

2020-2021

**Academies Catalog
Course of Study 2020**

Academies Catalog Course of Study – 2020

The most current revision to this publication is located on the Chesapeake Public Schools website under the Academics tab.

The mission of Chesapeake Public Schools

The mission of the Chesapeake Public Schools is to ensure that all students attain the knowledge, skills, and attitudes to become lifelong learners and productive citizens by combining the efforts of students, parents, community, and staff to provide a quality education in a safe, orderly environment in which human dignity is valued. The strategic goals are to:

- Optimize School Safety
- Ensure Rigorous Educational Standards
- Evaluate Effectiveness and Efficiency
- Optimize the Management of Human Resources and Ensure Effective Staff Development
- Optimize the Use of Technology
- Enhance Parental and Community Involvement
- Provide Optimal School Facilities

The Mission of Professional School Counselors

Our mission as professional school counselors is to provide a comprehensive, standard-based counseling program designed to promote the formation of productive and responsible citizens by assisting all students to develop academic, career, and personal/social competencies. Effective school counseling programs are a collaborative effort between the professional school counselor, parents, teachers, administrators, and the greater community to create an environment that promotes student achievement, as well as develop initiatives to close the achievement gap. A comprehensive school-counseling program connects school counseling with current educational reform initiatives that emphasize student achievement and success. Professional school counselors value and respond to the diversity and individual differences in our societies and communities. Comprehensive school counseling programs ensure equitable access for all students to participate fully in the educational process and to be productive members in a global economy and diverse society.

Contact Information for Specific Academies

Science and Medicine Academy (SMA)

Deep Creek High School

2900 Margaret Booker Dr.

Chesapeake, VA 23323

Phone: 757.558.5302

Fax: 757.558.5305

Coordinator: Heather Ott

**Governor’s Science, Technology, Engineering, and Mathematics (STEM)
Academy**

Grassfield High School

2007 Grizzly Trail
Chesapeake, VA 23323
Phone: 757.558.4493
Fax: 757-558-9240
Coordinator: Meredith Strahan

International Baccalaureate Program (IB)

Oscar Smith High School

1994 Tiger Drive
Chesapeake, VA 23320
Phone: 757.548.0696
Fax: 757.548.0531
Coordinator: Kerri Lancaster

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Weighted Credits

Certain courses have been approved for additional quality point weight, which is added to the grade point average of students. These courses are approved because they are academically demanding. The courses are identified as **honors or advanced placement (AP) classes**. Students will earn the following quality points: A=4.0, A-=3.7, B+=3.3, B=3.0, B-=2.7, C+=2.3, C=2.0, C-=1.7, D+=1.3, D=1.0, and E=0. After the students' grade point averages have been calculated with the above-stated quality points, a weight of 0.025 is added to the grade point average for each honors class completed successfully, and a weight of 0.05 is added to the grade point average for each advanced placement course/credit completed successfully. Because some advanced placement courses have a credit value of 2 Credits, then 0.10 will be added for these classes. Some Dual Enrollment classes are also weighted.

Students who transfer into Chesapeake Public Schools will be given weighted credit for courses passed successfully in other school divisions only if the specific courses are weighted in Chesapeake Public Schools.

Weighted Accelerated/Honors Classes (.025 Per Credit)

Art IV

Honors Music

Honors Biology

Honors Chemistry

Honors Earth Science

Physics

Math Analysis

Calculus

Honors Geometry

World Language 3, 4, 5

World Language Advanced Conversation

Honors English 9, 10, 11, 12

Honors Social Studies 9, 10

Honors United States History

Honors United States Government

Digital Visualization (Advanced Drafting)

Weighted Accelerated/ Dual Enrollment Classes (.05 Per Credit)

AP English Language and Composition

AP English Literature and Composition

AP World Language

AP Art History

AP Art Studio/Drawing

AP Music Theory

AP European History

AP Human Geography

AP US Government and Politics

AP Seminar

AP Psychology

AP US History

AP World History

AP Statistics

AP Calculus AB

AP Calculus BC

AP Biology

AP Chemistry

AP Physics 1 and 2

AP Physics C

AP Computer Science

AP Economics

AP Research

Dual Enrollment College Composition 1 & 2

Dual Enrollment US History 1 & 2

International Baccalaureate (IB) Courses

(Chesapeake Public Schools offers this program at Oscar Smith High School)

Weighted (.025 Per Credit)

IB Theory of Knowledge Pre-

IB English 9

Pre-IB English 10

Pre-IB Spanish 3

Pre-IB French 3

Pre-IB Biology Pre-

IB Chemistry

Pre-IB Algebra II/Trigonometry Pre-

IB Geometry

Pre-IB Math Analysis

Weighted (.05 Per Credit)

IB English HL 1
IB English HL 2
IB French SL/HL 4
IB French SL/HL 5
IB Spanish SL/HL 4
IB Spanish SL/HL 5
IB History of the Americas HL
IB History, Twentieth Century Topics HL
IB Psychology SL/HL 1
IB Psychology SL/HL 2
IB Biology SL/HL 1
IB Biology SL/HL 2
IB Chemistry SL/HL 1
IB Chemistry SL/HL 2
IB Physics SL/HL 1
IB Physics SL/HL 2
IB Math SL/HL 1
IB Math SL/HL 2
IB Math Studies SL 1
IB Math Studies SL 2
IB Visual Arts SL/HL 1
IB Visual Arts SL/HL 2
Pre-IB World History 1
Pre-IB World History 2
Pre-IB US Government and Politics
IB World Religions SL 1

Governor's STEM Academy Courses

(Chesapeake Public Schools offers this Program at Grassfield High School)

Weighted (.025 per Credit)

STEM Advanced Database Design and Management
STEM Advanced Programming
STEM Advanced Sports, Entertainment and Marketing
STEM Advanced Global Marketing and Commerce
STEM Principles of Engineering
STEM Introduction to Engineering Design

Weighted (.05 Per Credit)

STEM Digital Electronics
STEM Engineering Design and Development
STEM Aerospace Engineering
STEM Civil Engineering and Architecture

Science and Medicine Academy (SMA) Courses

(Chesapeake Public Schools offers this program at Deep Creek High School)

Weighted (.025 per credit)

SMA Honors English 9
SMA Honors English 10
SMA Honors Social Studies 9
SMA Honors Social Studies 10
SMA Geometry
SMA Algebra II/Trigonometry
SMA Mathematical Analysis
SMA Calculus
SMA Principles of Earth Systems
SMA Contemporary Science Investigations in Biology
SMA Honors Medicinal Chemistry
SMA Astronomy
SMA Forensic Science
SMA Human Anatomy and Pathophysiology of Human Systems
SMA Advanced Senior Seminar

Weighted (.05 per credit)

SMA Animal Science
SMA PLTW Medical Interventions
SMA Human Movement Science
SMA PLTW Biomedical Innovations
SMA AP Biology
SMA AP Chemistry
SMA AP Environmental Science

Academic and Career Program of Studies

The required instructional program for Chesapeake Public Schools is defined in the **High School Program of Studies** which contains (1) curriculum content and essential knowledge and skills for each grade level and course; (2) approved instructional resources; (3) testing and assessment programs; and (4) curriculum alignment with the

Virginia Standards of Learning. The Program of Studies overview and other academic programs may be reviewed at any secondary school and at the Chesapeake Public Schools website under the Program of Study: <https://cpschools.com/guidance-school-counseling/>

Special Note: Information in this Academic and Career Program of Studies Guide reflects Standards of Accreditation adopted by the Virginia Board of Education in July 2018. Action by the General Assembly or the State Board may necessitate changes in Chesapeake City Public Schools Board policies and regulations. If changes occur, they will be communicated as soon as possible.

Directory of Course Offerings and Descriptions for Each Academy

This guide has been prepared to assist students and their parent or guardian with long-term program planning for the students' academy courses. Students and parents are encouraged to familiarize themselves with this publication and to use it as a resource guide. School counselors, in cooperation with parents, guardians and teachers, will assist each student in planning a program of study and in selecting courses for the next year. Students will need to review academic and career plans annually with their parents, guardian, and school counselor, making adjustments where necessary to ensure that it relates with future education and/or career plans.

In addition to this academy edition catalog the high school catalog contains the required courses and a complete list of electives offered in the Chesapeake City Public Schools. For all courses listed in the school's offerings, however, this guide contains the course descriptions and the listing of prerequisites.

Periodically, courses will be modified, added, or deleted. Sufficient student enrollment is necessary for a course to be taught.

Science and Medicine Academy at Deep Creek High School

English

SMA Honors English 9 (10071) State Code 1130

Grade Level: 9

Level of Difficulty: Honors

Credit: 1 unit

Weight: 0.025

Prerequisite: English 8, Honors English 8, or Gifted English 8

Standard of Learning End-of-Course Test: No

Course Description: Students present and critique dramatic reading and make inferences and draw conclusions using explicit and implied textual evidence.

Students make planned oral and multimodal presentations independently and in collaborative groups. The course emphasizes precision in the use of language, both orally and in writing, and the use of standard grammar, usage, and mechanics.

Students develop a variety of writing samples to access and organize information and cite quoted and paraphrased information using either MLA or APA style.

Students utilize technical writing components with a focus on writing for the science and medical industries. Additionally, students follow the writing process to compose persuasive and analytical essays.

SMA Honors English 10 (11071) State Code 1140

Grade Level: 10

Level of Difficulty: Honors

Credit: 1 Unit

Weight: 0.025

Prerequisite: SMA Honors English 9

Standard of Learning End-of-Course Test: No

Course Description: Students study literature and nonfiction of different cultures and eras and analyze the cultural and social relationships across the different time periods. Students use the writing process to develop analytical and persuasive essays by showing the relationship among claims, reasons, and evidence from diverse sources, and identify misconceptions and possible bias using either MLA or APA style to credit sources. Writing shows attention to organization and accuracy. Students participate in collaborative groups to analyze informational materials and create multimodal presentations. In addition, students review standard grammar and usage. Utilizing a variety of sources and a prescribed format, students compose a documented paper using either MLA or APA style to credit sources and deliver an oral presentation.

Social Studies

SMA Honors World History I: World History and Geography I to 1500 C.E. (40071) State Code 2215

Grade Level: 9

Level of Difficulty: Honors

Credit: 1 unit

Weight: 0.025

Prerequisite: Accelerate/Honors Placement requirements

Standard of Learning End-of-Course Test: Yes

Course Description: This course is an in-depth study of the backgrounds and development of world civilizations. Students develop critical thinking skills through analysis and research, essay writing, and discussion. Selected knowledge areas include the role of physical geography as it has influenced and hindered the development of cultures from man's prehistory through the Renaissance. The course introduces the industrialization of key figures, key discoveries, key inventions and innovations in both the fields of science and medicine.

SMA Honors World History 2: World History and Geography 2-1500 C.E. to the Present (41071) State Code 2216

Grade Level: 10

Level of Difficulty: Honors

Credit: 1 Unit

Weight: 0.025

Prerequisite: Honors World History I: World History and Geography I to 1500 C.E. and Accelerated/Honors Placement Requirements

Standard of Learning End-of-Course Test: Yes

Course Description: This course is an in-depth study of the events of world history from the Renaissance through modern times. Selected knowledge areas include the coverage of the role of physical geography as it has influenced and hindered the development of world cultures. Specific attention concentrates on the emergence of strong national states, the age of revolutions, and the problems that exist today in modern nations. Various components of culture are addressed for comparison of similarities and differences of modern nations.

Math

SMA Honors Geometry (22071) State Code 3143

Grade Level: 9

Level of Difficulty: Honors

Credit: 1 Unit

Weight: 0.025

Prerequisite: Algebra 1 in middle school

Standard of Learning End-of-Course Test: Yes

Course Description: Students learn the principles of geometry and are required to demonstrate logical problem-solving techniques. Topics include introductions to truth tables, negations, quantifiers, vectors and matrices, and three-dimensional coordinates. Students analyze real-world applications and problem-solving techniques of mathematical principles as they relate to science and medicine.

SMA Honors Algebra 2/Trigonometry (23271) State Code 3137

Grade Level: 9 or 10

Level of Difficulty: Honors

Credit: 1 Unit

Weight: 0.025

Prerequisite: Geometry or SMA Honors Geometry (22071)

Standard of Learning End-of-Course Test: Yes

Course Description: This course combines all of the traditional Algebra 2 and Trigonometry objectives with additional topics including probability and statistics. Emphasis is placed on matrices, functions, graphing and trigonometry. Students demonstrate proficiency in solving problems using algebraic and graphing methods and a graphing calculator. Students use real-world applications and problem-solving of mathematical principles as they relate to science and medicine.

SMA Mathematical Analysis (25071) State Code 3162

Grade Level: 10 or 11

Level of Difficulty: Honors

Credit: 1 Unit

Weight: 0.025

Prerequisite: Trigonometry/Probability and Statistics (24011) or SMA Honors Alg. 2/Trig (23271)

Standard of Learning End-of-Course Test: No

Course Description: This comprehensive course is intended to develop student understanding and application of algebraic and transcendental functions, parametric and polar equations, sequences and series, and vectors. The content of this course will help prepare the student for Calculus. Graphing calculators will be used as a tool to verify and investigate mathematical concepts and ideas.

SMA Calculus (25171) State Code 3178

Grade Level: 11 or 12

Level of Difficulty: Honors

Credit: 1 Unit

Weight: 0.025

Standard of Learning End-of-Course Test: No

Prerequisite: SMA Honors Mathematical Analysis (25071)

Course Description: This course is intended for students who have a thorough knowledge of analytic geometry, and functions (including trigonometric functions, logarithmic functions, and exponential functions). The course provides students with a study of limits, continuity of functions, the derivative and its applications, and the definite integral and its applications. All topics will be investigated analytically, numerically and graphically. Graphing calculators will be used as a tool to verify and investigate mathematical concepts and ideas. This course can be used to prepare students for the rigors of Advanced Placement Calculus AB (789).

Science

SMA Principles of Earth Systems (37071) State Code 4210

Grade Level: 9

Level of Difficulty: Honors

Credit: 1 Unit

Weight: 0.025

Prerequisite: Accelerated/Honors Placement Requirements

Standard of Learning End-of-Course Test: Yes

Course Description: Principles of Earth Systems is a laboratory course, which connects the study of the Earth's composition, structure, processes, and history; its atmospheres, fresh water, and oceans; and its environment in space. This course stresses the interpretation of maps, charts, tables, and profiles; the uses of technology to collect, analyze, and report data; and the utilization of science skills in systematic investigations. This is a very rigorous course with a strong research component that uses the experimental design model of investigations. Principles of Earth Systems students will be challenged to learn, research, and utilize hand-on experiments in greater depth. Students formulate a basic understanding of and implied actions for the introduced science and medical issues.

SMA Contemporary Science Investigations in Biology (37271) State Code 4310**Grade Level:** 9**Level of Difficulty:** Honors**Credit:** 1 Unit**Weight:** 0.025**Prerequisite:** Accelerated/Honors Placement Requirements**Standard of Learning End-of-Course Test:** Yes

Course Description: This course is designed to give students a detailed, in-depth understanding of living systems. Emphasis is placed on the skills necessary to examine scientific explanations, to conduct controlled experiments, to analyze and communicate information, and to use scientific literature. The history of biological thought, and the evidence that supports it, is explored; they provide the foundation for scientific investigation. This rigorous course contains strong research components, which enable students to apply scientific concepts. Students will learn and research, utilizing both classroom experimentation and literature reviews from written and electronic resources. Students will utilize medical terminology and current science and medical trends/issues in our society.

SMA Honors Medicinal Chemistry (37671) State Code 4410**Grade Level:** 10**Level of Difficulty:** Honors**Credit:** 1 Unit**Weight:** 0.025**Prerequisite:** Accelerated/Honors Placement Requirements**Standard of Learning End-of-Course Test:** Yes

Course Description: Medicinal Chemistry is a laboratory course, which allows the students to conduct laboratory experiments, which involve short and long-term bacterial studies as well as computer modeling and basic drug design. Medicinal and pharmaceutical research is an integral part of the health professions. Through this course, students will apply their knowledge of the life sciences to extend their understanding of biochemistry and pharmacology. This course focuses on pharmaceutical development practices and strategies at the molecular level. In addition, they will investigate the structure, function, and therapeutic administration of chemical compounds. Students will write medical journal quality research papers, which reinforce topics that will be emphasized throughout the course. The course activities will emphasize research skills; critical thinking and problem solving will be emphasized. These skills will be encouraged through inquiry-based activities and challenging research investigations.

SMA Astronomy (37171) State Code 4260**Grade Level:** 10 or 11**Level of Difficulty:** Honors**Credit:** 1 Unit**Weight:** 0.025**Prerequisite:** Academy Placement Requirements**Standard of Learning End-of-Course Test:** No

Course Description: Astronomy is a laboratory course, which connects the study of the Earth's celestial coordinates, telescopes, the Solar System, the orbit of the moon, H-R diagrams, the nature of light, and the age of the Universe. As students learn more about astronomy, they will appreciate just how much astronomy has affected and continues to affect their lives. This course is designed to give students an in-depth understanding of the universe. The course is focused on organizing facts into logical hypothesis, testing that hypothesis, and coming up with a feasible conclusion. The course requires investigating new and historical astronomy, utilizing the newest technology, and the use of deductive reasoning.

SMA Forensic Science (37771) State Code 4610

Grade Level: 10 or 11

Level of Difficulty: Honors

Credit: 1 Unit

Weight: 0.025

Prerequisite: Academy Placement Requirements

Standard of Learning End-of-Course Test: No

Course Description: Forensic Science is a laboratory course, which allows the students to take on the various roles of a crime scene investigator, scientist, and medical examiner in order to collect and evaluate evidence in a problem-solving environment. Students will develop scientific bench techniques necessary for the handling and evaluation of evidence. Students will develop the field skills necessary to collect and maintain a chain of evidence, explore the history of DNA studies and the current standard acceptance of DNA in courts, and explore career opportunities involved in the medical, law enforcement, scientific, and legal aspects of forensic investigation.

SMA PLTW Principles of Biomedical Science (PBS) (80171)

Grade Level: 10 – 12

Level of Difficulty: Honors

Credit: 1 Unit

Weight: 0.025

Prerequisite: Earth Systems, CSI in Biology and Medicinal Chemistry

Standard of Learning End-of-Course Test: No

Course Description: In the introductory course of the PLTW Biomedical Science program, students explore concepts of biology and medicine to determine factors that led to the death of a fictional person. While investigating the case, students examine autopsy reports, investigate medical history, and explore medical treatments that might have prolonged the person's life. The activities and projects introduce students to human physiology, basic biology, medicine, and research processes while allowing them to design their own experiments to solve problems.

SMA PLTW Human Body Systems (HBS) (37771)

Grade Level: 10 – 12

Level of Difficulty: Honors

Credit: 1 Unit

Weight: 0.025

Prerequisite: PLTW PBS

Standard of Learning End-of-Course Test: No

Course Description: Students examine the interactions of human body systems as they explore identity, power, movement, protection, and homeostasis. Exploring science in action, students build organs and tissues on a skeletal Maniken®; use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration; and take on the roles of biomedical professionals to solve real-world medical cases.

SMA PLTW Medical Interventions (MI) (80371)

Grade Level: 11 or 12

Level of Difficulty: Accelerated

Credit: 1 unit

Weight: 0.05

Prerequisite: PLTW PBS and PLTW HBS

Standard of Learning End-of-Course Test: No

Course Description: Students follow the life of a fictitious family as they investigate how to prevent, diagnose, and treat disease. Students explore how to detect and fight infection; screen and evaluate the code in human DNA; evaluate cancer treatment options; and prevail when the organs of the body begin to fail. Through real-world cases, students are exposed to a range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, and diagnostics.

SMA PLTW Biomedical Innovation (BI) (80471)

Grade Level: 11 or 12

Level of Difficulty: Accelerated

Credit: 1 unit

Weight: 0.05

Prerequisite: PLTW PBS, PLTW HBS and PLTW MI

Standard of Learning End-of-Course Test: No

Course Description: Biomedical innovation is vital to treating disease and disability and to prolonging life in the face of illness and injury. Students build on the knowledge and experience gained from previous courses to design their own innovative solutions for the most pressing health challenges of the 21st century.

SMA Animal Science (37571) State code 4611

Grade Level: 11 or 12

Level of Difficulty: Accelerated

Credit: 1 unit

Weight: 0.05

Prerequisite: Earth Systems, CSI in Biology and Medicinal Chemistry

Standard of Learning End-of-Course Test: No

Course Description: Animal Science is a laboratory course, which allows the student to be introduced to the foundations for veterinary medical language and

basic anatomy & physiology. Positional, directional and planes of body and body cavity terminology will be discussed. The course will introduce basic concepts and principles of animal nutrition, growth, health, behavior, reproduction, and genetics, as well as practical applications, such as disease prevention, genetic selection, and crossbreeding systems.

SMA Human Movement Science (38371) State code 4612

Grade Level: 11 or 12

Level of Difficulty: Accelerated

Credit: 1 unit

Weight: 0.05

Prerequisite: Earth Systems, CSI in Biology, Medicinal Chemistry and Human Anatomy and Pathophysiology

Standard of Learning End-of-Course Test: No

Course Description: Human Movement Science is a laboratory course, which allows the student to learn proper anatomy, physiology, and biomechanical functions of the joints, muscles and ligaments in the body and will be able to identify and make decisions about injuries. Sports medicine is a branch of healthcare devoted to the application of medical knowledge and expertise to the prevention, diagnosis, treatment, and management of injuries related to participation in sports, exercise, and other physical and recreational activities. This course will help students get a better understanding of how sports medicine factors into athletic injuries. Each student will participate in practical applications of modern athletic training including post injury care, application and instruction in Physical Therapy techniques, Sports Massage, Strength & Conditioning and athletic Rehabilitation therapy. At the end of the course, students will be CPR and First Aid Certified.

SMA Advanced Placement Environmental Science (38071) State code 4270

Grade Level: 11 or 12

Level of Difficulty: Advanced Placement

Credit: 1 unit

Weight: 0.05

Prerequisite: Earth Systems, CSI in Biology, and Medicinal Chemistry

Standard of Learning End-of-Course Test: No

Course Description: The goal of the AP Environmental Science course is to provide students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving or preventing them. This course is designed to prepare students for the Advanced Placement examination in chemistry to receive college credit. Completion of an investigative research project is an expectation of all Advanced Placement Environmental Science students.

SMA Advanced Placement Biology (37371) State Code 4370**Grade Level:** 11 or 12**Level of Difficulty:** Advanced Placement**Credit:** 1 Unit**Weight:** 0.05**Level of Difficulty:** College Level**Prerequisite(s):** Earth Systems, CSI in Biology, and Medicinal Chemistry**Standard of Learning End-of-Course Test:** No

Course Description: Advanced Placement Biology is designed to place emphasis upon the major topics covered in introductory college level biology courses. Molecular, cellular, organism, and population biology are stressed. Students also develop an understanding of the characteristics, the unity, and the diversity of living things while collecting, analyzing, and interpreting biological data. This course is also designed to prepare students to achieve a satisfactory score on the Advanced Placement examination in biology to receive college credit. In meeting the rigorous course standards, students will be encouraged to share their ideas, use the language of biology, discuss problem-solving techniques, and communicate effectively. Advanced Placement biology students will be challenged to learn, to research, utilizing both classroom experimentation and literature reviews from written and electronic resources, and to present topics in biology in greater depth. Completion of an investigative research project is an expectation of all Advanced Placement biology students.

SMA Advanced Placement Chemistry (37871) State Code 4470**Grade Level:** 11 or 12**Level of Difficulty:** Advanced Placement**Credit:** 1 Unit**Weight:** 0.05**Level of Difficulty:** College Level**Science Prerequisite(s):** Earth Systems, CSI in Biology, Medicinal Chemistry**Mathematics Prerequisite(s):** Algebra II and a higher-level math course
Standard of Learning End-of-Course Test: No

Course Description: This course is designed to place emphasis on the major topics covered in introductory college level chemistry courses. This college level course will provide a depth of understanding of the fundamentals and competencies needed to apply chemical calculations and the mathematical formulation of principles. This course is designed to prepare students for the Advanced Placement examination in chemistry to receive college credit. In meeting the rigorous course standards, students will be encouraged to share their ideas, use the language of chemistry, discuss problem-solving techniques, and communicate effectively. Advanced Placement chemistry students will be challenged to learn, to research, utilizing both classroom experimentation and literature reviews from written and electronic resources, and to present topics in chemistry in greater depth. Completion of an investigative research project is an expectation of all Advanced Placement chemistry students.

SMA Advanced Senior Seminar (38271) State code 4612

Grade Level: 12

Level of Difficulty: Honors

Credit: 1 Unit

Weight: 0.025

Level of Difficulty: Intensified Honors

Science Prerequisite(s): Earth Systems, CSI in Biology and/or Medicinal Chemistry, a minimum of 4 additional elective SMA courses and a minimum of 20 hours of Job Shadowing

Standard of Learning End-of-Course Test: No

Course Description: The goal of the Science and Medicine Academy is to introduce students to the vast field of science and medical careers. The focus is to give each student rigorous academic coursework necessary to compete in post-secondary institutions. The student will be introduced to a work-related learning experience where they will develop hands on work experience in a certain occupational field or gain the relevant knowledge and skills required to enter into a particular career field. This internships will be short term in nature with the primary focus of getting some on the job training and taking what's learned in the classroom and applying it to the real world. This advanced seminar will help develop professional work habits; provides an understanding of corporate cultures, and offer a platform to compare differences in work styles. Students will be required to complete a minimum of 60 hours of hands on training. Students must complete an internal assessment in the form of a presentation and an external assessment in the form of a 1200-1600 word essay that addresses the students' skills, attitude and awareness of the career field of internship.

Governor's STEM Academy at Grassfield High School

Engineering and Technology Pathway

STEM Introduction to Engineering Design (79181) State Code 8439

Grade Level: 9 or 10

Level of Difficulty: Difficult

Credit: 1 Unit

Weight: 0.025

Prerequisite: Algebra1

Industry Credential: Yes

Course Description: Using computer-modeling software, students learn the design process. They solve design problems as they develop, create, and analyze product models.

STEM Principles of Engineering (79281) State Code 8441

Grade Level: 9 or 10

Level of Difficulty: Difficult

Credit: 1 Unit

Weight: 0.025

Prerequisite: Geometry Recommended; Introduction to Engineering Design required

Industry Credential: Yes

Course Description: Students develop an understanding of the engineering profession and the fundamental aspects of engineering problem solving. Students study the historical and current impact of engineering on society as well as ethical implications. Mathematical and scientific concepts will be applied to fundamental engineering topics, including mechanics and electrical circuit theory.

STEM Digital Electronics (79581) State Code 8440

Grade Level: 10 or 11

Level of Difficulty: Difficult

Credit: 1 Unit

Weight: 0.05

Prerequisite: None

Industry Credential: Yes

Course Description: Students use computer simulations to learn about the logic of electronics as they design, test, and construct circuits and devices. They apply control system programming and explore sequential logic and digital circuitry fundamentals. Topics in computer circuitry are also presented, including circuitry analysis and an exploration into diodes, transistors, and operational amplifiers.

STEM Aerospace Engineering (79381) State Code 8428

Grade Level: 11 or 12

Level of Difficulty: Difficult

Credit: 1 Unit

Weight: 0.05

Prerequisite(s): Principles of Engineering (79281) and Introduction to Engineering (79181)

Industry Credential: Yes

Course Description: The Aerospace course expands horizons with projects developed with NASA-aerodynamics, astronautics, space-life sciences, and systems engineering.

STEM Civil Engineering and Architecture (79481) State Code 8430

Grade Level: 11 or 12

Level of Difficulty: Difficult

Credit: 1 Unit

Weight: 0.05

Prerequisite(s): Principles of Engineering (79281) and Introduction to Engineering

(79181)

Industry Credential: Yes

Course Description: Introduces students to the interdependent fields of civil engineering and architecture; students learn project planning, site planning, and building design.

STEM Engineering Design and Development (79681) State Code 8443

Grade Level: 12

Level of Difficulty: Difficult

Credit: 1 Unit

Weight: 0.05

Prerequisite(s): Principles of Engineering (79281) and Introduction to Engineering (79181)

Industry Credential: No

Course Description: This pre-engineering course is designed to follow three core courses (Principles of Engineering, Introduction to Engineering Design, and Digital Electronics) as part of a national engineering program. Students enrolled in the Engineering Design and Development course synthesize knowledge, skills, and abilities through an authentic engineering experience. Students are expected to develop and formally present an independent study project and a team-oriented project, which are critiqued by an evaluation committee. Students interact and work with community mentors to research, design, and construct solutions to engineering problems.

Programming and Software Development Pathway

STEM Information Technology Fundamentals (71481) State Code 6670

Grade Level: 9 or 10

Level of Difficulty: Average

Credit: 1 Unit

Weight: None

Prerequisite: Keyboarding (71111) Recommended

Industry Credential: Yes

Course Description: Introduces the essential skills needed for students to pursue specialized programs leading to technical and professional careers and certifications in the Information Technology (IT) industry. Students have an opportunity to investigate career opportunities in four major IT areas: Information Services and Support, Network Systems, Programming and Software Development, and Interactive Media. The focus of the IT Fundamentals course is on introducing skills related to information technology basics, Internet fundamentals, network systems, computer maintenance/upgrading/troubleshooting, computer applications, programming,

graphics, Web page design, and interactive media. Students explore ethical issues related to computers and Internet technology and develop teamwork and communication skills that will enhance their employability.

STEM Database Design and Management (71381) State Code 6660

Grade Level: 10 or 11

Level of Difficulty: Average

Credit: 1 Unit

Weight: None

Prerequisite: Information Technology Fundamentals (71481) Recommended

Industry Credential: Yes

Course Description: This course includes database design and programming. Students study database fundamentals to include database development, modeling, design, and normalization. In addition, students are introduced to database programming. Students gain the skills and knowledge needed to use features of database software and programming to manage and control access to data.

STEM Advanced Database Design and Management (71382) State Code 6661

Grade Level: 11 or 12

Level of Difficulty: Difficult

Credit: 1 Unit

Weight: 0.025

Prerequisite: Database Design and Management (71381)

Industry Credential: Yes

Course Description: Students study Java programming and Java database applications. The basics of object-oriented programming and the Java programming language are emphasized in this instruction. Students will prepare for industry certification in database applications and programming.

STEM Programming (71281) State Code 6640

Grade Level: 10, 11 or 12

Level of Difficulty: Average

Credit: 1 Unit

Weight: None

Prerequisite: Keyboarding (71111) and Information Technology Fundamentals (71481) Recommended

Industry Credential: Yes

Course Description: Students explore computer concepts, use logic procedures, and implement programming procedures using one or more programming languages, such as Visual Basic, Java, and C++. In addition, HTML or Java Scripting is used to

program Web pages.

STEM Advanced Programming (71282) State Code 6641

Grade Level: 11 or 12

Level of Difficulty: Difficult

Credit: 1 Unit

Weight: 0.025

Prerequisite: Programming (71281)

Industry Credential: Yes

Course Description: Building on a foundation of programming skills, students will use object-oriented programming to develop applications for Windows, database, multimedia, games, mobile, and/or Web environments. Students will have the opportunity to explore and create applications related to the information technology and game design industries.

Global Entrepreneurship and Technology Pathway

STEM Leadership and Entrepreneurship Education (76581) State Code 9093

Grade Level: 9 or 10

Level of Difficulty: Average

Credit: 1 Unit

Weight: None

Prerequisite: None

Industry Credential: Yes

Course Description: This course introduces students to the exciting world of creating, owning, and launching their own business. Students will learn concepts and techniques for planning an innovative business and living the entrepreneurial lifestyle.

STEM Sports, Entertainment, and Recreation Marketing (76481) State Code 8175

Grade Level: 10, 11 or 12

Level of Difficulty: Average

Credit: 1 Unit

Weight: None

Prerequisite: None

Industry Credential: Yes

Course Description: Students develop skills in the areas of marketing analysis, event marketing, communication, and human relations, along with a thorough understanding of the sports, entertainment, and recreation industry and career options available. Academic skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting this course are studied.

STEM Advanced Sports, Entertainment, and Recreation Marketing (76482) State Code 8177

Grade Level: 11 or 12

Level of Difficulty: Difficult

Credit: 1 Unit

Weight: 0.025

Prerequisite: None

Industry Credential: Yes

Course Description: Advanced Sports and Entertainment Marketing will build on students' prior knowledge of sports, entertainment, and recreation marketing. This course focuses on the principles of management and planning supported by research, financial, and legal concepts. Students will be able to plan and execute an event, develop a career plan, and establish a sports, entertainment, or recreation marketing product/business. Academic skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting the course are studied.

STEM Global Marketing and Commerce (76381) State Code 8135

Grade Level: 11 or 12

Level of Difficulty: Average

Credit: 1 Unit

Weight: None

Prerequisite: None

Industry Credential: Yes

Course Description: Global Marketing and Commerce is a specialized course for students with a career interest in the field of international trade. Students gain an understanding of the various careers in global trade, finance, shipping, and marketing and consider fundamental concepts, principles, and theories of marketing in an international setting. Course content blends macroeconomic and microeconomic theory with international culture, politics, legal issues, concepts, practices, and applications. Internships may be available to provide students with additional opportunities for "hands-on" experiences in international marketing. Academic knowledge and skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting this course are studied.

STEM Advanced Global Marketing and Commerce (76382) State Code 8136

Grade Level: 12

Level of Difficulty: Difficult

Credit: 1 Unit

Weight: 0.025

Prerequisite: Global Marketing and Commerce (76381)

Industry Credential: Yes

Course Description: Advanced Global Marketing and Commerce, a specialized course for students with a career interest in international trade, builds upon concepts learned in Global Marketing and Commerce (76381). Economic and international trade concepts are reviewed, and the world environment of international trade is further explored. Students expand their knowledge about the impact of culture on international trade and continue their study of the legal and political aspects of international marketing. Global product strategies are examined. Concepts detailing entry into international markets, pricing strategies, international promotion, and marketing research are studied. Computer/technology applications supporting international marketing are explored. A review of skills and preparation required for careers in international marketing complete this course. Internships that provide “hands-on” opportunities in the international area may be available to students. Academic knowledge and skills (mathematics, science, English, and history/social science) related to the content are a part of this course. Computer/technology applications supporting this course are studied.

STEM Leadership Development (76681) State Code 9097

Grade Level: 11 or 12

Level of Difficulty: Average

Credit: 1 Unit

Weight: None

Prerequisite: None

Industry Credential: Yes

Course Description: Students develop competencies in identifying individual aptitudes in relation to effective leadership skills, understanding organizational behavior, using effective communication in the workplace, handling human resources and organizational problems, supervising and training employees, resolving conflict, and planning for the future. Continuing education in leadership is emphasized as well as practical leadership.

International Baccalaureate at Oscar Smith High School

Group 1: Language A1 (First Language)

CPS Pre-IB English 9 (10031) State Code IB1130

Level of Difficulty: Intensified Honors

Credit: 1 Unit

Weight: 0.025

Course Description: Students study language and classics in world literature, explore literary criticism, and complete a documented literary research paper. The course emphasizes precision in the use of language, both orally and in writing, and the use of standard grammar, usage, and mechanics. Students must complete summer reading assignments and read independently throughout the course.

CPS Pre-IB English 10 (11031) State Code IB1140

Level of Difficulty: Intensified Honors

Credit: 1 Unit

Weight: 0.025

Prerequisite: Pre-IB English 9

Course Description: Students study American literature, engage in comparative literary analysis, and compose a documented literary research paper. Students are expected to gain mastery of the writing process with careful attention to organization, writing style, correct grammar, usage and mechanics. Students must complete summer reading assignments and engage in independent reading assignments throughout the course.

IB English HL 1 (12261) State Code IB1150

Level of Difficulty: IB Higher Level

Grade Level: 11

Credit: 1 Unit

Weight: 0.05

Prerequisite: Pre-IB English 10

Course Description: This is the first year of an intensive, two-year study of language and literature in English. The course involves comparative study of literary works, both classical and contemporary, from various cultures. The texts, including American, British, and other world literature pieces in translation, are chosen from a broad list of prescribed authors and works representing different literary genres and styles. Students develop analytical and creative powers of expression, both in oral and written communication by practicing the skills involved in speaking and writing in a variety of styles and situations. Summer reading assignments are required. This course has end-of-course Standards of Learning tests.

IB English HL 2 (13261) State Code IB1160

Level of Difficulty: IB Higher Level

Grade Level: 12

Credit: 1 Unit

Weight: 0.05

Prerequisite: IB English HL 1

Course Description: Students continue a rigorous study of language and literature in IB English HL 2. Students demonstrate an increasing proficiency in creative and analytical thinking skills through their speech and writing. They develop a thorough understanding of the techniques involved in literary study and criticism, engage in detailed and critical examination of written works from world literature, and express a

personal and independent response to literature. Numerous written and oral assignments are graded both internally and externally by the International Baccalaureate. Students take the higher-level IB English HL examination. Summer reading assignments are required.

Group 2: Language B (Second Language)

CPS Pre-IB French 2 (50232) State Code IB5122

CPS Pre-IB Spanish 2 (53232) State Code IB5522

Grade Level: 9

Level of Difficulty: Intensified Academic

Credit: 1 Unit

Weight: None

Prerequisite: French 1 or Spanish 1

Course Description: In CPS Pre-IB French 2 or Spanish 2, students develop skill in understanding and speaking the language. Areas of emphasis in the course are reading for comprehension, writing for expression and reinforcement, and gaining insights into the culture of the countries where the language is spoken. Evidence of language mastery is displayed through interactive conversation, written assessments and oral presentations in the target language. A summer assignment is required.

CPS Pre-IB French 3 (50333) State Code IB5132

CPS Pre-IB Spanish 3 (53333) State Code IB5532

Grade Level: 10

Level of Difficulty: Intensified Academic

Credit: 1 Unit

Weight: 0.025

Prerequisite: French 2 or Spanish 2

Course Description: In CPS Pre-IB French 3 or Spanish 3, students continue to develop competency in the skills of listening, speaking, reading, and writing through meaningful communication and extensive practice. Increasingly, the language is used as the sole medium of communication in the classroom. The culture of the countries where the language is spoken continues to be stressed. For assessment purposes, students continue display language mastery through oral and written assessments using IB-level rubrics in order to prepare them for IB Language B requirements. Summer reading assignments may be required.

IB French SL, HL 4 (50464) State Code IB5142

IB Spanish SL, HL 4 (53464) State Code IB5542

Grade Level: 11

Level of Difficulty: IB Standard Level/Higher Level

Credit: 1 Unit

Weight: 0.05

Prerequisite: French 3 or Spanish 3

Course Description: IB French 4 or Spanish 4 is the first part of a two-year course in which students continue to develop proficiency in listening, speaking, reading and writing the target language. The course prepares students to use the language

appropriately in a range of situations and contexts and for a variety of purposes. To fulfill IB internal assessment requirements, students read and analyze cultural literature in context and practice using the target language creatively through oral presentations and conversation. IB French HL or IB Spanish HL is an extension of French or Spanish language that includes a greater emphasis on fluency in the target language and a deeper understanding of the culture(s) of the countries in which the target language is spoken. A summer assignment is required.

IB French SL, HL 5 (50565) State Code IB5152

IB Spanish SL, HL 5 (53565) State Code IB5552

Grade Level: 12

Level of Difficulty: IB Standard Level/Higher Level

Credit: 1 Unit

Weight: 0.05

Prerequisite: IB French SL 4 or Spanish SL 4

Course Description: IB French 5 or Spanish 5, students employ their skills of listening, speaking, reading, and writing in a variety of culturally and linguistically sophisticated formats. Students continue to develop skills through the use of authentic materials, including recordings, films, newspapers and magazines, in addition to selected literary works. IB internal assessment monitoring continues using dialogue, interactive conversation, and oral presentations in the target language. At the end of the course, students take the IB Language B Standard-Level or Higher-Level examination. A summer assignment is required.

GROUP 3: Individuals and Societies

CPS Pre-IB World History 1 (40031) and 2 (41031) State Code 2399

Grade Level: 9

Level of Difficulty: Advanced Placement

Credit: 2 Units (1 unit for each course)

Weight: 0.05 per unit

Course Description: In this two-term course, students study world history and geography at an accelerated pace with an emphasis on European history from the Middle Ages to the present. Students develop skills in historical analysis and research, essay writing, and discussion. Students also use the processes of conceptual and critical thinking to analyze document-based questions (DBQ's) using primary sources. Students take the Virginia end-of-course Standards of Learning test for World History from 1000 A.D. to the present and have the option of taking the Advanced Placement European History examination. Summer assignments are required.

CPS Pre-IB U.S. Government and Politics (43031) State Code 2445

Grade Level: 10

Level of Difficulty: Advanced Placement

Credit: 1 Unit

Weight: 0.05

Course Description: This course provides a critical perspective on government and

politics in the United States. This course involves both the study of general concepts used to interpret American politics (local, state, and national levels) and the analysis of specific case studies familiarizing the student with various institutions, groups, beliefs and ideas that make up the American political reality. Students have the opportunity to take the Advanced Placement United States Government examination at the end of the course. Summer assignments are required.

IB History of the Americas HL (42261) State Code IB2360

Grade Level: 11

Level of Difficulty: IB Higher Level

Credit: 1 Unit

Weight: 0.05

Course Description: The first of a two-part course, IB History of the Americas is an in-depth study of twentieth century world history with emphasis on the history of the Americas from 1840 to 1995. This course is designed to develop historical research skills, analytical thinking skills, and skills for interpreting political, military, social, and economic events of the twentieth century. Students engage in extensive reading, independent research, and analysis of primary and secondary source documents. Students take the Virginia end-of-course Standards of Learning test in United States History. At the end of the course, students have the opportunity to take the Advanced Placement US History examination. Summer assignments are required.

IB Topics in 20th Century History HL (46361) State Code IB2362

Grade Level: 12

Level of Difficulty: IB Higher Level

Credit: 1 Unit

Weight: 0.05

Prerequisite: IB History of the Americas HL

Course Description: In this course, students study selected twentieth century topics in world history and examine case studies of the major events and issues of the twentieth century. Students read widely acquiring the skills to evaluate, to interpret, and to use source material critically as historical evidence. They also engage in expository writing that demonstrates an awareness of historical perspective and a consistently high level of critical analysis and handling of evidence. At the end of the course, students take the higher-level examination in IB History. Summer assignments are required.

GROUP 4: Experimental Sciences

CPS Pre-IB Biology (31031) State Code IB4310

Grade Level: 9

Level of Difficulty: Intensified Honors

Credit: 1 Unit

Weight: 0.025

Course Description: In this course, students explore the characteristics, structure, function and interaction of living things. The course emphasizes the role of the

scientist as well as the social, ethical and economic implications of biology and technology. Students develop experimental design skills through inquiry-based laboratory investigations and compose formal laboratory reports. Lab experience may also involve plant and animal dissection. Specific course topics include basic biochemistry, cell structure and function, genetics and biotechnology, theories of evolution, ecology and the environment, the five kingdoms of living things including viruses, and animal anatomy and physiology. A summer assignment is required. This course has an end-of-course Standards of Learning test.

CPS Pre-IB Chemistry (32031) State Code IB4410

Grade Level: 10

Level of Difficulty: Intensified Honors

Credit: 1 Unit

Weight: 0.025

Course Description: The aim of this course is to develop a foundation of chemical concepts and principles for understanding the structure and properties of matter. Students develop investigative skills in order to solve problems and to understand the interrelationships among the basic concepts of modern chemistry. Specific topics include chemical reactions, bonding, acids, bases, and salts, atomic structure, kinetic theory and gasses, electron arrangement, oxidation and reduction, and organic chemistry. Students develop an understanding of the moral, ethical, social, economic, and environmental implications of using science and technology in a global context. Students have experience working with open-ended labs, data-based questions, and IB assessment formats. A summer assignment is required. This course has an end-of-course Standards of Learning test.

IB Biology SL, HL 1 (31061) State Code IB4380

Grade Level: 11

Level of Difficulty: IB Standard Level/Higher Level

Credit: 1 Unit

Weight: 0.05

Prerequisite: Pre-IB Biology

Course Description: This is the first part of a two-year course, which provides an in-depth study of biology. The course promotes understanding of the important relationships, processes, mechanisms, extensions, and applications of biological concepts. Through scientific inquiry, students learn that science is a process as well as personal experience. They also use knowledge of biology to explore and analyze environmental and social concerns on a global level. Students participate in structured labs, write research papers, design original research projects, and participate in a required IB interdisciplinary group project. IB Biology HL is an extension of Biology SL that requires additional lab hours and more in-depth study of several Biology Higher-Level options. A summer assignment, which reviews basic biological principles learned in CPS Pre-IB Biology, is required.

IB Biology SL, HL 2 (31062) State Code IB4390**Grade Level:** 12**Level of Difficulty:** IB Standard Level/Higher Level**Credit:** 1 Unit**Weight:** 0.05**Prerequisite:** IB Biology SL, HL 1

Course Description: In IB Biology 2, students continue to develop a broad, general understanding of the principles of biology. Four basic biological concepts that run throughout IB Biology HL are: (1) structure and function; (2) universality versus diversity; (3) equilibrium within systems; and (4) the evolution of structure and functions. Students continue to explore biological realities and ethical concerns on a global level. Students take the Standard-Level or Higher-Level examination in biology. A summer assignment is required.

IB Chemistry SL, HL 1 (32061) State Code IB4480**Grade Level:** 11**Level of Difficulty:** IB Standard Level/Higher Level**Credit:** 1 Unit**Weight:** 0.05**Prerequisite:** Pre-IB Chemistry

Course Description: IB Chemistry 1 develops the ability to critically analyze scientific literature and to develop manipulative and experimental skills necessary to perform college-level scientific investigations. Students participate in structured labs, write research papers, design original research projects, and participate in a required IB interdisciplinary group project. Student-centered cooperative learning as well as teacher-directed instruction provides the student a college-level chemistry experience. The course increases student awareness of global issues pertaining to chemistry. IB Chemistry HL is an extension of IB Chemistry SL that requires additional laboratory hours and more in-depth study of several Chemistry Higher Level options. A summer assignment is required.

IB Chemistry SL, HL 2 (32062) State Code IB4490**Grade Level:** 12**Level of Difficulty:** IB Standard Level/Higher Level**Credit:** 1 Unit**Weight:** 0.05**Prerequisite:** IB Chemistry SL, HL 1

Course Description: In IB Chemistry 2, students expand their knowledge and experimental skills obtained in IB Chemistry 1 in preparation for further study of pure and applied sciences in higher education. This course increases student awareness of global issues pertaining to chemistry and prepares students for International Baccalaureate internal and external assessment. Students take the Standard-Level or Higher-Level examination in chemistry at the end of the course.

IB Physics SL, HL 1 (33261) State Code IB4580

Grade Level: 11

Level of Difficulty: IB Standard Level/Higher Level

Credit: 1 Unit

Weight: 0.05

Prerequisite: CPS Pre-IB Biology, CPS Pre-IB Chemistry, CPS Pre-IB Algebra 2/Trig

Course Description: IB Physics 1 course offers a high-powered physics curriculum that will prepare students for college level calculus-based physics. The course allows students to develop the manipulative and experimental skills necessary to perform college-level physics investigations. Students participate in structured labs, design original research projects, and participate in a required IB interdisciplinary group project. Students learn a breadth of core physics principals from mechanics and thermal physics to gravitation and nuclear physics. The course also increases student awareness of global issues pertaining to Physics. IB Physics HL is an extension of IB Physics SL that requires additional laboratory hours and more in-depth study of several Physics Higher Level options. A summer assignment is required.

IB Physics SL, HL 2 (33262) State Code IB4590

Grade Level: 12

Level of Difficulty: IB Standard Level/Higher Level

Credit: 1 Unit

Weight: 0.05

Prerequisite: IB Physics SL, HL 1

Course Description: In IB Physics 2, students expand their knowledge of core physics topics and build upon experimental skills obtained in IB Physics 1. They also study selected options in depth, such as wave phenomena and quantum and nuclear physics, in preparation for further study of pure and applied sciences in higher education. The second year of the course builds upon student awareness of global issues pertaining to physics and prepares students for International Baccalaureate internal and external assessments. Students take the Standard-Level or Higher-Level examination in Physics at the end of the course.

Group Five: Mathematics

CPS Pre-IB Geometry (22031) State Code IB3143

Grade Level: 9

Level of Difficulty: Intensified Academic

Credit: 1 Unit

Weight: 0.025

Prerequisite: Algebra I

Course Description: Students learn the principles of geometry and are rigorously required to demonstrate logical, step-by-step problem-solving techniques in preparation for IB assessments. Additional topics include introduction to truth tables, negation, quantifiers, the laws of sines and cosines, three-dimensional coordinates,

and vectors and matrices. Emphasis is also placed on symbolic logic and geometric probability. A summer assignment is required. This course has an end-of-course Standards of Learning test.

CPS Pre-IB Algebra 2/Trigonometry (23231) State Code IB3137

Grade Level: 9 or 10

Level of Difficulty: Intensified Academic

Credit: 1 Unit

Weight: 0.025

Prerequisite: Geometry

Course Description: This course combines all of the traditional Algebra 2 and Trigonometry objectives with additional topics including probability and statistics. Emphasis is placed on matrices, functions, graphing, conic sections, trigonometry, and real-world application of mathematics principles. Students demonstrate proficiency in solving problems using algebraic and graphic methods and a graphing calculator. A summer assignment is required. This course has an end-of-course Standards of Learning test.

CPS Pre-IB Mathematical Analysis (25031) State Code IB3162

Grade Level: 10

Level of Difficulty: Intensified Academic

Credit: 1 Unit

Weight: 0.025

Prerequisites: Pre-IB Algebra 2/Trigonometry

Course Description: This course extends students' knowledge of mathematical functions, introduces them to another mode of mathematical reasoning, and prepares them for the study of calculus. Students utilize graphing utilities, calculator-based labs, probes, computers, and advanced software to enhance their ability to use technological tools for investigation and exploration and to make connections to the real world. Additional topics include significant figures and scientific notation as well as systems of linear and quadratic equations. A summer assignment is required.

IB Mathematics: Analysis & Approaches SL 1 28661 State Code IB3196

IB Mathematics: Analysis & Approaches HL 1 28662 State Code IB3197

Grade Level: Grade 11

Level of Difficulty: IB Standard Level/IB Higher Level

Credit: 1 Unit

Weight: 0.05

Prerequisite: SL: Pre-IB Algebra 2/Trigonometry HL: CPS Pre-IB Math Analysis

Course Description: International Baccalaureate Mathematics: Analysis and Approaches SL/HL 1 is the first year of a two-year course designed for students who enjoy developing their mathematics skills to become fluent in the construction of mathematical arguments and develop strong skills in mathematical thinking. The course emphasizes algebraic methods and fosters skills in real and abstract mathematic problem solving. Topics include partial fractions, formal proofs,

trigonometry using reciprocal functions, and more involved trigonometric identities. Probability theory will include a formal presentation of expectation through a variety of distributions and Bayes theorem, as well as an introduction to hypothesis testing using the normal distribution. Students who choose Mathematics: Analysis and Approaches at the Higher Level should have strong algebraic skills and the ability to understand simple proofs. They should be students who enjoy spending time on problems and solving challenging math problems. Additional HL calculus topics extend and build upon the aims, concepts and skills from the SL content including useful applications of differential and integral calculus. A summer assignment is required.

IB Mathematics: Analysis & Approaches Studies SL 2 28671 State Code IB3196

IB Mathematics: Analysis & Approaches Studies HL 2 28672 State Code IB3197

Grade Level: Grade 12

Level of Difficulty: IB Standard Level/IB Higher Level

Credit: 1 Unit

Weight: 0.05

Prerequisite: IB Mathematics: Analysis and Approaches 1

Course Description: International Baccalaureate Mathematics: Analysis and Approaches SL/HL 2 further builds upon the core concepts algebra and algebraic functions, geometry, trigonometry, statistics and probability, and calculus. Additional HL topics include conditional probability theory in the form of Bayes Theorem, properties of discrete and continuous random variables, circular functions, important trigonometric identities, and vectors in two and three dimensions. Students take the IB Mathematics SL/HL examination. A summer assignment is required.

IB Mathematics: Applications & Interpretation SL 1 28681 State Code IB3196

IB Mathematics: Applications & Interpretation HL 1 28682 State Code IB3197

Grade Level: 11

Level of Difficulty: IB Standard Level/IB Higher Level

Credit: 1 Unit

Weight: 0.05

Prerequisite: Pre-IB Algebra II/Trigonometry

Course Description: International Baccalaureate Mathematics: Applications and Interpretation SL/HL 1 is the first year of a two-year course designed for students who are interested in developing their mathematics skills for describing the world, for modeling, and for solving practical problems using technology. Students who take the Applications and Interpretation course will be those who prefer to apply mathematics in a practical context. General topics include numbers and algebra, functions, geometry and trigonometry, probability and statistics, and calculus, with a primary emphasis on functions and statistics. The curriculum also covers matrices and their applications for solving systems of equations, piecewise functions, an introduction to formal proofs, and a more formal investigation of geometry using Voronoi diagrams, adjacency matrices, and tree and cycle diagrams. Statistical theory will include basic measures of spread and central tendency as well as a formal introduction to hypothesis testing through the normal, Chi-squared, binomial, and Poisson distributions. Mathematics: applications

and interpretation will develop mathematical thinking, often in the context of a practical problem and using technology to justify assumptions. Students who choose to take IB Mathematics: Applications and Interpretation at the Higher Level should have expert algebraic skills and experience with solving real-world problems using mathematics. A summer assignment is required.

IB Mathematics: Applications & Interpretation SL 2 28691 State Code IB3196

IB Mathematics: Applications & Interpretation HL 2 28692 State Code IB3197

Grade Level: 12

Level of Difficulty: IB Standard Level/IB Higher Level

Credit: 1 Unit

Weight: 0.05

Prerequisite: IB Mathematics: Applications and Interpretation SL/HL1

Course Description: In IB Mathematics SL 2, students build upon skills learned in the first year of IB Mathematics: Applications and Interpretation. Students continue to learn how these concepts relate to real world situations and apply further numerical and graphical techniques and further key functions which can be used to model and interpret practical situations. Higher-level content includes the laws of logarithms, complex numbers and matrices, alternative measurement system for angles and trigonometric identities, matrices to transformations, kinematics, Graph theory, validity and reliability of data, non-linear regression, transition matrices, links between matrices, probability, and eigenvalues. Further differential and integral calculus techniques are introduced to enable students to model and interpret practical contexts. Students take the IB Mathematics: Applications and Interpretation SL/HL exam. A summer assignment is required.

Group 6: Arts and Electives

IB Psychology SL, HL 1 (45161) State Code IB2903

Grade Level: 11

Prerequisite: None

IB Psychology SL, HL 2 (45261) State Code IB2904

Grade Level: 12

Prerequisite: IB Psychology SL, HL 1

Level of Difficulty: IB Higher or IB Standard Level

Credit: 2 Units (one for each course)

Weight: 0.05 per unit

Course Description: Course Description: IB Psychology 1 and 2 give students a broad understanding of psychology and of its different levels of analysis. The course introduces students to diverse methods of psychological inquiry and promotes ethical practices and responsibilities in psychological inquiry. To meet this aim, students study research design, methods, statistics and ethical issues in psychological research and application and undertake one or more research studies. IB Psychology HL is an extension of IB Psychology SL, which introduces students to the psychology of dysfunctional behavior and psychodynamic psychology. In IB Psychology, students undertake an experimental study requiring them to research, design, implement, and

analyze the resulting data. At the end of the second year, students take the Standard-Level or Higher-Level IB Psychology examination. Summer assignments are required.

IB Visual Arts HL, SL 1 (63061) State Code IB9194

Grade Level: 11

Suggested Prerequisite: Art I or Photography

IB Visual Arts HL, SL 2 (63062) State Code IB9195

Grade Level: 12

Prerequisite: IB Visual Arts HL, SL 1

Level of Difficulty: IB Higher or IB Standard Level

Credit: 2 Units (one for each course)

Weight: 0.05 per unit

Course Description: IB Visual Arts 1 and 2 stimulate and train the student's visual awareness, increase the student's perceptive and critical responses to the art of various cultures, and enable the student to discover, develop, and enjoy different means of creative visual expression. The student is encouraged to develop an intensely personal view of the human condition and of nature through study of visual arts and to develop an informed attitude towards art and design in all its forms, both in history and in the contemporary world. The student may pursue one of two options at the standard level or take IB Visual Arts at the higher level depending upon his/her level of artistic ability. Students who think they would enjoy exploring art but who do not regard themselves as especially artistic can be very successful at the standard level. More serious artists benefit from taking IB Visual Arts HL. Because much of the course involves independent study and individual art production, both the standard level and higher level are taught together. External assessments in this course consist of studio work and research workbooks, which are evaluated by an IB art examiner. Summer assignments are required.

IB World Religions SL 1 (44161)

Grade Level: 11

IB World Religions SL 2 (44261)

Grade Level: 12

Level of Difficulty: IB Standard Level

Credit: 2 Units (one for each course)

Weight: 0.05 per unit

Course Description: IB World Religions 1 and 2 is a systematic, analytical, yet empathetic study of the variety of beliefs and practices encountered in nine main religions of the world. The course seeks to promote an awareness of religious issues in the contemporary world by requiring the study of a diverse range of religions. The course consists of an introductory unit, exploring five of the nine living world religions that form the basis of the syllabus. This is complemented by an in-depth study of two religions chosen from six world religions. This part of the syllabus is guided by themes, key concepts and key questions. The final component is the investigative study, which

provides opportunities for individual research of an aspect of the religious experience, practice or belief of a group and/or individual adherents. Students take the standard level IB World Religions SL examination at the end of the course. A summer assignment is required.

REQUIRED INTERDISCIPLINARY SEMINAR COURSE

IB Theory of Knowledge 1 (18261) State Code IB1197

Grade Level: 11

Prerequisite: IB Diploma Candidate

IB Theory of Knowledge 2 (18362) State Code IB1198

Grade Level: 12

Prerequisite: IB Theory of Knowledge 1

Level of Difficulty: International Baccalaureate

Credit: 1 Unit (0.5 Units per course)

Weight: 0.025

Course Description: Students who are candidates for the International Baccalaureate Diploma are required to complete this course. Part 1 is taken in the spring of the junior year and part 2 in the fall of the senior year. Students learn to better understand themselves as “knowers” by exploring the various methods they use to “know” the truth of a given thought, feeling, or belief. This exploration also involves how various “ways of knowing” are applied to all of the areas of knowledge in the IB curriculum: mathematics, natural science, human science, history, art, and ethics. Through the study of eastern and western philosophies, logic and reason, intuition, and faith, students explore various belief systems, both personal and global, in an attempt to determine their “truth.” To accomplish this, students read selected texts, write about their findings, and discuss, in great detail, their own thoughts on course topics. Students must complete an internal assessment in the form of a presentation and an external assessment in the form of a 1,600 word essay that addresses one of six prescribed titles.

International Baccalaureate Diploma Program Course Sequence

Grade 9

CPS Pre-IB English 9

CPS Pre-IB French 2 or

CPS Pre-IB Spanish 2

CPS Pre-IB World History 1

CPS Pre-IB World History 2

CPS Pre-IB Biology

CPS Pre-IB Geometry or

CPS Pre-IB Algebra 2/Trigonometry

Grade 10

CPS Pre-IB English 10

CPS Pre-IB French 3 or
CPS Pre-IB Spanish 3
CPS Pre-IB U.S. Government & Politics
CPS Pre-IB Chemistry
CPS Pre-IB Algebra 2/Trigonometry or
CPS Pre-IB Math Analysis

Grade 11

IB English HL 1
IB French SL/HL 4 or IB Spanish SL/HL 4
IB History of the Americas HL
IB Biology SL/HL 1, IB Chemistry SL/HL 1, or IB Physics SL/HL 1
IB Math Analysis & Approaches SL 1/HL1, IB Math Applications & Interpretations SL
1/HL 1
IB Psychology SL/HL 1, IB Visual Arts SL/HL 1, IB World Religions SL 1, or a second IB
science course (IB Biology, IB Chemistry, or IB Physics)
IB Theory of Knowledge 1

Grade 12

IB English HL 2
IB French SL/HL 5 or IB Spanish SL/HL 5
IB Topics in 20th Century History HL
IB Biology SL/HL 2, IB Chemistry SL/HL 2, or IB Physics SL/HL 2
IB Math Analysis & Approaches Studies SL 2/ HL 2, IB Math Applications &
Interpretation SL2/HL2
IB Psychology SL/HL 2, IB Visual Arts SL/HL 2, IB World Religions SL 2, or Year 2 of
second science course selected in grade 11
IB Theory of Knowledge 2

**CHESAPEAKE SCHOOL BOARD
(as of February 2020)**

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Mr. Harry A. Murphy
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Mrs. Angie Swygert
Mr. Michael J. Woods

Dr. Jean A. Infantino, Chief of Staff/Clerk of the
Board

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Superintendent
Dr. LaToya Harrison
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Ms. Victoria R. Lucente
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Dr. Jacqueline C. Miller
Chief Student Support Services Officer
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Chief Human Resources Officer
Dr. Jean A. Infantino
Chief of Staff/Clerk of the Board

The Chesapeake Public School System is an equal educational opportunity school system. The School Board of the City of Chesapeake also adheres to the principles of equal opportunity in employment and, therefore, prohibits discrimination in terms and conditions of employment on the basis of race, sex, national origin, color, religion, age, or disability.