fundamental principle in the design of games. XNA, C++ and other appropriate programming languages are used to develop a variety of games.
(NOTE: Course name change to be commensurate with the new middle school course, Introduction to Programming & Game Design, and Programming & Game Design I. Course description revised to reflect enhanced curriculum that includes programming.)

GOVERNOR’S SCHOOL FOR SCIENCE & TECHNOLOGY (GSST)

4571       CALCULUS-BASED ENGINEERING PHYSICS I & II: MECHANICS TO ELECTROMAGNETISM
2 Weighted Credits
Corequisite: Enrollment in GSST College Calculus Course
This is a mathematical rigorous course that investigates the principals of classical mechanics, gravitation, periodic motion, electric and magnetic field theory, AC and DC circuit theory, geometric optics through in-depth discussion, concept development, and experimental laboratory activities. The course also develops problem solving skills which emphasize the importance of inquiry in science and integrates the overarching themes of conservation and symmetry. Laboratory experiments use apparatuses such as dynamic tracks, ballistic pendulums, and different LabPro sensors to investigate fundamental physics theories and mathematical concepts. Computer data acquisition software is utilized to collect, analyze, and graph experimental data. The course encourages hands-on activities, class participation, and students taking responsibility for their own learning. Students will be provided many opportunities throughout the course to design and carry out investigations and to analyze and evaluate data. Learning fundamental principles, generalizations, model building and learning to apply course material to improve thinking, problem solving, and decision making are essential general goals. Gaining factual knowledge and developing specific skills, competencies, and points of view needed by professionals are important general goals. (NOTE: Course name and description changed by Governors School.)

4580       CALCULUS-BASED ENGINEERING PHYSICS III AND IV: MODERN PHYSICS AND APPLIED PHYSICS: ENGINEERING DESIGN PRINCIPLES
2 Weighted Credits
Prerequisite: Engineering Physics I & II
This course is an investigation of modern physics topics such as quantum mechanics, wave equations, atomic and nuclear physics. Additionally, the topics of the first year course are applied to real world engineering design projects. Skills necessary for the 21st century workplace such as computer modeling, Computer Aided Design (CAD), 3-D visualization and printing, and prototype design will be developed. Engineering Projects and competitions are developed in coordination with local business and governmental partners, such as HUNCH (High School students United with NASA to Create Hardware), SNAME (Society of Naval Architects and Marine Engineers), and the Jefferson Lab. Robotics design and programming are also included. Interactions with active engineers in various fields working on current day topics are emphasized. A survey of engineering and physics sub-fields along with their requisite skill requirements is an overarching goal. The capstone of the course is the HUNCH Extreme Science (HEXS) project. Students are tasked to design, prototype, and build an experiment for the International Space Station. In collaboration with NASA engineers, students will put into practice engineering design principles learned during
the course. A team of students representing the class is invited to Houston’s Ellington Field to test their experiment prior to acceptance to the ISS.

*(NOTE: Course name and description changed by Governors School.)*

**3177 COLLEGE CALCULUS**
1 Weighted Credit

This course takes an integrated approach to learning calculus. Students will use skills developed earlier in their math courses to address real-world problems related to calculus. Students will solve problems graphically, analytically, and by applying advanced software technology. Students will gain an in-depth understanding of limits, continuity and asymptotic behavior of functions, differential calculus, integral calculus, the Fundamental Theorem of Calculus, advanced techniques of integration, first degree differential equations and modeling, the study of sequences and series, and the calculus of functions defined in the polar coordinate system. Successful completion of this course will prepare students to enroll in multivariable calculus / linear algebra.

*(NOTE: Course name and description changed by Governors School.)*

**3162 COLLEGE MODERN PRE-CALCULUS**
1 Weighted Credit

This course is an intensive, reform approach to mathematics designed to prepare students for college calculus. Students will focus on discussion and mathematical problem solving in elementary vector analysis, explicitly defined exponential, polynomial, logarithmic and trigonometric functions, as well as functions that are defined recursively and parametrically. Student investigations into functions, bivariate data, and models will involve graphing calculators and computers. Both graphical and analytic approaches to problem solving will be emphasized and used to model practical applications. The course concludes with an introduction to calculus.

*(NOTE: Course name and description changed by Governors School.)*

**INTERNATIONAL BACCALAUREATE**

**IB 2210 IB GEOGRAPHY (SL)**
Grade 11 or 12
1 Weighted Credit

*(NOTE: Deleted Prerequisite IB Admission statement as it is stated in the Note at the end of the course description.)*

**IB 144012 IB THEATRE (HL)**
Grade 11
1 Weighted Credit

This course engages students in critically studying theater of diverse cultures and historical periods, developing as reflective practitioners of a variety of aspects of theatrical performance, and working both independently and collaboratively to device and produce original theatrical interpretations and/or productions. Course expectations include a variety of assignments geared toward completing IB Internal and External Assessments. IB assessments include a substantial research investigation, writings about practical performance aspects, an independent oral
presentation, and a cumulative portfolio project. Note: Only students admitted into the IB Diploma Programme or receiving teacher recommendation may enroll in this course.

*(NOTE: Deleted Prerequisite and changed course description. Course name change due to Bruton H.S. School of the Arts not being authorized as an IB World School. As such, the IB theater course may not be taught through the School of the Arts. The course must be moved to YHS to be taught as part of the IB curriculum.)*

**IB 144013**  
**IB THEATRE (HL)**  
Grade 12  
1 Weighted Credit  
Prerequisite: IB Theater (HL) Grade 11

*(NOTE: Course name change is the same as IB 144012 IB Theatre (HL) for 11th graders. Prerequisite change to: IB 144012 IB Theatre (HL).*

**IB 1197**  
**IB THEORY OF KNOWLEDGE (TOK)**  
Grade 11 or 12  
1 Weighted Credit

*(NOTE: Remove IB Admission Prerequisite statement & add IB Admission statement to the end of the course description to keep consistency with the other courses). “NOTE: Only students admitted into the IB Diploma Programme or receiving teacher recommendation may enroll in this course.”*

**INTERNATIONAL BACCALAUREATE MIDDLE YEARS PROGRAMME**

**8464M**  
**MYP DESIGN: INVENTIONS & INNOVATIONS**  
Grade 7  
Semester

*(NOTE: Course title changed for alignment with MYP Next Chapter Subject Guides.)*

**8403M**  
**MYP DESIGN: TECHNOLOGY SYSTEMS**  
Grade 8  
Semester

*(NOTE: Course title changed for alignment with MYP Next Chapter Subject Guides.)*

**5104M**  
**MYP INTRODUCTION TO FRENCH**  
Grade 6  
Year

*(NOTE: Course title changed for consistency with other 6th grade Encore options.)*

**57004M**  
**MYP INTRODUCTION TO FRENCH**  
Grade 7  
Year

*(NOTE: Course title changed for consistency with other 7th grade Encore options.)*

**5504M**  
**MYP INTRODUCTION TO SPANISH**
Grade 6
Year
(NOTE: Course title changed for consistency with other 6th grade Encore options.)

57005M MYP INTRODUCTION TO SPANISH
Grade 7
Year
(NOTE: Course title changed for consistency with other 7th grade Encore options.)

MATHEMATICS

All Students
3130 ALGEBRA I (Daily) = 1 math credit
32003 Corequisite: ALGEBRA I MATH LAB ELECTIVE = 1 elective credit
31303 Corequisite: ALGEBRA I MATH LAB CREDIT = 1 math credit*
(*Only applies to students who qualify and meet the requirements for Credit Accommodations.)
(NOTE: Course renamed and course codes changed to provide clarity for the double-blocked course and to identify the math course that provides an additional standard math credit to students who qualify for Credit Accommodations.)

YRA
3130 ALGEBRA I = 1 math credit
31303 Prerequisite: ALGEBRA I MATH LAB CREDIT = 1 math credit*
(*Only applies to students who qualify and meet the requirements for Credit Accommodations.)
32003 Prerequisite: ALGEBRA I MATH LAB ELECTIVE = 1 elective credit
(NOTE: Course renamed, prerequisites added, and course codes changed to provide an accurate reflection of the 4x4 Algebra course sequence. The changes were required to identify a math course that provides an additional standard math credit to students who qualify for Credit Accommodations.)

MUSIC

92708 CHORUS
Grades 7- 8
Year
(NOTE: Name changed from Advanced Chorus to create tiers for middle school choral instruction.)

SCHOOL OF THE ARTS

117711 ADVANCED ARTS LINK AND WRITERS WORKSHOP 9
Fine Arts Elective
1 Weighted Credit
(NOTE: The course title was revised to reflect the integration of art and writing instruction provided in the course.)
117721  ADVANCED ARTS LINK AND WRITERS WORKSHOP 10  
Fine Arts Elective  
1 Weighted Credit  
(NOTE: The course title was revised to reflect the integration of art and writing instruction provided in the course.)

117731  ADVANCED ARTS LINK AND WRITERS WORKSHOP 11  
Fine Arts Elective  
1 Weighted Credit  
(NOTE: The course title was revised to reflect the integration of art and writing instruction provided in the course.)

117741  ADVANCED ARTS LINK AND WRITERS WORKSHOP 12  
Fine Arts Elective  
1 Weighted Credit  
(NOTE: The course title was revised to reflect the integration of art and writing instruction provided in the course.)

14355  ADVANCED TECHNICAL THEATRE III AND IV WITH PRACTIUM  
Grades: 11-12  
Fine Arts Elective  
2 Weighted Credits  
Prerequisite: 14354 Advanced Technical Theatre 1  
(NOTE: Removed Theatre II from course name since those students are not required to complete a practicum.)

144011  ADVANCED THEATRE ARTS II  
Grades 10-12  
Fine Arts Elective  
1 Weighted Credit  
Prerequisite: 144010 Advanced Theatre Arts 1  
(NOTE: Course grade changed to 10th – 12th grades since they are dropping the Advanced Theatre Arts II with practicum for 10th – 12th graders.)

SCIENCE

4570  ADVANCED PLACEMENT PHYSICS 1  
Grade 11 - 12  
1 Weighted Credit  
Prerequisite: Algebra II Trigonometry or Trigonometry  
This course provides a systematic introduction to Newtonian mechanics, work, energy, and power; mechanical waves and sound. It emphasizes the development of conceptual understanding and problem-solving ability using algebra and trigonometry, but rarely calculus. The course content is equivalent to a first-semester college course in algebra-based physics. Students taking this course are encouraged to take the Advanced Placement Exam.
(NOTE: Course title and description changed due to the College Board offering its last test session of AP Physics B in the spring of 2014. Beginning in spring of 2015, AP Physics 1 and AP Physics 2 assessments will replace the AP Physics B assessment. The new course curriculum offered by the College Board will take students into an in-depth investigation of physics concepts through inquiry instruction. Timing trials conducted by the College Board have indicated that teachers will have the time to build foundational understanding through the teaching of state level Physics objectives. Therefore, students do not need to have taken Physics I in order to be successful in this course. Teachers have recommended that students take Trigonometry or Math Analysis before enrolling in AP Physics 1.)

DELETED COURSES:

GENERAL TOPICS:

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Name</th>
<th>Credit</th>
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<tbody>
<tr>
<td>982858</td>
<td>FRESHMAN SEMINAR</td>
<td>0.5 Credit</td>
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(Note: This course is recommended for deletion as it is identical to Academic Tutorial. A recommendation is being made to allow students in grade 9 to take the Academic Tutorial course.)

INTERNATIONAL BACCALAUREATE MIDDLE YEARS PROGRAMME

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>31433M</td>
<td>MYP ADVANCED GEOMETRY</td>
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<td>2357M</td>
<td>MYP CIVICS AND ECONOMICS</td>
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<td>1120M</td>
<td>MYP ENGLISH 8</td>
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<td>5120M</td>
<td>MYP FRENCH II</td>
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<td>7210M</td>
<td>MYP PHYSICAL EDUCATION/LIFETIME FITNESS 8</td>
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<tr>
<td>4125M</td>
<td>MYP PHYSICAL SCIENCE</td>
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<tr>
<td>5520M</td>
<td>MYP SPANISH II</td>
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Course designation no longer needed due to whole-school MYP model.
SCHOOL OF THE ARTS

144014     ADVANCED THEATRE ARTS II WITH PRACTICUM
(Course designation not needed since 10th graders will no longer be completing a practicum and
Advanced Theatre Arts II is offered for 10th – 12th grade.)