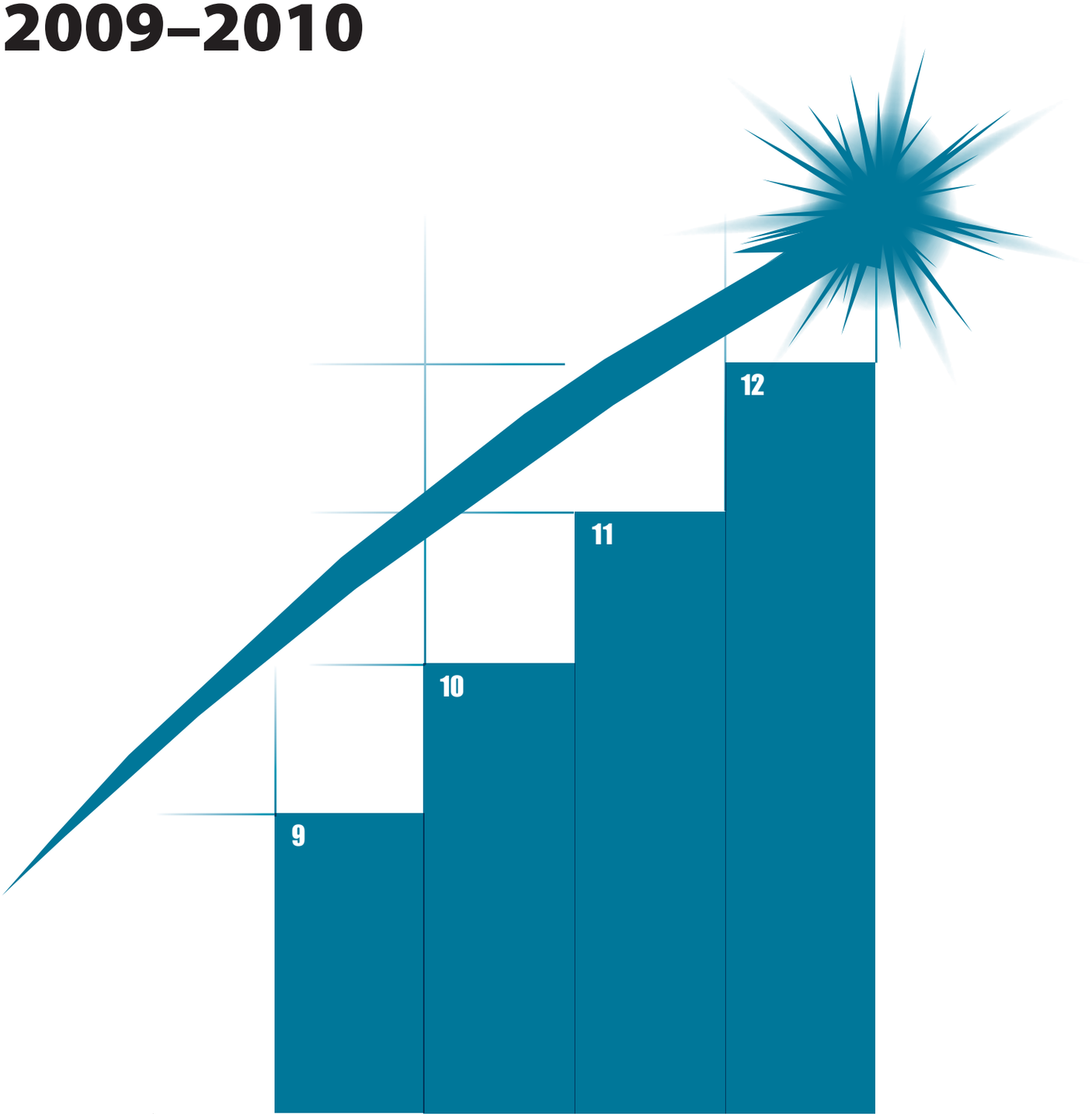
High School Course Bulletin

2009–2010



MCPS MONTGOMERY COUNTY PUBLIC SCHOOLS

Rockville, Maryland

www.mcpscourses.org

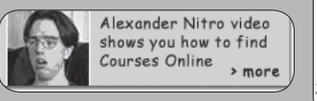
The MCPS Online High School Course Bulletin for 2009-2010

www.mcpscourses.org

THE ELECTRONIC WORKSHEET MAKES PLANNING FOR ALL FOUR YEARS SO EASY…"

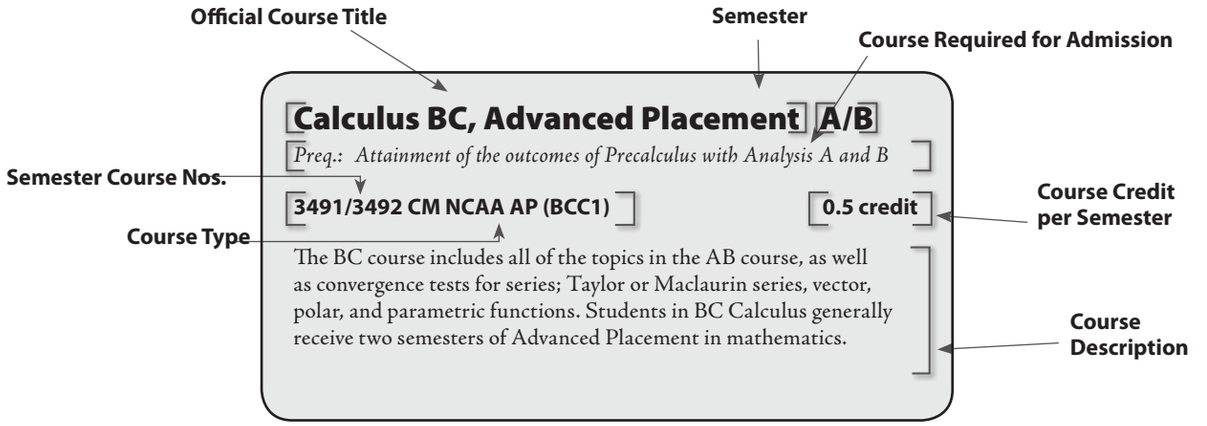
"IT HELPED US DECIDE WHAT WE REALLY WANTED TO TAKE IN SCHOOL NEXT YEAR."

"I CAN SEE EXACTLY WHICH COURSES ARE OFFERED AT MY SCHOOL"



"AVAILABLE ANYWHERE I CAN GET TO THE WEB."

HOW TO READ A COURSE DESCRIPTION



LEGEND OF COURSE TYPES

(92)	Course code showing course available at Thomas Edison High School of Technology
AL	Advanced Level
AP	Advanced Placement
AT	Advanced Technology Education course
BCC1	Basic Core Category 1
BCC2	Basic Core Category 2
CM	Certificate of Merit course
CPP	Career Pathway Program (formerly CDP)
DP	Double Period
FA	Fine Arts course
H	Honors
HSA	High School Assessment-related course
IB	International Baccalaureate Advanced-level course
NCAA	NCAA Initial-Eligibility Clearinghouse. Approved Core course
T2	Meets requirement for Technology Education for the Class of 2012 and later
TE	Technology Education course
TP	Triple period

CONTENTS

MONTGOMERY COUNTY PUBLIC SCHOOLS
www.montgomeryschoolsmd.org
MARYLAND

December 2008

Dear High School Students:

It is my pleasure to congratulate you as members of the Class of 2013 and welcome you as you embark on your high school career in Montgomery County Public Schools. Our high school administrators have been planning course offerings and programs that will prepare you for the challenges of college and the workplace. The 2009–2010 High School Course Bulletin presents descriptions of rigorous courses that are designed to help you make the most of your academic experience. Please review this guide and consider it a useful tool as you and your school counselor work together to chart a learning experience that will challenge and engage you.

In addition, each high school has its own website dedicated to the specific course options available there. You may access individual school websites by logging onto *www.montgomeryschoolsmd.org/schools/* and proceeding to the appropriate school site. The information presented on these sites provides a snapshot of each school, including detailed program descriptions of magnet and signature programs, academies, and career-themed course progressions offered in Montgomery County Public Schools (MCPS).

MCPS' outstanding, highly competent and dedicated teachers, administrators, and support staff are available to help you enhance your academic skills. Preparing you to become a productive citizen in a global society is a responsibility we take seriously. We encourage you to commit yourself to your studies with the same zeal and enthusiasm. Please take the opportunity to have conversations with your parents, teachers, and counselor about the academic and career paths you want to explore. These discussions will guide you as you select courses that will prepare you to achieve your future goals.

I extend my best wishes for your success as you prepare for the exciting and rewarding challenges that lie ahead.

Respectfully,

Jerry D. Weast, Ed.D.
Superintendent of Schools

Office of the Superintendent of Schools
850 Hungerford Drive, Room 122 ♦ Rockville, Maryland 20850 ♦ 301-279-3381

PREFACE

The 2009–2010 MCPS High School Course Bulletin provides students and parents/guardians with information about high school courses, programs, and career pathways. It includes specific requirements for graduation, as well as information about assessments, internships, opportunities for dual enrollment in college, and special programs.

Montgomery County Public Schools (MCPS) high school students experience various academic, extracurricular, and community activities that provide a wealth of opportunities that clarify interests, goals, and plans for the future.

Course selection in high school is critical to the realization of career and higher education goals. Students make appropriate academic decisions when their choices relate the courses they take in high school to college and career plans for the future. Students should talk to their teachers and school counselor about the courses needed to meet their individual goals.

The 2009–2010 MCPS High School Course Bulletin is reorganized to reflect better the changes in the Office of Curriculum and Instructional Programs (OCIP). All courses are categorized as either Arts and Humanities or Science, Technology, Engineering, and Mathematics courses. Career pathways have been added to appropriate content areas and a new category of courses has been added, Entrepreneurship, Finance, and Information Technologies. Additionally, The Foundations Program will have courses listed under its own program heading for the first time in this bulletin.

The 2009–2010 MCPS High School Course Bulletin contains brief descriptions of all approved courses offered in MCPS. Students and parents should work together to review the course offerings provided, the graduation requirements, and other information in this bulletin. Additional information appears in the following MCPS regulations and policies: MCPS Regulation ISB: High School Graduation Requirements; Regulation IKA: Grading and Reporting; Policy IKA: Grade Point Averages (GPA) and Weighted Grade Point Averages (WPGA); MCPS Policy IED: High School Policy; Policy IGA: High School Core Courses; Policy IOA: Gifted and Talented Education; and Regulation IOA-RA: Gifted and Talented Education. These are available in all school counseling offices and media centers, as well as on the MCPS website *www.montgomeryschools.org/departments/policy/.*

MCPS offers several hundred interesting and rewarding courses that help prepare students for the demands of the postsecondary world of college and careers. However, no one school can offer all of the courses described in this bulletin.

INTRODUCTION

MARYLAND DIPLOMA REQUIREMENTS

The state of Maryland authorizes one diploma for all high school graduates, based upon successful fulfillment in four categories of requirements: enrollment, course credit, student service learning (SSL), and Maryland assessments. MCPS requirements that extend state requirements are designated below with a double asterisk (**).

Enrollment

Students must satisfactorily complete four years beyond Grade 8. (For exceptions, see Alternatives to Four-Year Enrollment.)

Course Credits

A student shall be enrolled in a Montgomery County public school and have earned a minimum of **22** credits (unless a preapproved MCPS alternative is satisfied) that include the requirements shown in the table, MCPS Graduation Requirements at a Glance.

MCPS GRADUATION REQUIREMENTS AT A GLANCE			
English	**4 credits**		
Fine Arts	**1 credit** (Selected courses in art, dance, drama/ theater, and music that satisfy the fine arts requirement are marked FA)		
Health Education	**0.5 credit**		
Mathematics	**4 credits**** (1 algebra credit, 1 geometry credit) Students who successfully complete a calculus course may be exempted from this 4-credit requirement.		
Physical Education	**1 credit**		
Science	**3 credits** (1 biology credit and 1 physical science credit must be included)		
Social Studies	**3 credits** (1 U.S. History credit; 1 World History credit; and 1 National, State, and Local Government credit)		
Technology Education	**1 credit** (Courses in career and technology education that satisfy the new technology education requirement have changed. Specific information is available in the appendices of this bulletin.)		
Electives: The additional credits required for graduation may be fulfilled by one of the these three options	**OPTION 1**	**OPTION 2**	**OPTION 3**
	2 credits in a foreign language **OR** 2 credits in American Sign Language **AND** **2.5 credits** in elective courses	**2 credits** in advanced technology education **AND** **2.5 credits** in elective courses	**4 credits** in a state-approved career and technology program **AND** **0.5 credit** in electives courses
Student Service Learning (SSL)	Students must meet established service-learning requirements		
Graduating Classes of 2009 and Later—Assessment Requirements			
High School Assessments	Students must **pass** the Maryland High School Assessments for English, algebra/data analysis, biology, and government (see Assessments below for more information). For the most recent information on the requirements visit the website *www.hsaexam.org/about.html*		

Student Service Learning (SSL)

The SSL program in MCPS promotes a culture of student involvement and student responsibility through civic engagement. Service learning is a graduation requirement in Maryland. The number of service-learning hours needed for graduation, based on the date of original enrollment in MCPS, varies for individual students. Beginning with the class of 2011 MCPS students will complete a minimum of 75 service-learning hours for graduation. The graduating classes prior to 2011 must complete a minimum of 60 service-learning hours for graduation. The specific SSL hour requirement and other SSL information is shown at *www.mcpsssl.org*. MCPS students begin fulfilling this requirement the summer after Grade 5 and continue to accrue SSL hours through high school. Students who earn 260 or more SSL hours receive a Certificate of Meritorious Service at the time of graduation. Preparation, action, and reflection are the three phases of service learning that distinguish SSL from traditional volunteering and community service efforts.

Service learning hours are earned as follows:

- School Courses
- Successful completion of specific courses identified in this Course Bulletin where an individual completes the three phases in SSL activities that achieve curricular objectives.
- School Clubs
- Fully participating and completing the three phases of service learning in activities promoted by school-sponsored clubs and organizations.
- Community Organizations and Opportunities (must be preapproved for SSL)

Fully participating with community organizations identified as "Approved SSL MCPS" and opportunities identified, "MCPS SSL Approved" in the activity title at the website *www.mcpsssl.org* or by having MCPS Form 560-50, *Request for Student Service Learning Preapprova*l granted prior to earning hours with organizations and opportunities that are not tagged as MCPS SSL-approved at the website.

All activities for which SSL hours are desired must occur in a public place, be secular in nature, and be supervised by a representative from a nonprofit, tax-exempt organization. Parents and relatives may not directly supervise a student. One SSL hour is awarded for every hour of service outside of the instructional day, with a maximum of 8 hours in a 24-hour period. MCPS Form 560-51; *Student Service Learning Activity Verification*, is required to document all activities for which SSL hours are desired. For individual SSL questions, contact the SSL coordinator in any middle or high school. See Appendix at the end of this bulletin for frequently asked questions concerning SSL.

Maryland High School Assessments (HSA)

Maryland High School Assessments are end-of-course tests related to MCPS courses Algebra 1, Biology, English 10, and NSL Government. All students enrolled in any of the HSA courses are required to take the HSA at the end of the course. The Maryland State Department of Education (MSDE) has designed the tests to measure student achievement and school performance, providing valuable information to students, parents, and schools.

The Maryland State Board of Education established passing scores for the four High School Assessments (Algebra/Data Analysis, English, Government, and Biology) in June of 2004 and made passing* the High School Assessments a graduation requirement for the graduating class of 2009 and after. *www.hsaexam.org/about.html*

The Maryland State Department of Education has developed safeguard options to support students:

Combined Score Option—Achieve a combined total score of 1602 points on all four tests

External Test Option—The state has set passing scores for identified alternative external tests, such as an AP or IB test in an HSA-related content area, that may be used to meet the HSA requirement. These identified assessments exist in all four content areas. Please see the website below for specific information on acceptable external tests and external scores required to meet the HSA requirement. As established by the state, a student using this option to meet the requirement for any HSA content assessment will receive the lowest passing score for the related test. This score is used in all calculations associated with meeting the HSA requirements. *www.hsaexam.org/img/bridge_plan/Bridge_Over_Feb08.pdf*

Modified Testing Option—A modified HSA (MOD-HSA) test option is available for students who meet the criteria established by the state. The passing scores for these tests mirror the scores for the HSA. *www.hsaexam.org/about/options/mod_hsa.html*

Bridge Plan Option—The state has also adopted the Bridge Plan for Academic Validation (BPAV) to offer an alternative way to meet the graduation requirement. Students and/or parents interested in pursuing BPAV should contact the local school to review whether they meet requirements for participation in this plan, *www.mdbridgeplan.org/*

To meet the HSA Graduation Requirement a student must

- PASS means students must meet or exceed the lowest passing score on all the High School Assessments OR
- A student may use the following options or a combination of options to support meeting the graduation requirement
  - achieve at least the combined total score of 1602 for all four assessments
  - use one or more MOD-HSA score toward PASS scores or the combined total score option
  - meet the required achievement score on one or more external test recognized by the Maryland State Department of Education toward PASS scores or the combined total score option
  - successfully complete an approved BPAV alternative to testing to be used in conjunction with PASS scores earned in content areas where the BPAV alternative is not used to meet requirement.

For details, visit *www.hsaexam.org/index.html* or contact the MCPS Office of High School Instruction and Achievement, 301-517-5007; or contact your local school.

Maryland School Assessments (MSA)

The Maryland School Assessments provide educators, parents, and the public with valuable information about students, schools, school systems, and state performance. The tests meet requirements of the federal *No Child Left Behind Act* (ESEA ACT). High school students meet the reading and mathematics MSA requirements through HSA/MSA combined assessments in Algebra 1 and English, Grade 10. These assessments are administered when the student completes that course of study. For details, visit the MSDE website *www.marylandpublicschools.org*, or contact your local school.

Maryland Certificate

Maryland High School Certificate

This certificate is awarded to students with disabilities who do not meet the requirements for a diploma but who meet one of the following criteria:

1. The student is enrolled in a special education program for at least four years beyond Grade 8, or its age equivalent. The student is determined to have developed appropriate skills for the individual to enter the world of work, act responsibly as a citizen, and enjoy a fulfilling life by an Individualized Educational Program Team (IEP Team), with agreement of the student's parents/guardians. The world of work includes but is not limited to-
   - gainful employment,
   - work activity centers,
   - supported employment, or
   - sheltered workshops.
2. After being enrolled in a special education program for four years beyond Grade 8, or its age equivalent, the student reached age 21.

Montgomery County Public Schools Certificate of Merit

In addition to the Maryland high school diploma, students who meet the following requirements may be awarded the Montgomery County Public Schools Certificate of Merit (a diploma endorsement):

a. **Advanced Courses**
   At least 12 credits must be earned in advanced courses identified by MCPS as applicable to the Certificate of Merit. A CM in course listings in this bulletin designates courses that satisfy these requirements.

b. **Mathematics Requirement**
   Successfully complete, receive credit for the MCPS Algebra 2 course.

c. **Cumulative Grade Point Average**
   Students must obtain at least a 3.0 unweighted cumulative grade point average.

All Certificate of Merit courses must be taken for a letter grade.

COURSES AND CREDITS

Each high school is responsible for providing a comprehensive program for every student. The Basic Core of Courses offered in every high school is composed of two categories:

- Category 1 courses must be offered and given in each high school, regardless of course enrollment, except that they may be offered and given in alternate years or in combined classes when enrollment is less than 15.
- Category 2 courses must be offered and given in a high school when the enrollment in that course is 15 or more.

All high school courses are one semester in length. All courses satisfying graduation requirements must be taken for a letter grade. The student earns credit in each course taken upon completion of each semester's work—0.5 credit for successful completion of a single-period course, 1 credit for a double-period course, and so on. Yearlong courses usually have the same name for the two semesters, with the title of the first semester followed by "A" or "1" and the second by "B" or "2." Yearlong courses are usually sequenced to begin in the fall with "A" or "1."

High School Credit for Middle School Students

High school credit is awarded to students who complete yearlong high school courses while in middle school, after the student has passed both semesters of the course and passed the semester B high school final examination. Credit is awarded only after the student has begun to attend an MCPS high school as a ninth grade student.

Honors, Advanced Placement, and Advanced-level and International Baccalaureate Courses

Honors, advanced-level, Advanced Placement (AP), and International Baccalaureate (IB) courses provide rigorous and challenging studies for students who are capable of or motivated to pursue rigorous and challenging instruction. Typically, students enroll in individual Honors, advanced-level, and AP courses and not in a program as a whole. Students seeking an external curriculum diploma, such as the IB program, or participating in local school certificate programs must meet the requirements of that program in addition to the requirements for graduation in MCPS.

Honors Courses

Honors courses include course work in art, computer science, English, foreign languages, mathematics, music, science, and social studies. The curriculum in each Honors course includes appropriate adaptations for accelerated and enriched learning for pursuing in-depth studies that require abstract and higher-order thinking skills. Honors courses provide expectations and opportunities for students to work independently at an accelerated pace, to engage in more rigorous and complex content and processes, and to develop authentic products that reflect students' understanding of key concepts. Under special circumstances in designated courses, a cluster of students may pursue honors level work in a regular-level class. To get credit for Honors work, students must enroll under the special Honors code included in the course description.

Students in Honors, AP, and advanced-level courses are expected to maintain at least a C average. Students who receive a grade of D or E over two consecutive marking periods should be counseled and supported.

Advanced-level Courses

Advanced-level courses are based upon previous achievement in a sequence of study. Advanced-level courses are available in the following MCPS areas: Information Technology/Computer Science; Foreign Languages; Mathematics; Science. Additionally, advanced-level courses may be part of special countywide and local magnet, IB, and signature programs. Students should expect advanced-level courses to include appropriate adaptations for accelerated and enriched learning for pursuing in-depth studies that require abstract and higher-order thinking skills.

Advanced Placement Courses

MCPS has developed courses that meet College Board guidelines to accompany the Advanced Placement examinations. A qualifying score on an AP exam may give the student college credit or advanced standing in the subject in many colleges. These courses include concepts and skills that help prepare students for the AP exams. AP courses are available in the following MCPS content areas: Art; Computer Science; English; Foreign Languages; Mathematics; Music; Science; Social Studies. Please consult your school counselor for the titles of the courses offered at your school.

International Baccalaureate (IB) Diploma Programs in MCPS

The IB Diploma program is offered at

- Bethesda-Chevy Chase High School (for students in the B-CC area)
- Einstein High School (for students in the Downcounty Consortium)
- Richard Montgomery High School (for students countywide who are selected through a competitive application process during their Grade 8 year)
- Rockville High School (for students graduating in 2010 or later in the Rockville HS area).
- Springbrook High School (for students in the Northeast Consortium)
- Watkins Mill High School (for students in the Watkins Mill area)

The IB organization allows schools to develop their individual programs within their subject specifications. Each of these MCPS schools has individualized its programs by unique selections in the IB electives and languages. Local school course listings will indicate those courses unique to a given school.

The IB countywide program at Richard Montgomery High School (RMHS) is designed for highly gifted students in Montgomery County and has an application process that occurs in Grade 8. Please refer to the Countywide Programs section of this bulletin for information on this special program. John F. Kennedy and Seneca Valley high schools are in the process of applying to provide the IB Diploma Program. Pending authorization, this program will be available at these two schools for students graduating in 2012 or later.

Criteria for Enrollment in Honors, Advanced Placement, and Advanced-level Courses

Principals ensure that all students who have the capability, motivation, or potential to accept the challenge of Honors, advanced-level, and/or AP courses will be accorded an opportunity to do so. Each semester, principals will convene their schools' Honors/AP Review Committee to review the participation of students in Honors, AP, and advanced-level courses to ensure consistent implementation of the Gifted and Talented Education Policy and the accompanying regulation. This multi-stakeholder committee is cochaired by the principal and a faculty member, and includes counselors, teachers, representative resource teachers/department chairs and staff who have expertise in special needs (e.g., ESOL and special education).

The Honors/AP Review Committee also ensures that each school provides responsible open enrollment in Honors, AP, and advanced-level courses for every student who is capable of or motivated to pursue a rigorous program and higher-level course work. The committee documents the strengths that each student brings to Honors, AP, and advanced-level work and recommends a plan for outreach, nurturing, and support of potential candidates. A profile of student strengths can be determined by conducting a thorough review of the following multiple criteria:

- Mastery of Course Prerequisites (grades of A, B, or C)
- Parent/guardian recommendations
- Standardized test scores, as appropriate
- Willingness to complete challenging assignments
- Student interest or motivation
- Teacher/counselor recommendations
- Work samples and portfolios

Schools will evaluate multiple criteria for each student as no single criterion is to be used to exclude a student from pursuing Honors, AP, and advanced-level course work.

Prior to the start of each semester, guidance counselors notify all candidates for Honors, AP, and advanced-level courses regarding their enrollment.

Review Process for Enrollment in Honors, Advanced Placement, and Advanced-level Courses

Students who are not recommended for enrollment, but who still wish to be considered for Honors, AP, or advanced-level course placement should appeal in writing to the principal for a special review within 10 school days of notification.

LOCAL PROGRAMS AND COURSES

Downcounty Consortium

By action of the Board of Education, the Downcounty Consortium (DCC) was established, creating a partnership among five high schools in the downcounty region of Montgomery County—Montgomery Blair, Albert Einstein, John F. Kennedy, Northwood, and Wheaton. Downcounty Consortium students and their parents participate in the school assignment process known as "Choice." The Choice process allows each student to rank his/her preference for a high school among the five choices. Each student considers many variables when making a choice, including the academy offerings at each high school.

Based on the emerging research on high school improvement, DCC high schools are developing small learning communities within their larger schools. Those communities include ninth grade teams and themed academies as part of a comprehensive high school curriculum. Themed academies provide students with opportunities to explore areas of interest through relevant courses and capstone experiences such as internships, senior research projects and college-level course work.

Northeast Consortium

The Northeast Consortium (NEC) began as a unique response to school assignment issues in the northeast area of Montgomery County. As a result, three high schools—James Hubert Blake, Paint Branch, and Springbrook—were affiliated into a consortium to serve the interests of all students living in the northeast area of Montgomery County. Students and their parents participate in the school assignment process known as "Preferred Choice," in which each student ranks his/her preference for a high school from among the three choices.

While each student has many variables to consider when making his/her choice of high school, a significant factor is the academic offerings available at each of the three schools. Each campus offers a comprehensive high school curriculum as well as a distinctive "signature program." Signature programs focus on a field of high interest to students of diverse abilities and achievement levels and incorporate these signature themes throughout the instructional program. Extensive research in education demonstrates that student achievement and school climate improve dramatically when students are able to select programs that are related to their interest.

Signature Programs

Twenty-three high schools have developed and implemented signature programs. A signature program integrates a specific focus or distinguishing theme with the skills, concepts, and instructional strategies of some portion of a school's curriculum. The theme or focus becomes the vehicle for teaching the traditional comprehensive high school curriculum in a fresh, interesting, and more challenging way. Some high schools have implemented whole-school programs while other schools have implemented school-within-school organizational structures. The implementation of signature programs supports the process of raising achievement by allowing individual school communities to examine the academic needs of their students, with the goal of developing programs that enhance the learning process for all. Signature schools develop strategic plans to expand the number of students reached by the programs and improve instruction, communication, and stakeholder involvement.

COURSE-RELATED INFORMATION

Student Withdrawals from Courses

A student-initiated withdrawal may occur when the student and parents/guardians determine that withdrawal will be beneficial to the student. The student's withdrawal request must be approved by parents/guardians in writing, reviewed by the counselor, and discussed with the student to

ensure that there is understanding of a possible delay in meeting graduation requirements that may result if the student withdraws from a course. The counselor's recommendation is forwarded to the principal for approval or disapproval.

If a student withdraws from a course before the end of the fifth week (25 school days), no notation is made on the student's permanent record card or report card. The request to withdraw must be made by the 25th school day.

If the student withdraws after 25 school days of the course, the date of the withdrawal and the achievement attained to the time of withdrawal will be entered on the report card and permanent record. Withdrawal grades are not used in computing GPA or WGPA. However, they are included to determine student academic eligibility for participation in extracurricular activities.

Alternative Provisions for Earning Credit

In addition to earning credits during the regular school day and year, credits may be earned through summer school, extended-day learning opportunities, work experience programs, online courses, and college courses. Advance permission from the principal or designee is required in all cases involving alternative provisions for earning credit.

Specific provisions govern the use of each of these programs. It is critical that students and parents consider these programs carefully and consult school counselors in advance to obtain full information about any alternative means of earning credit and its advisability. In the case of online courses, the course must be recognized and the content of the course must meet MCPS content standards to be considered for credit.

Alternatives to Four-year Enrollment

As with alternative means of earning credit, specific provisions govern the use of alternatives to four-year enrollment. Guidance from counselors is critical and should begin far in advance. Permission of the principal is required in advance. The alternatives include early college admission programs or early admission to an approved vocational, technical, or other postsecondary school. The General Educational Development (GED) testing program, managed by the state of Maryland, is another alternative.

Attendance

A commitment to school attendance on the part of both students and parents/guardians is an essential component of a high-quality learning experience. Parents and school personnel are expected to do everything possible to ensure each student's regular attendance. Students should attend all scheduled classes and approved educational activities and are responsible for completing all assigned work on time. Students should be enrolled in a full-day program or spend a comparable period of time in an alternative program or activity approved by the student's parent/guardian and principal.

Grading and Reporting

Basis for Grading

Grades reflect student achievement based on what they know and are able to do, as defined by the MCPS curriculum. Students receiving services for limited English proficiency, special education, or 504 disabilities will be afforded all accommodations and modifications, as documented by English Language Learner (ELL) plans, Individualized Education Programs (IEPs), or Section 504 plans.

Procedures for Grading

Grading procedures will be applied consistently within and among schools. Grading practices must include clear and timely communication, alignment with curriculum, accurate reflection of student achievement, and fair representation of student performance. Grading practices must be fair and manageable and support effective teaching and learning.

Grades on report cards reflect academic achievement in relation to course expectations, as outlined in the Montgomery County Public Schools curriculum. Extra credit may not be used. Course-specific procedures for grading are defined, used consistently, and explained clearly to students and parents in writing at the beginning of a semester or school year.

A final evaluation activity is required at the conclusion of all courses. Semester examinations in specified courses are computed as 25 percent of the final grade for the semester and reported separately on the report card.

Reporting Student Progress

Teachers will provide students and parents with information about achievement throughout the marking period. This feedback may take several forms, including the following:

- Report cards
- Interims/progress reports
- Online grade reports (Edline)
- Parent conferences
- Informal methods of communication
- Teacher feedback

Credit/No Credit Grading Option

The Credit/No Credit grading option may be used only in courses not specifically required for graduation by the Maryland State Department of Education or MCPS. Credit/No Credit cannot be applied to a Certificate of Merit course.

Additional information about grading and reporting is available to students, parents, community members, teachers, and administrators on the MCPS website at *www.montgomeryschoolsmd.org/info/grading/*.

Grade Point Average (GPA) and Weighted Grade Point Average (WGPA)

Only course final grades and credit are reported on high school transcripts (A-E) are used in determining cumulative GPA and WGPA, in accordance with the procedures set forth in MCPS Regulation IKC-RA: *Grade Point Averages and Weighted Grade Point Averages*.

An additional quality point will be added to grades of A, B, and C in all Honors, Advanced Placement, and advanced-level courses only to determine WGPA. MCPS does not rank students.

Marking period averages (MPA) shown on report cards are not cumulative and **cannot** be averaged to establish a GPA/WGPA.

Academic Eligibility for Participation in Extracurricular Activities

Students must maintain a 2.0 marking period average (MPA), with not more than one failing grade in the previous marking period, in order to participate in extracurricular activities during the next marking period. The MPA is not the same as the GPA. (MCPS Regulation IQD-RA: *Academic Eligibility for High School Students Who Participate in Extracurricular Activities*.)

National Collegiate Athletic Association Eligibility Center

The National Collegiate Athletic Association (NCAA) established the Eligibility Center to serve as the authorizing group for the final review and approval of core courses for freshmen students who want to participate in intercollegiate athletics in NCAA Division I-A, I-AA, and II colleges and universities.

The NCAA Eligibility Center Approved Core Courses are identified in the course bulletin with the symbol NCAA. In all cases, the list of eligible courses available at the The NCAA Eligibility Center website represents the final determination on acceptable core courses.

To learn more about NCAA Eligibility Center Approved Core Courses or about NCAA Freshmen Eligibility Standards contact the local school resource counselor and visit the NCAA Eligibility Center website at *www.web1.ncaa.org/eligibilitycenter/common/*

Taking Courses not Available at the Home School

Students wishing to attend a neighboring school for a course not available at the home school must apply through their home school counseling office. Courses are open to students on a space-available basis. Students/parents must provide transportation.

Career Pathway Programs and Technology Education Requirements

Career Pathway Programs (CPP) are state-approved programs that satisfy the career development graduation requirement and are marked with CPP. Each of these programs are designed to help students acquire the specialized knowledge, skills, attitudes, and work habits required for employment and postsecondary education. Each high school offers career development programs.

Students seeking to enroll in a CPP that includes a work-based learning component may be required by the employer or sponsoring organization to provide appropriate documentation that may include a social security number and/or proof of citizenship/green card. Please review program applications and CPP requirements carefully for specific work-based learning component guidelines.

Students participating in CPPs at locations other than their home schools are advised to consult with their school counselors to ensure that the proper amount of transportation time is allocated within their schedule.

Thomas Edison High School of Technology

Thomas Edison provides opportunities for students in CPPs that might not be available in their home schools. Registration packets are available from Thomas Edison and from local school counselors. Students enroll in Thomas Edison programs through their home school and take courses at both the home school and at Thomas Edison. Bus transportation is provided.

Other Program Options

Schools not offering a particular CPP may request placement of a student in that program at another school. Efforts will be made to fulfill reasonable student requests for transportation. Students requesting a CPP at another school must complete MCPS form 565-6 and submit it to their home school counselor.

Technology and Advanced Technology Education Credit—Changes for the Class of 2012

In compliance with the Annotated Code of Maryland Regulation (COMAR) governing technology education instructional programs, students in the graduating class of 2012 will be required to take a state-approved course that meets all 20 COMAR standards for technology education and satisfies the high school graduation requirement in technology education.

The three courses meeting state approval and identified with the symbol T2 in the course bulletin are available at all high schools. A course that meets these criteria is being identified for students in Grade 8. The Foundations of Technology A/B course now is available to be taken online during summer school. Courses that satisfy the current technology education requirement for students graduating in the years 2009–2011 will be marked with a TE. Additional information about the technology education credit can be found in the appendix of this bulletin.

In addition to the technology education credit changes, **COMAR also is modifying requirements for the advanced technology education credit courses.** Students in the graduating class of 2012 and beyond who choose to complete their high school graduation requirement by successfully completing a technology education credit course followed by two advanced technology education courses will be required to take state-approved advanced technology education credit courses. Three new MCPS courses will meet the revised advanced technology education requirement; information about the first of these courses, Technological Design, will be available in the online version of the course bulletin.

Foundations Office Programs

The Foundations Office provides programs in partnership with three separate nonprofit educational foundations: automotive, construction, and information technology. Each provides a liaison between the business/professional community and MCPS to promote and advance student education, training, and preparation for college and a full range of careers within the automotive, construction, and information technology industries. Additional information may be found at *www.foundationsoffice.org*. All Foundation student programs provide opportunities to earn industry-recognized credentials and also provide entrepreneurial experiences.

Automotive Trades Foundation Programs are located at Damascus, Thomas Edison, Gaithersburg, and Seneca Valley high schools. Three student-run car sales per school year are held, selling more than 2,000 renovated vehicles to date. Students also donate one renovated vehicle yearly to a deserving Montgomery County organization.

Construction Trades Foundation Programs are located at Damascus and Thomas Edison high schools. Students design, construct, and market student-built houses; 36 houses have been built and sold thus far in Montgomery County.

Network Operations Programs are located at Clarksburg, Thomas Edison, and Rockville high schools. Students renovate, market, and sell donated computers to the community during three yearly sales. Students also donate a refurbished computer lab yearly to a deserving Montgomery County nonprofit organization.

Montgomery County Public Schools, Montgomery College and The University System of Maryland Partnership Programs

Programs for "College Ready" MCPS High School Students

"College ready" high school juniors or seniors may earn college credits while in high school through dual enrollment programs. Dual enrollment programs exist at select high schools between MCPS and Montgomery College, University of Maryland, College Park, University of Maryland, Baltimore County, and University of Maryland, University Campus. Students may enroll in college courses at their home high school or at the college campus during the school day. Credits for these courses are fully transferable to the providing institution. Students must check with the college of their choice to ensure transferability at other institutions of higher education. Limited financial aid is available through the institutions' financial aid office to help pay tuition and fees. Dual enrollment programs are currently on the campus of 17 high schools. For information about dual enrollment programs contact your school counselor. Montgomery College early placement programs can be accessed by all MCPS students by contacting the college admissions office at 240-567-5000.

MC Ensembles Partnership Program

The MC Ensembles Partnership gives talented MCPS high school instrumental music students the opportunity to participate in the MC Symphony Orchestra or MC Wind Ensemble and empowers them to be service leaders in their community. For additional information, contact Dr. Jay Crowder, Music Department Chair, at 240-567-7554/ email jay.crowder@montgomerycollege.edu or speak with your instrumental music teacher.

Gateway to College Program at Montgomery College

The Gateway to College Program at MC serves high school students, 16–20 years old, for whom high school completion is at risk. To enroll, students must be significantly behind in credit attainment and have a GPA that is less than 2.0. Students attend classes on the college campus, simultaneously earning their high school diploma and an associate degree or certificate. For more information about the Gateway to College Program go to *www.montgomerycollege.edu/Departments/mcmcps/gateway/*, contact your school counselor or call/e-mail Amy Crowley, Gateway to College at MC program director, at 301-610-4052 / e-mail amy.crowley@montgomerycollege.edu.

College Credit Available at Montgomery College for MCPS Students Who Complete Career Pathway Programs

Graduates from Montgomery County Public Schools (MCPS) who successfully complete one of 38 career pathway programs may earn free college credit when receiving grades of "A" or "B" in courses articulated with Montgomery College (MC). Earned credits may be used toward an associate degree at MC. For more information regarding the MC articulated credit for career pathway programs, contact your school counselor. MC offers financial aid to help pay tuition and fees to students who qualify. To contact the Financial Aid Office at MC, please call 301-279-5000. If you have questions about the 38 MCPS career pathway programs, you may call 301-309-MCPS (6277) for information regarding career pathway programs or visit the website at *www.montgomeryschoolsmd.org/departments/cte/*. Please call MC at 301-279-5000 for college-related information and an application packet.

ADVANCED PLACEMENT AND ADVANCED LEVEL COURSES

6313/6314	Advanced Studio A/B
3310/3311	Algebra 2, Honors A/B
3761/3762	Anatomy and Physiology A/B (BC)
1899/1900	Arabic 3 A/B
6456/6457	Art History, Advanced Placement A/B
3641/3642	Biology, Advanced Placement A/B (BC)
3651/3652	Biology, Advanced Placement A/B (DP) (BC)
3452/3453	Calculus AB, Advanced Placement, A/B
3491/3492	Calculus BC, Advanced Placement, A/B
3356/3357	Calculus with Applications A/B
6385/6386	Ceramics/Sculpture 3 A/B
3751/3752	Chemistry, Advanced Placement A/B (DP) (PC)
3741/3742	Chemistry, Advanced Placement A/B (PC)
1879/1880	Chinese 5 A/B
1881/1882	Chinese 6 A/B
1929/1930	Chinese Language and Culture, Advanced Placement A/B
4200/4201	Computer Programming 1 A/B
2989/2990	Computer Programming 1 A/B
2901/2902	Computer Programming 2, Advanced Placement Computer Science A/B
2965/2966	Computer Programming 3, Advanced Topics in Computer Science A/B
2315 t	Economics, Macroeconomics, Advanced Placement
2316 t	Economics, Microeconomics, Advanced Placement
3609/3610	Engineering Science A/B (SC)
1015/1016	English Language and Composition, Advanced Placement, A/B
1017/1018	English Literature and Composition, Advanced Placement, A/B
3659/3660	Environmental Science, Advanced Placement A/B (SC)
3674/3675	Environmental Science, Honors A/B (DP) (SC)
3676/3677	Environmental Science, Honors A/B (SC)
3864/3865	Forensic Science A/B (SC)
1615/1625	French 5 A/B
1616/1626	French 6 A/B
1635/1636	French Language, Advanced Placement A/B
1965/1975	German 5 A/B
1966/1976	German 6 A/B
2132/2145	Government, Comparative Government and Politics A/B, Advanced Placement
2104/2105	Government, United States and Politics with NSL, Advanced Placement A/B
2131	Government, United States Government and Politics, Advanced Placement

2938/2939	Guided Research—National Academy Foundation A/B
2216/2217	History, European, Advanced Placement A/B
2114/2124	History, United States, Advanced Placement A/B
2240/2241	History, World, Advanced Placement A/B
2332/2333	Human Geography, Advanced Placement A/B
1945/1946	Italian Language and Culture, Advanced Placement A/B
1843/1844	Japanese 5 A/B
1829/1830	Japanese 6 A/B
1539/1540	Japanese Language and Culture, Advanced Placement A/B
1819/1820	Latin, Vergil, Advanced Placement A/B
3657/3658	Molecular Biology A/B (BC)
3653/3654	Molecular Biology A/B (DP) (BC)
3048/3049	Multivariable Calculus and Differential Equations A/B
6547/6548	Music Theory and Composition, Advanced Placement
3837/3838	Physics B, Advanced Placement A/B (PC)
3839/3840	Physics C, Advanced Placement A/B (PC)
3851/3852	Physics, Advanced Placement A/B (DP) (PC)
3841/3842	Physics, Advanced Placement A/B (PC)
3350/3351	Precalculus, Honors A/B
2330/2331	Psychology, Advanced Placement A/B
1153	Publications Editing, Layout, and Business Management
1859/1860	Russian 5 A/B
1861/1862	Russian 6 A/B
2225	Seminar in Peace Studies
1715/1725	Spanish 5 A/B
1716/1726	Spanish 6 A/B
1759/1760	Spanish Language, Advanced Placement A/B
1761/1762	Spanish Literature, Advanced Placement A/B
3320/3321	Statistics, Advanced Placement, A/B
6486	Studio Art 2-D, Advanced Placement
6487	Studio Art 2-D, Advanced Placement
6305/6306	Studio Art 3 A/B
6488	Studio Art 3-D, Advanced Placement
6489	Studio Art 3-D, Advanced Placement
6482	Studio Art Drawing, Advanced Placement
6484	Studio Art Drawing, Advanced Placement
7829	Superintendent's Leadership Program
7830	Superintendent's Leadership Program
7831	Superintendent's Leadership Program
7832	Superintendent's Leadership Program
1152	Techniques of Advanced Journalism

ARTS AND HUMANITIES

THE ARTS AND BROADCAST MEDIA

The fine arts provide students with opportunities to be creative thinkers and to express themselves uniquely and in a multitude of forms. Dance, music, theater, and visual arts are rooted in curiosity not satisfied by other means of inquiry. Students are actively involved learners in the arts and become creators, composers, organizers, observers, and evaluators.

The fine arts have provided for each generation a knowledge of other cultures from the past, a mirror of the present, and a vision for the future. The fine arts—dance, music, theater, and visual art—are among humanity's greatest aesthetic and intellectual achievements.

The purpose of the fine arts curriculum is to establish a foundation for a lifelong relationship with the arts for every student. The curriculum provides opportunities to develop abilities that allow for personal expression, sensitivity to cultural diversity, and the capacity to embrace creativity in everyday life.

Students are led in an exploration of self, of others, and the world in relation to the art forms. Students are challenged to become independent, self-motivated workers and creators as they move toward advanced levels of artistic accomplishment. The fine arts curriculum is based on the premise that all students have creative potential and, given the appropriate opportunities, that potential can be realized.

Dance

Students in dance classes—

- Use perceptual skills through performing and responding
- Understand individual, cultural, and creative expression through improvisation

Music

Students in music classes—

- Develop performance skills, including the use of voice, instruments, and other sound-producing media
- Create musical ideas through composing, arranging, and improvising
- Describe music through reading and writing music notation; listening to music; and employing their understanding of music verbally, visually, and through movement

Theater

Students in theater classes—

- Explore aspects of their individual development
- Express themselves creatively
- Develop intellectual and physical discipline

Visual Arts

Students in visual arts classes—

- Form a positive and enriching lifelong relationship with art and the visual world
- Focus on increasingly open-ended problems
- Express ideas, thoughts, and feelings that learners want to explore and share
- Employ visual thinking and aesthetic development supported by perceptual, conceptual, and representational skills.

MCPS requires each student to complete 1 credit in the fine arts in order to graduate. The fine arts curriculum also provides students with an opportunity to earn student service learning hours within the context of the classroom.

Arts and Broadcast Media

DANCE		
Dance as Fine Art 1	6017	FA (5 SSL)
Dance as Fine Art 2	6018	FA (5 SSL)
GENERAL MUSIC		
Piano 1A	6520	FA
Piano 1B	6521	FA
Piano 2A	6535	FA
Piano 2B	6536	FA
Music Theory and Composition A/B	6545/6546	FA
Music Theory and Composition, Advanced Placement	6547/6548	CM FA AP (AL)
Music Perspectives	6565	FA
Music Perspectives B	6566	FA
Guitar 1 A/B	6585/6586	FA (BCC2)
Guitar 2 A/B	6591/6592	FA
Music Technology A/B	6605/6607	FA
CHORAL MUSIC		
Chorus, General A/B	6701/6702	FA
Chorus 1A	6711	FA (BCC1)
Chorus 1B	6712	FA (BCC1)
Chorus 2A	6721	FA (BCC1)
Chorus 2B	6722	FA (BCC1)
Choir, Concert	6731	CM FA
Choir, Concert A, Honors	6733	CM FA (H)
Choir, Concert B	6732	CM FA
Choir, Concert B, Honors	6734	CM FA (H)
Choir, Chamber A	6741	CM FA
Choir, Chamber A, Honors	6743	CM FA (H)
Choir, Chamber B	6742	CM FA
Choir, Chamber B, Honors	6744	CM FA (H)
Choir, Show A	6745	FA
Choir, Show B	6746	FA
INSTRUMENTAL MUSIC		
Band, Beginning A/B	6811 /6885	FA
Band, Advanced A/B	6831 /6832	FA
Band, Concert A/B	6821 /6822	CM FA (BCC1)
Band, Symphonic A/B	6826 /6827	CM FA (BCC1)
Band, Symphonic, Honors A/B	6828 /6829	CM FA (H)
Jazz Ensemble A/B	6871 /6872	CM FA
Jazz Ensemble, Honors A/B	6873 /6874	CM FA (H)
Orchestra, Beginning A/B	6841 /6855	FA
Orchestra, Advanced A/B	6861 /6862	FA
Orchestra, Concert A/B	6851 /6852	CM FA (BCC2)
Orchestra, Symphonic A/B	6866 /6867	CM FA
Orchestra, Symphonic, H A/B	6868 /6869	CM FA (H)
THEATER/TELEVISION PRODUCTION		
Introductory Dramatics	6908	FA
Theater 1 A/B	6926 /6927	CM FA
Theater 2 A/B	6928 /6929	CM FA
Acting, Advanced	6912	CM FA
Stage Design	6913	CM FA
Play Directing	6914	CM FA
Television Production 1/2	7860 /7862	

VISUAL ARTS		
Advanced Studio A/B	6313 /6314	CM FA (AL)
Art History, Advanced Placement A/B	6456 /6457	CM FA AP (AL)
Art and Culture A/B	6454 /6455	FA
Art History A/B	6451 /6452	FA
Studio Art 1 A/B	6105 /6106	CM FA
Studio Art 2 A/B	6205 /6206	CM FA
Studio Art 3 A/B	6305 /6306	CM FA (AL)
Ceramics/Sculpture 1 A/B	6381 /6391	FA (BCC2)
Ceramics/Sculpture 2 A/B	6383 /6393	CM FA
Ceramics/Sculpture 3 A/B	6385 /6386	CM FA (AL)
Commercial Art A/B	6401 /6411	FA (BCC2)
Commercial Art 2 A/B	6403 /6413	CM FA
Digital Art A/B	6496 /6497	CM FA
Foundations of Art A/B	6055 /6056	FA (BCC1)
Painting A/B	6365 /6366	FA
Photography 1 A/B	6345 /6346	FA
Photography 2 A/B	6347 /6348	CM FA
Printmaking A/B	6377 /6378	FA
Visual Art Center A/B	6492 /6493	CM FA (AL) (DP)
Visual Art Center A/B	6490 /6491	CM FA (AL) (TP)
Studio Art Drawing, Advanced Placement	6482	CM FA AP (AL)
Studio Art Drawing, Advanced Placement	6484	CM FA AP (AL) (DP)
Studio Art 2-D, Advanced Placement	6486	CM FA AP (AL)
Studio Art 2-D, Advanced Placement	6487	CM FA AP (AL) (DP)
Studio Art 3-D, Advanced Placement	6488	CM FA AP (AL)
Studio Art 3-D, Advanced Placement	6489	CM FA AP (AL) (DP)
CAREER PATHWAY PROGRAMS IN ARTS AND MEDIA		
Broadcast Media— Career Pathway Program *(4 credits required)*		
Radio Production A/B	5169 /5170	
Video Production A/B	5173 /5174	
Media Management and Production B	5177 /5178	CM
Electronic Video Field Production A/B	5175 /5176	
Electronic Audio Field Production A/B	5171 /5172	
Radio Station Management/Operations A/B	5166 /5167	CM
Guided Research—Arts, Humanities, Media, and Communications A/B	5310 /5311	
Printing, Graphics, and Electronic Media— Career Pathway Program *(4 credits required)*		
Printing, Graphics, and Electronic Media 1 A/B Triple Period	5118 (92)/ 5119(92)	(15 SSL) (TP)
Printing, Graphics, and Electronic Media 2 A/B TP	5121 (92)/ 5122(92)	(15 SSL) (TP)
Internship, Printing Graphics	5717 (92)	

ARTS AND BROADCAST MEDIA COURSE DESCRIPTIONS

Dance

The following two courses satisfy the Fine Arts requirement:

Dance as Fine Art 1

6017 FA (5 SSL) **0.5 credit**

This introductory dance course emphasizes the development of technique and the exploration of dance as a fine art. Students learn basic technical skills needed for several dance disciplines, and the history of dance in many cultures. Students demonstrate the knowledge and application of the basic elements of dance such as time, force, energy, dynamics, and space through movement.

Dance as Fine Art 2

Prerequisite: *Attainment of the outcomes of Dance as Fine Art 1*

6018 FA (5 SSL) **0.5 credit**

The elements of dance are studied in greater depth, with applications directed at solving movement problems. Students create original choreography and increase improvisational skills. Basic movement skills and techniques are refined to achieve greater technical and artistic competency. Specific dance forms are studied.

General Music

Special Note: *Attainment of specified student service learning (SSL) hours for each course is not an automatic granting of hours based on successful completion of the course. Rather, course-specific SSL maximum hours are determined by program coordinators.*

Each teacher and student determine the specific SSL hours for each specific course. At the end of the course the teacher authorizes the number of SSL hours to be awarded to each student, and reports that number to the local school SSL coordinator using MCPS Form 560-51

Public performances during and after school hours may be required to meet course objectives.

Piano 1A

6520 FA **0.5 credit**

Students acquire standard piano technique and learn to read music written for the instrument. This course is open to all students regardless of musical background. In an instructional setting that allows individuals to receive assistance as needed, students develop effective practice habits so they will be able to progress independently. Examples of excellent piano performance are heard and analyzed. This course may be repeated for credit.

Piano 1B

Prerequisite: *Attainment of the outcomes of Piano 1A*

6521 FA **0.5 credit**

Students learn to perform musical selections of gradually increasing difficulty, while also gaining skill in creative uses of the keyboard. Aspects of music history and theory relevant to piano performance are presented. This course may be repeated for credit.

Piano 2A

Prerequisite: *Demonstration of intermediate piano performance skills via audition*

6535 FA **0.5 credit**

Students continue to build on the notation and technical skills acquired in Piano 1, studying and performing a wide variety of intermediate and advanced repertoire. They continue to improvise, compose, and arrange music. Students refine their understandings of music history through analysis of repertoire. This course may be repeated for credit.

Piano 2B

Prerequisite: *Attainment of the outcomes of Piano 2A*

6536 FA **0.5 credit**

Piano students continue to study works of increasing difficulty at the intermediate and advanced levels. By playing duets, serving as accompanists, or playing in ensembles, they expand their performing expertise. They improvise and compose in a variety of styles. Each student selects and studies a major period of music history in depth. This course may be repeated for credit.

Music Theory and Composition A/B

6545/6546 FA **0.5 credit**

Students study the elements of music with emphasis on music terminology, notation, and major and minor keys. They practice melodic, rhythmic, and harmonic dictation, as well as keyboard harmony and sight-singing. They learn how to improvise and compose music in different styles for various combinations of voices and instruments. Students build on the skills acquired earlier in Music Theory and Composition A.

Music Theory and Composition, Advanced Placement

Prerequisite: *Attainment of the outcomes of Music Theory B or permission of instructor*

6547/6548 CM FA AP (AL) **0.5 credit**

Students with strong interest and preparation in music prepare to meet the requirements of the College Board for advanced placement in Music Theory. Practice in sight-singing, dictation, composition, and improvisation is complemented by listening and score analysis. In the second semester, students read, write, and analyze music of increasing complexity. They study in detail the techniques used to compose music, including electronic media.

Music Perspectives
6565 FA **0.5 credit**

Students analyze and discuss jazz, folk, popular, and classical music representing a variety of eras and cultures. Through listening, performing, and composing, students learn about music notation, form, and style. They examine the art of performance from the perspective of the audience, the performer, and the critic. Attendance at live performances is encouraged.

Music Perspectives B
Prerequisite: *Music Perspectives A or permission of instructor*
6566 FA **0.5 credit**

Students continue to study music of their own and other cultures and historical eras. They explore historical and cultural influences on the creation of music and the other arts. Students learn to make informed personal judgments about music and music performances. Using electronic technology, students create their own compositions.

Guitar 1 A/B
6585/6586 FA (BCC2) **0.5 credit**

Students learn beginning guitar technique, including selected major, minor, and seventh chords; basic finger picks and strums; and tuning technique. Music theory and historical perspective are studied as they relate to guitar performance. This course is open to all students regardless of music background. Students acquire more advanced guitar performance skills in semester B. The technological aspects of contemporary guitar playing are studied. These courses may be repeated for credit.

Guitar 2 A/B
6591/6592 FA **0.5 credit**

Students with a high level of interest, ability, and preparation in guitar study and perform music representing a variety of musical styles. Ear-training and music theory are emphasized; and students complete several creative projects. This course may be repeated for credit. Second-semester students continue to refine their guitar performance skills. They analyze the guitar styles of a variety of cultures and incorporate them into their own improvisations. These courses may be repeated for credit.

Music Technology A/B
6605/6607 FA **0.5 credit**

Students learn the techniques of electronic sound production and manipulation, and apply them to create their own compositions. They use specialized electronic equipment and computer software to synthesize, modify, and record sounds. Students analyze and evaluate examples of electronic music, as well as multiarts works featuring electronic music sources. Second semester students extend their knowledge and skills introduced in Music and Its Technology A. Career options in electronic music are explored.

Choral Music
Chorus, General A/B
6701/6702 FA **0.5 credit**

Students learn the fundamentals of choral singing technique, including diction, breathing, tone production, intonation, and sight-reading. Membership in this choral group is open to all students and previous choral experience is not required. A wide variety of choral music is used, and the group performs occasionally at school and community programs. This course may be repeated for credit.

Chorus 1A
6711 FA (BCC1) **0.5 credit**

Students learn the fundamentals of singing and develop sight-reading skills through a variety of choral literature from various cultures and historical eras. Membership is open to all students and previous choral singing experience is not required. Students learn to appreciate and understand the historic and cultural contexts of this music. Several performances are given at school.

Chorus 1B
Prerequisite: *Attainment of the outcomes of Chorus 1A or audition*
6712 FA (BCC1) **0.5 credit**

Students learn to perform musical selections of increasing difficulty, while expanding their ability to recognize and use the elements of music. A number of performances are given at school and within the community.

Chorus 2A
Prerequisite: *Attainment of the outcomes of Chorus 1B or audition*
6721 FA (BCC1) **0.5 credit**

Students continue developing vocal techniques and experience a more varied and complex repertoire. They explore the historic, aesthetic, and cultural context of the music, as well as the social and intellectual influences affecting its development. A number of performances are given at school and within the community.

Chorus 2B
Prerequisite: *Attainment of the outcomes of Chorus 2A or audition*
6722 FA (BCC1) **0.5 credit**

Students continue to build on skills learned in Chorus 2A and perform music of increasing difficulty. Appreciation of the cultural, historical, and aesthetic qualities of each piece is deepened through more thorough investigation. A number of performances are given at school and within the community.

Choir, Concert
Prerequisite: *Attainment of the outcomes of Chorus 2B or audition*
6731 CM FA **0.5 credit**
6733 CM FA (H) **0.5 credit**

Students whose singing skills and musicianship demonstrate readiness to perform challenging repertoire audition for placement in Concert Choir A. An audition is required for membership, and previous choral experience is expected. Music representing a broad variety of historical eras and cultures is performed and analyzed. Frequent performances are given at school and in the community.

Choir, Concert B
Prerequisite: *Attainment of the outcomes of Concert Choir A or audition*
6732 CM FA **0.5 credit**
6734 CM FA (H) **0.5 credit**

Students sing masterworks from different cultures in their original languages. Emphasis is on refining sight-reading skills, ensemble performance, and vocal production. A number of performances are given at school and within the community.

Choir, Chamber A
6741 CM FA **0.5 credit**
6743 CM FA (H) **0.5 credit**

Students sing a variety of music written for small vocal ensembles, often without accompaniment. Chamber Choir allows select singers to refine their vocal skills in the highly demanding small ensemble setting. The ensemble has a very active performing schedule and offers leadership opportunities for student conductors and soloists. A number of performances are given at school and within the community.

Choir, Chamber B
6742 CM FA **0.5 credit**
6744 CM FA (H) **0.5 credit**

Students continue to build on the vocal and music reading skills acquired in the previous semester. They improvise, arrange, and compose music for the small vocal ensemble. Students continue their explorations into the history of small vocal ensemble literature and how it interrelates with other arts. They develop their aesthetic judgment skills by critiquing a variety of performances. *A number of performances are given at school and within the community.*

Choir, Show A
Prerequisite: *Audition*
6745 FA **0.5 credit**

Students sing a variety of music in jazz and popular vocal styles. Emphasis is on learning to integrate good vocal technique with dance/movement and improvisation. They acquire critical listening skills to use in evaluating their own and others' performances. This ensemble has a very active performing schedule, and offers leadership opportunities for student soloists, conductors, and choreographers. A number of performances are given at school and within the community.

Choir, Show B

Prerequisite: *Attainment of the outcomes of Show Choir A or audition*

6746 FA **0.5 credit**

Students continue to build on the skills acquired in the previous semester, extending their ability to integrate singing and dance/movement. They improvise and compose music and continue their explorations of the history of jazz and show choir genres. This ensemble has a very active performing schedule, and offers leadership opportunities for student soloists, conductors, and choreographers. A number of performances are given at school and within the community.

Instrumental Music

Band, Beginning A/B

6811/6885 FA **0.5 credit**

For students with no instrumental music experience. Areas such as elements of musical form, terms and symbols, tone production, and the importance of practice habits are presented. The development of skills necessary to perform Grade I music is stressed. In Beginning Band B, the emphasis is on preparing the student for a high school band course. The development of skills necessary to perform Grade II music is stressed. Public performances outside of the school day may be required to meet course objectives.

Band, Advanced A/B

Prerequisite: *Attainment of the outcomes of Beginning Band B*

6831/6832 FA **0.5 credit**

Advanced Band students develop skills that will enable them to perform music at the Grade II to III level of difficulty. Students learn the cultural influences from the historical periods reflected in the musical works being discussed. The study of music theory includes major scales, diatonic and chromatic intervals, and melodic dictation. Public performances during and after school may be required to meet course objectives. This course may be repeated once for credit.

Band, Concert A/B

Prerequisite: *Attainment of the first-year outcomes of Advanced Band, by audition, and the musical need to balance the instrumentation as determined by the director*

6821/6822 CM FA (BCC1) **0.5 credit**

Students will develop and refine the skills that will enable them to perform music at the Grade III level of difficulty. Basic transposition, melodic dictation, and triad development are included. Written projects may include music history, performance critiques, and musical composition. Public performances outside of the school day may be required to meet course objectives. This course may be repeated once for credit. A second year of Advanced Band may be substituted for the first year of Concert Band.

Band, Symphonic A/B

Prerequisite: *Attainment of the second-year outcomes of Concert Band, by audition, and the musical need to balance the instrumentation as determined by the director*

6826/6827 CM FA (BCC1) **0.5 credit**

6828/6829 CM FA (H) **0.5 credit**

Students develop skills that will enable them to perform music at the Grade IV to VI level of difficulty. The emphasis will be on the study of literature composed originally for the band/orchestra during the 20th century. Additional experiences may include marching band, pep band, improvisation, and chamber and solo performance. Public performances during and after school may be required to meet course objectives. This course may be repeated for credit.

Jazz Ensemble A/B

Prerequisite: *Attainment of the first-year outcomes of Concert Band and Concert Orchestra, by audition, and the need to balance the instrumentation as determined by the director*

6871/6872 CM FA **0.5 credit**

6873/6874 CM FA (H) **0.5 credit**

Students develop a high level of skill in the performance of jazz, blues, jazz-rock, soul, and other styles of music. They extend their skills of jazz interpretation and improvisation through studying this literature. They continue to study jazz harmony and theory, along with the historical influences on jazz as it developed into an American art form. Public performances during and after school may be required to meet course objectives. This course may be repeated for credit.

Orchestra, Beginning A/B

6841/6855 FA **0.5 credit**

Students with no instrumental music experience should elect this course. They develop basic instrumental skills through a variety of musical materials. The historical significance of the music is discussed. The elements of musical form, terms and symbols, tone production, instrument care, and the importance of practice habits are presented. The development of technical skills necessary to perform Grade I music is stressed.

Orchestra, Advanced A/B

Prerequisite: *Attainment of the outcomes of Beginning Orchestra B*

6861/6862 FA **0.5 credit**

Advanced Orchestra students develop skills that will enable them to perform music at the Grade II to III level of difficulty. Students learn the cultural influences from the historical periods reflected in the musical works being discussed. The study of music theory includes major scales, diatonic and chromatic intervals, and melodic dictation. Public performances during and after school may be required to meet course objectives. This course may be repeated once for credit.

Orchestra, Concert A/B

Prerequisite: *Attainment of the first-year outcomes of Advanced Orchestra, by audition, and the musical need to balance the instrumentation as determined by the director*

6851/6852 CM FA (BCC2) **0.5 credit**

Students will develop and refine the skills that will enable them to perform music at the Grade III level of difficulty. Transposition, melodic dictation, and performance of triads are included. Music history, performance critiques, and musical composition projects may be used. Public performances outside of the school day may be required to meet course objectives. This course may be repeated once for credit. A second year of Advanced Orchestra may be substituted for the first year of Concert Orchestra.

Orchestra, Symphonic A/B

Prerequisite: *Attainment of the second-year outcomes of Concert Orchestra, by audition, and the musical need to balance the instrumentation as determined by the director*

6866/6867 CM FA **0.5 credit**

6868/6869 CM FA (H) **0.5 credit**

Students develop skills that will enable them to perform music at the Grade IV to VI level of difficulty. They focus on the study of literature composed originally for the orchestra during the 20th century. Additional experiences may include full symphony orchestra, chamber and solo performance, and musical theater orchestra. Public performances during and after school hours may be required to meet course objectives. This course may be repeated for credit.

Theater/Television Production

Introductory Dramatics

6908 FA **0.5 credit**

This course will acquaint students with basic understandings and skills in theater. The focus is self-developmental through creative theatrical experiences, theater games, pantomime, improvisation, and vocal and body development exercises. Production experience is minimized.

Theater 1 A/B

6926/6927 CM FA **0.5 credit**

This course is the Prerequisite for all other high school theatre courses. Students gain an understanding of the entire process through which human behavior is translated into a written drama, produced as a play, and presented to an audience. The study of theatre aesthetics, history, and criticism is balanced with workshop training in acting and basic theatre production skills.

Theater 2 A/B
Prerequisite: *Attainment of Theatre 1 outcomes.*
6928/6929 CM FA **0.5 credit**
Knowledge and skills learned in Theater 1 are applied to production and performance. Students study script analysis, character development, performance skills and processes, and beginning technical production skills. Studying the aesthetics and history of the theater, reading plays, and attending plays provide a balanced framework for application of theater criticism. Writing and thinking skills are reinforced through journaling. Careers in acting and technical theater are discussed.

Acting, Advanced
Prerequisite: *Attainment of the outcomes of Theater 1 and 2*
6912 CM FA **0.5 credit**
This course provides complex development of acting skills and theories begun in Theater 2. Carefully structured methods of role/character development are introduced. The vocal and physical techniques of period and stylized acting are studied. Group experiences such as Children's and Readers' Theater are provided.

Stage Design
Prerequisite: *Attainment of the outcomes of Theater 1 and 2*
6913 CM FA **0.5 credit**
Stage production and the design and mounting of stage presentations, with emphasis on problems of technical production are studied. Students use advanced skills in both the design and construction aspects of technical theater sets, costumes, lighting, sound, and properties. Students compare design/production approaches of various designers/directors and practice technical skills related to performance.

Play Directing
Prerequisite: *Attainment of the outcomes of Theater 1 and 2*
6914 CM FA **0.5 credit**
Students focus on the skills required in theater directing. Study centers on the director as interpretative and creative artist, selecting and casting the play, coordinating design functions, blocking the play, developing characterization, and rehearsing the play and developing an ensemble effect in performance. Through the study of various theories, students direct both traditional and experimental theater forms as culminating productions.

Television Production 1/2
7860/7862 **0.5 credit**
This course introduces the fundamentals of television. Activities are centered on classroom work. The course offers a combination of theory and practical experiences. Activities in TV2 include the exploration of major issues affecting television broadcasting, programming, and scheduling. Advanced writing and production techniques for a variety of formats are covered. This course does not apply to the fine arts graduation requirement.

Visual Arts
Advanced Studio A/B
Prerequisite: *Attainment of all credits specific to the art form; a minimum of 1 credit is required.*
6313/6314 CM FA (AL) **0.5 credit**
This course code is used to provide continued, rigorous and advanced study in a specific art form; outcomes are based on previous course work. This code may be used once the existing course code sequence has been depleted in the art form. Students participate in individualized critiques of their own work, and show evidence of a completed special project. May be repeated for credit.

Art History, AP A/B
Prerequisite: *Based on criteria for Honors courses*
6456/6457 CM FA AP (AL) **0.5 credit**
Students prepare for the AP Art History exam. They study the evolution of Western and non-European art in contemporary society by examining the major forms of visual expression in world cultures. Students analyze architecture, sculpture, painting, and the decorative arts within a historical and cultural context. They also focus on the ancient through the medieval periods of history, as prescribed by the College Board curriculum. Semester B emphasizes the period from the Renaissance to the present.

Art and Culture A/B
6454/6455 FA **0.5 credit**
Students study the visual designs found in our environment with a focus on cultural influences and social significance. They analyze and discuss architecture, crafts, decorative arts, environmental designs, communication arts, design in commerce and industry, as well as fine art. Studio projects and textbook assignments are given. The role of art in society and the contributions of minority artists are among the topics studied.

Art History A/B
6451/6452 FA **0.5 credit**
Students conduct a chronological overview of the major periods of world art with an emphasis on culture. They develop a time-line to associate major periods of art with significant historical events, crafts, and/or architectural achievements of various cultures. In the second semester, students compare major works of art in terms of a central theme or image. The role of the artist in society and the effect of political or technological influences are discussed.

Studio Art 1 A/B
Prerequisite: *Foundations of Art A and B, or 0.5 credit of Foundations of Art and 0.5 credit in any other art elective.*
6105/6106 CM FA **0.5 credit**
Students continue their study of art, and apply their knowledge of media, tools, techniques, the elements of art and principles of design to original artwork. Many art forms are studied including drawing, painting, printmaking, and sculpture. Students learn about art from other cultures,regions, and time periods, and is used to inspire both historical and contemporary artwork is used to inspire original work. Writing and thinking skills are reinforced through journaling. Career information is provided.

Studio Art 2 A/B
Prerequisite: *Attainment of the outcomes of Studio Art 1A and 1B*
6205/6206 CM FA **0.5 credit**
Students continue to build a portfolio of artwork and an art journal. Personal style emerges through the selection of media, subject matter and art forms used to solve visual problems. Classroom reading assignments, group critiques, and visuals are used to help students develop an aesthetic vocabulary and an appreciation for art as an expression of human experience. Writing and thinking skills are reinforced through journaling.

Studio Art 3 A/B
Prerequisite: *Attainment of the outcomes of Studio Art 2A and 2B*
6305/6306 CM FA (AL) **0.5 credit**
Students focus on a medium and art form of their choice, using both assigned and self-selected subject matter. They participate in group critiques and present their work in a portfolio. Students prepare and present their artwork in a one-person show. They participate in group discussions in which they analyze significant works of art and periods of art history. Museum field trips and talks with visiting artists may be arranged. Writing and thinking skills are reinforced through journaling.

Ceramics/Sculpture 1 A/B
6381/6391 FA (BCC2) **0.5 credit**
Students learn basic hand-building techniques and glazing processes. Included are the composition and general characteristics of clay bodies, safe studio practices, craftmanship, and conduct a surveys of significant styles in pottery and ceramic sculpture. An introduction to the wheel may be presented. Ceramics 1B focuses on sculptural processes using a variety of materials and techniques. Writing and thinking skills are reinforced through journal writing.

Ceramics/Sculpture 2 A/B
Prerequisite: *Attainment of the outcomes of Ceramics/Sculpture 1A and 1B*
6383/6393 CM FA **0.5 credit**
Students create original artwork inspired by natural and historically significant ceramic forms. The formulation and firing characteristics of basic glazes are studied. Additional techniques for throwing on the pottery wheel are included. Kiln theory is introduced as students learn to stack and monitor the kiln. Craftsmanship and safe studio practices are emphasized. Student apply decoration techniques such as using overglazes, underglazes, and patina methods. Writing and thinking skills are reinforced.

Ceramics/Sculpture 3 A/B

Prerequisite: *Attainment of the outcomes of Ceramics/Sculpture 2A and 2B*

6385/6386 CM FA (AL) **0.5 credit**

Students study the works of contemporary potters and sculptors in terms of form, finish, and conceptual statement. Students create a series of forms that reflect a common source or theme. They combine hand-made and wheel-thrown clay forms to create pottery or sculpture that reflects personal meaning. Writing and thinking skills are reinforced through journaling. Group critiques are conducted. Health hazards are reviewed.

Commercial Art A/B

Prerequisite: *0.5 credit in Foundations of Art, or 0.5 credit in Design*

6401/6411 FA (BCC2) **0.5 credit**

6403/6413 CM FA **0.5 credit**

Students design and produce advertising and promotional art using a variety of tools and graphic design processes. Students investigate historically significant designs and the use of photography, digital art, and TV/video productions in contemporary commercial artwork. Related health and safety hazards are discussed. Writing and thinking skills are reinforced through journaling.

Digital Art A/B

Prerequisite: *1 credit in Foundations of Art and/or Drawing and Design*

6496/6497 CM FA **0.5 credit**

Students use the computer as a tool to create portraits, illustrations, commercial/advertising art, and animations. Students discuss ethical and safety issues in the use of computers as an instructional tool. A variety of techniques, processes, and applications are studied. Guest speakers and experts in the field of digital art introduce and describe careers. Students work to develop criteria for judgment of digital artwork. A portfolio of digital art is produced.

Foundations of Art A/B

Prerequisite: *Attainment of the outcomes of Foundations of Art A are required for B.*

6055/6056 FA (BCC1) **0.5 credit**

Artworks that convey personal meaning are created using a variety of production processes, including drawing, painting, crafts, commercial art, printmaking, and sculpture. Historically significant examples of each art form, representing a variety of cultures are investigated and represented in the creative production process. Students develop a context for understanding art as an aspect of human experience. Writing and thinking skills are reinforced through journaling. Career information is provided.

Painting A/B

Prerequisite: *Foundations of Art A and B, or 0.5 credit of Foundations of Art and 0.5 credit in any other art elective*

6365/6366 FA **0.5 credit**

Students continue their study of composition, the structure of form, and the relationships of color, and apply these concepts to personal artworks. A variety of wet media and surfaces will be explored. Historical and contemporary painting styles are investigated; health hazards are studied. In the second semester, students may elect to concentrate on a preferred painting medium such as watercolor, tempera, or acrylic. Writing and thinking skills are reinforced through journaling.

Photography 1 A/B

Prerequisite: *Attainment of the outcomes of Photo 1A are required for Photo 1B.*

6345/6346 FA **0.5 credit**

Students develop skills in using an SLR camera, processing film, and printing black-and-white photographs. The elements of art and design principles are studied and applied to photographic compositions. Contemporary photographic technology is demonstrated and used where available. Safe darkroom practices are learned, and opportunities to exhibit work are presented. Writing and thinking skills are reinforced through journaling.

Photography 2 A/B

Prerequisite: *Attainment of the outcomes of Photography 1A and 1B*

6347/6348 CM FA **0.5 credit**

Students create a portfolio of photographic work using various production techniques, including advanced camera and darkroom practices, and digital technology. Students continue studies in the history of photography and apply historical or stylistic qualities to their work. Composition and aesthetic criteria are stressed. Writing and thinking skills are reinforced through journaling. Students participate in critiques, and mat and display their work for exhibit.

Printmaking A/B

Prerequisite: *1 credit of Foundations of Art, or 0.5 credit of Foundations of Art and 0.5 credit in any other art elective*

6377/6378 FA **0.5 credit**

Artworks that convey personal meaning are created using a variety of printmaking processes such as monoprints, collographs, linoleum prints and woodcuts. Historically significant examples of each art form, representing a variety of cultures are investigated and represented. Students develop a context for understanding art as an aspect of human experience. Writing and thinking skills are reinforced through journaling. Career information is provided.

Visual Art Center A/B

Corequisite: *Students living beyond the Einstein attendance area must provide their own transportation to Einstein High School.*

Offered only at: ***Albert Einstein HS***

6492/6493 CM FA (AL) (DP) **1.0 credit**

Students concentrate on a variety of two-dimensional art forms including drawing, painting, and printmaking. Students are assigned readings in art history, and assemble a portfolio of work suitable for college or career. The Visual Art Center at Einstein is open to all MCPS students. Interested students must have a portfolio of artwork and should call the Visual Art Center at Einstein for additional information and to schedule a portfolio review.

Visual Art Center A/B

Corequisite: *Students living beyond the Einstein attendance area must provide their own transportation to Einstein High School.*

Offered only at: ***Albert Einstein HS***

6490/6491 CM FA (AL) (TP) 1.5 credits

Students concentrate on a variety of art forms including drawing, painting, and printmaking. Students are assigned readings in art history, and assemble a portfolio of work suitable for college or career. The Visual Art Center at Einstein is open to all MCPS students. Interested students must have a portfolio of artwork and should call the Visual Art Center for additional information and to schedule a portfolio review. This is an honors level course that may be repeated for credit.

Studio Art Drawing, AP

Prerequisite: *2 credits, including Foundations of Art and/or Drawing and Design, and Studio Art 1 A/B.*

6482 CM FA AP (AL) **0.5 credit**

6484 CM FA AP (AL) (DP) **1.0 credit**

This individualized program focuses on art projects that demonstrate the competencies expected of Advanced Placement art applicants, as identified by the College Board. Students assemble portfolios to meet the submission requirements for the AP exam. This course may be repeated once for credit. Writing and thinking skills are reinforced through journaling.

Studio Art 2-D, AP

Prerequisite: *2 credits, including Foundations of Art or Drawing and Design, and Studio Art 1A and 1B.*

6486 CM FA AP (AL) **0.5 credit**

6487 CM FA AP (AL) (DP) **1.0 credit**

This individualized program focuses on art projects that demonstrate the competencies expected of Advanced Placement art applicants, as identified by the College Board. Students assemble portfolios to meet the submission requirements for the AP Exam. Writing and thinking skills are reinforced through journaling. This course may be repeated once for credit.

Studio Art 3-D, AP

Prerequisite: *Ceramics and Sculpture 1A/B and 2A/B*

6488 CM FA AP (AL) **0.5 credit**

6489 CM FA AP (AL) (DP) **1.0 credit**

This individualized program focuses on art projects that demonstrate the competencies expected of Advanced Placement art applicants, as identified by the College Board. Students assemble portfolios to meet the submission requirements for the AP exam. Writing and thinking skills are reinforced through journaling. This course may be repeated once for credit.

BROADCAST MEDIA—CAREER PATHWAY PROGRAM *(4 credits required)*

Students in the Broadcast Media program learn about career options in a field that is constantly evolving. In the television and radio studio, analog, tape-based recording technology is being replaced by digital, computer-based recording. International multimedia conglomerates have transformed the industry from a small number of local broadcasting outlets to a wide variety of audiences via hundreds of cable and satellite stations. The explosion of new programming and technology options has opened a myriad of career opportunities for students to pursue. These courses are career education electives.

Radio Production A/B

Offered only at: *Northwood, Rockville, Sherwood HS*

5169/5170 **0.5 credit**

This course introduces students to the fundamentals of radio. Students learn production fundamentals, how radio developed, and radio technology through studio hands-on experience. Students create their own productions using a school's radio equipment. Field trips and guest lecturers provide initial career information. This course provides a strong emphasis on recording and editing audio sources using digital editors. Course fees may apply.

Video Production A/B

Offered only at: *James Hubert Blake, Gaithersburg, Col. Zadok Magruder, Richard Montgomery, Northwood, Rockville, Seneca Valley HS*

5173/5174 **0.5 credit**

This course introduces students to the fundamentals of television. Students learn production fundamentals, how television developed, and television technology through studio hands-on experience. Students create their own productions using a school's video equipment. Field trips and guest lecturers provide initial career information. Course fees may apply.

Electronic Video Field Production A/B

Prerequisite: *Course 5173/5174 Video Production.*

Offered only at: *James Hubert Blake, Gaithersburg, Col. Zadok Magruder, Richard Montgomery, Northwood, Rockville, Seneca Valley, Sherwood HS*

5175/5176 **0.5 credit**

This course introduces students to the fundamentals of television. Students learn production fundamentals, how television developed, and television technology through studio hands-on experience. Students create their own productions using a school's video equipment. Field trips and guest lecturers provide initial career information. Course fees may apply.

Media Management and Production A/B

Prerequisite: *Video Production A/B, Electronic Video Field Production (EVFP) A/B*

Offered only at: *James Hubert Blake, Gaithersburg, Col. Zadok Magruder, Richard Montgomery, Northwood, Rockville, Seneca Valley, Sherwood HS*

5177/5178 CM **0.5 credit**

Students enrolled in the Media Management and Production course will serve as station staff members for a schools television station. In addition to producing a daily live show within the school, the staff will be responsible for producing one half-hour program each month for air on cable television outside the school. Potential channels for airing include MCPS-TV or Montgomery Community Television. The course is to be primarily studio-based, with EVFP products utilized in the productions.

Electronic Audio Field Production A/B

Prerequisite: *Radio Production A & B*

Offered only at: *Northwest, Rockville, Sherwood HS*

5171/5172 **0.5 credit**

This course builds on Radio Production A and B. Students will have the opportunity to improve radio skills while working on a daily live radio show. This course provides a strong emphasis on the audio aspects of radio communication. Programs produced for the school as well as for transmission over the Internet are part of the responsibilities for this class. In addition, advanced writing and production techniques for presentations in news radio broadcasting and entertainment programming will be covered.

Radio Station Management/Operations A/B

Prerequisite: *Radio Production A/B, Electronic Audio Field Production A/B.*

Offered only at: *Northwood, Rockville, Sherwood HS*

5166/5167 CM **0.5 credit**

Students enrolled in the management/operations course will serve as station staff members for the schools radio station. In addition to producing a daily live show within the school, the staff will be responsible for producing one half-hour program each month for web casting on the schools site. The course is to be primarily studio-based, with EAFP products utilized in the productions.

Guided Research—Arts, Humanities, Media, and Communications A/B

Prerequisite: *Students must successfully complete all required course work in the Arts, Humanities, Media, and Communications career pathway to take this course.*

Offered only at: *James Hubert Blake, Gaithersburg, Col. Zadok Magruder, Richard Montgomery, Northwood, Rockville, Seneca Valley, Sherwood HS*

5310/5311 **0.5 credit**

This course provides an opportunity for students to complete a structured research project to advance their knowledge and skills related to an Arts, Humanities, Media, and Communications career area.

PRINTING, GRAPHICS, AND ELECTRONIC MEDIA—CAREER PATHWAY PROGRAM *(4 credits required)*

Students in the Printing, Graphics, and Electronic Media program learn a wide variety of design, media, and graphic communications skills that provide a foundation for employment in all aspects of the graphics communications and media industries. Conventional and electronic design, layout, composition activities, and production techniques are included in the instructional program. These courses are career education electives.

Printing, Graphics, and Electronic Media 1 A/B TP

Offered only at: *Thomas Edison HS of Technology*

5118(92)/5119(92) (15 SSL) (TP) **1.5 credits**

Students use the latest in digital imagery, design, and production with computer technology, including advanced photo editing software, multimedia, and web design. Also included is layout, design, composition activities, offset lithography, 35 mm continuous tone photography, and screen printing. Course fees may apply.

Printing, Graphics, and Electronic Media 2 A/B TP

Prerequisite: *Attainment of the outcomes for Printing/Graphics and Electronic Media 1A/1B*

Offered only at: *Thomas Edison HS of Technology*

5121(92)/5122(92) (15 SSL) (TP) **1.5 credits**

Students learn a wide variety of design, media, and graphic communications skills that provide a foundation for employment in all aspects of the graphics communications and media industries. Conventional and electronic design, layout, composition activities, and production techniques are included in the instructional program. Course fees may apply.

Internship, Printing Graphics

Prerequisite: *Completion of the course work in 1A/B*

Offered only at: *Thomas Edison HS of Technology*

5717(92) **0.5 credit**

Students who complete the course are prepared to seek employment upon graduation or to continue their technical training at a two-year or four-year college.

ENGLISH, LANGUAGE ARTS, AND READING

Philosophy

The goal of the English Language Arts program is to create literate, thoughtful communicators capable of controlling language effectively as they negotiate an increasingly complex information-rich world. Students will refine specific skills and strategies in reading, writing, speaking, listening, and viewing and will use these skills and strategies widely as tools for learning and reflection. Exploring a variety of texts, students will understand and appreciate language and literature as catalysts for deep thought and emotion.

Enduring Understandings

- Language is a powerful tool for expressing ideas, beliefs, and feelings.
- Knowledge of language facilitates thought.
- Readers, listeners, and viewers continually develop and apply strategies to construct meaning from increasingly complex and challenging texts.
- Writers and speakers strategically use language to communicate for a variety of purposes.
- Individuals need advanced literacy skills to participate actively and successfully in today's demanding information-based society.
- Literature reveals the complexities of the world and human experience.

Four Credits in English are Required for Graduation

GRADE 9	English 9A and 9B OR English 9A and 9B Honors
GRADE 10	English 10A and 10B OR English 10A and 10B Honors
GRADE 11	English 11A and 11B OR English 11A and 11B Honors OR Advanced Placement English
GRADE 12	English 12A and 12B OR English 12A and 12B Honors OR Advanced Placement English

English 9 A/B	1311 /1312	NCAA (BCC1)
English 9, Honors A/B	1313 /1314	CM NCAA (BCC1) (H)
English 10 A/B	1321 /1322	NCAA (BCC1)
English 10, Honors A/B	1323 /1324	CM NCAA (BCC1) (H)
English 11 A/B	1331 /1332	NCAA (BCC1)
English 11, Honors A/B	1333 /1334	CM NCAA (BCC1) (H)
English Language and Composition, Advanced Placement, A/B	1015 /1016	CM NCAA AP (BCC1) (AL)
English 12 A/B	1341 /1342	NCAA (BCC1)
English 12, Honors A/B	1343 /1344	CM NCAA (BCC1) (H)
English Literature and Composition, Advanced Placement, A/B	1017 /1018	CM NCAA AP (BCC1) (AL)
Advanced Composition A/B	1130 /1135	CM NCAA
Informative and Argumentative Speaking	1461	CM (BCC2)
Oral Interpretation and Media Study	1462	CM (BCC2)
Journalism A: Editing, Gathering, and Reporting the News	1150	(BCC2)
Journalism B: Advanced News Writing and Paper Production	1151	(BCC2)
Techniques of Advanced Journalism	1152	CM (AL)
Publications Editing, Layout, and Business Management	1153	CM (AL)
SAT: Verbal and Mathematics Preparation	1142	
Developmental Reading	1143	
Basic Reading	1145	(BCC1)
College Prep Literacy	1188	(BCC1)
College Prep Literacy II	1189	(BCC1)
College Prep Literacy III	1190	(BCC1)
College Prep Literacy IV	1191	(BCC1)

English 9 A/B

1311/1312 NCAA (BCC1) **0.5 credit**
1313/1314 CM NCAA (BCC1) (H) **0.5 credit**

This course integrates the processes of reading, writing, speaking, listening, and viewing with the study of the contents of language and literature. Students develop critical reasoning skills and strategies for close reading of texts from a variety of genres and time periods during two units aligned with ninth grade history courses. Students complete mandatory common tasks that focus primarily on the writing process but include development of other language skills.

English 10 A/B

Prerequisite: *Attainment of outcomes of English 9*
1321/1322 NCAA (BCC1) **0.5 credit**
1323/1324 CM NCAA (BCC1) (H) **0.5 credit**

This course integrates the processes of reading, writing, speaking, listening, and viewing with the study of the contents of language and literature. Students develop critical reasoning skills and strategies for close reading of texts from a variety of genres and time periods during two thematic units. Students complete mandatory common tasks that focus primarily on the writing process but include development of other language skills.

English 11 A/B

Prerequisite: *Attainment of outcomes of English 10*
1331/1332 NCAA (BCC1) **0.5 credit**
1333/1334 CM NCAA (BCC1) (H) **0.5 credit**

This course integrates the processes of reading, writing, speaking, listening, and viewing with the study of the contents of language and literature. Students develop critical reasoning skills and strategies for close reading of texts from a variety of genres and time periods during two thematic units. Students complete mandatory common tasks that focus primarily on the writing process but include development of other language skills.

English 12 A/B

Prerequisite: *Attainment of outcomes of English 11*
1341/1342 NCAA (BCC1) **0.5 credit**
1343/1344 CM NCAA (BCC1) (H) **0.5 credit**

This course integrates the processes of reading, writing, speaking, listening, and viewing with the study of the contents of language and literature. Students develop critical reasoning skills and strategies for close reading of texts from a variety of genres and time periods during two thematic units. Students complete mandatory common tasks that focus primarily on the writing process but include development of other language skills.

English Language and Composition, AP, A/B

Prerequisite: *Semester A—Attainment of the outcomes of English 10 and teacher recommendation*
1015/1016 CM NCAA AP (BCC1) (AL) **0.5 credit**

This course is designed for able and motivated students with a command of standard English and a lively interest in the power and versatility of language. Students read complex prose written in a variety of periods, disciplines, and rhetorical contexts and write for a range of purposes to express ideas with clarity and precision. Students are strongly encouraged to take the AP examination at the end of the course.

English Literature and Composition, AP, A/B

Prerequisite: *Semester A—Attainment of the outcomes of English 11 and teacher recommendation*

1017/1018 CM NCAA AP (BCC1) (AL) **0.5 credit**

This course is designed for able and motivated students with a command of standard English and an interest in reading challenging literature, both classical and contemporary and representative of dominant literary genres and themes. Students apply methods of literary analysis and write for a variety of purposes to increase their precision in expression. Students are strongly encouraged to take the AP examination at the end of the course.

Advanced Composition A/B

Prerequisite: *Attainment of the outcomes of English 9*

1130/1135 CM NCAA **0.5 credit**

This course is designed for able students interested in creative or expository writing. Students receive guided instruction in areas of their choice: creative writing with special emphasis on poetry, drama, or prose fiction; advanced expository writing; or a combination of writing types. Regular guidance and instruction take place mainly in small, common-interest groups, supplemented by frequent teacher-student conferences and critiques.

Informative and Argumentative Speaking

Prerequisite: *Attainment of outcomes of English 10*

1461 CM (BCC2) **0.5 credit**

Students interested in competitive debate and effective speaking will enjoy this course. Students improve their oral communication skills during two core units on speechwriting and argumentation and supplementary units on extemporaneous and impromptu speaking. Students experience all phases of speech planning, preparation, delivery, and analysis and become familiar with the protocols of competitive forensics and debate.

Oral Interpretation and Media Study

Prerequisite: *Attainment of the outcomes of English 10*

1462 CM (BCC2) **0.5 credit**

This course offers opportunities for students interested in forensics, effective speaking, and oral interpretation. Students engage in a variety of activities, including using their own personalities to interpret literature, analyzing texts for oral interpretation, communicating experiences through writing, and studying characteristics of radio and television. Students also explore the career implications of speech in the media.

Journalism A: Editing, Gathering, and Reporting the News

1150 (BCC2) **0.5 credit**

This basic journalism course is recommended for all students interested in working on school publications and is required for those seeking editorial positions. Students develop skills in gathering and reporting news, editing, copyreading, and headlining. Students also consider issues such as the responsibilities of the press, libel and slander laws, problems of censorship, and the role of the news media in shaping public opinion.

Journalism B: Advanced News Writing and Paper Production

Prerequisite: *Attainment of outcomes of Editing, Gathering, and Reporting the News*

1151 (BCC2) **0.5 credit**

Students develop their skills in straight news writing and learn to write sports stories, feature stories, and interpretive pieces. Students research and write a wide sampling of features focusing on areas of newspaper or magazine writing for which they show greatest promise. Students study the principles of newspaper layout and makeup and are encouraged to contribute stories and apply layout principles to the school newspaper production process.

Techniques of Advanced Journalism

Prerequisite: *Attainment of the outcomes of both Editing, Gathering, and Reporting the News and Advanced News Writing and Newspaper Production*

1152 CM (AL) **0.5 credit**

This course emphasizes the interpretive and investigative nature of media. Students examine the similarities and differences of newspaper, news magazine, television, and radio; analyze the unique manner in which each explains and interprets current events; and consider the relative importance of each. Students learn research techniques essential to in-depth reporting and write investigative and interpretative stories.

Publications Editing, Layout, and Business Management

Prerequisite: *Attainment of the outcomes of Editing, Gathering, and Reporting the News*

1153 CM (AL) **0.5 credit**

This course helps students learn the techniques and knowledge needed to produce and manage school newspapers, yearbooks, and literary magazines. Although the course is not required for participation in the production of these school publications, it is highly recommended for students serving on the editorial staff of these publications. The course provides instruction in all aspects and phases of publications planning, including editing, layout, advertising, and budget.

SAT: Verbal and Mathematics Preparation

1142 **0.5 credit**

This one-semester course is designed to improve student achievement on both the verbal and mathematics components of the SAT. They acquire skills related to the SAT format and develop test-taking skills by taking released editions of the SAT under simulated test conditions. This course is also listed in the English section.

Academic Reading A/B

1139/1140 **0.5 credit**

Using the READ 180 materials developed by Scholastic Education, this course is a reading intervention program that builds literacy skills for selected students. This course may be repeated unlimited times for credit.

Developmental Reading

1143 **0.5 credit**

Students reading on or below grade level who wish to increase their reading efficiency will find this course helpful. Students learn to recognize and evaluate the unique features of a variety of reading materials to increase their comprehension and reading efficiency. Students acquire strategies for expanding their vocabulary and have opportunities to read for personal and academic enrichment. This course may be repeated once for credit.

Basic Reading

1145 (BCC1) **0.5 credit**

Students who are more than two years behind in reading, according to state standards, may take this course upon recommendation of the principal or designee. Using a variety of materials, students receive instruction in reading strategies and study techniques for use in their content classes. The course may be taken more than once for credit.

College Prep Literacy I

1188 (BCC1) **0.5 credit**

College Prep Literacy II

1189 (BCC1) **0.5 credit**

College Prep Literacy III

1190 (BCC1) **0.5 credit**

College Prep Literacy IV

1191 (BCC1) **0.5 credit**

Students who are able decoders and literal readers and students who do not view themselves as college bound are encouraged to take this class upon recommendation of the principal or designee. Students are introduced to strategies essential to literacy and learn when and how to use these strategies in their content classes, promoting success on exams and college-level studies.

ENGLISH FOR SPEAKERS OF OTHER LANGUAGES (ESOL)

Philosophy

The English for Speakers of other Languages (ESOL) program provides high-quality English language instruction that assists students with acquiring the basic interpersonal communication skills and essential academic language proficiency to function successfully in a regular classroom. Central to language acquisition is the instruction of pragmatics, which includes the social and cultural skills that are integral for acculturation to school and society. Valuing and promoting the home language and culture of ESOL students fosters the understanding that literacy in ones native language is essential to the transfer of skills across languages.

All educators in the schools share in the responsibility and collaborate to provide an effective education for ESOL students. The diverse nature of the ESOL student population provides rich linguistic and sociocultural resources to develop schoolwide recognition and knowledge of the valuable contributions of diverse cultures and the need for improvement of communication in a global society.

Enduring Understandings

English language acquisition is essential for communicating and expressing ideas, beliefs, and feelings. English language learning occurs through meaningful and significant use of the language within a social and educational setting.

English language learning includes valuing the contributions of bilingual and multilingual individuals. English language learning involves developing and nurturing cultural, social, and cognitive processes.

English language acquisition involves developing and applying strategies for listening, speaking, reading, and writing to construct meaning from a variety of texts and other sources. English language acquisition includes developing literacy skills to fully and actively participate in the demanding information-based environment of todays global society.

Overview

The English for Speakers of Other Languages program at the secondary level enrolls linguistically and culturally diverse secondary students who require intensive instruction in English as a new language. Students in Montgomery County Public schools are assessed on a state-mandated test of language proficiency and placed in an appropriate level of ESOL instruction, levels 1 through 5. The composition of the student population in each level is multi-grade and heterogeneous, with instructional goals based on the development of language proficiency.

ESOL classes provide structured instruction in the acquisition of the English language, with specific emphasis on the listening, speaking, reading, and writing skills that are Prerequisite for success in a rigorous academic environment. Students explore an understanding of the human experience from a multicultural perspective as they develop reading and writing skills. Students are exposed to developmentally appropriate texts representing the genres of narration, poetry, drama, and exposition, and they are taught to analyze text from an historical and cultural perspective.

Students develop competency in understanding spoken English, using grammatically correct English to express social and academic needs, and in organizing and clearly expressing their ideas in written English.

ESOL Level 1 A/B	1201 /1211	
ESOL Level 1 Elective A/B	1217 /1218	
ESOL Lab A/B	1206 /1216	
ESOL Level 2 A/B	1202 /1212	(DP)
ESOL Level 2 Elective A/B	1219 /1220	
ESOL Level 3 A/B	1203 /1213	
ESOL Level 4 A/B	1204 /1214	
ESOL Level 5 A/B	1205 /1215	
ESOL Advanced Communication	1224	
TOEFL Prep	1225	
ESOL Multimedia Arts Literacy A/B	1226 /1227	
Academic Language Class A/B	1241 /1242	
SEPA ESOL 1	8094	
SEPA ESOL 2	8095	

ESOL Level 1 A/B

Corequisite: *ESOL Level 1 Elective A/B 1217/1218 must be taken simultaneously with ESOL Level 1 A/B 1201/1211*

1201/1211 **0.5 credit**

This course is designed to teach beginning-level American English skills listening, speaking, reading and writing. These four skills are integrated into thematic units. A general introduction to American culture is provided. Emphasis is placed on the development of oral language, vocabulary, and language structures that facilitate acquisition of English as a new language for social and academic purposes.

ESOL Level 1 Elective A/B

Corequisite: *This course is offered simultaneously with ESOL Level 1 A/B 1201/1211.*

1217/1218 **0.5 credit**

This companion course for ESOL Level 1 A/B is designed to continue teaching beginning-level American English skills-listening, speaking, reading and writing, to facilitate acquisition of English as a new language for social and academic purposes.

ESOL Lab A/B

1206/1216 **0.5 credit**

This basic course is recommended for ESOL levels 1 and 2 students to further develop the language skills taught in the ESOL 1201 and 1202 courses. Students focus on all four language skills, with a particular emphasis on the development of academic language and literacy skills. Students develop the beginning reading and writing skills that are Prerequisite for accessing content across the curriculum. This course may be repeated for elective credit.

ESOL Level 2 A/B

Corequisite: *This course is offered simultaneously with ESOL Level 2 Elective A/B 1219/1220*

1202/1212 (DP) **0.5 credit**

This course is designed to continue development of social and academic language proficiency. Newly acquired vocabulary is incorporated into more complex structures, in both oral and written language, that focus on functional and academic skills. Language structures are presented in the context of literary and expository text, as students explore the themes of identity, adventure, family, and courage. Students are required to make oral presentations, do research using technology, and read a short novel.

ESOL Level 2 Elective A/B

Corequisite: *This course is offered simultaneously with ESOL Level 2 A/B 1202/1212*

1219/1220 **0.5 credit**

This companion course to ESOL Level 2 A/B is designed to continue development of social and academic language proficiency. Language structures are presented in the context of literary and expository text, as students explore the themes of identity, adventure, family, and courage.

ESOL Level 3 A/B

1203/1213 **0.5 credit**

This course is designed to review the language structures taught at levels 1 and 2, with emphasis on the development of fluency and more sustained and complex oral and written communication. Students continue to expand their vocabulary, improve their pronunciation, and acquire greater precision in the use of grammatical forms. Included at this level are activities designed to hone critical literacy skills for comprehension and effective writing, in response to reading narrative and expository text.

ESOL Level 4 A/B

1204/1214 **0.5 credit**

This course is designed to provide more development of advanced grammar emphasizing speaking and writing using more complex sentence structures. Students expand their vocabulary, both orally and in written form, and demonstrate an awareness and appreciation of American culture. Elements of literary style are taught through expanded reading to develop critical analysis of various literary genres. Students demonstrate comprehension of text by writing multi-paragraph essays and giving oral presentations.

ESOL Level 5 A/B

1205/1215 **0.5 credit**

This course is designed to provide advanced language development and cultural knowledge as students refine strategies for critical analysis of texts from a variety of genres and time periods. Students use the four language skills of listening, speaking, reading and writing to demonstrate a command of English to debate, analyze, justify, and draw conclusions. Students investigate elements of literary style through literature and use those elements in their writing of essays and research papers.

ESOL Advanced Communication

1224 **0.5 credit**

This course is designed to provide ESOL level 3, 4, and 5 students with extended practice in the development of oral and written communication skills. Clarity and precision of pronunciation and intonation are developed and assessed during oral presentations. Fluency and accuracy of writing is developed through structured presentation and practice of narrative and expository writing. Students are required to prepare several oral presentations and write multi-paragraph essays.

TOEFL Prep

Corequisite: *Students must be enrolled in ESOL Level 4 1204/1214 or ESOL Level 5 1205/1215. Recently exited ESOL students are also eligible to enroll.*

1225 **0.5 credit**

This course is designed to improve student achievement on the Test of English as a Foreign Language, an assessment of an English language learner's English proficiency to qualify for college admission. Students learn the format of the TOEFL and develop test-taking skills by taking released versions of the test under simulated test conditions. Continued practice of oral and academic English language proficiency is provided as students learn a variety of strategies for improving reading and writing skills.

ESOL Multimedia Arts Literacy A/B

Corequisite: *Students must be concurrently enrolled in ESOL Level 4 A/B 1204/1214 or ESOL Level 5 1205/1215 to enroll in this course*

Offered only at: ***Albert Einstein HS***

1226/1227 **0.5 credit**

This course is designed to provide upper level ESOL students with specialized visual and literacy instruction aligned with ESOL and English Voluntary State Curricula. This project-based course emphasizes development of essay writing coordinated with multimedia products. The focus on critical thinking, reading, writing, listening and viewing skills provides structured practice in visual and written interpretation.

Academic Language Class A/B

Offered only at: ***Albert Einstein, John F. Kennedy, Richard Montgomery, Northwood, Quince Orchard, Watkins Mill HS***

1241/1242 **0.5 credit**

This course provides lower level secondary English language learners with declarative and procedural knowledge to help them prepare to be successful in academic content classes. The focus of the class is to develop English language, literacy, and critical thinking skills which are essential to learning content material. Students will develop vocabulary and learn language structures that pertain to a variety of academic topics in mathematics, science, and social studies.

SEPA ESOL 1

Prerequisite: *This course is open only to ESOL students enrolled in the SEPA Program. Admission to these courses must be determined by SEPA committee decision at Wheaton and Einstein.*

8094 **0.5 credit**

Students Engaged in Pathways to Achievement (SEPA) program is a career-based instructional program for Spanish-speaking high school ESOL students who have experienced interrupted or limited formal education. To be eligible for the SEPA program, students must be at least eighteen (18) years of age by the end of the school year. Available only to SEPA students at Einstein and Wheaton High Schools.

SEPA ESOL 2

Prerequisite: *This course is open only to ESOL students enrolled in the SEPA Program. Admission to these courses must be determined by SEPA committee decision at Wheaton and Einstein.*

8095 **0.5 credit**

Students Engaged in Pathways to Achievement (SEPA) program is a career-based instructional program for Spanish-speaking high school ESOL students who have experienced interrupted or limited formal education. To be eligible for the SEPA program, students must be at least eighteen (18) years of age by the end of the school year. Available only to SEPA students at Einstein and Wheaton High Schools.

WORLD LANGUAGES

Philosophy

The goal of the foreign language program is to educate students in a language and culture in order to make them knowledgeable and active members of a global society. Students will learn to use foreign languages for meaningful communication in both spoken and written form. The foreign language program emphasizes language as it is used in real-life situations that students are most likely to encounter. Through foreign language study, students develop sensitivity to the cultural and linguistic heritage of other groups, understand their influence on American culture, and become prepared to participate in a society characterized by linguistic and cultural diversity.

Enduring Understandings

- As the world moves towards a global community, it is increasingly important to be able to communicate in languages other than English.
- It is important to understand the perspectives of a culture that generate its patterns of behavior, ways of life, worldviews, and contributions.
- Proficiency in a foreign language is a vehicle to gaining knowledge that can only be acquired through that language and its culture.
- The study of a foreign language enables students to develop insights into the nature of language and culture.
- Learning a foreign language enables an individual to participate in multilingual communities.

Basic Core Courses in Foreign Languages

Basic Core Category 1 courses are French and Spanish, Levels 1 through 4. Basic Core Category 2 courses are French and Spanish, Levels 5 and 6, plus two levels (four semesters) of one of the following languages: Chinese, German, Italian, Japanese, Latin, or Russian. All courses are open to students in Grades 9–12.

If students select a foreign language to fulfill the Maryland diploma requirements, it is recommended that the two foreign language credits be in the same language.

Foreign language courses must be taken in sequential order. The Prerequisite for all courses, except 1A, is successful completion of the preceding course. Two credits in a foreign language or two credits in American Sign Language may be used to complete specific credits required for graduation.

Foreign Language Level 1 — 0.5 credit

Arabic	1 A/B 1589/1590	NCAA
Chinese	1 A/B 1871/1872	NCAA
French	1 A/B 1611/1621	NCAA (BCC1)
German	1 A/B 1961/1971	NCAA
Italian	1 A/B 1981/1982	NCAA
Japanese	1 A/B 1831/1832	NCAA
Russian	1 A/B 1851/1852	NCAA
Spanish	1 A/B 1711/1721	NCAA (BCC1)

Students begin to learn to communicate orally and in written form about daily life. Emphasis is on vocabulary development, simple grammatical structures, and the basic culture. Students are encouraged to use the language beyond the school setting and keep informed of current events in countries where the target language is spoken.

Foreign Language Level 2 — 0.5 credit

Prerequisite: *Attainment of the outcomes of Level 1B*

Arabic	2 A/B 1591/1592	NCAA
Chinese	2 A/B 1873/1874	NCAA
French	2 A/B 1612/1622	NCAA (BCC1)
German	2 A/B 1962/1972	NCAA
Italian 2	A/B 1983/1984	NCAA
Japanese	2 A/B 1833/1834	NCAA
Russian	2 A/B 1853/1854	NCAA
Spanish	2 A/B 1712/1722	NCAA (BCC1)

Students expand vocabulary and learn increasingly complex expressions and structures for written and oral communication. The culture is examined in greater depth. Students continue to make comparisons with the language and culture studied. They are encouraged to use the language beyond the school setting and keep informed of current events in countries where the target language is spoken.

Foreign Language Level 3 — 0.5 credit

Prerequisite: *Attainment of the objectives of 2B*

Arabic 3	A/B 1899/1900	CM (AL)
Chinese 3	A/B 1875/1876	CM NCAA
Chinese 3, Honors	A/B 1925/1926	CM NCAA (H)
French 3	A/B 1613/1623	CM NCAA (BCC1)
French 3, Honors	A/B 1633/1643	CM NCAA (H)
German 3	A/B 1963/1973	CM NCAA
German 3, Honors	A/B 1977/1979	CM NCAA (H)
Italian 3	A/B 1985/1986	CM NCAA
Italian 3, Honors	A/B 1989/1990	CM NCAA (H)
Japanese 3	A/B 1835/1836	CM NCAA
Japanese 3, Honors	A/B 1839/1840	CM NCAA (H)
Russian 3	A/B 1855/1856	CM NCAA
Russian 3, Honors	A/B 1846/1847	CM NCAA (H)
Spanish 3	A/B 1713/1723	CM NCAA (BCC1)
Spanish 3,	Honors A/B 1733/1743	CM NCAA (H)

Students continue to build on previously developed skills while expanding their ability to communicate on a variety of topics. Increased grammatical accuracy is stressed. Students continue to make comparisons with the language and culture being studied, further their knowledge of other school subjects, and keep informed of current events in countries where the target language is spoken.

Foreign Language Level 4 — 0.5 credit

Prerequisite: *Attainment of the objectives of 3B or Immersion 3*

Chinese 4	A/B 1877/1878	CM NCAA
Chinese 4, Honors	A/B 1927/1928	CM NCAA (H)
French 4	A/B 1614/1624	CM NCAA (BCC1)
French 4, Honors	A/B 1634/1644	CM NCAA (H)
German 4	A/B 1964/1974	CM NCAA
German 4, Honors	A/B 1978/1980	CM NCAA (H)
Italian 4	A/B 1987/1988	CM NCAA
Italian 4, Honors	A/B 1991/1992	CM (H)
Japanese 4	A/B 1837/1838	CM NCAA
Japanese 4, Honors	A/B 1841/1842	CM NCAA (H)
Russian 4	A/B 1857/1858	CM NCAA
Russian 4, Honors	A/B 1848/1849	CM NCAA (H)
Spanish 4	A/B 1714/1724	CM NCAA (BCC1)
Spanish 4, Honors	A/B 1734/1744	CM NCAA (H)

Students participate in extemporaneous conversations on familiar topics; are able to narrate present, past, and future events; and take notes in the target language. They learn to understand the main ideas from authentic edited materials. They are expected to demonstrate knowledge of culture and of specific topics and information that form the course content.

Foreign Language Level 5 — 0.5 credit

Prerequisite: *Attainment of the objectives of 4B*

Chinese 5	A/B 1879/1880	CM NCAA (AL)
French 5	A/B 1615/1625	CM NCAA (AL)
German 5	A/B 1965/1975	CM NCAA (AL)
Japanese 5	A/B 1843/1844	CM NCAA (AL)
Russian 5	A/B 1859/1860	CM NCAA (AL)
Spanish 5	A/B 1715/1725	CM NCAA (AL)

Students continue to increase their proficiency in understanding others and expressing themselves in the target language. They paraphrase information from authentic edited or unedited materials, make predictions based on background knowledge and textual information, express ideas, support opinions, and comprehend and exchange detailed information. They must demonstrate knowledge of specific topics and information that form the course content.

Foreign Language Level 6 — 0.5 credit

Prerequisite: *Attainment of the objectives of 5B*

Chinese 6	A/B 1881/1882	CM NCAA (AL)
French 6	A/B 1616/1626	CM NCAA (AL)
German 6	A/B 1966/1976	CM NCAA (AL)
Japanese 6	A/B 1829/1830	CM NCAA (AL)
Russian 6	A/B 1861/1862	CM NCAA (AL)
Spanish 6	A/B 1716/1726	CM NCAA (AL)

Students work at a highly advanced level analyzing literature, works of art, and current events. Writing skills continue to be refined as well as the ability to interact in a culturally appropriate manner, while demonstrating knowledge of specific topics.

Advanced Placement Foreign Languages

French Language, AP A/B

1635/1636 CM NCAA AP (AL) — **0.5 credit**
1759/1760 CM NCAA AP (AL) — **0.5 credit**

This course is for foreign language students interested in college-level work or credit. Students concentrate on developing proficiency in speaking, listening, reading, and writing in preparation for the Advanced Placement language examination. This course emphasizes mastery of linguistic competencies at a very high level of proficiency.

Spanish Literature, AP A/B

1761/1762 CM NCAA AP (AL) — **0.5 credit**

This course is for foreign language students interested in college-level work or credit. A selection of challenging literature and materials helps students deepen their understanding of how literature communicates meaning through form and content. Students read, discuss, and react to representative works of a range of literary genres and themes in preparation for the appropriate AP exam.

Chinese Language and Culture, AP A/B

1929/1930 CM NCAA AP (AL) — **0.5 credit**

This course is for foreign language students interested in college-level work or credit. It links the language and the culture while developing students proficiency in speaking, listening, reading, and writing. Students read, discuss, and react to a variety of texts orally and in writing in preparation for the Advanced Placement examination.

Italian Language and Culture, AP A/B

1945/1946 CM NCAA AP (AL) — **0.5 credit**

This course is for foreign language students interested in college-level work or credit. It links the language and the culture while developing students proficiency in speaking, listening, reading, and writing. Students read, discuss, and react to a variety of texts orally and in writing in preparation for the Advanced Placement examination.

Japanese Language and Culture, AP A/B

1539/1540 CM NCAA AP (AL) — **0.5 credit**

This course is for foreign language students interested in college-level work or credit. It links the language and the culture while developing students proficiency in speaking, listening, reading, and writing. Students read, discuss, and react to a variety of texts orally and in writing in preparation for the Advanced Placement examination.

Russian Language and Culture, AP A/B

Offered only at: *Walt Whitman HS*

1867/1868 CM NCAA AP (AL) — **0.5 credit**

This course is for foreign language students interested in college-level work or credit. It links the language and the culture while developing students proficiency in speaking, listening, reading, and writing. Students read, discuss, and react to a variety of texts orally and in writing in preparation for the Advanced Placement examination.

Spanish for Spanish Speakers

Spanish for Spanish Speakers provides continuing language instruction for students with proficiency in Spanish. This course utilizes a language arts approach comparable to that of English courses. The curriculum is based on a three-year cycle with four basic themes repeated with increasing levels of difficulty and fresh content annually. Students can take Spanish for Spanish Speakers 3A/B at the Honors level by meeting the local school procedures and registering for Honors.

Spanish for Spanish Speakers 1 A/B

1777/1778 NCAA — **0.5 credit**

Spanish for Spanish Speakers 2 A/B

1779/1780 NCAA — **0.5 credit**

Spanish for Spanish Speakers 3 A/B

1781/1782 CM NCAA — **0.5 credit**

Spanish for Spanish Speakers 3, Honors A/B

1783/1784 CM NCAA (H) — **0.5 credit**

LATIN

Latin 1 A/B

1811/1821NCAA — **0.5 credit**

Focusing on the basic elements of Latin grammar, students begin to build a foundation in vocabulary. The proficiency skills of speaking, listening, and writing are involved to help students develop reading skills. Throughout the course, students discuss Latin derivatives in English and modern foreign languages. Students also learn about the daily life and heritage of the early Romans and the Western world.

Latin 2 A/B

Prerequisite: *Attainment of the outcomes of Latin 1B*

1812/1822 NCAA — **0.5 credit**

Continuing their study of basic Latin grammar after a review of Latin 1 concepts, students concentrate on grammatical structures that involve phrases and subordinate clauses. Students continue to build their Latin vocabulary, analyzing the patterns of compounding and networking within the language and tying the new Latin words to English. There is ongoing study of various aspects of Roman life.

Latin 3 A/B

Prerequisite: *Attainment of the outcomes of Latin 2B*

1813/1823 CM NCAA — **0.5 credit**
1815/1825 CM NCAA (H) — **0.5 credit**

Students concentrate on the prose of major Latin authors. They translate a major writing of Cicero and learn the hallmarks of his style. They also read selections from a variety of authors that may include Sallust, Pliny, Horace, Catullus, Ovid, Propertius, Tibullus, or Plautus. Students continue to study advanced grammatical structures and focus on the use of rhythm, word placement, and rhetorical devices.

Latin 4 A/B

Prerequisite: *Attainment of the outcomes of Latin 3B*

1814/1824 CM NCAA — **0.5 credit**
1816/1826 CM NCAA (H) — **0.5 credit**

Students focus on the writings of Vergil, the epic poet of the Augustan Age, including the Aeneid. In addition, students learn about early imperial Rome and Augustus planned reforms for the political and moral resurgence of his people. Students make comparisons and contrasts between contemporary America and imperial Rome, between the epics of Vergil and others.

Latin, Vergil, AP A/B

1819/1820 CM NCAA AP (AL) — **0.5 credit**

This course prepares students to sit for the AP Vergil examination. The course offers selections from the Aeneid. Students are expected to be able to translate the Aeneid from Latin into English, and demonstrate a grasp of the grammatical structures and vocabulary. Stylistic analysis as well as the study of the cultural, social, and political context of the literature is integral to the course.

Sign Language

American Sign Language 1 A/B

1596/1597 NCAA — **0.5 credit**

Students use American Sign Language to talk about daily life with basic vocabulary and simple grammatical structures. They explore the cultural and linguistic heritage of the Deaf community and its influence.

American Sign Language 2 A/B

Prerequisite: *Attainment of the outcomes of American Sign Language Level 1B*

1593/1594 NCAA — **0.5 credit**

Students expand vocabulary, specifically in the areas of pastimes, community, and well-being, with special emphasis on conducting basic conversation in ASL with fluency. Students continue to explore deaf culture in greater detail in order to develop sensitivity to the cultural and linguistic heritage of the Deaf community and its influence.

SOCIAL STUDIES

The goal of social studies is to help create literate and well-informed citizens who actively participate in a democratic society. Students learn how to become effective citizens through—

- active engagement in the learning processes and skills of the social sciences and history
- development of a useful knowledge base in culture, economics, geography, history, and politics learning the fundamental structures of human systems of interaction and how these systems have developed over time (change)—human systems of interaction include culture, economics, geography, history, and political systems
- application of concepts and knowledge of the past to problem-solving real-world issues of the present application and evaluation of the role of an effective citizen, including putting citizen participation theory into practice effective use of multiple sources of investigation for research and learning, including technology, primary and secondary source materials, the arts, film, and oral history
- development and communication of social studies concepts and knowledge using a variety of formats, with a special emphasis on analytic and persuasive writing.

- Additional information regarding the MCPS Social Studies program can be found at: *www.montgomeryschoolsmd.org/curriculum/socialstd/*

Basic Core Courses

Basic Core Category 1 courses are U.S. History A and B; National, State, and Local Government A and B; and Modern World History A and B; and Economics. Additionally, schools must treat as Category 1 courses one of the following pairs: U.S. History Advanced Placement A and B; United States Government and Politics Advanced Placement with NSL A and B; European History Advanced Placement A and B; or World History Advanced Placement A and B.

Schools must treat as Category 2 courses two of the following five: History, Africa South of the Sahara; History, African American; History, Eastern Asia; History, Latin American; History, Middle East; Psychology 1 or Sociology 1. Three credits in social studies are required for graduation.

GRADE 9	United States History A and B
GRADE 10	National, State, and Local Government A and B
GRADE 11 or 12	Modern World History A and B

Careers in Justice, Law and Society

The career pathway Justice, Law and Society is part of the course offerings supported by social studies. This pathway prepares students for further education and careers in law, law enforcement, government, and public administration. Students develop critical thinking skills by solving real-world problems and analyzing public policy related to law, law enforcement, and government.

SOCIAL STUDIES COURSES

Comparative Religions	2320	CM NCAA
Cultural Anthropology A/B	2309 /2329	CM NCAA
Economics	2303	CM NCAA (BCC1)
Economics, Macroeconomics, Advanced Placement	2315	CM NCAA AP (AL)
Economics, Microeconomics, Advanced Placement	2316	CM NCAA AP (AL)
Global Issues in the 21st Century A/B	2347 /2348	CM NCAA
Government National, State, and Local (NSL) A/B	2107 /2108	NCAA (BCC1)
Government National, State, and Local (NSL) Honors A/B	2127 /2128	CM NCAA (BCC1) (H)
Government, United States and Politics with NSL, Advanced Placement A/B	2104 /2105	CM NCAA AP (BCC1) (AL)
Government, United States Government and Politics, Advanced Placement	2131	CM NCAA AP (AL)
Government, Comparative Government and Politics A/B, Advanced Placement	2132 /2145	CM NCAA AP (AL)
History, Africa South of the Sahara	2206	CM NCAA (BCC2)
History, African American	2103	CM NCAA (BCC2)
History, Ancient and Medieval	2210	CM NCAA
History, Ancient Mediterranean Civilizations	2208	CM NCAA
History, Eastern Asia	2218	CM NCAA (BCC2)
History, European	2212	CM NCAA
History, European A/B	2214 /2215	CM NCAA
History, European, Advanced Placement A/B	2216 /2217	CM NCAA AP (BCC1) (AL)
History, Latin American	2204	CM NCAA (BCC2)
History, Medieval European	2209	CM NCAA
History, Modern World A/B	2221 /2222	CM NCAA (BCC1)
History, Modern World Honors A/B	2223 /2224	CM NCAA (BCC1) (H)
History, Russian	2205	CM NCAA
History, The Middle East	2226	CM NCAA (BCC2)
History, United States A/B	2110 /2112	NCAA (BCC1)
History, United States Honors A/B	2111 /2113	CM NCAA (BCC1) (H)
History, United States, Advanced Placement A/B	2114 /2124	CM NCAA AP (BCC1) (AL)
History, World, Advanced Placement A/B	2240 /2241	CM NCAA AP (BCC1) (AL)
Human Geography, Advanced Placement A/B	2332 /2333	CM NCAA AP (AL)
Humanities A/B	2318 /2319	CM NCAA
Law I	2312	CM NCAA
Law 2	2343	CM NCAA
Philosophy	2311	CM NCAA
Psychology 1/2	2304 /2313	CM NCAA (BCC2)
Psychology, Advanced Placement A/B	2330 /2331	CM NCAA AP (BCC2) (AL)
Seminar in Peace Studies	2225	CM (AL)
Sociology 1/2	2305 /2314	CM NCAA (BCC2)
Student Leadership A/B	2339 /2340	
Executive High School Internship Program	2323	CM
Executive High School Internship Program	2324	CM
Executive High School Internship Program	2325	CM (BCC1)
Career Pathway Program in Social Studies		
JUSTICE, LAW AND SOCIETY— CAREER PATHWAY PROGRAM (*4 credits required*)		
Justice, Law, and Society, Introduction A/B	5148 /5149	
Law and the Administration of Justice A/B	5146 /5147	
Contemporary Issues in Justice, Law, and Society A/B	5144 /5145	CM (AL)
Contemporary Issues in Justice, Law, and Society DP	5134	CM (AL) (DP)
Internship-Law, Government, Public Safety and Administration A/B	5142 /5143	CM (AL)
Internship-Law/Public Safety DP	5133	CM (AL) (DP)
College Law, Government, Public Safety, and Administration A/B	5185 /5186	CM (AL)
Guided Research—Law, Government, Public Safety, and Administration A/B	5308 /5309	CM

SOCIAL STUDIES COURSES

Comparative Religions

2320 CM NCAA **0.5 credit**

The basic elements and historical development of world religions are surveyed in this course. The course introduction may be taught through a study of primitive religions or a general examination of the sociology of religion. Other units are organized around comparisons of the religions of India, China, and the Near East. Specific religions/philosophies studied include Buddhism, Christianity, Confucianism, Hinduism, Islam, Judaism, Taoism, and Zoroastrianism.

Cultural Anthropology A/B

2309/2329 CM NCAA **0.5 credit**

Students learn the methods used by archaeologists to uncover finds, determine age, classify artifacts, and trace the origins of social interaction. During semester B physical anthropology is introduced and archaeological case studies are used. The place of human life in the animal world, human fossil forms, and racial theories is studied. Cultural prehistory is a distinctive part of the semester, and New World prehistory is compared and contrasted with Old World prehistory.

Economics

2303 CM NCAA (BCC1) **0.5 credit**

This introductory course emphasizes choices and decisions people and nations make about the use of resources. Students study basic economic concepts both national and international monetary and fiscal policies and the application of economic principles to everyday life. Detailed discussion is devoted to the roles played by banks, credit, principal, rent, wages, and consumer buying.

Economics, Macroeconomics, AP

2315 CM NCAA AP (AL) **0.5 credit**

This course is for students interested in college-level work in economics. Study begins with fundamental economic concepts such as scarcity, opportunity costs, production possibilities, specialization, comparative advantage, demand, supply, and price determination. Major topics include measurement of economic performance, national income and price determination, and international economics and growth.

Economics, Microeconomics, AP

2316 CM NCAA AP (AL) **0.5 credit**

This course is for advanced students interested in college-level work in economics and/or gaining advanced standing in college. The course begins with a study of fundamental economic concepts such as scarcity, opportunity costs, production possibilities, specialization, and comparative advantage. Major topics include the nature of functions of product markets; factor markets; and efficiency, equity, and the role of government.

Global Issues in the 21st Century A/B

2347/2348 CM NCAA **0.5 credit**

Students use media resources that relate to intercultural and international topics to learn about the diversity, complexity and interdependence of the world community. This provides the necessary background to analyze the political, economic, social and cultural aspects of current world problems and issues in relation to the policies of the American government. The course helps students make connections to our global society.

Government National, State, and Local (NSL) A/B

2107/2108 NCAA (BCC1) **0.5 credit**

2127/2128 CM NCAA (BCC1) (H) **0.5 credit**

Students learn the purposes, structure, functions, and workings of government; rights and responsibilities of citizens; and change processes that keep American governments workable. In Semester B, students learn economic principles, fiscal/monetary policy of the United States, principles of foreign policy and application to contemporary situations, and the role of government in making public policy in areas such as environment, health, and equity. This course is required for graduation.

Government, United States and Politics with NSL, AP A/B

2104/2105 CM NCAA AP (BCC1) (AL) **0.5 credit**

This course is a year-long survey of American government. The course combines the content and skill development of Advanced Placement U.S. Government and Politics and National, State, and Local Government. Note: Advanced Placement United States Government and Politics with NSL may be used to satisfy the graduation requirement of a year in National, State and Local Government A and B.

Government, United States Government and Politics, AP

2131 CM NCAA AP (AL) **0.5 credit**

This college-level course is a survey of the structure and function of American government and politics that begins with an analysis of the Constitution, the foundation of the American political system. Students study the three branches of government, administrative agencies that support each branch, the role of political behavior in the democratic process, and the workings of political parties and interest groups.

Government, Comparative Government and Politics A/B, AP

2132/2145 CM NCAA AP (AL) **0.5 credit**

This college-level course is both a survey of the various forms of government found throughout the world and an in-depth study of specific governments and approaches to politics. Students compare the structure of governmental institutions in different countries and learn how each structure affects society in general and individuals in particular. The concept of political change and the different methods to effect such change are a focus in the course.

History, Africa South of the Sahara

2206 CM NCAA (BCC2) **0.5 credit**

This course surveys African history by examining the forces and events that have shaped and are shaping the cultures of Africa south of the Sahara. Topics include traditional culture, European impact, nationalism and revolution, and contemporary situations.

History, African American

2103 CM NCAA (BCC2) 0.5 **credit**

This course is a survey of the individuals, forces, and events that make up the experiences of African Americans in the United States. By exploring those forces, and by highlighting those individuals who helped shape the development of America, students learn that the "Black Experience" can serve as the testing ground for American democratic ideas. Emphasis is given to the impact of major events in our history on African Americans.

History, Ancient and Medieval

2210 CM NCAA **0.5 credit**

This is a survey course that begins with the civilizations of the ancient Near East and continues through the Reformation in Europe. Students focus on the geographic, political, social, economic, and cultural factors that have shaped the development of ideas and institutions from Mesopotamia to the present day.

History, Ancient Mediterranean Civilizations

2208 CM NCAA **0.5 credit**

This course is a survey of the evolution of society from the Fertile Crescent through Greek and Roman civilizations. Students examine the rise of civilizations in the Near East and their legacies. Greek civilization is studied from its historical roots through Alexander's empire, emphasizing forces of change and aspects that provide a basis for Western thought. The course concludes with a study of the Roman Era.

History, Eastern Asia

2218 CM NCAA (BCC2) **0.5 credit**

This course provides an overview of Chinese, Korean, and Japanese history. It stresses the cultural and intellectual highlights of each of these countries, broadening the students understanding of Asia. Topics include traditional culture, the impact of European contact, and contemporary situations.

History, European

2212 CM NCAA 0.5 **credit**

This course is an abbreviated survey of Europe from 1600 to the present. Topics of study include the rise of the modern nation state, the scientific and industrial revolutions, the age of exploration and nationalism, imperialism, and world war.

History, European A/B

2214/2215 CM NCAA **0.5 credit**

Throughout the course, the concepts of causation, continuity and change, and social interdependence are used to examine focus areas, which include development of major institutions; revolutionary movements; and nationalism in the period from the 16th century to 1815.

During Semester B focus areas include development of major institutions; revolutionary movements and nationalism; Industrial Revolution; ideologies; world wars; and the intellectual/cultural history from 1815 to contemporary times.

History, European, AP A/B
2216/2217 CM NCAA AP (BCC1) (AL) **0.5 credit**

This college-level course is a survey in European history from the 15th century to the present. A college-level text is used, and students engage in college-level writing and discussion. This course prepares students for the AP European History examination.

History, Latin American
2204 CM NCAA (BCC2) **0.5 credit**

This course provides an overview of the cultural background and historical development of the nations of Latin America, their role in the world today, and their future. Problems of population distribution, cultural and economic influences and ownership, and political and social change are studied.

History, Medieval European
2209 CM NCAA **0.5 credit**

European history from the fall of Rome through the crises that characterized the late Middle Ages is surveyed. Topics include the rise of Christianity and Islam and the conflict between those religious forces, the characteristics of medieval European society, and crises such as the Black Plague that ended this period.

History, Modern World A/B
2221/2222 CM NCAA (BCC1) **0.5 credit**
2223/2224 CM NCAA (BCC1) (H) **0.5 credit**

Semester A is a survey of modern world history from the 15th century to 1850. Focus areas include major civilizations about 1500; effects of Renaissance, Protestant Reformation, and economic changes; philosophical/scientific thinking and the Industrial Revolution.

Semester B is a survey of world history from 1850 to the present. Focus areas include nationalism and imperialism; rise of totalitarian governments, World War I and II; worldwide depression, and Cold War. This course is required for graduation.

History, Russian
2205 CM NCAA **0.5 credit**

This course is a survey of Russia before, during, and since the Bolshevik Revolution. Topics covered include the origins of the Russian people, the formative years of the Russian nation, the growth of the Russian autocracy and its failure to accommodate change, the 1917 revolutions, the consolidation of power in the Soviet Union, the role of the Soviet Union in and after World War II, and Russia in the post-cold-war era.

History, The Middle East
2226 CM NCAA (BCC2) **0.5 credit**

This course provides an overview of the Middle East and its history. It stresses the role of the Middle East as the cradle of early civilizations, the crossroads of many empires, and the birthplace of three major world religions. Special emphasis is given to the influence of the Middle East on world civilizations, the historical importance of the Middle East over the centuries, and the background needed to understand present conditions in the area.

History, United States A/B
2110/2112 NCAA (BCC1) **0.5 credit**
2111/2113 CM NCAA (BCC1) (H) **0.5 credit**

This course is a continuation of eighth grade U.S. history. Semester A is a survey in four are as the enduring impact of Civil War and Reconstruction; effects of Industrial Revolution and immigration; United States in world affairs through World War I; and major developments of the 1920s and 1930s. Semester B is a survey of four areas of U.S. History, World War II and its impact; domestic policies 1945-1970; the impact of the cold war; and cultural change in post-war America. This course is required for grad

History, United States, AP A/B
2114/2124 CM NCAA AP (BCC1) (AL) **0.5 credit**

This course is for students desiring a freshman college-level course in United States history. The course is a survey of this nation's history from 1607 to the present, using a college-level text and requiring college-level writing and discussion.

Note: U.S. History AP A and B may be used instead of U.S. History A and B to satisfy the graduation requirement of a year in U.S. History.

History, World, AP A/B
2240/2241 CM NCAA AP (BCC1) (AL) **0.5 credit**

This college-level course helps students develop greater understanding of world history and human societies. This understanding is advanced through a combination of selective factual knowledge and appropriate analytical skills. The chronological time frame is from 8000 BCE to the present. Note: World History AP A/B may be used instead of Modern World History A/B to satisfy the graduation requirement of a year in Modern World History.

Human Geography, AP A/B
2332/2333 CM NCAA AP (AL) **0.5 credit**

This college-level course introduces students to the systematic study of patterns and processes that have shaped human understanding, use, and alteration of Earths surface. Students employ spatial concepts and landscape analysis to analyze human social organization and its environmental consequences. They also learn about the methods and tools geographers use in their science and practice.

Humanities A/B
2318/2319 CM NCAA **0.5 credit**

Semester A includes three units: Classical Age, Medieval Europe, and Renaissance and Baroque. Semester B includes the following units: Neoclassic/Enlightenment, Romantic Era, and The Modern Era. In both semesters, students study the ideas and ideals of western civilization and, to a lesser extent, Eastern civilization, and how perceptions of human nature and the place of humans in the universe change over time. Works from the performing arts, fine arts, literature, philosophy, and historiography are used.

Law I
2312 CM NCAA **0.5 credit**

This course is designed to help students understand the processes by which American society seeks justice and order through law, and ways in which people can participate in those processes. Students examine history and philosophy of law, how the law works and can be made to work in actual situations, and major substantive areas of law such as torts, property, criminal and juvenile law.

Law 2
Offered only at: ***James Hubert Blake, Walter Johnson HS***
2343 CM NCAA **0.5 credit**

Law 2 is designed to provide a comprehensive overview of the history, philosophy and the organization of our legal system with special emphasis on the interpretive role of the courts. The units include constitutional law, law and the American family and consumer law. Students apply legal precedents to real and hypothetical situations. Opportunities are provided to observe the legal process in action, explore law-related careers and participate in mock trials.

Philosophy
2311 CM NCAA **0.5 credit**

This course acquaints students with the discipline and history of philosophy. Major philosophers and their works are studied with focus on such issues as the nature of the universe; the basic moral and intellectual superstructure of society; good and evil; free will and determinism; and the relationship of a person to other individuals and to the state. Current trends in philosophy are studied as well.

Psychology 1/2
Prerequisite: *Psychology 1 is a Prerequisite to Psychology 2*
2304/2313 CM NCAA (BCC2) **0.5 credit**

Students are introduced to the scientific study of behavior and mental process in Psychology 1. While learning how to apply psychological principles to daily life, students investigate the role of scientific inquiry into the major domains of psychology, including Methods of Research, Biopsychology, Cognitive Processes, Lifespan Development, and Sociocultural Dimensions of Behavior. Psychology 2 provides further investigation into these major domains in psychology.

Psychology, AP A/B
2330/2331 CM NCAA AP (BCC2) (AL) **0.5 credit**

This college-level course prepares students for the AP exam. Students scientifically study behavior and investigate the psychological domains, methods of research, biopsychology, cognitive processes, lifespan development, and sociocultural dimensions of behavior. Semester B extends student investigation of the psychological domains and includes thinking and language; states of consciousness; individual differences; personality and assessment; and psychological disorders and their treatment.

Seminar in Peace Studies

2225 CM (AL) **0.5 credit**

This course focuses on the study of nonviolent force as practiced by current and past peacemakers. Students examine the philosophy of nonviolent force, primary and secondary sources, and print and non-print sources to analyze the impact of the work of those persons devoted to nonviolent change. Conflict resolution skills and techniques involve students in the practical applications of ideas learned in class.

Sociology 1/2

Prerequisite: *Sociology 1 is a Prerequisite of Sociology 2*

2305/2314 CM NCAA (BCC2) **0.5 credit**

Sociology 1 is concerned with human groups and factors that unite or divide them, including culture, values, social groups, social stratification, population, the family, socialization, propaganda, and social institutions. Focus is on the impact of change on mores, norms, and customs. In Sociology 2, emphasis is placed on the application of the basic concepts of social change to American institutions, particularly education and the family. Research papers focus on community or on-site research.

Student Leadership A/B

2339/2340 **0.5 credit**

In this course, students are given many classroom and laboratory experiences in leadership training. Students build skills in communications, negotiations, organizational development, and activity design and execution. Students systematically study the student government organization, its internal workings, and its relationship to the school, school system, and school community.

Executive High School Internship Program

2323 CM **2.0 credits**
2324 CM **2.5 credits**
2325 CM (BCC1) **3.0 credits**

The program gives students the opportunity to work as interns and learn about the concepts of management and delivery of services with professionals. Interns analyze what has been learned in a log; attend seminars; design and present a project; and develop a summary report. Students interested in this program should contact their guidance counselors or the career center. Course 2323 may be repeated once.

JUSTICE, LAW AND SOCIETY—CAREER PATHWAY PROGRAM *(4 credits required)*

The Justice, Law, and Society program prepares students for further education and careers in law enforcement, legal services, and government and public administration. Students develop critical thinking skills by solving real-world problems and analyzing public policy related to law, law enforcement, and government. Students use information technology to access, analyze, and evaluate legal research and produce legal documents. Students develop oral and written communication skills for use in presenting legal research and legal documents. Students demonstrate knowledge of the American legal system, including the study of diverse areas of law, causes of crime, and the role of law enforcement, including through case studies, interviews with industry representatives, and community service projects. These courses are career education electives.

Justice, Law, and Society, Introduction A/B

Corequisite: *Must be enrolled in appropriate social studies course.*

Offered only at: ***Montgomery Blair, Northwood, Seneca Valley, Springbrook HS***

5148/5149 **0.5 credit**

Students will deepen their knowledge and understanding of the judicial branch at the national, state, and local levels of government to establish a foundation of understanding of the American legal system. Explore careers in criminology; forensic sciences and investigation skills; and police work at local, state, and federal levels. Explore a crime from beginning to end through the eyes of the public professional responsible for law enforcement. Examine the same set of facts from a civil perspective.

Law and the Administration of Justice A/B

Prerequisite: *Introduction to Justice, Law, and Society A (5148), or Law I (2312) and Introduction to Justice, Law, and Society B (5149)*

Offered only at: ***Montgomery Blair, Northwood, Seneca Valley, Springbrook HS***

5146/5147 **0.5 credit**

This year-long course will focus on law within our society, informing citizens of their rights, and the ability to support a position based on facts. The course will begin with an in-depth focus on the Bill of Rights and flow with the consideration of due process, equal protection and human rights. In the second semester, students will apply their knowledge through mock trail and moot court opportunities. All students will learn and demonstrate critical thinking and legal research skills.

Contemporary Issues in Justice, Law, and Society A/B

Prerequisite: *Law and the Administration of Justice (5146/5147)*

Offered only at: ***Montgomery Blair, Northwood, Seneca Valley, Springbrook HS***

5144/5145 CM (AL) **0.5 credit**

This course provides opportunities for students to explore contemporary issues in the field of law. Students examine topics that have become a significant interest within fields related to Justice, Law, and Society, such as forensic testing, public safety, environmental law, ethics, and homeland security.

Contemporary Issues in Justice, Law, and Society DP

Prerequisite: *Law and the Administration of Justice (5146/5147)*

Offered only at: ***Montgomery Blair, Northwood, Seneca Valley, Springbrook HS***

5134 CM (AL) (DP) **1.0 credit**

This course provides opportunities for students to explore contemporary issues in the field of law. Students examine topics that have become a significant interest within fields related to Justice, Law, and Society, such as forensic testing, public safety, environmental law, ethics, and homeland security.

Internship-Law, Government, Public Safety and Administration A/B

Prerequisite: *Students must have completed at least 2 credits in a related career pathway program.*

Offered only at: ***Montgomery Blair, Northwood, Seneca Valley, Springbrook HS***

5142/5143 CM (AL) **0.5 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences.

Internship-Law/Public Safety DP

Prerequisite: *Contemporary Issues* **Corequisite:** *Contemporary Issues*

Offered only at: ***Montgomery Blair, Northwood, Seneca Valley, Springbrook HS***

5133 CM (AL) (DP) **1.0 credit**

This course provides an internship opportunity within the law, government, and public safety community. Students network and engage in activities with industry professionals to learn the skills necessary for success. A culminating project is required for course completion.

College Law, Government, Public Safety, and Administration A/B

Prerequisite: *Law and the Administration of Justice A/B (5146/5147)*

Offered only at: ***Montgomery Blair, Northwood, Seneca Valley, Springbrook HS***

5185/5186 CM (AL) **0.5 credit**

This advanced level course is designed for students who have completed the foundation course and who also meet the requirements for enrollment in a postsecondary institution such as Montgomery College.

Guided Research—Law, Government, Public Safety, and Administration A/B

Prerequisite: *Students must have completed at least 2 credits in a related career pathway program.*

Offered only at: ***Montgomery Blair, Northwood, Seneca Valley, Springbrook HS***

5308/5309 CM **0.5 credit**

This course provides an opportunity for Law, Government, Public Safety, and Administration students to complete a structured research project to advance their knowledge and skills related to a Law, Government, Public Safety, and Administration career area.

SCIENCE, TECHNOLOGY, ENGINEERING, AND MATHEMATICS

SCIENCE AND ENGINEERING

Philosophy

We live in a world that is dominated by the influences of science and technology. The ability to make informed decisions as voters and consumers requires an understanding and appreciation of the nature of science. Since science is both a body of knowledge and a process of investigation, these two components are integral parts of each science course offering. Students should expect a rigorous course of study that encourages higher-level reasoning, incorporates the use of technology, and involves laboratory inquiry. Skills in reading, writing, and mathematics are important components of science instruction. Science courses are carefully aligned with the National Science Education Standards and the Maryland Science Content Standards and develop appropriate skills for the HSA. All students are encouraged to take four years of science that provide a balance of the life sciences and the physical sciences.

Basic Core Courses in Science

Basic Core Category 1 courses are Matter and Energy A and B, Biology A and B, Chemistry A and B, Physics A and B, and Earth Space Systems A and B. Additionally, schools must treat as Category 1 courses one of the following pairs: Biology AP A and B, Chemistry AP A and B, Physics AP A and B, Biology AP (DP) A and B, Chemistry AP (DP) A and B, and Environmental Science AP A and B. Basic Core Category 2 courses are Applied Science A and B, Astronomy A and B, Environmental Science A and B, Horticulture Science A and B, Engineering Science A and B, Molecular Biology A and B, Nutrition Science A and B, and Physical Science A and B.

BC—Satisfies biology requirement
PC—Satisfies physical science requirement
SC—Satisfies third science credit

Science offers a network of course choices and pathways. All possible pathways cannot be easily diagrammed. Students are encouraged to follow a science pathway based on their needs and interests.

Requirements for Graduation

Three science credits are required for graduation. One biology credit (BC) and one physical science credit (PC) must be included in the three credits.

Note that Maryland state colleges and universities require two laboratory sciences for admission. All listed science courses, except internship courses, meet the criteria for laboratory science.

Science Courses		
Anatomy and Physiology A/B (BC)	3761/3762	CM NCAA (BCC2) (AL)
Applied Science A/B (SC)	3611/3612	(BCC2)
Astronomy A/B (PC)	3856/3857	(BCC2)
Biology A/B (BC)	3631/3632	NCAA (BCC1)
Biology, Honors A/B (BC)	3621/3622	CM NCAA (BCC1) (H)
Biology, Advanced Placement A/B (BC)	3641/3642	CM NCAA AP (AL)
Biology, Advanced Placement A/B (DP) (BC)	3651/3652	CM NCAA AP (AL) (DP)
Biological Anthropology/Archaeology (SC)	3656	(BCC2)
Biotechnology A/B (SC)	3636/3637	CM (BCC2)
Chemistry A/B (PC)	3721/3722	CM NCAA (BCC1)
Chemistry, Honors A/B (PC)	3711/3712	CM NCAA (BCC1) (H)
Chemistry, Advanced Placement A/B (PC)	3741/3742	CM NCAA AP (AL)
Chemistry, Advanced Placement A/B (DP) (PC)	3751/3752	CM NCAA AP (AL) (DP)
Earth/Space Systems A/B (PC)	3811/3812	NCAA (BCC1)
Earth/Space Systems, Honors A/B (PC)	3815/3816	CM NCAA (BCC1) (H)
Engineering Science A/B (SC)	3609/3610	CM (BCC2) (AL)
Environmental Science A/B (SC)	3661/3662	NCAA (BCC2)
Environmental Science, Honors A/B (SC)	3676/3677	CM NCAA (BCC2) (AL)
Environmental Science, Honors A/B (DP) (SC)	3674/3675	CM NCAA (BCC2) (AL) (DP)
Environmental Science, Advanced Placement A/B (SC)	3659/3660	CM NCAA AP (AL)
Forensic Science A/B (SC)	3864/3865	NCAA (BCC2) (AL)
Horticultural Science A/B (SC)	3671/3672	(BCC2)
Internship, Science A/B (SC)	3511/3512	CM (BCC2)
Internship, Science A/B (DP) (SC)	3521/3522	CM (BCC2) (DP)
Matter and Energy A/B (PC)	3749/3750	NCAA (BCC1)
Matter and Energy, Honors A/B (PC)	3764/3765	CM NCAA (BCC1) (H)
Molecular Biology A/B (BC)	3657/3658	CM (BCC2) (AL)
Molecular Biology A/B (DP) (BC)	3653/3654	CM (BCC2) (AL) (DP)
Nutrition Science A/B (SC)	3560/3561	(BCC2)
Nutrition Science, Honors A/B (SC)	3562/3563	CM (BCC2) (H)
Physical Science A/B (PC)	3941/3942	NCAA (BCC2)
Physics A/B (PC)	3831/3832	CM NCAA (BCC1)
Physics A/B, Honors (PC)	3821/3822	CM NCAA (BCC1) (H)
Physics, Advanced Placement A/B (PC)	3841/3842	CM NCAA AP (AL)
Physics, Advanced Placement A/B (DP) (PC)	3851 /3852	CM NCAA AP (AL) (DP)
Physics B, Advanced Placement A/B (PC)	3837 /3838	NCAA AP (AL)
Physics C, Advanced Placement A/B (PC)	3839 /3840	NCAA AP (AL)
Wildlife Biology (SC)	3655	NCAA (BCC2)
Career Pathway Program in Science		
BIOTECHNOLOGY—CAREER PATHWAY PROGRAM *(4 credits required)*		
Biotechnology, Molecular A/B DP (SC)	3867(92)/ 3868(92)	CM (BCC2) (AL) (DP)
Biotechnology, Molecular A/B DP	3873/3874	CM (AL) (DP)
Biotechnology, Special Topics A/B	3871/3872	CM (AL)
Guided Research in Biosciences A/B	3875/3876	CM (AL)
Internship, Biosciences A/B (SC)	3869(92)/ 3870(92)	CM (AL)
BIOMEDICAL SCIENCES (PROJECT LEAD THE WAY/PLTW)—CAREER PATHWAY PROGRAM *(4 credits required)*		
Principles of Biomedical Science A/B	3881/3882	
Human Body Systems A/B	3681/3682	CM (AL)
Medical Interventions A/B	5375/5376	(AL)
ACADEMY OF HEALTH PROFESSIONS CAREER PATHWAY PROGRAM *(4 credits required)*		
Foundations of Medicine and Health Science A/B	4044/4045	
Anatomy and Physiology for Health Professions A/B	4042/4043	CM (AL)
Fundamentals of Pharmacy A/B	3684/3685	CM (AL)
Guided Research in Biosciences A/B	3875/3876	CM (AL)
Internship, Biosciences A/B (SC)	3869(92)/ 3870(92)	CM (AL)
College Health and Biosciences A/B DP	3879 /3880	CM (AL) (DP)

MEDICAL CAREERS —CAREER PATHWAY PROGRAM *(4 credits required)*		
Medical Careers A/B	5418/5419	(5 SSL)
Medical Careers Science A/B (SC)	3995(92)/ 3996(92)	
Medical Careers Science A/B	3877/3878	
Medical Careers A/B DP	5833 (92)/ 5834(92)	(10 SSL) (DP)
Internship, Medical Careers	5415 (92)	
Guided Research in Biosciences A/B	3875/3876	CM (AL)
College Health and Biosciences A/B DP	3879/3880	CM (AL) (DP)
FIRE AND RESCUE SERVICES/EMERGENCY MEDICAL TECHNICIAN—CAREER PATHWAY PROGRAM *(4 credits required)*		
Essentials of Fire Fighting, DP	5423	(DP)
Internship, Essentials of Fire Fighting A	5421	
Fire and Rescue Techniques, Advanced, DP	5424	CM (10 SSL) (DP)
Internship, Advanced Fire and Rescue Technique B	5422	(5 SSL)
Emergency Medical Technician/Basic	5453	
Emergency Medical Technician/Basic—Science A/B (SC)	3993/3994	
Emergency Medical Technician/Basic—Science A/B	2802 /2803	
Internship, Emergency Medical Technician/Basic A/B	5458/5459	(5 SSL)
ENVIRONMENTAL HORTICULTURE—CAREER PATHWAY PROGRAM *(4 credits required)*		
Foundations of Horticulture A/B	5535/5536	
Horticulture 2 A/B	5527/5528	
Horticulture 2 A/B DP	5529/5530	(DP)
Horticulture 3 A/B	5531/5532	
Horticulture 3 A/B DP	5533/5534	(DP)
Internship, Horticulture	5710	
Guided Research—Environmental, Agricultural, and Natural Resources A/B	5304/5305	
LANDSCAPE DESIGN—CAREER PATHWAY PROGRAM *(4 credits required)*		
Landscaping/Nursery Management 2 A/B DP	5659/5660	(DP)
Internship, Landscaping/ Nursery Management	5713	
Engineering courses		
ADVANCED ENGINEERING TECHNOLOGY (PROJECT LEAD THE WAY/PLTW)—CAREER PATHWAY PROGRAM *(5 credits required)*		
Principles of Engineering A/B (T2/TE credit)	5150/5151	TE (BCC1) (AL)
Introduction to Engineering Design A/B (T2/TE credit)	5152/5153	TE CM
Civil Engineering and Architecture A/B	4255/4256	CM (AL)
Computer Integrated Manufacturing A/B	5154/5155	CM (H)
Digital Electronics A/B	5156/5157	CM
Engineering Design and Development A/B	5158/5159	CM (H)
Aerospace Engineering A/B	5721/5722	CM (AL)
PRE-ENGINEERING TECHNOLOGY—CAREER PATHWAY PROGRAM *(4 credits required)*		
Pre-Engineering A/B	5504 /5505	TE CM
Pre-Engineering A/B	4210 /4211	AT CM
Communications Systems Technology A/B	4208 /4209	AT CM
Technological Innovations A/B	5506 /5507	TE CM
Technological Innovations A/B	4212 /4213	AT CM
Internship, Engineering Technology	5709	
Guided Research—Engineering, Scientific Research, and Manufacturing Technologies A/B	5302 /5303	
Technology Education Courses		
Foundations of Technology A/B (T2/ TE credit)	5161 /5162	TE
Principles of Engineering A/B (T2/TE credit)	5150 /5151	TE (BCC1) (AL)
Introduction to Engineering Design A/B (T2/TE credit)	5152 /5153	TE CM

SCIENCE COURSES

Anatomy and Physiology A/B (BC)

Prerequisite: *Attainment of the outcomes of Biology A and B*
Corequisite: *Chemistry A and B*
3761/3762 CM NCAA (BCC2) (AL) **0.5 credit**

This course is a study of the major systems of the human body. Career opportunities in medical-related fields are examined. The course is intended for advanced-level students. Anatomy and Physiology A topics include cells, tissues, and systems (skeletal, muscular, integumentary, and nervous). Anatomy and Physiology B topics include digestive, respiratory, circulatory, excretory, endocrine, and reproductive systems. Dissection is required.

Applied Science A/B (SC)

3611/3612 (BCC2) **0.5 credit**

This course provides students with an opportunity to investigate practical applications of the concepts and processes of life science and physical science. Basic topics are transportation, mechanical appliances, electricity, health practices, household products, the exploration of a science topic of personal interest, and science-related careers. Applied Science A covers physical science topics and Applied Science B covers life science topics. Either semester may precede the other.

Astronomy A/B (PC)

3856/3857 (BCC2) **0.5 credit**

Astronomy offers an in-depth look into the cosmos, integrating the disciplines of biology, chemistry, earth science, and physics. Students learn about the Universe through experiences in the laboratory and sites beyond the classroom such as NASA and the Air and Space Museum. Course content constantly evolves with new discoveries. Students may enroll in either semester and in any order.

Biology A/B (BC)

3631/3632 NCAA (BCC1) **0.5 credit**
3621/3622CM NCAA (BCC1) (H) **0.5 credit**

These courses emphasize the study of living things through laboratory experiences. Topics include ecology, chemistry of life, cells in living things, cell energy, nucleic acids and protein synthesis, energy, inheritance, applied genetics, evolution, and systems and living things. Ecology and evolution are unifying themes throughout the course. Attention is given to social issues and career opportunities. Dissections may occur.

Biology, Advanced Placement A/B (BC)

Prerequisite: *Attainment of the outcomes of Biology A and B*
Corequisite: *Attainment of the outcomes of Chemistry A and B*
3641/3642 CM NCAA AP (AL) **0.5 credit**

Biology AP is for highly motivated students with interest in biology. The course emphasizes laboratory investigations and builds on the concepts covered in Biology. Students prepare to take the Advanced Placement biology examination at the end of the course. Topics in Biology AP include chemistry of life, cytology, cellular energetics, genetics, diversity of life, evolution, ecology, and behavior. Dissections may occur in this course. See Alternatives to Dissection at the end of the Science section.

Biology, Advanced Placement A/B (DP) (BC)

Prerequisite: *Attainment of the outcomes of Biology A and B*
Corequisite: *Attainment of the outcomes of Chemistry A and B*
3651/3652 CM NCAA AP (AL) (DP) **1.0 credit**

These are double-credit courses that meet two periods each day. The courses have the same objectives as Biology AP A and AP B, with the provision that the content, materials, and activities of Biology AP (double period) follow the Biology Advanced Placement curriculum. Students may not earn credit for both single and double-period AP Biology A and B. Dissections may occur in this course. See Alternatives to Dissection at the end of the Science section.

Biological Anthropology/Archaeology (SC)

Prerequisite: *Attainment of the outcomes of Biology A and B*
3656 (BCC2) **0.5 credit**

Using critical thinking skills, students explore the scientific approaches to surveying and understanding biological differences in past and present human populations. Topics include the study of bone, anatomy, and archaeological techniques used by modern scientists to uncover the past. This course includes career explorations, field trip opportunities, and hands-on laboratory investigations.

Biotechnology A/B (SC)

Prerequisite: *Attainment of the outcomes of Biology A and B*

3636/3637 CM (BCC2) **0.5 credit**

Biotechnology provides students with the ability to apply the concepts of biochemistry, genetics, and molecular biology in research activities. This intensive, hands-on laboratory program utilizes the latest in laboratory equipment and computer technology to investigate the intricacies of molecular and microbiology, organic chemistry, and DNA science.

Chemistry A/B (PC)

Prerequisite: *Attainment of the outcomes of Geometry A and B or concurrent enrollment*

3721/3722 CM NCAA (BCC1) **0.5 credit**

3711/3712 CM NCAA (BCC1) (H) **0.5 credit**

These courses emphasize the study of matter through laboratory investigations. Chemistry A topics include classification and properties of matter, atomic theory, periodicity, mole concept, heat, molecular motion, and chemical bonding. Chemistry B includes molecular shapes, thermodynamics, reaction kinetics, equilibrium systems, solutions and solubility, acids, bases, and salts.

Chemistry, Advanced Placement A/B (PC)

Prerequisite: *Attainment of the outcomes of Chemistry A and B, and Algebra 2A and 2B*

3741/3742 CM NCAA AP (AL) **0.5 credit**

Chemistry AP A and B are for highly motivated students with interest in the physical sciences. Chemistry AP builds on concepts covered in chemistry with greater detail in content and laboratory investigations. Students are prepared to take the Advanced Placement Chemistry examination at the end of the course. Topics in Chemistry AP include atomic theory, chemical bonding, phases of matter, solutions, types of reactions, equilibrium, reaction kinetics, and thermodynamics.

Chemistry, Advanced Placement A/B (DP) (PC)

Prerequisite: *Attainment of the outcomes of Chemistry A and B, and Algebra 2A and 2B*

3751/3752 CM NCAA AP (AL) (DP) **1.0 credit**

These are double-credit courses that meet for two class periods each day. The courses have the same objectives as Chemistry AP A and AP B, with the provision that the content, materials, and activities of Chemistry AP (DP) follow the AP curriculum. Students may not earn credit for both single- and double-period AP Chemistry A and B.

Earth/Space Systems A/B (PC)

3811/3812 NCAA (BCC1) **0.5 credit**

3815/3816 CM NCAA (BCC1) (H) **0.5 credit**

These courses emphasize the dynamic processes of systems on and inside the Earth and its surrounding space environment. Topics include the interrelated systems, hydrosphere, cryosphere, geosphere, biosphere, and atmosphere.

Engineering Science A/B (SC)

Corequisite: *Attainment of the outcomes of Physics A and B*

3609/3610 CM (BCC2) (AL) **0.5 credit**

These courses are designed to give students an understanding of the principles and applications of engineering. Students build products to meet given specifications; they physically test and mathematically analyze the products. Students must complete a design package containing justification for the design, assembly instructions, cost analysis, parts list, engineering drawings, analysis of results, and suggested future modifications.

Environmental Science A/B (SC)

3661/3662 NCAA (BCC2) **0.5 credit**

3676/3677 CM NCAA (BCC2) (AL) **0.5 credit**

3674/3675 CM NCAA (BCC2) (AL) (DP) **1.0 credit**

These courses explore ecological interactions through the systematic study of global realms atmosphere, hydrosphere, lithosphere, and biosphere. Environmental Science A is an overview of ecosystems, energy flow, geology, chemical cycles, population studies, community dynamics, and pollution. Environmental Science B includes topics in land and water use, energy, food and natural resources, and populations.

Environmental Science, Advanced Placement A/B (SC)

Prerequisite: *Attainment of the outcomes of Biology A and B*

Corequisite: *Chemistry A and B recommended*

3659/3660 CM NCAA AP (AL) **0.5 credit**

Environmental Science AP A and B are for highly motivated students with interest in interdisciplinary science. Environmental Science AP builds on concepts covered in Environmental Science, with greater detail in content and laboratory investigations. Students are prepared to take the Advanced Placement environmental science examination at the end of the course. Topics in Environmental Science AP include the interrelationships of the natural world and environmental problems, issues, and solutions.

Forensic Science A/B (SC)

Prerequisite: *Attainment of the outcomes of Biology A and B.*

Corequisite: *Attainment of the outcomes of Chemistry A and B or Physics A and B.*

3864/3865 NCAA (BCC2) (AL) **0.5 credit**

This course will focus on forensic science and modern criminal investigation analysis. Forensic Science A includes selected topics in these areas: structure and function of the human body, toxicology, drug and alcohol abuse, serology, and terrorist and disaster response and emergency medical procedures. Forensic Science B includes selected topics in these areas: ballistics, DNA analysis, fingerprint interpretation, and explosive incident and arson investigation. Either semester may precede the other.

Horticultural Science A/B (SC)

3671/3672 (BCC2) **0.5 credit**

Horticultural Science A and B are designed for students interested in mastering fundamental techniques in the care and culture of plants in the home, business, and community. Topics include plant anatomy and physiology; growth conditions; plant propagation; control of disease, weeds, and pests; greenhouse management; plant identification; soils; lawns; and landscaping. Either semester can precede the other.

Internship, Science A/B (SC)

3511/3512 CM (BCC2) **0.5 credit**

3521/3522 CM (BCC2) (DP) **1.0 credit**

Science internships provide laboratory or science field research experience out of school. Students are placed, according to their interest and the availability of space, in private or government research agencies such as the National Institutes of Health and the National Institute of Standards and Technology or the Walt Whitman Psychology Laboratory. The description and requirements for participation in the internship program are in the Administrative Handbook on Student Internships.

Matter and Energy A/B (PC)

3749/3750 NCAA (BCC1) / 3764/3765 CM NCAA (BCC1) (H) **0.5 credit**

These courses emphasize the development of observation, experimentation, and analytic skills applicable to succeeding in laboratory courses in high school science. Matter and Energy A includes scientific skills and processes, mechanics (forces and motion), energy, electricity, and magnetism. Matter and Energy B includes properties of matter, heat, and atomic and nuclear structure.

Molecular Biology A/B (BC)

Prerequisite: *Attainment of the outcomes of Biology A and B*

Corequisite: *Attainment of the outcomes of Chemistry A and B*

3657/3658 CM (BCC2) (AL) **0.5 credit**

3653/3654 CM (BCC2) (AL) (DP) **1.0 credit**

These courses stress the concepts, theories, and techniques of molecular biology, classical genetics, modern genetics, DNA technology, and bioethics. Laboratory investigations parallel those in a scientific research laboratory. These advanced-level courses prepare students for an internship at a scientific research facility.

Nutrition Science A/B (SC)

Prerequisite: *Attainment of the outcomes of Biology A and B*

3560/3561 (BCC2) / 3562/3563 CM (BCC2) (H) **0.5 credit**

Nutrition Science A and B apply scientific laboratory skills and food preparation laboratory skills to study topics in nutritional requirements and assessments. Students examine food consumption patterns, diet planning, and digestion, and investigate the current trends and scientific research that is evolving about this science.

Physical Science A/B (PC)

3941/3942 NCAA (BCC2) **0.5 credit**

These courses focus on practical and functional applications of chemistry and physics. Semester A includes topics of atomic structure, chemical formulas and equations, classification of chemical substances, radioactivity, and organic chemistry. Semester B includes vector analysis, force and motion, work, energy, power, heat, waves and sound, light and optics, and electricity and magnetism. Either semester can precede the other.

Physics A/B (PC)
Prerequisite: *Attainment of the outcomes of Geometry A and B or concurrent enrollment*
3831/3832 CM NCAA (BCC1) **0.5 credit**
3821/3822 CM NCAA (BCC1) (H) **0.5 credit**
These courses are for students who wish to investigate physical laws and theories, relationships of physical phenomena, and the interrelationships of physics to other fields of human endeavor. Physics includes topics in vectors, kinematics, dynamics, energy, momentum, thermodynamics, electricity and magnetism, waves, and quantum physics.

Physics, Advanced Placement A/B (PC)
Prerequisite: *Attainment of the outcomes of Physics A and B, and Precalculus A and B*
3841/3842 CM NCAA AP (AL) **0.5 credit**
Physics AP A and B are for highly motivated students with interest in the physical sciences. Physics AP builds on concepts covered in Physics with greater detail in content and laboratory investigations. Students are prepared to take the Advanced Placement Physics examination at the end of the course. During Physics AP A, Newtonian mechanics is the central topic. During Physics AP B, emphasis is placed on electricity and magnetism.

Physics, Advanced Placement A/B (DP) (PC)
Prerequisite: *Attainment of the outcomes of Physics A and B, and Precalculus A and B*
3851/3852 CM NCAA AP (AL) (DP) **1.0 credit**
These are double-credit courses that meet for two periods each day. The courses have the same objectives as Physics AP A and AP B, with the provision that the content, materials, and activities of Physics AP (double period) follow the AP curriculum, but with extensive laboratory work in each of the topic areas. Students may not earn credit for both single- and double-period AP Physics.

Physics B, Advanced Placement A/B (PC)
Prerequisite: *Attainment of the outcomes of Physics A and B, and Precalculus A and B*
3837/3838 NCAA AP (AL) **0.5 credit**
This course is for highly motivated students with interest in the physical sciences. Students should have a knowledge of algebra and basic trigonometry. The course includes topics in both classical and modern physics. Topics include Newtonian mechanics, thermal physics, electricity and magnetism, waves and optics, and atomic and nuclear physics. Students are prepared to take the Advanced Placement Physics B examination at the end of this course.

Physics C, Advanced Placement A/B (PC)
Prerequisite: *Attainment of the outcomes of Physics A and B, and Precalculus A and B*
3839/3840 NCAA AP (AL) **0.5 credit**
This course is for highly motivated students with interest in the physical sciences. Students use calculus in problem solving and in derivations as they study Newtonian mechanics, electricity, and magnetism. Students are prepared to take the Advanced Placement Physics C examination at the end of this course.

Wildlife Biology (SC)
Prerequisite: *Attainment of the outcomes of Biology A and B*
3655 NCAA (BCC2) **0.5 credit**
This introductory course for students interested in wildlife management or zoology includes field study techniques and information about careers in areas of animal science. Topics include statistical tests, wildlife management habitat usage, foraging preference, behaviors, and body morphology to identify organisms. Soil chemical properties and water quality are used to determine the viability of vertebrates and aquatic macro invertebrates.

CAREER PATHWAY PROGRAMS IN SCIENCE

BIOTECHNOLOGY—CAREER PATHWAY PROGRAM *(4 credits required)*
Biotechnology is the application of concepts from biochemistry, genetics, and molecular biology. Biotechnology students develop and refine their laboratory and research skills as they improve their scientific investigative techniques. Biotechnology provides an intensive hands-on laboratory program for students that utilize the latest lab equipment and computer technology to investigate the intricacies of protein/DNA science. Laboratory experiences include plant and animal tissue culture, microbiology, polymerase chain reaction techniques, biochemical environmental evaluation, and the latest techniques of recombinant DNA technology. Only course marked (SC) carry science credit.

Biotechnology, Molecular A/B DP (SC)
Prerequisite: *Biology A/B or Chemistry A/B*
Corequisite: *Chemistry A/B or Biology A/B. Concurrent enrollment in Biotechnology, Special Topics A/B for Edison students only*
Offered only at: ***Thomas Edison HS of Technology, Northwest, Seneca Valley, Wheaton, Thomas S. Wootton HS***
3867(92)/3868(92) CM (BCC2) (AL) (DP) **1.0 credit**
3873/3874 CM (AL) (DP) **1.0 credit**
This course provides an overview of biotechnology. Students develop problem solving skills through hands-on laboratory investigations that require them to integrate equipment use and laboratory techniques with background information in microbiology and molecular biology. Infused throughout the curriculum are activities that provide students with an opportunity to practice the application of scientific inquiry, investigation, and bioethics.

Biotechnology, Special Topics A/B
Prerequisite: *Molecular Biotechnology DP A/B, Biology A/B or Chemistry A/B*
Corequisite: *Students at Edison must be concurrently enrolled in 3867/3868.*
Offered only at: ***Thomas Edison HS of Technology, Northwest, Seneca Valley, Wheaton, Thomas S. Wootton HS***
3871/3872 CM (AL) **0.5 credit**
This course provides an opportunity for students to engage in advanced studies of biotechnology. Students explore the application of biotechnology to the biological fields of the agriculture, environmental science, forensics, and medicine.

Guided Research in Biosciences A/B
Prerequisite: *Molecular Biotechnology A/B 3867/3868 or Foundations of Medicine and Health Science A/B 4044/4045 and Anatomy and Physiology for Health Professions A/B 4042/4043.*
Offered only at: ***Thomas Edison HS of Technology, Northwest, Seneca Valley, Wheaton, Thomas S. Wootton HS***
3875/3876 CM (AL) **0.5 credit**
Students have the option of completing an industry-mentored project. Students will develop and implement a research project and poster. As they work on this project, students will be mentored by a researcher from the bioscience industry, an academic institution or federal laboratory.

Internship, Biosciences A/B (SC)
Prerequisite: *Molecular Biotechnology A/B 3867/3868 or Foundations of Medicine and Health Science A/B 4044/4045 and Anatomy and Physiology for Health Professions A/B 4042/4043.*
Offered only at: ***Thomas Edison HS of Technology, Northwest, Seneca Valley, Wheaton, Thomas S. Wootton HS***
3869(92)/3870(92) CM (AL) **0.5 credit**
This course provides an internship opportunity within the bioscience and healthcare community. Students network and engage in projects with industry professionals to learn the skills necessary for success in a related field. A culminating project will be required to complete the internship.

BIOMEDICAL SCIENCES (PROJECT LEAD THE WAY/PLTW)—CAREER PATHWAY PROGRAM *(4 credits required)*
The Project Lead the Way Biomedical Sciences Program prepares students to take advantage of the tremendous career opportunities available in health and science. The hands-on, project-based, and problem-based national curriculum engages students, allows them to explore the wide variety of healthcare and science career options and equips them with the knowledge and skills necessary to succeed in any postsecondary biomedical sciences or pre-professional program. Students gain a broad foundation in science, mathematics, language arts, and social studies. The curriculum incorporates engineering principles such as design process, feedback loops, and fluid dynamics when appropriate. Students will also obtain an awareness of the social, legal, and ethical issues surrounding technological advances related to the biomedical sciences. Only course marked (SC) carry science credit.

Principles of Biomedical Science A/B
Offered only at: *Wheaton HS*
3881/3882 **0.5 credit**
This course provides an introduction to the biomedical sciences through "hands-on" projects and problems. Student work involves the study of human medicine, research processes, and an introduction to bio-informatics. Key biological concepts embedded in the curriculum include homeostasis,

metabolism, inheritance of traits, feedback systems, and defense against disease. Engineering principles such as the design process, fluid dynamics, and the relationship of structure to function are included.

Human Body Systems A/B (SC)

Prerequisite: *3881/3882 Principles of Biomedical Science A/B*

Offered only at: ***Wheaton HS***

3681/3682 CM (AL) **0.5 credit**

This course engage students in the study of basic human physiology, especially in relationship to human health. Students will use a variety of monitors to examine body systems (respiratory, circulatory, nervous) at rest and under stress, and observe the interactions between various body systems. Students will use LabView software to design and build systems to monitor body functions. This course is for students who completed the first Biomedical course, and is only offered at PLTW Inc. approved schools.

Medical Interventions A/B

Prerequisite: *3881/3882 Principles of Biomedical Sciences A/B & 3681/3682 Human Body Systems A/B*

Offered only at: ***Wheaton HS***

5375/5376 (AL) **0.5 credit**

This is the third course of the Biomedical Sciences Career Pathway Program. The course explores the design and development of various medical interventions, including vascular stents, cochlear implants, and prosthetic limbs. In addition, students review the history of organ transplants and gene therapy, and stay updated on cutting-edge developments via scientific literature. Using 3Dimaging, data acquisition software, and current scientific research students will design a product for medical intervention

ACADEMY OF HEALTH PROFESSIONS— CAREER PATHWAY PROGRAM *(4 credits required)*

The Academy of Health Professions utilizes project and problem-based learning, clinical experiences, classroom and lab instruction to teach students about the field of healthcare. Students are introduced to basic healthcare knowledge and skills through two foundation courses: Foundation of Medicine and Health Science and Anatomy and Physiology for Health Professions. Opportunities for students to apply foundational course knowledge to real-life health care situations are offered through specialized course options such as Fundamentals of Pharmacy and Medical Careers. Students will have the opportunity to earn state and /or nationally recognized certifications, and/or college credit through articulation agreements with local colleges. In addition, students may choose from amongst several options for program completion. These options may include, AP Biology and AP Chemistry, enrollment in a postsecondary institution, internship, or a guided research course. Students are strongly encouraged to complete four (4) years of math and science. At minimum students should take Biology and Chemistry while enrolled in the program. Only course marked (SC) carry science credit.

Foundations of Medicine and Health Science A/B

Corequisite: *Must be co-enrolled in appropriate math and science courses.*

4044/4045 **0.5 credit**

This course is designed to provide students with an overview of the therapeutic, diagnostic, environmental and information systems of the healthcare industry. The course includes medical terminology, medical ethics and documentation, healthcare delivery systems and agencies and an introduction to human body systems. Related mathematical concepts are embedded into the curriculum when it is appropriate.

Anatomy and Physiology for Health Professions A/B

Prerequisite: *4044/4045 Foundations of Medicine and Health Science A/B*

Corequisite: *Must be co-enrolled in appropriate math and science courses.*

4042/4043 CM (AL) **0.5 credit**

Students study the structure and functions of the human body. Students investigate the body's responses to the external environment, maintenance of homeostasis, electrical interactions, transport systems, and energy processes. Students will conduct laboratory investigations and fieldwork, use scientific methods during investigations to solve problems and make informed decision. Upon completion of this course, students will be eligible to take a medical terminology exam for college credit.

Fundamentals of Pharmacy A/B

Prerequisite: *4044/4045 Foundations of Medicine and Health Science A/B, 4042/4043 Anatomy and Physiology for Health Professions A/B*

Corequisite: *Must be co-enrolled in appropriate math and science courses.*

3684/3685 CM (AL) **0.5 credit**

This course focuses on exposing students to the many career options in pharmacy and pharmaceutical science. Students experience relevant activities that engage them in a rigorous curriculum that integrates academic and technical standards.

Guided Research in Biosciences A/B

Prerequisite: *Molecular Biotechnology A/B 3867/3868 or Foundations of Medicine and Health Science A/B 4044/4045 and Anatomy and Physiology for Health Professions A/B 4042/4043.*

3875/3876 CM (AL) **0.5 credit**

Students have the option of completing an industry-mentored project. Students will develop and implement a research project and poster. As they work on this project, students will be mentored by a researcher from the bioscience industry, an academic institution or federal laboratory.

Internship, Biosciences A/B (SC)

Prerequisite: *Molecular Biotechnology A/B 3867/3868 or Foundations of Medicine and Health Science A/B 4044/4045 and Anatomy and Physiology for Health Professions A/B 4042/4043.*

3869(92)/3870(92) CM (AL) **0.5 credit**

College Health and Biosciences A/B DP

3879/3880 CM (AL) (DP) **0.5 credit**

This course provides an internship opportunity within the bioscience and healthcare community. Students network and engage in projects with industry professionals to learn the skills necessary for success in a related field. A culminating project will be required to complete the internship.

MEDICAL CAREERS— CAREER PATHWAY PROGRAM *(4 credits required)*

Students participating in the Medical Careers program gain certified health care skills that enable them to train and work along with health care professionals in various settings. Authentic experiences in a local hospital and other medical facilities help prepare students for one of the many careers in the rapidly expanding field of medicine and health care. Students must have a 'B' or better in either chemistry or biology to enroll in the program, a cumulative GPA of 2.5 or better, and must complete an application.

Medical Careers is articulated with Montgomery College. Students may be required by the sponsoring hospital/nursing home to provide appropriate documentation that may include a social security number and proof of citizenship. Only course marked (SC) carry science credit.

Biology A/B, taken at the student's home school, counts as 1 credit toward the program requirement.

Medical Careers A/B

Prerequisite: *Grade of B or better in Biology A/B or Chemistry A/B and a cumulative GPA of 2.5 or better. Students must apply to the program. Allow for travel time.*

Corequisite: *Biology A/B or Chemistry A/B (one must be completed prior to enrolling). Concurrent enrollment in Medical Careers Science A/B (3995 and 3996)*

Offered only at: ***John F. Kennedy, Paint Branch, Sherwood, Watkins Mill HS***

5418/5419 (5 SSL) **0.5 credit**

Instruction focuses on anatomy, physiology, disease processes, college-level medical terminology, patient care skills, CPR, and current issues related to the health care profession. Other areas of emphasis include physical therapy skills, taking vital signs, principles of infection control, and care of the hospitalized. Students have the opportunity for nursing assistant certification, geriatric aide certification, and CPR certification, depending on program location.

Medical Careers Science A/B (SC)

Prerequisite: *Grade of B or better in Biology A/B or Chemistry A/B and a cumulative GPA of 2.5 or better. Students must apply to the program. Allow for 1 period of travel time.*

Corequisite: *Concurrent enrollment in Medical Careers A/B.*

Offered only at: ***Thomas Edison HS of Technology, John F. Kennedy, Paint Branch, Sherwood, Watkins Mill, Wheaton HS***

3995(92)/3996(92) **0.5 credit**
3877/3878 **0.5 credit**

Instruction focuses on anatomy, physiology, disease processes, medical terminology, patient care skills, CPR, and current issues related to the health care profession. Other areas of emphasis include physical therapy skills, taking vital signs, principles of infection control, and care of the hospitalized. Students receive CPR certification and have the opportunity for certified nursing assistant and geriatric adie certification, depending upon program location.

Medical Careers A/B DP

Prerequisite: *Grade of B or better in Biology A/B or Chemistry A/B and a cumulative GPA of 2.5 or better. Students must apply to the program. Students should allow for travel time.*

Corequisite: *Biology A/B or Chemistry A/B (one must be completed prior to enrolling). Concurrent enrollment in Medical Careers Science A/B (3995/3996)*

Offered only at: ***Thomas Edison HS of Technology, Wheaton HS***

5833(92)/5834(92) (10 SSL) (DP) **1.0 credit**

This career development program offers students unique medical learning opportunities. During the first semester, students learn anatomy, physiology, medical terminology, and disease processes, and perform patient care skills including CPR. During the second semester, students put their knowledge and skills into practice. Students receive CPR certification and have the opportunity to receive certified nursing assistant and geriatric aide certification. Lab fee required.

Internship, Medical Careers

Prerequisite: *Successful completion of Medical Careers A/B with minimum grade of B, CNA certification, and recommendation of medical careers teacher.*

Corequisite: *Enrollment in an upper-level science course approved by the teacher.*

Offered only at: ***Thomas Edison HS of Technology, John F. Kennedy, Paint Branch, Sherwood, Watkins Mill, Wheaton HS***

5415(92) **0.5 credit**

Students who have successfully completed the program in Grade 11 may elect an internship in Grade 12 for one, two, or three periods, under the supervision of the program teacher. The objectives of the internship are those of the general student internship. Learning activities, however, are specifically related to students' medical career goals. Students must provide their own transportation. Lab fee may be required. Students may enroll in course for more than one period.

Guided Research in Biosciences A/B

Prerequisite: *Molecular Biotechnology A/B 3867/3868 or Foundations of Medicine and Health Science A/B 4044/4045 and Anatomy and Physiology for Health Professions A/B 4042/4043.*

Offered only at: ***Thomas Edison HS of Technology, Northwest, Seneca Valley, Wheaton, Thomas S. Wootton HS***

3875/3876 CM (AL) **0.5 credit**

Students have the option of completing an industry-mentored project. Students will develop and implement a research project and poster. As they work on this project, students will be mentored by a researcher from the bioscience industry, an academic institution or federal laboratory.

College Health and Biosciences A/B DP

Offered only at: ***Thomas Edison HS of Technology, Northwest, Paint Branch, Seneca Valley, Wheaton HS***

3879/3880 CM (AL) (DP) **0.5 credit**

Alternatives to Dissection

Dissection is one of many instructional methods that may be used in Biology and AP Biology. Students may request from the teacher alternatives to dissection in Biology and AP Biology. Alternatives may include such materials as videos, computer programs, film, filmstrips, models, transparencies, charts, diagrams, and textbook overlays. Dissections are required in Anatomy and Physiology. Alternatives to this course include AP Biology and other advanced-level science courses.

FIRE AND RESCUE SERVICES/EMERGENCY MEDICAL TECHNICIAN—CAREER PATHWAY PROGRAM *(4 credits required)*

The Fire and Rescue Services/Emergency Medical Technician program provides students with training at the Montgomery County Fire and Rescue Training Academy. Students can earn local and national certifications that enable them to work side by side with Montgomery County fire and rescue staff as they provide fire and rescue emergency services. Students who successfully complete the program may apply up to nine credits when enrolling in the Montgomery County Fire Science Program. Each course in this program is taken concurrently with a field-based internship at a sponsoring local fire department and supervised by Montgomery County Fire and Rescue staff. Students must have a 2.0 GPA, be 16 years old, complete an application, and pass the National Fire Protection Agency physical examination to enroll in the program. To remain in the program, students must maintain a 2.0 GPA and a 90 percent attendance rate within the program. Failure to score 70% (or equivalent) on any exam will result in dismissal from the program. Students should schedule time for travel in the program. Transportation is provided. Only course marked (SC) carry science credit.

Essentials of Fire Fighting, DP

Prerequisite: *Must complete application to Academy, and pass National Fire Protection Agency standard physical examination. Must be 16 (before beginning course) with a 2.0 GPA.*

Corequisite: *Concurrent enrollment in Essentials of Fire Fighting Internship A (5421)*

5423 (DP) **1.0 credit**

Students receive classroom instruction and practice fire-fighting skills under controlled conditions. Instruction includes organization, rules, and regulations of fire departments; identification and use of forcible entry tools and protective apparatus; the common causes of fire; and CPR and first aid. Students attend class at the Public Safety Training Academy in Rockville each day from 11:00 a.m. to 1:30 p.m. Fire Fighter II certification is obtained upon completion of this course and internship (5421).

Internship, Essentials of Fire Fighting A

Prerequisite: *Must complete application to Academy, and pass National Fire Protection Agency standard physical examination. Must be 16 (before beginning the course) with a 2.0 GPA.*

Corequisite: *Concurrent enrollment in Essentials of Fire Fighting (5423)*

5421 **0.5 credit**

Each course in the Fire and Rescue Services Program is taken concurrently with a field-based internship at a sponsoring local fire department and supervised by Fire and Rescue Services program staff. Students should plan for adequate travel time as they develop their class schedule. Upon successful completion of this course and Essentials of Fire Fighting, students are awarded Fire Fighter II certification.

Fire and Rescue Techniques, Advanced, DP

Prerequisite: *Essentials of Fire Fighting and Internship, Essentials of Fire Fighting*

Corequisite: *Concurrent enrollment in Advanced Fire and Rescue Techniques Internship B (5422)*

5424 CM (10 SSL) (DP) **1.0 credit**

This course includes instruction in hazardous materials, emergency scene tactical problems, specific fire and rescue strategies, the effective use of fire and rescue apparatus in emergency situations, and the practice of fire and rescue skills under controlled conditions. Students alternate between attending classes at the training academy and interning at a local fire station or other designated internship site, where they participate in fire and rescue operations. Students should plan for travel time.

Internship, Advanced Fire and Rescue Technique B

Prerequisite: *Essentials of Fire Fighting and Essentials of Fire Fighting Internship A*

Corequisite: *Concurrent enrollment in Advanced Fire and Rescue Techniques*

5422 (5 SSL) **0.5 credit**

Each course in the Fire and Rescue Services Program is taken concurrently with a field-based internship at a sponsoring local fire department and is supervised by training academy staff. Students alternate between attending classes at the Public Safety Training Academy in Rockville, and interning at a local fire station or other designated internship site, where they participate in fire and rescue operations. Students should plan for adequate travel time.

Emergency Medical Technician/Basic

Prerequisite: *Pass National Fire Protection Agency physical examination. Must be 16 years old before beginning the course and have a 2.0 GPA.*

Corequisite: *Concurrent enrollment in Emergency Medical Technician/Basic Internship A (5458) and EMT/B Science (3993).*

5453 **0.5 credit**

Students prepare for certification in Emergency Medical Technician/Basic. They learn emergency diagnosis, treatment, and care of injuries. Final and written practical examinations are administered by Emergency Medical Services and the Maryland State Department of Health and Mental Hygiene. Students attend class at the Montgomery County Fire and Rescue Training Academy in Rockville each day from 11:00 am to 1:30 pm. Students should plan for adequate travel time as they develop their class schedule.

Emergency Medical Technician/Basic-Science A/B (SC)

Prerequisite: *Pass National Fire Protection Agency physical examination. Must be 16 with a 2.0 GPA before beginning course.*

Corequisite: *Concurrent enrollment in Emergency Medical Technician/Basic Internship A (5458) and EMT/B (5453)*

3993/3994 **0.5 credit**

2802/2803 **0.5 credit**

Students prepare for certification in Emergency Medical Technician/Basic. They learn emergency diagnosis, treatment, and care of injuries. Final and written practical examinations are administered by Emergency Medical Services and the Maryland State Department of Health and Mental Hygiene. Students attend class at the Montgomery County Fire and Rescue Training Academy in Rockville each day from 11:00 a.m. to 1:30 p.m. Students should plan for adequate travel time as they develop their class schedules.

Internship, Emergency Medical Technician/Basic A/B

Prerequisite: *Pass National Fire Protection Agency physical examination. Must be 16 years old (before beginning course) with a 2.0 GPA.*

Corequisite: *Concurrent enrollment in Emergency Medical Technician/Basic (5453/5459) and EMT/B Science (3993/3994).*

5458/5459 (5 SSL) **0.5 credit**

Students prepare for certification in Emergency Medical Technician/Basic. They learn emergency diagnosis, treatment, and care of injuries. Final and written practical examinations are administered by Emergency Medical Services and the Maryland State Department of Health and Mental Hygiene. Students attend class at the Montgomery County Fire and Rescue Training Academy in Rockville each day from 11:00 am to 1:30 pm. Students should plan for adequate travel time as they develop their class schedule.

ENVIRONMENTAL HORTICULTURE—CAREER PATHWAY PROGRAM *(4 credits required)*

The Horticulture program provides students with opportunities to prepare for careers in nurseries, greenhouses, and other businesses. Students learn about the propagation and nurturing of small trees, shrubs, plants and flowers, as well as planting and arrangements for interiors and exteriors. As students gain knowledge, skills, and experience, they engage in residential and commercial landscape planning.

Foundations of Horticulture A/B

Offered only at: ***Clarksburg, Damascus, Gaithersburg, Col. Zadok Magruder, Northwood, Poolesville, Sherwood, Watkins Mill, Wheaton HS***

5535/5536 **0.5 credit**

This course develops understanding of the industry on a local, regional and national level. Students learn conditions for quality plant growth, identification, propagation, fertility and crop management. Students will also learn to produce, process, and market plants used principally for ornamental, recreational, and aesthetic purposes and to design, establish, maintain, and manage horticultural enterprises. Classroom and laboratory experiences are supplemented with supervised agricultural experiences.

Horticulture 2 A/B

Prerequisite: *Attainment of the outcomes of Foundations of Horticulture.*

Offered only at: ***Clarksburg, Damascus, Gaithersburg, Col. Zadok Magruder, Northwood, Poolesville, Sherwood, Watkins Mill, Wheaton HS***

5527/5528 **0.5 credit**

This course involves in-depth exploration studies that includes the propagation and the nurturing of trees, shrubs, flowers, and other plants.

Horticulture 2 A/B DP

Prerequisite: *Attainment of the outcomes of Foundations of Horticulture.*

Offered only at: ***Clarksburg, Damascus, Gaithersburg, Col. Zadok Magruder, Northwood, Poolesville, Sherwood, Watkins Mill, Wheaton HS***

5529/5530 (DP) **1.0 credit**

This course involves in-depth exploration studies that includes the propagation and the nurturing of trees, shrubs, flowers, and other plants.

Horticulture 3 A/B

Prerequisite: *Attainment of the outcomes of Horticulture 2 A/B.*

Offered only at: ***Clarksburg, Damascus, Gaithersburg, Col. Zadok Magruder, Northwood, Poolesville, Sherwood, Watkins Mill, Wheaton HS***

5531/5532 **0.5 credit**

Students develop workplace skills as they interact with local businesses and nurseries, gaining knowledge and experience in residential and commercial landscape planning.

Horticulture 3 A/B DP

Prerequisite: *Attainment of the outcomes of Horticulture 2 A/B*

Offered only at: ***Clarksburg, Damascus, Gaithersburg, Col. Zadok Magruder, Northwood, Poolesville, Sherwood, Watkins Mill, Wheaton HS***

5533/5534 (DP) **1.0 credit**

Students develop workplace skills as they interact with local businesses and nurseries, gaining knowledge and experience in residential and commercial landscape planning.

Internship, Horticulture

Prerequisite: *Completed course work in the Horticulture Career Pathway Program (CPP).*

Offered only at: ***Clarksburg, Damascus, Gaithersburg, Col. Zadok Magruder, Northwood, Poolesville, Sherwood, Watkins Mill, Wheaton HS***

5710 **0.5 credit**

Students who complete this course are prepared to seek employment upon graduation or to continue their technical training at a two- or four-year college.

Guided Research—Environmental, Agricultural, and Natural Resources A/B

Prerequisite: *Students must successfully complete all required course work in the Environmental, Agricultural, and Natural Resources career pathway to take this course.*

Offered only at: ***Clarksburg, Damascus, Gaithersburg, Col. Zadok Magruder, Northwood, Poolesville, Sherwood, Watkins Mill, Wheaton HS***

5304/5305 **0.5 credit**

This course provides an opportunity for environmental students to complete a structured research project to advance their knowledge and skills related to an Environmental, Agricultural, and Natural Resources career area.

LANDSCAPE DESIGN—CAREER PATHWAY PROGRAM *(4 credits required)*

The Landscaping/Nursery Management program prepares students to pursue a variety of horticulture occupations. Students learn about plants and maintain shrubs, trees, ornamental plants, ground cover, and turf grass for the beautification of homes or recreational areas. Experiences emphasize propagation and harvesting in the greenhouse and the field, landscape planning and maintenance, the use and maintenance of nursery and landscaping equipment, and techniques of manicured lawn care.

Landscaping/Nursery Management 2 A/B DP

Prerequisite: *Foundations of Horticulture*

Offered only at: ***Clarksburg, Damascus, Gaithersburg, Col. Zadok Magruder, Northwood, Poolesville, Sherwood, Watkins Mill, Wheaton HS***

5659/5660 (DP) **1.0 credit**

Students broaden their study of plants and the maintenance of shrubs, trees, ornamental plants, ground cover, and turf grass for the beautification of homes or recreational areas.

Internship, Landscaping/Nursery Management

Prerequisite: *Successful completion of all course work in the Landscaping/ Nursery Management Career Pathway Program (CPP).*

Offered only at: ***Clarksburg, Damascus, Gaithersburg, Col. Zadok Magruder, Northwood, Poolesville, Sherwood, Watkins Mill, Wheaton HS***

5713 **0.5 credit**

Students who complete this course are prepared to seek employment upon graduation or to continue their technical training at a two- or four-year college. (unlimited repeats)

ENGINEERING COURSES

ADVANCED ENGINEERING TECHNOLOGY (PROJECT LEAD THE WAY/PLTW)—CAREER PATHWAY PROGRAM

(5 credits required)

Project Lead the Way (PLTW) is a national program that forms partnerships with public schools to increase the quantity and quality of engineers and engineering technologists graduating from our educational system.

Principles of Engineering A/B (T2/TE credit)

Prerequisite: *Algebra I and/or Introduction to Engineering Design B or better*

Corequisite: *Students must be in a college prep math sequence to enroll in this class. Algebra 1 is the minimal math requirement and Algebra 2 is preferred.*

Offered only at: ***Col. Zadok Magruder, Paint Branch, Poolesville, Rockville, Watkins Mill, Wheaton, Walt Whitman HS***

5150/5151 TE (BCC1) (AL) **0.5 credit**

This is a broad-based survey course to help students understand engineering, engineering technology, and identify career possibilities. This course provides an overview of engineering and engineering technology. Students develop problem-solving skills by tackling real-world engineering problems. Through theory and practical hands-on experiences, students address the emerging social and political consequences of technological change.

Introduction to Engineering Design A/B (T2/TE credit)

Prerequisite: *Algebra 1 minimal math experience preferred.*

Corequisite: *Algebra 1 or higher college prep math course to be taken concurrent for all PLTW courses.*

5152/5153 TE CM **0.5 credit**

This is an introductory course that develops students' problem-solving skills, with emphasis on visualization and communication skills using a computer and a 3-D solid modeling software. This course emphasizes the development of a design using computer software to produce, analyze, and evaluate models of projects and solutions. Students will study the design concepts of form and function and then use state-of-the-art technology to translate conceptual design into reproducible products.

Civil Engineering and Architecture A/B

Prerequisite: *Algebra 1 or higher college prep math course to be taken concurrent for all Project Lead The Way (PLTW) courses.*

Corequisite: *This course is only for students in the Project Lead The Way (PLTW) advanced engineering career pathway. Students must have completed IED and POE to take this course.*

Offered only at: ***Col. Zadok Magruder, Paint Branch, Poolesville, Rockville, Watkins Mill, Wheaton, Walt Whitman HS***

4255/4256 CM (AL) **0.5 credit**

This course provides an overview of the fields of civil engineering and architecture, while emphasizing the interrelationship and interdependence of both fields. Students use state-of-the-art software to solve real-world problems and communicate solutions to hands-on projects and activities. This course covers topics such as: The Roles of Civil Engineers and Architects; Project Planning; Site Planning; Building and Engineering Design; and Project Documentation and Presentation.

Computer Integrated Manufacturing A/B

Prerequisite: *Principles of Engineering and Introduction to Engineering Design Preferred*

Corequisite: *Students must be in and continue with college preparatory math courses*

Offered only at: ***Watkins Mill HS***

5154/5155 CM (Honors) **0.5 credit**

This course teaches the fundamentals of computerized manufacturing technology. It builds on the solid-modeling skills developed in the Introduction to Engineering Design course. Students use 3-D computer software to solve design problems. They assess their solutions through mass propriety analysis (the relationship of design, function, and materials), modify their designs, and use prototyping equipment to produce 3-D models.

Digital Electronics A/B

Prerequisite: *Principles of Engineering, and Introduction to Engineering preferred.*

Corequisite: *Students must be in and continue with college preparatory math courses.*

Offered only at: ***Col. Zadok Magruder, Paint Branch, Poolesville, Rockville, Watkins Mill, Wheaton, Walt Whitman HS***

5156/5157 CM **0.5 credit**

This course introduces students to applied digital logic, a key element of careers in engineering and engineering technology. This course explores the smart circuits found in watches, calculators, video games, and computers. Students use industry-standard computer software in testing and analyzing digital circuitry. They design circuits to solve problems and use appropriate components to build their designs. Students use mathematics and science in solving real-world engineering problems.

Engineering Design and Development A/B

Prerequisite: *All courses in the PLTW sequence of courses leading up to this capstone course.*

Corequisite: *Students must be in and continue with college preparatory math courses.*

Offered only at: ***Col. Zadok Magruder, Poolesville, Watkins Mill, Wheaton, Walt Whitman HS***

5158/5159 CM (Honors) **0.5 credit**

This is the capstone course for the Project Lead The Way (PLTW) advanced engineering program. At the end of the course, teams present their research paper and defend their projects to a panel of engineers, business leaders, and engineer college educators for a professional review and feedback. This course equips students with the independent study skills that they will need in postsecondary education and careers in engineering and engineering technology.

Aerospace Engineering A/B

Prerequisite: *Algebra 1 or higher college prep math course to be taken concurrent for all Project Lead The Way (PLTW) courses.*

Corequisite: *This course is only for students in the Project Lead The Way (PLTW) advanced engineering career pathway. Students must have completed IED and POE to take this course*

Offered only at: ***Col. Zadok Magruder, Wheaton HS***

5721/5722 CM (AL) **0.5 credit**

The fields of aeronautics and aerospace engineering are the focus of this engaging course that includes topics of study such as aerospace information systems, astronautics, rocketry, propulsion, the biology and physics of space science, principles of aeronautics, structures and materials, and systems engineering. Students continue using the national Project Lead The Way (PLTW) model to develop solutions to aerospace problems through the application of engineering, mathematics, and science-related knowledge.

PRE-ENGINEERING TECHNOLOGY—CAREER PATHWAY PROGRAM *(4 credits required)*

The Engineering Technology program provides a foundation for students interested in a technical career or a career in the field of engineering. Students learn to apply theories and principles of math and science to research and develop economical solutions to technical problems.

Pre-Engineering A/B

Prerequisite: *Grades 1012 (required)*

Offered only at: ***Bethesda-Chevy Chase, Montgomery Blair, James Hubert Blake, Winston Churchill, Clarksburg, Damascus, Albert Einstein, Gaithersburg, Walter Johnson, John F. Kennedy, Richard Montgomery, Northwest, Northwood, Quince Orchard, Seneca Valley, Sherwood, Springbrook, Thomas S. Wootton HS***

5504/5505 TE CM **0.5 credit**
4210/4211 AT CM **0.5 credit**

This course provides orientation and exposure to engineering activities and applies scientific principles to the solution of practical problems. This experience-based course provides students the opportunity to apply the practices of designing, prototyping, analyzing, and improving new and used designs. Computer systems, testing devices and equipment, materials, engineering graphics, math, science, language arts, and social studies principles are used to solve practical problems in a lab-based setting.

Communications Systems Technology A/B

Offered only at: ***Bethesda-Chevy Chase, Montgomery Blair, James Hubert Blake, Winston Churchill, Clarksburg, Damascus, Albert Einstein, Gaithersburg, Walter Johnson, John F. Kennedy, Richard Montgomery, Northwest, Northwood, Quince Orchard, Seneca Valley, Springbrook, Thomas S. Wootton HS***

4208/4209 AT CM **0.5 credit**

This course is for students who enjoy the challenge of solving problems by using electronic and computer imaging, audio-video production, laser and fiber optics, and satellite communications. Solutions to problems are constructed using different technology processes and systems. Students build and use communication systems, explore emerging technologies, use multimedia to manipulate and code information, and solve problems dealing with communication and information technologies.

Technological Innovations A/B

Offered only at: ***Bethesda-Chevy Chase, Montgomery Blair, James Hubert Blake, Winston Churchill, Clarksburg, Damascus, Albert Einstein, Gaithersburg, Walter Johnson, John F. Kennedy, Richard Montgomery, Northwest, Northwood, Quince Orchard, Seneca Valley, Sherwood, Springbrook, Thomas S. Wootton HS***

5506/5507 TE CM **0.5 credit**
4212/4213 AT CM **0.5 credit**

This course is for students interested in exploring physical, informational, and bio-related technologies. Students are involved in research and exploration of product design by experimenting and collecting data. Students then use tools, machines, and computer systems to problem solve, design, and construct prototypes of innovative solutions to everyday problems.

Internship, Engineering Technology

Prerequisite: *Completed at course work in the engineering CPP.*

5709 **0.5 credit**

Students who complete the Career Pathway Program (CPP) in engineering are prepared to seek employment upon graduation or to continue their technical training in engineering at a two- or four-year college.

Guided Research—Engineering, Scientific Research, and Manufacturing Technologies A/B

Prerequisite: *Students must successfully complete all required course work in the pre-engineering career pathway to take this course.*

Offered only at: ***Bethesda-Chevy Chase, Montgomery Blair, James Hubert Blake, Winston Churchill, Clarksburg, Damascus, Walter Johnson, John F. Kennedy, Northwest, Northwood, Paint Branch, Quince Orchard, Rockville, Seneca Valley, Sherwood, Springbrook, Thomas S. Wootton HS***

5302/5303 **0.5 credit**

This course provides an opportunity for pre-engineering students to complete a structured research project to advance their knowledge and skills related to an Engineering, Scientific Research, and Manufacturing Technologies Cluster career area.

TECHNOLOGY EDUCATION COURSES

Technology Education

These courses meet the state graduation requirement in Technology Education for students graduating in 2011 and after.

Foundations of Technology A/B (T2/TE credit)

5161/5162 TE **0.5 credit**

Students will explore and develop a deep understanding of the characteristics and scope of technology and the influence on history, along with the relationships and connections between technology and other fields of study. Students will develop an understanding of the attributes of design and develop skills by using the design process to solve technological problems. Students will develop a positive attitude about safety and skills through research, problem solving, testing, and working collaboratively.

Principles of Engineering A/B (T2/TE credit)

Prerequisite: *Algebra I and/or Introduction to Engineering Design B or better*

Corequisite: *Students must be in a college prep math sequence to enroll in this class. Algebra 1 is the minimal math requirement and Algebra 2 is preferred.*

Offered only at: ***Col. Zadok Magruder, Paint Branch, Poolesville, Rockville, Watkins Mill, Wheaton, Walt Whitman HS***

5150/5151 TE (BCC1) (AL) **0.5 credit**

This is a broad-based survey course to help students understand engineering, engineering technology, and identify career possibilities. This course provides an overview of engineering and engineering technology. Students develop problem-solving skills by tackling real-world engineering problems. Through theory and practical hands-on experiences, students address the emerging social and political consequences of technological change.

Introduction to Engineering Design A/B (T2/TE credit)

Prerequisite: *Algebra 1 minimal math experience preferred.*

Corequisite: *Algebra 1 or higher college prep math course to be taken concurrent for all PLTW courses.*

5152/5153 TE CM **0.5 credit**

This is an introductory course that develops students' problem-solving skills, with emphasis on visualization and communication skills using a computer and a 3-D solid modeling software. This course emphasizes the development of a design using computer software to produce, analyze, and evaluate models of projects and solutions. Students will study the design concepts of form and function and then use state-of-the-art technology to translate conceptual design into reproducible products.

HEALTH AND PHYSICAL EDUCATION

HEALTH EDUCATION COURSES

Comprehensive Health Education—Grade 10
Corequisite: *Students must be in Grade 10 or above to register for this course*
7835 (BCC1) **0.5 credit**
Students learn factual health information and develop lifetime skills in mental health; tobacco, alcohol, and other drugs; personal and consumer health; nutrition and fitness; safety and injury prevention; family life and human sexuality; and disease prevention. Although this course is required for graduation, parental permission must be specifically provided for students under the age of 18 to participate in family life and human sexuality and HIV/STI prevention.

Comprehensive Health Education—Grade 10, Honors
Corequisite: *Students must be in Grade 10 or above to register for this course.*
7841 (BCC1) (H) **0.5 credit**
Students learn factual health information and develop lifetime skills in mental health; tobacco, alcohol, and other drugs; personal and consumer health; nutrition and fitness; safety and injury prevention; family life and human sexuality; and disease prevention. Although this course is required for graduation, parental permission must be specifically provided for students under the age of 18 to participate in family life and human sexuality and HIV/STI prevention.

Family Life and Human Development
Prerequisite: *Comprehensive Health Education*
7833 **0.5 credit**
Students develop a greater understanding of how family relationships and human sexuality have an impact on individual health and society. Topics include interpersonal relationships; economics of family life; responsibilities of marriage and parenting; pregnancy prevention; pregnancy and childbirth; and sexually transmitted infections. Due to the nature of this course, parental permission is required for students under 18. *This course does not meet the Health Education graduation requirement.*

Human Behavior
Prerequisite: *Comprehensive Health Education*
7834 **0.5 credit**
Students explore human behavior through four major concepts human needs, perception, self-image and coping, and behavior/decision making. What influences the decisions we make, how we make decisions, and how those decisions affect us and others are the focus of the study of human behavior. Group dynamics and communication skills are integral parts of this course. *This course does not satisfy the Health Education graduation requirement.*

PHYSICAL EDUCATION COURSES

Physical Education 1, General
7720 (BCC1) **0.5 credit**
This course includes opportunities for a varied selection of individual, dual, team, dance, and personal development activities. Students are guided in identifying and improving their fitness levels through the development and use of personalized fitness plans. Recommended for students for whom basic skills and experiences are appropriate. It is recommended that ninth graders be enrolled in General Physical Education 1 as an introduction to the high school physical education curriculum.

Physical Education 2, General
7721 (BCC1) **0.5 credit**
General Physical Education 2 is recommended as the second course for ninth graders. Students focus on continuous skill development through individual, dual, team, dance, and personal development activities. Students continue to develop their personalized fitness plans and improve their physical fitness levels.

Physical Education, Concentrated
7722 (BCC1) **0.5 credit**
This course includes instruction in two or three activity units during a semester (six or nine weeks for each activity). Students may select from one interest area (e.g., all dance units) or from two or more interest areas (individual, dual, team, dance, fitness, personal development). Emphasis is on fitness and intermediate and advanced skill techniques in selected sports and activities, as ninth graders are less likely to be in this course.

Physical Education, Specialty
7723 (BCC1) **0.5 credit**
This course includes instruction in one or two selected activities during a semester. Improving individual fitness levels is also emphasized in this course. Skill work progresses from beginning- through intermediate- to advanced-level skills, but the emphasis is on intermediate- and advanced-level skills. Ninth graders are less likely to be in this course.

EDUCATION, ENTREPRENEURSHIP, FINANCE, AND INFORMATION TECHNOLOGIES

CAREER PATHWAY PROGRAMS IN EDUCATION

EARLY CHILD DEVELOPMENT CAREER PATHWAY PROGRAM *(4 credits required)*

Students in the Early Child Development program work with children in a variety of settings and study child development from the prenatal through adolescent stages. Knowledge of physical, intellectual, language, social, and emotional development is applied through planning sessions, teaching, observing, and studying 3-and 4-year olds in the child development laboratory. Students develop competence in creative teaching techniques.

Child and Adolescent Development 1 A/B

Prerequisite: *Students must complete Child and Adolescent Development 1A before taking Child and Adolescent Development 1B*

4847/4848 (5 SSL) **0.5 credit**
4851/4852 (10 SSL) (DP) **1.0 credit**

In this introductory course, students become part of an education team that has direct interaction with 4-year olds in a lab school setting. Students interested in education, pediatric medicine, physical therapy, family law, psychology, and sociology enroll in this course in preparation for college and career experiences. After a rigorous training period, students become part of a team of teachers responsible for the day-to-day workings of a lab school.

Child and Adolescent Development 2 A/B

Prerequisite: *Students must complete Child and Adolescent Development 1A and 1B and Child and Adolescent Development 2A before taking Child and Adolescent Development 2B*

4849/4850 CM (5 SSL) **0.5 credit**
4853/4854 CM (10 SSL) (DP) **1.0 credit**

After successful completion of Child Development 1, students continue to develop their teaching skills as they assume increased leadership responsibilities in the lab school setting. Students are responsible for program management as they develop and implement age-appropriate experiences for preschoolers. Upon completion of Child Development 2 and certification requirements, students may earn certification in the 90-Clock Hours Program. This certification may allow a student to obtain senior staff status.

Child and Adolescent Development 3 A/B

Prerequisite: *Students must complete Child and Adolescent Development 1A/B, 2A/B, 3A before taking this course.*

4866/4867 CM **0.5 credit**

Students research careers in education and other child-related fields of study. They pursue their interest through independent study, research, advocacy projects, field trips, and observations. Students complete their professional portfolios and participate in the interview process as they prepare for continuing education and career experiences.

Internship, Child Development A/B

Prerequisite: *Students must complete at least two credits in a related career pathway program.*

4860/4861 CM (5 SSL) **0.5 credit**
4862/4863 CM (10 SSL) (DP) **1.0 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences.

Child Development courses are available at all comprehensive high schools except Richard Montgomery High School

TEACHER ACADEMY OF MARYLAND CAREER PATHWAY PROGRAM *(4 credits required)*

The Academy for Teacher Education program prepares students for further education and careers in the education profession. The program consists of four high school credits, in the process of being developed, that focus on teaching as a profession, human growth and development, learning theory, and curriculum and instruction. These credits are designed to articulate to a Maryland post secondary teacher education program. Upon completion of the program and passing the ParaPro test, high school graduates are ready for employment in the teaching profession.

Child and Adolescent Development 1 A/B

Prerequisite: *Students must complete Child and Adolescent Development 1A before taking Child and Adolescent Development 1B*

4847/4848 (5 SSL) **0.5 credit**
4851/4852 (10 SSL) (DP) **1.0 credit**

In this introductory course, students become part of an education team that has direct interaction with 4-year olds in a lab school setting. Students interested in education, pediatric medicine, physical therapy, family law, psychology, and sociology enroll in this course in preparation for college and career experiences. After a rigorous training period, students become part of a team of teachers responsible for the day-to-day workings of a lab school.

Teaching as a Profession A/B

4878/4879 **0.5 credit**

This course focuses on the profession of teaching by exploring major approaches to human learning. Participation in guided observations and field experiences in multiple settings helps students to assess their personal interest in pursuing careers in this field and identify effective learning environments. Students will develop the components of a working portfolio.

Teaching and Curriculum A/B

Prerequisite: *Students must complete Child and Adolescent Development 1 A/B and Teaching as a Profession A and B before taking this course.*

4874/4875 **0.5 credit**

This course explores curriculum delivery models in response to the developmental needs of all children. Emphasis is placed on the development of varied instructional materials and activities to promote learning. Students will explore basic theories of motivation that increase learning and will participate in guided observations and field experiences. Students will continue to develop the components of a working portfolio to be assembled upon completion of the internship.

Internship, Teacher Education A/B

Prerequisite: *Students must complete at least two credits in a related career pathway program.*

4876/4877 **0.5 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences.

Guided Research—Education, Training, and Child Studies A/B

5300/5301 **0.5 credit**

This course provides an opportunity for Education, Training and Child Studies students to complete a structured research project to advance their knowledge and skills in career areas related to this cluster.

CAREER PATHWAY PROGRAMS AND COURSES IN ENTREPRENEURSHIP AND BUSINESS

BUSINESS ADMINISTRATION—ACCOUNTING—CAREER PATHWAY PROGRAM *(4 credits required)*

The Business Administration—Accounting program provides students with a comprehensive study of rigorous pathways in Accounting or Business Management. These programs provide students with accounting principles and the application of these principles to a wide range of business situations while developing a strong foundation in business operations. Students learn how to organize, finance, establish, operate, and manage a small business.

Entrepreneurship and Business Management 1 A/B

Prerequisite: *Software Applications by Design A/B is highly recommended; Entrepreneurship A is a prerequisite for Entrepreneurship B*

5450/5451 CM **0.5 credit**

Whether students dreams involve working at a fast-moving entrepreneurial organization or running an existing company, in this foundational course they learn the necessary skills they need to understand business principles. Student entrepreneurs work in teams to investigate topics such as business opportunities, feasibility studies, development of a business plan, financing alternatives, marketing, and legal forms of organization.

Accounting A/B

Prerequisite: *Highly recommended Software Applications by Design A/B; Accounting A is a prerequisite of Accounting B*

4111/4112 AT **0.5 credit**

Want to become a stockbroker, a financial analyst, or run your own business? Using microcomputers for electronic spreadsheets and accounting simulations, students will be able to set up accounts, prepare qualitative reports, and learn about auditing principles, budgets, and final reports. Emphasis is placed on student interest and how accounting is conducted in our society. Students may receive credit for this course at Montgomery College.

Accounting, Advanced A/B, Honors

Prerequisite: *Attainment of the outcomes of Accounting A/B; Advanced Accounting A is a prerequisite for Advanced Accounting B*

4113/4114 AT CM (H) **0.5 credit**

Certified public accountant (CPA), financial analyst, stockbroker, e-commerce developer, these are just a few of the careers that require an accounting background. This course provides students with a more comprehensive study of accounting principles and the application of these principles to a wide range of business situations. Extended use of microcomputers is an essential component of this course. Students may receive credit for this course at Montgomery College.

Internship, Business Management and Finance

Prerequisite: *Students must have completed at least two credits in a business-related career pathway program.*

5471 **0.5 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences.

BUSINESS MANAGEMENT—CAREER PATHWAY PROGRAM *(4 credits required)*

Software Applications Management A/B

4055/4056 **0.5 credit**

This course introduces word processing and spreadsheet skills using Microsoft Word and Excel. Students will integrate written and oral skills and apply speadsheet and charting skills within a project-based learning environment.

Software Applications by Design A/B

2903/2904 TE **0.5 credit**

This course helps prepare students to take the Microsoft Office Specialist (MOS) certification core-level examinations for Microsoft Word, Excel, Access, and PowerPoint. Students design and complete word processing, desktop publishing, spreadsheets, databases, and multimedia projects that reinforce the MOS standards taught throughout this course.

Software Applications by Design, Advanced A/B

Prerequisite: *Software Applications by Design A/B*

2905/2906 AT CM **0.5 credit**

Building on knowledge and skills learned in the Software Applications by Design courses, students will use project-based learning to apply advance skills in Microsoft Word and Excel along with the development of digital portfolios. Students may elect to take the Microsoft Office Specialist certification expert-level examination for Word and Excel at the conclusion of this course.

Entrepreneurship and Business Management 1 A/B

Prerequisite: *Software Applications by Design A/B is highly recommended; Entrepreneurship A is a prerequisite for Entrepreneurship B*

5450/5451 CM **0.5 credit**

Whether students dreams involve working at a fast-moving entrepreneurial organization or running an existing company, in this foundational course they learn the necessary skills they need to understand business principles. Student entrepreneurs work in teams to investigate topics such as business opportunities, feasibility studies, development of a business plan, financing alternatives, marketing, and legal forms of organization.

Entrepreneurship and Business Management 2

Prerequisite: *Entrepreneurship and Business Management A/B*

4135 CM **0.5 credit**

Students who have experienced entrepreneurial thinking and entrepreneurship concepts in the Entrepreneurship and Business Management 1 course extend their business acumen in this course. They learn more about organizing, financing, establishing, operating, and managing their own small businesses. Small business owners and managers will be invited to share authentic experiences with the students. Students complete a comprehensive business plan by the end of this course.

Skills for Success

4085 **0.5 credit**

Through observing, recording, and reviewing, students sharpen their abilities to organize their learnings with effective note taking. Soft skills such as time management, goal- setting, memory improvement techniques, test-taking strategies, and listening skills are emphasized. Tools, techniques, and ideas for improving student performance are addressed. The focus of the course involves organizing, synthesizing, and discerning important information from oral and written materials.

Personal Finance

Prerequisite: *Highly recommend Software Applications by Design A/B*

4158 CM **0.5 credit**

This course is designed to help students identify and learn personal strategies for managing financial resources. Investment simulations are used to focus on the importance of managing funds and investing wisely. Topics include consumerism, personal finance, credit, and investment planning.

Economics and Business Law A/B

Prerequisite: *Highly recommended Software Applications by Design A/B*

4131/4132 CM **0.5 credit**

4133/4134 CM **0.5 credit**

For those students contemplating becoming a lawyer or paralegal in the business community, this course introduces them to topics involving supply and demand theory, inflation, unemployment, fiscal and monetary policy, government regulations, and international trade. Students investigate how economics concepts impact decision-making in the world of business. Students focus on evaluating both sides of an issue and making decisions based on facts.

International Business

4136 CM **0.5 credit**

This course is designed for students who want to understand how business is conducted in other countries and who want to develop global business perspectives as well as sensitivities toward diverse cultures and customs. International marketing strategies, economic concepts, history, the role of geography in trade, monetary systems, trade agreements, and future trends will be some of the topics investigated.

Business Mathematics A/B
4171/4172, 4157/4159 **0.5 credit**

For students who always wondered when they would use the mathematics studied in school, here is the answer: real-world applications of mathematical skills. Students use mathematics to solve problems involving personal money records, banking transactions, purchasing for personal and household needs, and personal finances. Students will apply business math in savings and investments, home ownership, travel and transportation, taxes, and operation of a small business.

Business Administration Guided Research A/B
4046/4047 **0.5 credit**

This course provides an opportunity for business students to complete a structured research project related to a business career-related area.

Internship, Business Management and Finance
Prerequisite: *Students must have completed at least two credits in a business-related career pathway program.*

5471 **0.5 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences.

MARKETING—CAREER PATHWAY PROGRAM
(4 credits required)

The Marketing program focuses on a creative, dynamic and competitive field that requires a skilled professional understanding of consumer behavior and economic trends. Students learn the basics of economics and the total marketing process—from producer to consumer. Business organizations, marketing services, and the managerial responsibilities of marketing executives are studied. This program is available at Walt Whitman and Thomas S. Wootton high schools.

Marketing A/B
Prerequisite: *Marketing A is a prerequisite for Marketing B*

Offered only at: ***Montgomery Blair, James Hubert Blake, Damascus, Albert Einstein, John F. Kennedy, Richard Montgomery, Northwest, Northwood, Rockville, Sherwood, Springbrook, Watkins Mill, Walt Whitman, Thomas S. Wootton HS***

5431/5432 **0.5 credit**

Students learn economics and the role of marketing in today's global economy. This course includes a study of human relations, business organizations, market services, competition, and market research.

Advanced Marketing A/B
Prerequisite: *Attainment of the outcomes of Marketing A/B; Advanced Marketing A is a prerequisite for Advanced Marketing B.*

Offered only at: ***Montgomery Blair, James Hubert Blake, Damascus, Albert Einstein, Gaithersburg, John F. Kennedy, Richard Montgomery, Northwest, Northwood, Rockville, Sherwood, Springbrook, Watkins Mill, Walt Whitman, Thomas S. Wootton HS***

5433/5434 **0.5 credit**

Students explore the managerial responsibilities of marketing executives and analyze common management technique problems. Students investigate how marketing concepts affect decision making in the world of business.

Entrepreneurship and Business Management 1 A/B
Prerequisite: *Software Applications by Design A/B is highly recommended; Entrepreneurship A is a prerequisite for Entrepreneurship B*

5450/5451 CM **0.5 credit**

Whether students dreams involve working at a fast-moving entrepreneurial organization or running an existing company, in this foundational course they learn the necessary skills they need to understand business principles. Student entrepreneurs work in teams to investigate topics such as business opportunities, feasibility studies, development of a business plan, financing alternatives, marketing, and legal forms of organization.

Internship, Business Management and Finance
Prerequisite: *Students must have completed at least two credits in a business-related career pathway program.*

5471 **0.5 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences.

COSMETOLOGY—CAREER PATHWAY PROGRAM
(9 credits required)

Cosmetology, the science of personal beauty care, is a three-year program that requires 1,500 hours of instruction and allows the student entrance to the Maryland State Board Examination for an operator's license. Students receive practical instruction in hair care, hair coloring, hair shaping, hair styling, and chemical hair relaxing. Related theory instruction emphasizes hygiene and sanitation, professional ethics, salon management, chemistry, bacteriology, anatomy, and physiology. Students will be required to take the Maryland State Board of Cosmetologists Examination at the end of the program.

Cosmetology 1A TP
Offered only at: ***Thomas Edison HS of Technology, Gaithersburg HS***

5583(92) (15 SSL) (TP) **1.5 credits**

Upon completion of Cosmetology 1, students will be able to practice sanitation and sterilization procedures; give shampoos and various types of rinses; treat a variety of hair and scalp conditions; identify and describe skin and hair disorders; develop and display professional ethics, good grooming, and poise; and demonstrate knowledge of a wide range of career options. Upon completion of the program, students may earn an industry credential in Cosmetology.

Cosmetology 1B DP
Offered only at: ***Thomas Edison HS of Technology, Gaithersburg HS***

5584(92) (10 SSL) (TP) **1.0 credit**

Upon completion of Cosmetology 1, students will be able to practice sanitation and sterilization procedures; give shampoos and various types of rinses; treat a variety of hair and scalp conditions; identify and describe skin and hair disorders; develop and display professional ethics, good grooming, and poise; and demonstrate knowledge of a wide range of career options. Upon completion of the program, students may earn an industry credential in Cosmetology.

Related Mathematics A/B
Corequisite: *This course is taken in conjunction with Algebra 1A and 1B.*

3231(92)/3232(92) (BCC1) **0.5 credit**

Related Mathematics is taken in conjunction with Algebra 1A and 1B. It reinforces the essential pre-algebra and algebra concepts and skills necessary to function in authentic problem-solving situations. Students focus on skills and applications related to success in Algebra 1 and use technology in the problem-solving process. Upon completion of the program, students may earn an industry credential in Cosmetology.

Cosmetology 2 A/B DP
Prerequisite: *Attainment of the outcomes of Cosmetology 1. Students must complete Cosmetology 2A before taking 2B*

Corequisite: *Students must enroll in 0.5 credit of science (3615/3616)*

Offered only at: ***Thomas Edison HS of Technology, Gaithersburg HS***

5643(92)/5644(92) (10 SSL) (DP) **1.0 credit**

Upon completion of this course, students will be able to administer skin tests prior to applying tints and toners to patrons; identify and describe anatomical and physiological systems; use electrical frequency equipment for facials and scalp treatments; give a complete permanent wave; give a chemical hair relaxing treatment; and apply tints, and highlighting. Upon completion of the program, students may earn an industry credential in Cosmetology.

Cosmetology Science A/B

Prerequisite: *Science 3615A must be taken before 3616B*

Offered only at: ***Thomas Edison HS of Technology, Gaithersburg HS***

3615(92)/3616(92) **0.5 credit**

This science course is taken in conjunction with Cosmetology 2. Upon completion of the program, students may earn an industry credential in Cosmetology.

Cosmetology 3A TP

Prerequisite: *Attainment of the outcomes of Cosmetology 1 and 2*

Offered only at: ***Thomas Edison HS of Technology, Gaithersburg HS***

5587(92) (15 SSL) (TP) **1.5 credits**

Upon completion of Cosmetology 3, students will be able to do marcel waving and various sets and comb-outs, give a variety of facials, use chemical relaxers, acquire and apply knowledge of theory to practicing cosmetology and managing a beauty salon. Upon completion of the program, students may earn an industry credential in Cosmetology.

Cosmetology 3B DP

Prerequisite: *Attainment of outcomes for Cosmetology 1, 2, and 3A*

Offered only at: ***Thomas Edison HS of Technology, Gaithersburg HS***

5588(92) (10 SSL) (DP) **1.0 credit**

Upon completion of Cosmetology 3, students will be able to do marcel waving and various sets and comb-outs, give a variety of facials, use chemical relaxers, acquire and apply knowledge of theory to practicing cosmetology and managing a beauty salon. Upon completion of the program, students may earn an industry credential in Cosmetology.

NAIL TECHNOLOGY (MANICURING)—CAREER PATHWAY PROGRAM *(4 credits required)*

The Manicuring/Nail Technology program is a one-year program that prepares students for the Maryland State Board of Cosmetology Licensure Examination for Nail Technicians. To earn completer status, students must successfully complete the one-year program and additional related on-the-job training. To be eligible to apply to take the Maryland State Board Licensure Examination for Nail Technicians, the student must complete 250 hours of instruction and turn 17 years old by the end of the school year.

Nail Technology TP A

Offered only at: ***Thomas Edison HS of Technology***

5671(92) (15 SSL) (TP) **1.5 credits**

Nail Technology provides training in nail technology techniques, including manicures, pedicures, salon management, and interpersonal skills. Acrylic nails, nail designs, and nail wraps are also included. Related theory includes bacteriology, anatomy, physiology, sanitation, and skin and nail diseases. Upon completion of the program, students may earn the Maryland State Board of Cosmetology Nail Technician industry credential.

Nail Technology TP B

Prerequisite: *Nail Technology A*

Offered only at: ***Thomas Edison HS of Technology***

5672(92) (15 SSL) (TP) **1.5 credits**

Nail Technology provides training for the Maryland State Board of Cosmetology exam for Nail Technology. Students will learn how to administer manicures and pedicures, become proficient in salon management. Acrylic nails, nail designs, and nail wraps are also taught. Upon completion of the program, students may earn the Maryland State Board of Cosmetology Nail Technician industry credential.

Nail Technology, On The Job Training

Prerequisite: *Nail Technology A and B*

Offered only at: ***Thomas Edison HS of Technology***

5715(92) **0.5 credit**

For high school completer status, a student is required to complete 180 hours of on-the-job training where they will gain first hand experience working with industry professionals. Upon completion of the program, students may earn the Maryland State Board of Cosmetology Nail Technician industry credential.

HOSPITALITY MANAGEMENT—CAREER PATHWAY PROGRAM *(4 credits required)*

The Hospitality Management program offers students opportunities to pursue interests and gain proficiency in all aspects of the food industry, preparing them for a variety of career options. The need for dietary consultants, food scientists, nutritionists, chefs, food service managers, and educators continues to expand. Nutrition, food safety, and sanitation are emphasized as students practice all aspects of meal planning and preparation. ProStart outcomes have been infused into the curriculum, providing students with authentic work-based skills. Students take the ProStart and ServSafe exams for certification.

International Cultures and Cuisines A/B

Prerequisite: *Students must complete International Cultures and Cuisines A before taking B*

Offered only at: ***Clarksburg, Damascus, Albert Einstein, Gaithersburg, John F. Kennedy, Col. Zadok Magruder, Richard Montgomery, Northwest, Northwood, Paint Branch, Quince Orchard, Rockville, Sherwood, Springbrook, Watkins Mill, Wheaton, Walt Whitman, Thomas S. Wootton HS***

4630/4640 (5 SSL) **0.5 credit**

International Cultures and Cuisines examines the emphasis on food as it relates to the culture of other countries or cultural groups of our own country. Workforce trends, career paths and postsecondary requirements are examined. ProStart, a nationally recognized curriculum, has been infused into the curriculum, providing students with authentic work-based skills. Students may earn the ServSafe Food Protection Manager and ProStart industry credentials.

Culinary Essentials A/B

Prerequisite: *Students must complete Culinary Essentials A before taking B*

Offered only at: ***Clarksburg, Damascus, Albert Einstein, Gaithersburg, John F. Kennedy, Col. Zadok Magruder, Richard Montgomery, Northwest, Northwood, Paint Branch, Quince Orchard, Rockville, Sherwood, Springbrook, Watkins Mill, Walt Whitman, Thomas S. Wootton HS***

4825/4826 **0.5 credit**

This course offers students opportunities to refine their culinary skills while building important workplace skills. Attention is given to all aspects of careers in the hospitality industry. Laboratory experiences will foster an appreciation for the principles of food preparation. ProStart, a nationally recognized curriculum, has been infused into the curriculum, providing students with authentic work-based skills. Students may earn the ServSafe Food Protection Manager and ProStart industry credentials.

Internship, Hospitality Management

Prerequisite: *Students must complete at least two credits in a related career pathway program.*

Offered only at: ***Clarksburg, Damascus, Albert Einstein, Gaithersburg, John F. Kennedy, Col. Zadok Magruder, Richard Montgomery, Northwest, Northwood, Paint Branch, Quince Orchard, Rockville, Sherwood, Springbrook, Watkins Mill, Walt Whitman, Thomas S. Wootton HS***

4816 **0.5 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences. Students in this Career Pathway Program may earn the ServSafe Food Protection Manager and ProStart industry credentials.

ACADEMY OF HOSPITALITY AND TOURISM [AOHT]—CAREER PATHWAY PROGRAM *(4 credits required)*

The National Academy of Hospitality and Tourism, a member of the National Academy Foundation, addresses the needs of the hospitality industry by providing high school students with the education required for a successful career. The Academy provides a curriculum that gives an in-depth look at all aspects of hospitality and tourism, including coursework in business, geography, hospitality, and economics.

Hospitality and Tourism A/B

Prerequisite: *Students must complete Hospitality and Tourism A before taking Hospitality and Tourism B*

Offered only at: ***James Hubert Blake, Thomas Edison HS of Technology, Sherwood HS***

5398/5399 (5 SSL) **0.5 credit**

The National Academy of Hospitality and Tourism is a member program of the National Academy Foundation. This course provides an introduction to various components of this industry. Students are given an overview of aspects of business and marketing, opportunities to practice consumer service principles, and exposure to the various careers available in hospitality and tourism.

Economics for AOHT

Offered only at: ***James Hubert Blake, Thomas Edison HS of Technology, Sherwood HS***

5400 (5 SSL) **0.5 credit**

This is an economics principles and practices course that parallels the concepts taught in a general high school economics course. Academy students take this course in lieu of the economics course offered at their school. Throughout the course, examples of economic principles are drawn from the world of hospitality and tourism in order to integrate rigorous academic learning and practical business applications.

Hospitality for AOHT

Offered only at: ***James Hubert Blake, Thomas Edison HS of Technology, Sherwood HS***

5401 (5 SSL) **0.5 credit**

This course examines the various components of hospitality, including marketing and sales, lodging management, front desk operations, food and beverage, and culinary services. Students explore various career options in hospitality and tourism.

Systems for AOHT

Offered only at: ***James Hubert Blake, Thomas Edison HS of Technology, Sherwood HS***

5402 (5 SSL) **0.5 credit**

This course provides an overview of the systems and technology that provide infrastructure for the hospitality and tourism industry, including reservations, transportation, and online systems. Students will learn how to apply these technology principles to multiple aspects of the industry.

Travel Geography for AOHT A

Offered only at: ***James Hubert Blake, Thomas Edison HS of Technology, Sherwood HS***

5403 (5 SSL) **0.5 credit**

This course focuses on students developing broad geographic knowledge and skills. Students learn how to use the tools of the geographer as they examine travel geography in relation to the hospitality and tourism industry.

Travel Geography for AOHT B

Prerequisite: *Students must complete Travel Geography for AOHT A before taking B.*

Offered only at: ***James Hubert Blake, Thomas Edison HS of Technology, Sherwood HS***

5407 **0.5 credit**

Students will learn how the elements of geography impact travel professionals as they work with clients in the hospitality and tourism industry. Travel geography encompasses the physical elements of a destination—natural features and climate—and the human elements—economic, cultural, and political characteristics. Career opportunities in this industry are examined.

Internship, National Academy Foundation

Prerequisite: *Students must have completed at least two credits in a related career pathway program.*

Offered only at: ***Damascus, Albert Einstein, Gaithersburg, Col. Zadok Magruder, Northwest, Paint Branch, Seneca Valley, Sherwood, Springbrook, Watkins Mill, Wheaton, Thomas S. Wootton HS***

5720 CM **0.5 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences. This is a required course for National Academy Foundation students.

Guided Research—National Academy Foundation A/B

Prerequisite: *Students must have completed at least two credits in an IT-related career pathway program.*

2938/2939 CM (AL) **0.5 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences.

Guided Research for Human and Consumer Services, Hospitality and Tourism A/B

5394/5395 **0.5 credit**

This course provides an opportunity for Human and Consumer Services, Hospitality and Tourism students to complete a structured research project to advance their knowledge and skills in career areas related to this cluster.

PROFESSIONAL RESTAURANT MANAGEMENT—CAREER PATHWAY PROGRAM

(4 credits required)

The Professional Restaurant Management program provides students with the opportunity to explore the many career opportunities available in the food service industry. Students develop skills for employment based on industry standards. Students learn safety and sanitation principles, professional food handling techniques, and quantity preparation through the use of commercial equipment and systems technology. Nutrition, menu planning, food cost control, and workplace skills are emphasized throughout the program. The American Culinary Federation (ACF) has certified this program and ACF outcomes have been infused into the curriculum providing industry-based experiences. Students take ServSafe exam for certification.

Professional Restaurant Management 1 A/B

Prerequisite: *International Cultures and Cuisines A and B*

Offered only at: ***Damascus, Thomas Edison HS of Technology, Paint Branch HS***

4821(92)/4822(92) (5 SSL) **0.5 credit**

4823(92)/4824(92) (10 SSL) (DP) **1.0 credit**

Level I of Restaurant Management is designed to enable students to survey careers in the food industry as well as learn the basics of commercial food preparation through the operation of a restaurant and in-house catering. The American Culinary Federation (ACF) has certified this program and ACF outcomes have been infused into the curriculum providing industry-based experiences. Students may earn the ServSafe Food Protection Manager, ProStart and Certified Junior Culinarian industry credentials.

Professional Restaurant Management 2 A/B

Prerequisite: *Students must complete Professional Restaurant Management 1A/B before taking 2A. Students must complete Professional Restaurant Management 2A before taking 2B*

Offered only at: ***Damascus, Thomas Edison HS of Technology, Paint Branch HS***

4831(92)/4832(92) (5 SSL) **0.5 credit**

4841(92)/4842(92) (10 SSL) (DP) **1.0 credit**

Level II Restaurant Management is designed to expand managerial necessary for careers in the food service industry. Students gain additional experience through a variety of food service related projects. The American Culinary Federation (ACF) has certified this program and ACF outcomes have been infused into the curriculum providing industry-based experiences. Students may earn the ServSafe Food Protection Manager, ProStart and Certified Junior Culinarian industry credentials.

Internship, Professional Restaurant Management

Prerequisite: *Students must complete at least two credits in a related career pathway program.*

Offered only at: ***Damascus, Thomas Edison HS of Technology, Paint Branch HS***

4820(92) **0.5 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences. Students in this Career Pathway Program may earn the ServSafe Food Protection Manager, ProStart and Certified Junior Culinarian industry credentials.

ADDITIONAL ENTREPRENEURSHIP AND BUSINESS COURSES

Food Trends and Technology A/B

Prerequisite: *Students must complete Food Trends and Technology A before taking B*

Offered only at: ***Clarksburg, Damascus, Albert Einstein, Gaithersburg, John F. Kennedy, Col. Zadok Magruder, Richard Montgomery, Northwest, Paint Branch, Quince Orchard, Rockville, Sherwood, Springbrook, Watkins Mill, Walt Whitman, Thomas S. Wootton HS***

4204/4205 AT CM (BCC1) **0.5 credit**

4843/4844 TE CM (BCC1) **0.5 credit**

Food Trends and Technology examines the interrelationship of food, technology, science, and nutrition. A scientific approach to purposeful laboratory experiences allows students to prepare and evaluate specific foods and their properties. Units emphasize all aspects of food preparation from production through consumption. Students cooperatively research the role technology plays in food processing and study culinary techniques of the past, present, and into the future.

Interior Design 1 A/B

Prerequisite: *Students must complete Interior Design 1A before taking Interior Design 1B*

Offered only at: ***Thomas Edison HS of Technology***

4785/4786 (5 SSL) **0.5 credit**

This course includes units on the elements and principles of design, house styles and basic construction, scale drawing, room arrangement, furniture selection and styles, surface and window treatments, kitchen and other service areas, lighting, and accessories. Career opportunities in the field of interior design and the preparation of a design portfolio are essential components. Students will participate in the selection of furnishings and the decoration of the student built house project.

Interior Design 2 A/B

Prerequisite: *Students must complete Interior Design 2A before taking Interior Design 2B.*

Offered only at: ***Damascus HS***

4645/4646 **0.5 credit**

This course is a continuation of Interior Design 1 and is part of the future interior design career pathway program. Emphasis is on creating design solutions for both residential and nonresidential spaces. Utilizing appropriate color, scale, and form, students create interior design solutions in an organized method.

SEPA Cosmetology Topics

Prerequisite: *This course is open only to ESOL students enrolled in the SEPA Program. Admission to these courses must be determined by SEPA committee decision at Wheaton and Einstein.*

8096 **1.5 credits**

Students Engaged in Pathways to Achievement (SEPA) program is a career-based instructional program for Spanish-speaking high school ESOL students who have experienced interrupted or limited formal education. To be eligible for the SEPA program, students must be at least eighteen (18) years of age by the end of the school year. Available only to SEPA students in the DownCounty Consortium (DCC).

SEPA Culinary Arts Topics

Prerequisite: *This course is open only to ESOL students enrolled in the SEPA Program. Admission to these courses must be determined by SEPA committee decision at Wheaton and Einstein.*

8097 **1.5 credits**

Students Engaged in Pathways to Achievement (SEPA) program is a career-based instructional program for Spanish-speaking high school ESOL students who have experienced interrupted or limited formal education. To be eligible for the SEPA program, students must be at least eighteen (18) years of age by the end of the school year. Available only to SEPA students in the DownCounty Consortium (DCC).

CAREER PATHWAY PROGRAM IN FINANCE

National Academy of Finance *(4 credits required)*

The National Academy of Finance is a member of the National Academy Foundation. In this program, students receive intensive course work in economic and business principles. For more information, visit www.naf.org. This program is currently at Albert Einstein, Gaithersburg, Magruder, Northwest, Paint Branch, and Watkins Mill high schools.

Accounting A/B

Prerequisite: *Highly recommended Software Applications by Design A/B. Accounting A is a prerequisite of Accounting B*

4111/4112 AT **0.5 credit**

Want to become a stockbroker, a financial analyst, or run your own business? Using microcomputers for electronic spreadsheets and accounting simulations, students will be able to set up accounts, prepare qualitative reports, and learn about auditing principles, budgets, and final reports. Emphasis is placed on student interest and how accounting is conducted in our society. Students may receive credit for this course at Montgomery College.

Entrepreneurship and Business Management 1 A/B

Prerequisite: *Software Applications by Design A/B is highly recommended; Entrepreneurship A is a prerequisite for Entrepreneurship B*

5450/5451 CM **0.5 credit**

Whether students dreams involve working at a fast-moving entrepreneurial organization or running an existing company, in this foundational course they learn the necessary skills they need to understand business principles. Student entrepreneurs work in teams to investigate topics such as business opportunities, feasibility studies, development of a business plan, financing alternatives, marketing, and legal forms of organization.

Financial Planning

Prerequisite: *Accounting A* **Corequisite:** *Accounting A*

Offered only at: ***Albert Einstein, Gaithersburg, Col. Zadok Magruder, Northwest, Paint Branch, Watkins Mill HS***

4103 CM (AL) **0.5 credit**

Financial Planning introduces students to the financial planning process and the components of a comprehensive financial plan. Students learn how to prepare a financial plan that includes saving, investing, borrowing, risk management (insurance), retirement, and estate planning.

Banking and Credit

Prerequisite: *Accounting A* **Corequisite:** *Accounting A*

Offered only at: ***Albert Einstein, Gaithersburg, Col. Zadok Magruder, Northwest, Paint Branch, Watkins Mill HS***

4104 CM **0.5 credit**

Banking and Credit includes a survey of the principles and practices of banking and credit in the United States. Students learn about the major functions of banks and other depository institutions, in-house operations and procedures, central banking through the Federal Reserve System, and modern trends in the banking industry. The credit component provides an overview of credit functions and operations, including credit evaluation, loan creation, and debt collection.

Economics and the World of Finance
Prerequisite: *Accounting A* **Corequisite:** *Accounting A*
Offered only at: ***Albert Einstein, Gaithersburg, Col. Zadok Magruder, Northwest, Paint Branch, Watkins Mill HS***
4106 CM **0.5 credit**
Economics and the World of Finance includes macro-and micro-economics and provides an understanding of how our market economy functions in a global setting. It provides students with a survey of economic concepts. In addition, a unit on capital markets acquaints the students with the role that various markets and securities play in the U.S. economy.

International Finance
Prerequisite: *Accounting A* **Corequisite:** *Accounting A*
Offered only at: ***Albert Einstein, Gaithersburg, Col. Zadok Magruder, Northwest, Paint Branch, Watkins Mill HS***
4107 CM (AL) **0.5 credit**
This course provides students with opportunities to explore major components of the international financial system. It includes the study of foreign trade, the international monetary system, foreign exchange rates, foreign exchange markets, international financial markets, international banking, and the multinational corporation.

Securities and Insurance
Prerequisite: *Attainment of the outcomes of Accounting A/B*
Corequisite: *Accounting A*
Offered only at: ***Albert Einstein, Gaithersburg, Col. Zadok Magruder, Northwest, Paint Branch, Watkins Mill HS***
4138 CM (AL) **0.5 credit**
Through a study of the structure of brokerage firms, the trading process, credit and margin practicies, automated processes, government regulations, and licensing procedures, students gain an understanding of how a securities firm services its customers and plays an important role in our economy. This course also introduces students to various elements of the insurance industry, including insurance needs and products for businesses and individuals.

Internship, National Academy Foundation
Prerequisite: *Students must have completed at least two credits in a related career pathway program.*
Offered only at: ***Damascus, Albert Einstein, Gaithersburg, Col. Zadok Magruder, Northwest, Paint Branch, Seneca Valley, Sherwood, Springbrook, Watkins Mill, Wheaton, Thomas S. Wootton HS***
5720 CM **0.5 credit**
Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences. This is a required course for National Academy Foundation students.

Guided Research—National Academy Foundation A/B
Prerequisite: *Students must have completed at least two credits in an IT-related career pathway program.*
2938/2939 CM (AL) **0.5 credit**
Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences.

COURSES IN INFORMATION TECHNOLOGIES

Computer Science Courses

Software Applications Management A/B
4055/4056 **0.5 credit**
This course introduces word processing and spreadsheet skills using Microsoft Word and Excel. Students will integrate written and oral skills and apply speadsheet and charting skills within a project-based learning environment.

Software Applications by Design A/B
2903/2904 TE **0.5 credit**
This course helps prepare students to take the Microsoft Office Specialist (MOS) certification core-level examinations for Microsoft Word, Excel, Access, and PowerPoint. Students design and complete word processing, desktop publishing, spreadsheets, databases, and multimedia projects that reinforce the MOS standards taught throughout this course.

CAREER PATHWAY PROGRAMS IN INFORMATION TECHNOLOGIES

The National Academy of Information Technology consists of grade nine through twelve curriculum developed to address future demands of the Information Technology workforce across the nation. This program is aligned with relevant academic and employment standards. Students are required to complete a college-level course as well as participate in a paid summer internship program. For more information, see *www.naf.org.* This program is available at Damascus, Gaithersburg, Seneca Valley, Springbrook, Wootton, and Wheaton high schools. There are three National Academy of Information Technology pathways available: Programming, Information Resource Design, and Networking/Hardware.

NATIONAL ACADEMY OF INFORMATION TECHNOLOGY—(AOIT OFFERED IN IDENTIFIED SCHOOLS] CAREER PATHWAY PROGRAM
(4 credits required)

Computer Programming Strand (AOIT Option 1)
Career Pathway Program (4 credits required) The Computer Programming pathway offers students opportunities to explore careers related to computer science and programming.

Discovering Programming Concepts A/B
Prerequisite: *Algebra 1B*
2964/2967 TE CM **0.5 credit**
This course is designed for students who have had little or no past programming experience but may have an interest in computer science. Students explore fundamental computer science concepts such as algorithms, variables and constants, decision structures, looping structures, methods, arrays, and graphics using either the Visual BASIC or Visual Basic.NET programming language.

Computer Programming 1 A/B
Prerequisite: *Geometry OR* **Corequisite:** *Honors Geometry*
2989/2990 TE CM (AL) **0.5 credit**
4200/4201 AT CM (AL) **0.5 credit**
This course introduces the basic principles of structured programming, within the context of an object-oriented language. Topics covered include fundamentals of the C++ programming language, simple and structured data types, control statements, functions, arrays, and classes. Emphasis is placed on developing effective problem-solving techniques through individual and team projects.

Computer Programming 2, Advanced Placement Computer Science A/B
Prerequisite: *Attainment of the outcomes of Computer Programming 1 A/B*
2901/2902 AT CM AP (AL) **0.5 credit**
Using the Java language, students explore in-depth work with text files and arrays, abstract data types, recursion, searching and sorting algorithms, and program efficiency. Examination of specified class behaviors, interrelated objects, and object hierarchies are studied. Students may elect to take the A version of the Advanced Placement Computer Science exam upon completion of this course.

Computer Programming 3—Advanced Topics in Computer Science A/B

Prerequisite: *Attainment of the outcomes of Computer Programming 2 A/B*

2965/2966 AT CM AP (AL) **0.5 credit**

Students will study programming methodology, the features of programming languages, primitive data types, dynamic allocation of memory, data structures, searching, sorting, and numerical algorithms, using the Java programming language. Students are also introduced to software engineering concepts and team-oriented approaches for solving problems. Students will explore advanced topics such as memory management, network programming, simulation and game development, and multimedia programming.

Internship, National Academy Foundation

Prerequisite: *Students must have completed at least two credits in a related career pathway program.*

Offered only at: ***Damascus, Albert Einstein, Gaithersburg, Col. Zadok Magruder, Northwest, Paint Branch, Seneca Valley, Sherwood, Springbrook, Watkins Mill, Wheaton, Thomas S. Wootton HS***

5720 CM **0.5 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences. This is a required course for National Academy Foundation students.

Guided Research—National Academy Foundation A/B

Prerequisite: *Students must have completed at least two credits in an IT-related career pathway program.*

2938/2939 CM (AL) **0.5 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences.

Information Resource Design Strand (AOIT Option 2)

The Information Resource Design pathway offers students opportunities to explore careers related to web site development and database administration.

Discovering Programming Concepts A/B

Prerequisite: *Algebra 1B*

2964/2967 TE CM **0.5 credit**

This course is designed for students who have had little or no past programming experience but may have an interest in computer science. Students explore fundamental computer science concepts such as algorithms, variables and constants, decision structures, looping structures, methods, arrays, and graphics using either the Visual BASIC or Visual Basic.NET programming language.

Software Applications by Design, Advanced A/B

Prerequisite: *Software Applications by Design A/B*

2905/2906 AT CM **0.5 credit**

Building on knowledge and skills learned in the Software Applications by Design courses, students will use project-based learning to apply advance skills in Microsoft Word and Excel along with the development of digital portfolios. Students may elect to take the Microsoft Office Specialist certification expert-level examination for Word and Excel at the conclusion of this course.

Website Development A/B

Prerequisite: *Highly recommended -- Software Applications by Design A/B or Discovering Programming Concepts A/B; Web Site Development A is a prerequisite for Web Site Development B*

Corequisite: *Software Applications by Design A/B or Discovering Programming Concepts A/B*

2991/2992 AT CM **0.5 credit**

Students learn Web design from storyboard to a finished online Web page and develop actual sites from customers' specifications using HTML, Java Script, Cold Fusion, Web composers, and object-oriented programming languages. Skills in streaming media, server applications, and 3-D animation are developed. Project management provides students with skills to lead teams through projects, from inception to completion.

Web Tools and Digital Media, Advanced A/B

Prerequisite: *Website Development A/B; Semester A is a prerequisite for Semester B.*

Offered only at: ***Damascus, Gaithersburg, Seneca Valley, Springbrook, Wheaton, Thomas S. Wootton HS***

2936(92)/2937(92) AT CM **0.5 credit**

This course introduces students to advanced Web topics such as webscripting, Web server administration, and Web-based multimedia tools. Students also study digital media and related topics, including audio, video, graphics, text, and animation tools as well as color and animation concepts.

Database Administration Programming A/B

Prerequisite: *Discovering Programming Concepts A/B or Computer Programming 1; Semester A is a prerequisite for Semester B.*

Offered only at: ***Gaithersburg, Wheaton HS***

4232/4233 AT CM (AL) **0.5 credit**

Students are introduced to the concepts of relational database engines and the tools to use them. Database concepts of tables, rows, indexes, constraints, triggers, SQL syntax, and storage are among the topics presented.

Internship, National Academy Foundation

Prerequisite: *Two credits in a related career pathway program.*

Offered only at: ***Damascus, Albert Einstein, Gaithersburg, Col. Zadok Magruder, Northwest, Paint Branch, Seneca Valley, Sherwood, Springbrook, Watkins Mill, Wheaton, Thomas S. Wootton HS***

5720 CM **0.5 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences. This is a required course for National Academy Foundation students.

Guided Research—National Academy Foundation A/B

Prerequisite: *Two credits in an IT-related career pathway program.*

2938/2939 CM (AL) **0.5 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences.

ORACLE DATABASE ACADEMY CAREER PATHWAY PROGRAM *(4 credits required)*

Computer Programming 1 A/B

Prerequisite: *Geometry* **Corequisite:** *Honors Geometry*

2989/2990 TE CM (AL) **0.5 credit**

This course introduces the basic principles of structured programming, within the context of an object-oriented language. Topics covered include fundamentals of the C++ programming language, simple and structured data types, control statements, functions, arrays, and classes. Emphasis is placed on developing effective problem-solving techniques through individual and team projects.

Computer Programming 1 A/B

Prerequisite: *Geometry* **Corequisite:** *Honors Geometry*

4200/4201 AT CM (AL) **0.5 credit**

This course introduces the basic principles of structured programming, within the context of an object-oriented language. Topics covered include fundamentals of the C++ programming language, simple and structured data types, control statements, functions, arrays, and classes. Emphasis is placed on developing effective problem-solving techniques through individual and team projects.

Computer Programming 2, Advanced Placement Computer Science A/B

Prerequisite: *Attainment of the outcomes of Computer Programming 1 A/B*

2901/2902 AT CM AP (AL) **0.5 credit**

Using the Java language, students explore in-depth work with text files and arrays, abstract data types, recursion, searching and sorting algorithms, and program efficiency. Examination of specified class behaviors, interrelated objects, and object hierarchies are studied. Students may elect to take the A version of the Advanced Placement Computer Science exam upon completion of this course.

Computer Programming 3—Advanced Topics in Computer Science A/B

Prerequisite: *Attainment of the outcomes of Computer Programming 2 A/B*

2965/2966 AT CM AP (AL) **0.5 credit**

Students will study programming methodology, the features of programming languages, primitive data types, dynamic allocation of memory, data structures, searching, sorting, and numerical algorithms, using the Java programming language. Students are also introduced to software engineering concepts and team-oriented approaches for solving problems. Students will explore advanced topics such as memory management, network programming, simulation and game development, and multimedia programming.

Database Administration Programming A/B

Prerequisite: *Discovering Programming Concepts A/B or Computer Programming 1; Semester A is a prerequisite for Semester B.*

Offered only at: ***Gaithersburg, Wheaton HS***

4232/4233 AT CM (AL) **0.5 credit**

Students are introduced to the concepts of relational database engines and the tools to use them. Database concepts of tables, rows, indexes, constraints, triggers, SQL syntax, and storage are among the topics presented.

CISCO NETWORKING ACADEMY PATHWAY *[IN SELECTED AND AOIT SCHOOLS ONLY]* *(4 credits required)*

The Networking/Hardware Career Program Pathway offers students opportunities to learn basic technical and problem-solving skills while providing a comprehensive foundation of microcomputer and network technologies. Preparation for international industry credentials validate the knowledge students have attained. Hands on laboratory experiences train students as entry-level technicians in the field of IT as well as for advanced studies in Engineering and IT in colleges, universities and the military. Several schools offer preparation for nationally recognized industry certifications through the Cisco Academy program. Articulated college credits may be earned through successful completion of the program.

Microcomputer Technologies A/B

Prerequisite: Prerequisite: *Algebra I B; Discovering Programming Concepts A/B in Grade 9 or Computer Programming 1 A/B;*

Offered only at: ***Bethesda-Chevy Chase, Montgomery Blair, Damascus, Gaithersburg, Northwest, Quince Orchard, Seneca Valley, Sherwood, Springbrook, Wheaton, Thomas S. Wootton HS***

5611/5612 TE **0.5 credit**

This course offers an in-depth exposure to computer hardware and operating systems. Students will learn how to assemble and configure a computer, install operating systems and software, and troubleshoot hardware and software problems. In addition, they will be introduced to networking. Students will prepare to take CompTIA A+ national certification exam. Several schools offer the Cisco IT Essentials Academy program and prepare students for the Cisco certification exam.

Microcomputer Technologies A/B DP

Prerequisite: Prerequisite: *Algebra IB; Discovering Programming Concepts A/B in Grade 9 or Computer Programming 1 A/B*

Offered only at: ***Bethesda-Chevy Chase, Montgomery Blair, Damascus, Gaithersburg, Northwest, Quince Orchard, Seneca Valley, Sherwood, Springbrook, Wheaton, Thomas S. Wootton HS***

5613/5614 TE (DP) **1.0 credit**

This course offers an in-depth exposure to computer hardware and operating systems. Students will learn how to assemble and configure a computer, install operating systems and software, and troubleshoot hardware and software problems. In addition, they will be introduced to networking. Students will prepare to take CompTIA A+ national certification exam. Several schools offer the Cisco IT Essentials Academy program and prepare students for the Cisco certification exam.

Network Engineering and Management A/B

Prerequisite: *Attainment of the outcomes of Microcomputer Technologies A/B; Network Engineering A is a prerequisite for Network Engineering B.*

Offered only at: ***Bethesda-Chevy Chase, Montgomery Blair, Damascus, Gaithersburg, Northwest, Quince Orchard, Seneca Valley, Sherwood, Springbrook, Wheaton, Thomas S. Wootton HS***

5615/5616 TE **0.5 credit**

Students are introduced to the basic foundations of networking. Concepts covered include LANS, WANS, the OSI model, cabling, router configuration, and management. Students will prepare to take the CompTIA Network + certification exam. Additionally, schools offering Cisco Academy programs will prepare the students to take the industry CCNA certification exams.

Network Engineering and Management A/B DP

Prerequisite: *Attainment of the outcomes of Microcomputer Technologies A/B; Network Engineering A is a prerequisite for Network Engineering B*

Offered only at: ***Bethesda-Chevy Chase, Montgomery Blair, Damascus, Gaithersburg, Northwest, Quince Orchard, Seneca Valley, Sherwood, Springbrook, Wheaton, Thomas S. Wootton HS***

5617/5618 TE (DP) **1.0 credit**

Students are introduced to the basic foundations of networking. Concepts covered include LANS, WANS, the OSI model, cabling, router configuration, and management. Students will prepare to take the CompTIA Network + certification exam. Additionally, schools offering Cisco Academy programs will prepare the students to take the industry CCNA certification exams.

Microcomputer Technologies A/B

Prerequisite: *Prerequisite—Algebra I B; Discovering Programming Concepts A/B in Grade 9 or Computer Programming 1 A/B;*

Offered only at: ***Bethesda-Chevy Chase, Montgomery Blair, Damascus, Gaithersburg, Northwest, Quince Orchard, Seneca Valley, Sherwood, Springbrook, Wheaton, Thomas S. Wootton HS***

4214/4215 AT **0.5 credit**

This course offers an in-depth exposure to computer hardware and operating systems. Students will learn how to assemble and configure a computer, install operating systems and software, and troubleshoot hardware and software problems. In addition, they will be introduced to networking. Students will prepare to take CompTIA A+ national certification exam. Several schools offer the Cisco IT Essentials Academy program and prepare students for the Cisco certification exam.

Microcomputer Technologies A/B DP

Prerequisite: *Prerequisite—Algebra 1B; Discovering Programming Concepts A/B in Grade 9 or Computer Programming 1*

Offered only at: ***Bethesda-Chevy Chase, Montgomery Blair, Damascus, Gaithersburg, Northwest, Quince Orchard, Seneca Valley, Sherwood, Springbrook, Wheaton, Thomas S. Wootton HS***

4216/4217 AT (DP) **1.0 credit**

This course offers an in depth exposure to computer hardware and operating systems. Students will learn how to assemble and configure a computer, install operating systems and software, and troubleshoot hardware and software problems. In addition, they will be introduced to networking. Students will prepare to take CompTIA A+ national certification exam. Several schools offer the Cisco IT Essentials Academy program and prepare students for the Cisco certification exam.

Network Engineering and Management A/B

Prerequisite: *Attainment of the outcomes of Microcomputer Technologies A/B; Network Engineering A is a prerequisite for Network Engineering B.*

Offered only at: ***Bethesda-Chevy Chase, Montgomery Blair, Damascus, Gaithersburg, Northwest, Quince Orchard, Seneca Valley, Sherwood, Springbrook, Wheaton, Thomas S. Wootton HS***

4218/4219 AT **0.5 credit**

4220/4221 AT (DP) **1.0 credit**

Students are introduced to the basic foundations of networking. Concepts covered include LANS, WANS, the OSI model, cabling, router configuration and management. Students will prepare to take the CompTIA Network + certification exam. Additionally, schools offering Cisco Academy programs will prepare the students to take the industry CCNA certification exams.

Network Engineering and Management, Advanced A/B

Prerequisite: *Network Engineering and Management A/B*

Offered only at: ***Bethesda-Chevy Chase, Montgomery Blair, Damascus, Gaithersburg, Northwest, Quince Orchard, Seneca Valley, Sherwood, Springbrook, Wheaton, Thomas S. Wootton HS***

4230/4231 AT CM (AL) **0.5 credit**

Advanced concepts of functionally connecting multiple computing devices are addressed in this course. Physical and logical connections are presented as well as concepts such as bandwidth, access time, data rate, and error detection and correction.

Internship, Microcomputer Technologies and Network Engineering

Prerequisite: *Completion of the Networking/Hardware Pathway (4 credits required)*

Offered only at: ***Bethesda-Chevy Chase, Montgomery Blair, Damascus, Gaithersburg, Northwest, Quince Orchard, Seneca Valley, Sherwood, Springbrook, Wheaton, Thomas S. Wootton HS***

5706 **0.5 credit**

This course provides a internship in microcomputer and/or network engineering. Students network with local IT professionals and mentors to learn the skills necessary for success in an IT career. Successful completion of this course prepares students to seek employment upon graduation and/or continue their training at a two or four year college.

Internship, National Academy Foundation

Prerequisite: *Students must have completed at least two credits in a related career pathway program.*

Offered only at: ***Damascus, Albert Einstein, Gaithersburg, Col. Zadok Magruder, Northwest, Paint Branch, Seneca Valley, Sherwood, Springbrook, Watkins Mill, Wheaton, Thomas S. Wootton HS***

5720 CM **0.5 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences. This is a required course for National Academy Foundation students.

Guided Research—National Academy Foundation A/B

Prerequisite: *Students must have completed at least two credits in an IT-related career pathway program.*

2938/2939 CM (AL) **0.5 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences.

NETWORK OPERATIONS—CAREER PATHWAY PROGRAM *(4 credits required)*

Network Operations A/B TP

Offered only at: ***Clarksburg, Thomas Edison HS of Technology, Rockville HS***

4202(92)/4203(92) AT CM (15 SSL) (TP) **1.5 credits**

Students acquire industry-standard knowledge and skills needed to install, configure, diagnose, and repair PC hardware including power supplies, memory, I/O devices, drives, and peripherals. Students learn to install and troubleshoot a variety of computer operating systems. Students learn networking configuration, protocols, security, fault tolerance, and hardware/software troubleshooting in local and wide area networks. CompTIA A+/Network+ certifications and articulated college credits may be earned.

Network Operations 1 A/B, DP

Prerequisite: *Successful completion of Network Operations 1A (4242) required prior to Network Operations 1B (4243).*

Offered only at: ***Clarksburg, Rockville HS***

4242/4243 AT CM (10 SSL) (DP) **1.0 credit**

Students acquire industry-standard knowledge and skills needed to install, configure, optimize, diagnose and upgrade personal and laptop computers. Content includes power supplies, memory, I/O, storage devices, drives, and peripherals. Students install, configure, and troubleshoot a variety of computer operating systems. Networks, security, safety, and environmental issues are addressed. Aligned to CompTIA A+ Essentials and IT Technician objectives, this course allows students to earn full A+ certification.

Network Operations 2, DP

Prerequisite: *Network Operations 1B (4243)*

Offered only at: ***Clarksburg, Rockville HS***

4244 AT CM (10 SSL) (DP) **1.0 credit**

Students learn the features and functions of computer network components and acquire the skills needed to install, configure, and troubleshoot networking hardware, peripherals, and protocols. Concepts covered include media and topologies, protocols and standards, network implementation and support. Students learn the layers of the OSI model, LANS, WANS, cabling, and router configuration and management. Students take the CompTIA Network+ certification exam, earning valuable industry-standard certification.

Network Operations Internship

Prerequisite: *Network Operations A/B (4202/4203 or 4242/4243)*

Offered only at: ***Clarksburg, Thomas Edison HS of Technology, Rockville HS***

4187 AT **0.5 credit**

Network Operations students extend computer skills learned in the classroom through work-based experiences. Industry placements are made in partnership with Montgomery County Students Information Technology Foundation, Inc., providing meaningful work-based experiences framed around Server+, Security+, or MCSA industry certifications. Trained mentors in the professional IT business community supervise and lead students toward these challenging and advanced industry certifications. May be repeated for credit.

Network Operations Guided Research

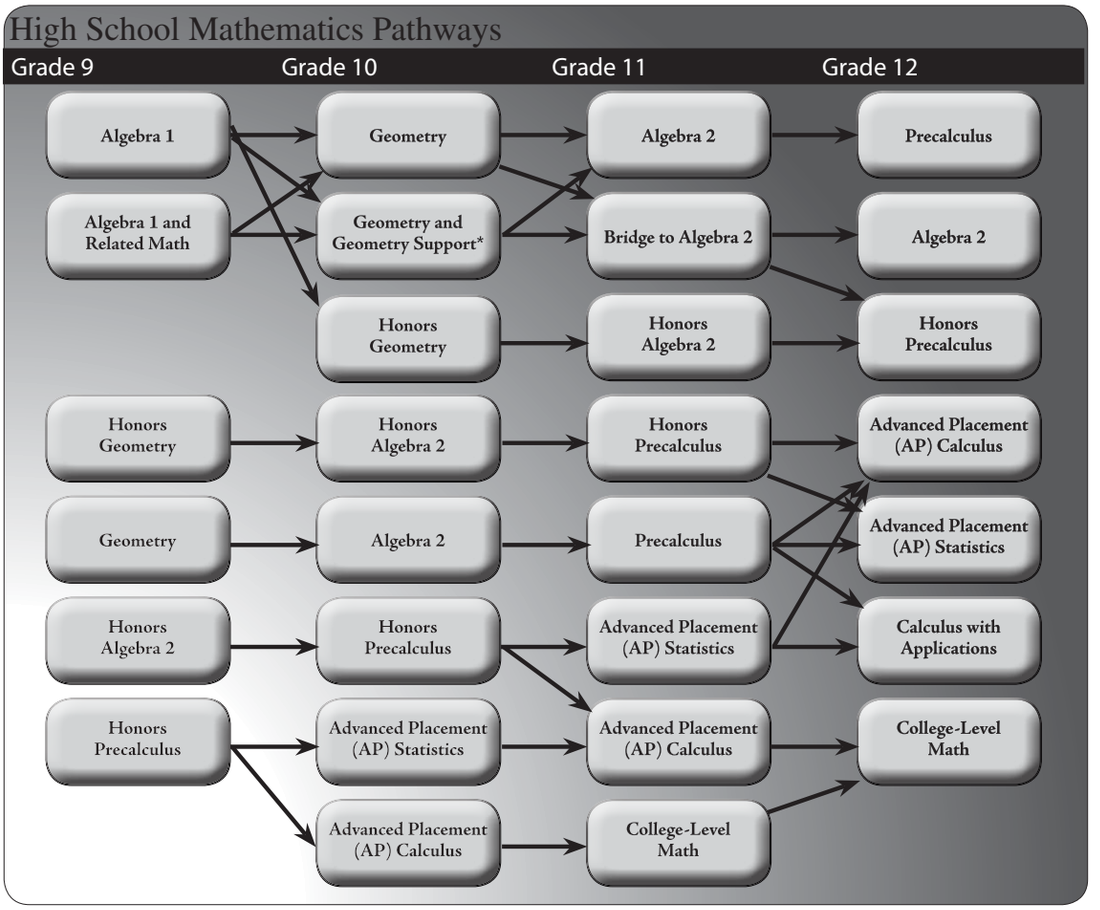
Prerequisite: *Network Operations A/B (4202/4203 or 4242/4243)*

Offered only at: ***Clarksburg, Thomas Edison HS of Technology, Rockville HS***

4188 AT **0.5 credit**

This course provides school-based learning opportunities for advanced information technology studies. Under the supervision of the Network Operations teacher, students will pursue a project or concentrated study in an area of computer and information sciences related to a networking career, leading to advanced IT certification and college credits. Students may attain such advanced industry certification as Server+, Security+, or MCSA; and/or dual-enrollment college matriculation. May be repeated for credit.

MATHEMATICS



*Geometry Support is counted as an elective credit, not as a mathematics credit.

Additional math electives: Statistics and Mathematical Modeling (SAMM) and Quantitative Literacy

Students have the option to move from an on-level course to Honors or Advanced Placement courses at any time throughout high school.

Four credits in mathematics, including 1 credit in algebra and 1 credit in geometry are required for graduation.

Students who have successfully completed a calculus course may be exempted from the 4-credit requirement in mathematics. Students must consult with school counselors in advance to obtain full information about the credit waiver and its advisability. They are strongly encouraged to have a graphing calculator. Graphing calculators are used on the High School Assessments (HSA), PSAT, SAT, and Advanced Placement examinations and in the courses leading to those examinations. All Maryland state colleges and universities require mathematics through Algebra 2 for admission. In order to earn an MCPS Certificate of Merit (CM) a student must successfully complete Algebra 2.

Basic Core Courses in Mathematics

Basic Core Category 1 courses are , Algebra 1 A/B, Related Mathematics A/B, Geometry A/B, Bridge to Algebra 2 A/B Algebra 2 A/B, Precalculus A/B, AP Calculus AB, A/B, and AP Calculus BC, A/B. Category 2 courses are Mathematical Approach to Problem Solving A/B, Quantitative Literacy A/B, Statistics and Mathematics Modeling A/B, AP Statistics A/B, and Calculus with Applications A/B.

Courses in Mathematics			
Mathematical Approach to Problem Solving A	3014	9-12	
Mathematical Approach to Problem Solving B	3015	9-12	
Algebra 1A	3111	9-12	CM, HSA, NCAA
Algebra 1B	3112	9-12	CM, HSA, NCAA
Related Mathematics A	3231	9-12	
Related Mathematics B	3232	9-12	
Quantitative Literacy A	3121	11-12	CM, NCAA
Quantitative Literacy B	3122	11-12	CM, NCAA
Geometry A	3201	9-12	CM, NCAA
Geometry B	3202	9-12	CM, NCAA
Geometry A, Honors	3203	9-12	CM, NCAA
Geometry B, Honors	3204	9-12	CM, NCAA
Geometry Support A (elective credit only)	3051	9-12	
Geometry Support B (elective credit only)	3052	9-12	
Bridge to Algebra 2 A	3053	10-12	CM, NCAA
Bridge to Algebra 2 B	3054	10-12	CM, NCAA
Algebra 2 A	3301	9-12	CM, NCAA
Algebra 2 B	3302	9-12	CM, NCAA
Algebra 2 with Analysis A, Honors	3310	9-12	CM, NCAA
Algebra 2 with Analysis B, Honors	3311	9-12	CM, NCAA
SAT—I Verbal and Mathematics Preparation	1142	9-12	
Precalculus A	3489	9-12	CM, NCAA
Precalculus B	3490	9-12	CM, NCAA
Precalculus with Analysis A, Honors	3350	9-12	CM, NCAA
Precalculus with Analysis B, Honors	3351	9-12	CM, NCAA
Statistics and Mathematical Modeling A	3322	11-12	CM, NCAA
Statistics and Mathematical Modeling B	3323	11-12	CM, NCAA
Calculus with Applications A	3356	9-12	CM, NCAA
Calculus with Applications B	3357	9-12	CM, NCAA
Calculus AB, A, Advanced Placement	3452	9-12	CM, NCAA
Calculus AB, B, Advanced Placement	3453	9-12	CM, NCAA
Calculus BC, A, Advanced Placement	3491	9-12	CM, NCAA
Calculus BC, B, Advanced Placement	3492	9-12	CM, NCAA
Statistics A, Advanced Placement	3320	9-12	CM, NCAA
Statistics B, Advanced Placement	3321	9-12	CM, NCAA

MATHEMATICS COURSES

Algebra 1 A/B

3111/3112 CM NCAA (BCC1) **0.5 credit**

Algebra 1 examines the basic structure of real numbers, algebraic expressions, and functions. The topics studied are linear equations, inequalities, functions and systems, quadratic equations and functions, polynomial expressions, data analysis, probability, and properties of functions. Mathematical modeling of real-life problems and problem solving are major themes of the course.

Mathematical Approach to Problem Solving A/B

3113/3114 (BCC1) **0.5 credit**

Mathematical Approach to Problem Solving (MAPS) is designed for students who need additional instruction prior to taking Algebra 1. MAPS is a course primarily for students who have had an "interrupted education" (e.g., coming to MCPS from out of state or country). Calculators and computers are used in problem-solving situations and in the development of number, algebra, geometry, measurement, probability, and statistics concepts and skills.

Related Mathematics A/B

Corequisite: *This course is taken in conjunction with Algebra 1A and 1B.*

3231(92)/3232(92) (BCC1) **0.5 credit**

Related Mathematics is taken in conjunction with Algebra 1A and 1B. It reinforces the essential pre-algebra and algebra concepts and skills necessary to function in authentic problem-solving situations. Students focus on skills and applications related to success in Algebra 1 and use technology in the problem-solving process. Upon completion of the program, students may earn an industry credential in Cosmetology.

Geometry A/B

Prerequisite: *Attainment of the outcomes of Algebra 1A and 1B*

3201/3202 CM NCAA (BCC1) **0.5 credit**

3203/3204 CM NCAA (BCC1) (H) **0.5 credit**

Geometry is studied as a mathematical system through the deductive development of relationships in the plane and space. Students formalize their understanding of geometric concepts, including congruence and similarity, circle chords, secants and tangent segments, parallel and perpendicular lines, angle and side measures in polygons, proofs, logic, transformations, the Pythagorean Theorem, constructions, coordinate geometry, and surface area and volume of solids.

Bridge to Algebra 2 A/B

Prerequisite: *Attainment of the outcomes of Algebra 1 and Geometry*

3053/3054 (BCC1) **0.5 credit**

Bridge to Algebra 2 is designed for students who have completed Algebra 1 and Geometry, and need additional support before taking Algebra 2. Students in this course will apply concepts from Algebra 1 and Geometry to solve meaningful real-world problems. In doing so, they will reinforce their algebra and geometry skills.

Algebra 2 A/B

Prerequisite: *Attainment of the outcomes of Algebra 1 and Geometry*

3301/3302 CM NCAA (BCC1) **0.5 credit**

3310/3311 CM NCAA (BCC1) (AL) **0.5 credit**

Algebra 2 is the study of the complex number system and functions. Real-world problems are discussed, represented, and solved using advanced algebraic techniques, incorporating technology. The properties and algebra of functions, including polynomial, exponential, logarithmic, piece-wise, radical, and rational, are analyzed and applied, as well as conics, matrices, systems of equations, sequences, and series.

Statistics and Mathematical Modeling A/B

Prerequisite: *Attainment of the outcomes of Algebra 2A and 2B*

3322/3323 CM NCAA (BCC2) **0.5 credit**

Statistics and Mathematical Modeling (SAMM) semester A topics include data analysis, probability, simulations, inferential statistics, normal and binomial distributions, techniques of sampling, confidence intervals, and hypotheses testing. Semester B topics are chosen from cryptography and coding, game and graph theory, architecture, trigonometry, fairness and apportionment, careers, investment and finance, and college placement test review.

Quantative Literacy A/B

Prerequisite: *Attainment of the indicators of Algebra 2 or Bridge to Algebra 2*

3121/3122 (BCC2) **0.5 credit**

Quantitative Literacy is designed to enhance students abilities in mathematical decision-making and financial literacy. Topics include issues in health and social sciences, the mathematics of chance, the mathematics of democracy, mathematics around the house, individual budgeting, investing, credit and loans. Also included are business topics including starting and maintaining a business. Emphasis is on the mathematical aspects of the topics.

Precalculus A/B

Prerequisite: *Attainment of the outcomes of Algebra 2A and 2B*

3489/3490 CM NCAA (BCC1) **0.5 credit**

3350/3351 CM NCAA (BCC1) (AL) **0.5 credit**

Precalculus completes the formal study of the elementary functions begun in Algebra 1 and Algebra 2. Students focus on the use of technology, modeling, and problem solving. Functions studied include polynomial, exponential, logarithmic, rational, radical, piece-wise, and trigonometric and circular functions and their inverses. Parametric equations, vectors, and infinite sequences and series are also studied.

Calculus with Applications A/B

Prerequisite: *Attainment of the outcomes of Precalculus A and B*

3356/3357 CM NCAA (BCC2) (AL) **0.5 credit**

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

Calculus AB, Advanced Placement, A/B

Prerequisite: *Attainment of the outcomes of Precalculus A and B*

3452/3453 CM NCAA AP (BCC1) (AL) **0.5 credit**

Calculus AB topics are those traditionally offered in the first year of calculus in college, and are designed for students who wish to obtain a semester of advanced placement in college. The topics studied include limits, continuity, derivatives and integrals of algebraic and transcendental functions and their applications, and elementary differential equations.

Calculus BC, Advanced Placement, A/B

Prerequisite: *Attainment of the outcomes of Precalculus, Honors A and B*

3491/3492 CM NCAA AP (BCC1) (AL) **0.5 credit**

Calculus BC includes all of the topics in Calculus AB, as well as convergence tests for series, Taylor or Maclaurin series, vector, polar, and parametric functions. Students in BC Calculus generally receive two semesters of Advanced Placement in mathematics.

Statistics, Advanced Placement, A/B

Prerequisite: *Attainment of the outcomes of Algebra 2A and 2B*

3320/3321 CM NCAA AP (BCC2) (AL) **0.5 credit**

Advanced Placement Statistics students engage in the exploratory analysis of data, using graphical and numerical techniques. Data sets are collected using statistical design methods. Students produce appropriate models using probability, simulation, and statistical inference. Models are used to draw conclusions from data and analyzed by inferential methods to determine whether the data support or discredit the model. This course is equivalent to a non-calculus-based introductory college statistics course.

SAT: Verbal and Mathematics Preparation

1142 **0.5 credit**

This one-semester course is designed to improve student achievement on both the verbal and mathematics components of the SAT. They acquire skills related to the SAT format and develop test-taking skills by taking released editions of the SAT under simulated test conditions. This course is also listed in the English section.

INTERNATIONAL BACCALAUREATE DIPLOMA PROGRAM

THE PROGRAM

The International Baccalaureate (IB) Diploma program is a two-year liberal arts curriculum that meets the requirements established by the International Baccalaureate Organization based in Geneva, Switzerland. This program leads to the IB diploma, recognized for university entrance in all participating countries.

The IB diploma program provides a rigorous liberal arts education for highly motivated and academically proficient students in Grades 11 and 12. It represents a deliberate compromise between the demand for specialization in the high school curriculum and the emphasis on breadth of knowledge. Students are required to become proficient in six broad areas: English (Language A), a modern foreign language (Language B), social studies, experimental science, mathematics, and a sixth academic area of their choice.

The interdisciplinary nature of learning is an important component of the IB program. Students develop an appreciation for the relationship between disciplines as they progress through the different subject areas of the program and Theory of Knowledge.

Diploma candidates must select three areas for higher-level study (two years) and three for standard-level study (one year). Students take examinations designed and graded by examiners selected by the IB testing office.

Students must take two semesters of Theory of Knowledge, a course that stimulates critical thought and integrates the various disciplines and non-Western approaches to knowledge. It helps students develop a personal mode of thought, based on critical examination of evidence and argument. While it is required and graded, Theory of Knowledge is assessed by an externally evaluated essay rather than by an examination.

Diploma candidates also must research and write an extended essay in any subject within the IB program. Like the IB examinations, the extended essay is read and graded by examiners across the world. In addition, students must complete 150 hours of Creativity, Action, and Service (CAS).

Students in the IB program register for the IB examinations in the fall of their junior and senior years. The students pay the registration and subject fees set by the IB Organization.

Students who complete the requirements and pass the examinations in all six areas receive the IB diploma. Those who do not pass the prescribed examinations in all areas are awarded a certificate for each exam that they pass. Many colleges recognize these certificates for advanced standing or credit. Students who complete the IB diploma program with the Maryland State Department of Education graduation requirements receive the Maryland diploma and, where applicable, a Certificate of Merit. All IB courses are advanced-level courses and are applicable to the Certificate of Merit (CM). Courses marked with a section mark (IB-AL) count as advanced-level courses.

MCPS grading policies and procedures are used to grade and report student progress in the program. Continuation is based on the student's level of commitment and achievement.

The IB diploma program is offered at Bethesda-Chevy Chase High School (for students in the B-CC attendance area), Einstein High School (for students in the Downcounty Consortium), Springbrook High School (for students in the Northeast Consortium), and Watkins Mill High School (for students in the Watkins Mill attendance area), and Rockville High School (for students in the Rockville attendance area). Kennedy and Seneca Valley High School are in the process of receiving accreditation as IB schools in their respective attendance areas.

The countywide IB program at Richard Montgomery High School is designed for highly gifted students in Montgomery County and has an application process that occurs in Grade 8. For additional details see the Richard Montgomery International Baccalaureate Program pages in the county-wide program section of this publication.

IB English 1 A/B	1026/1027	CM IB NCAA (AL)
IB English 2 A/B	1028/1029	CM IB NCAA (AL)
IB Extended Essay	1030	IB
IB French 4 A/B	1619/1620	CM IB NCAA (AL)
IB French 5 A/B	1627/1628	CM IB NCAA (AL)
IB French 6 A/B	1629/1630	CM IB NCAA (AL)
IB Chinese 4 A/B	1651/1652	CM IB NCAA (AL)
IB Chinese 5 A/B	1653/1654	CM IB NCAA (AL)
IB Chinese 6 A/B	1655/1656	CM IB NCAA (AL)
IB Spanish 4 A/B	1751/1752	CM IB NCAA (AL)
IB Spanish 5 A/B	1753/1754	CM IB NCAA (AL)
IB Spanish 6 A/B	1755/1756	CM IB NCAA (AL)
IB Russian 3 A/B	1863/1864	CM IB NCAA (AL)
IB Russian 4 A/B	1865/1866	CM IB NCAA (AL)
Theory of Knowledge 1	2007	CM IB NCAA (AL)
Theory of Knowledge 2	2008	CM IB NCAA (AL)
IB Theory of Knowledge 1/ Extended Essay A/B	2011/2012	CM IB NCAA (AL)
IB History 1 A/B	2230/2231	CM IB NCAA (AL)
IB Psychology A/B	2232/2233	CM IB NCAA (AL)
IB Economics A/B	2234/2235	CM IB NCAA (AL)
IB History 2 A/B	2403/2404	CM IB NCAA (AL)
IB Information Technology in a Global Society A/B	2405/2406	TE CM IB (AL)
IB Math Studies A/B	3410/3418	CM IB NCAA (AL)
IB Precalculus A/B	3420/3424	CM IB NCAA (AL)
IB HL Mathematics A/B	3496/3497	CM (AL)
IB Biology A/B	3606/3607	CM IB NCAA (AL) (DP)
IB Chemistry 1 A/B	3746/3747	CM IB NCAA (AL)
IB Physics 1 A/B	3844/3845	CM IB NCAA (AL)
IB Physics 2 A/B	3846/3847	CM IB NCAA (AL)
IB Visual Arts 1 A/B	6102/6103	CM FA IB (AL)
IB Visual Arts 2 A/B	6107/6108	CM FA IB (AL)
IB Advanced Music A/B	6567/6568	CM FA IB (AL)
IB Theater 1 A/B	8071/8072	CM FA IB (AL)

IB English 1 A/B

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

1026/1027 CM IB NCAA (AL) **0.5 credit**

This first year of a required two-year sequence includes a detailed analysis of a Shakespearean tragedy and in-depth analysis of selected works of fiction, drama, and poetry, with an emphasis on world literature. One of two papers for the external assessment is written, and oral assessments are completed for a portion of the IB score. All work is designed to prepare students for both the oral and written portions of the higher-level IB English exam.

IB English 2 A/B

Prerequisite: *IB English 1*

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

1028/1029 CM IB NCAA (AL) **0.5 credit**

This course completes the requirements for the higher-level IB English exam. Students complete a detailed analysis of an author and in-depth studies of selected works of fiction, drama, and poetry, with an emphasis on world literature. Skills on essay responses to detailed questions and oral analysis of selected literature are polished. The second paper for the external assessment is completed.

IB Extended Essay

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Springbrook, Watkins Mill HS***

1030 IB **0.0 credit**

This course supports IB students who are beginning the extended essay process. The course begins by teaching general research techniques, with more emphasis placed on independent work as students refine their topics, conduct research, and create a first draft of extended essays.

IB French 4 A/B

Prerequisite: *Attainment of the outcomes of IB Level 3B*

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

1619/1620 CM IB NCAA (AL) **0.5 credit**

IB Level 4 French B is the first year of a two-year sequence to prepare students for the standard-level IB foreign language exam. Students strengthen their knowledge and fluency in oral and written language and broaden their understanding of culture and civilization. Composition objectives for specific writing assignments are correlated with the literature, culture, and civilization topics.

IB French 5 A/B

Prerequisite: *Attainment of the outcomes of IB Level 4B.*

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

1627/1628 CM IB NCAA (AL) **0.5 credit**

IB Level 5 French B completes the preparation of students for the standard-level IB foreign language and the Advanced Placement language exam. Emphasis is placed on reading comprehension, interpretation, analysis, and oral proficiency. Students analyze a wide variety of spoken and written materials and life and civilization in pertinent countries.

IB French 6 A/B

Prerequisite: *Attainment of the outcomes of IB Level 5B.*

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Springbrook, Watkins Mill HS***

1629/1630 CM IB NCAA (AL) **0.5 credit**

IB Level 6 French B emphasizes the composition of well-constructed extended essays and oral proficiency at the near-native level. Instruction emphasizes critical analysis of the structural and stylistic characteristics of works and increased oral and written proficiency. In-depth study of the life and civilization of pertinent countries continues. Students are prepared for the higher-level IB exam.

IB Chinese 4 A/B

Prerequisite: *Attainment of the outcomes of Level 3 or Level 3 Immersion.*

Offered only at: ***Bethesda-Chevy Chase, Richard Montgomery HS***

1651/1652 CM IB NCAA (AL) **0.5 credit**

IB Level 4 Chinese B is the first year of a two-year sequence to prepare students for the standard-level IB foreign language exam. Students strengthen their knowledge and fluency in oral and written language and broaden their understanding of culture and civilization. Composition objectives for specific writing assignments are correlated with the literature, culture, and civilization topics.

IB Chinese 5 A/B

Prerequisite: *Attainment of the outcomes of Level 4B.*

Offered only at: ***Bethesda-Chevy Chase, Richard Montgomery HS***

1653/1654 CM IB NCAA (AL) **0.5 credit**

IB Level 5 Chinese B completes the preparation of students for the standard-level IB foreign language and the Advanced Placement language exam. Emphasis is placed on reading comprehension, interpretation, analysis, and oral proficiency. Students analyze a wide variety of spoken and written materials and life and civilization in pertinent countries.

IB Chinese 6 A/B

Prerequisite: *Attainment of the outcomes of Level 5B.*

Offered only at: ***Richard Montgomery HS***

1655/1656 CM IB NCAA (AL) **0.5 credit**

IB Level 6 Chinese B emphasizes the composition of well-constructed extended essays and oral proficiency at the near-native level. Instruction emphasizes critical analysis of the structural and stylistic characteristic of works and increased oral and written proficiency. In-depth study of the life and civilization of pertinent countries continues. Students are prepared for the higher-level IB exam.

IB Spanish 4 A/B

Prerequisite: *Attainment of the outcomes of Level 3B or Level 3 Immersion*

Offered only at: ***Albert Einstein, Richard Montgomery, Springbrook, Watkins Mill HS***

1751/1752 CM IB NCAA (AL) **0.5 credit**

IB Level 4 Spanish B is the first year of a two-year sequence to prepare students for the standard-level IB foreign language exam. Students strengthen their knowledge and fluency in oral and written language and broaden their understanding of culture and civilization. Composition objectives for specific writing assignments are correlated with the literature, culture, and civilization topics.

IB Spanish 5 A/B

Prerequisite: *Attainment of the outcomes of IB Level 4B*

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

1753/1754 CM IB NCAA (AL) **0.5 credit**

IB Level 5 Spanish B completes the preparation of students for the standard-level IB foreign language and the Advanced Placement language exam. Emphasis is placed on reading comprehension, interpretation, analysis, and oral proficiency. Students analyze a wide variety of spoken and written materials and life and civilization in pertinent countries.

IB Spanish 6 A/B

Prerequisite: *Attainment of the outcomes of IB Level 5*

Offered only at: ***Bethesda-Chevy Chase, Walter Johnson, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

1755/1756 CM IB NCAA (AL) **0.5 credit**

IB Level 6 Spanish B emphasizes the composition of well-constructed extended essays and oral proficiency at the near-native level. Instruction emphasizes critical analysis of the structural and stylistic characteristics of works and increased oral and written proficiency. In-depth study of the life and civilization of pertinent countries continues. Students are prepared for the higher-level IB exam.

IB Russian 3 A/B

Prerequisite: *Attainment of the objectives of Russian Level 2B*

Offered only at: ***Bethesda-Chevy Chase HS***

1863/1864 CM IB NCAA (AL) **0.5 credit**

Students continue to build on skills developed previously. Vocabulary themes include travel, health, technology, and the media. Increased grammatical accuracy is stressed. Students continue to make comparisons with the language and culture being studied, further their knowledge of other school subjects, and keep informed of current events in countries where the target language is spoken.

IB Russian 4 A/B

Prerequisite: *Attainment of objectives of IB Level 3B*

Offered only at: ***Bethesda-Chevy Chase HS***

1865/1866 CM IB NCAA (AL) **0.5 credit**

Students learn to understand the main ideas from authentic edited materials. They participate in extemporaneous conversations on familiar topics; are able to narrate present, past, and future events; and take notes in the target language. They are expected to demonstrate knowledge of specific topics and information that form the course content.

Theory of Knowledge 1

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Springbrook HS***

2007 CM IB NCAA (AL) **0.5 credit**

Theory of Knowledge 1 introduces students to the sources, varieties, and systems of knowledge. Major topics include the roles of language and thought in knowledge, the requirements of logical reasoning for knowledge, and the systems of knowledge applied by mathematicians and natural and human scientists. This is the one-semester version of the Theory of Knowledge 1 course. Work on the extended essay is conducted independently of this class.

Theory of Knowledge 2

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

2008 CM IB NCAA (AL) **0.5 credit**

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

IB Theory of Knowledge 1/Extended Essay A/B

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

2011/2012 CM IB NCAA (AL) **0.5 credit**

Theory of Knowledge 1 introduces students to the sources, varieties, and systems of knowledge. Major topics include the roles of language and thought in knowledge, the requirements of logical reasoning for knowledge, and the systems of knowledge applied by mathematicians and natural and human scientists. Students also acquire skills necessary to begin working on the Extended Essay, a university-level independent research paper.

IB History 1 A/B

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

2230/2231 CM IB NCAA (AL) **0.5 credit**

This course, the first year of a required two-year sequence, surveys European and world history from the Renaissance (1450) through the Age of Enlightenment (1750) up to 1900. Emphasis is on the rise of the European nation states; the scientific, economic, industrial, and political revolutions; colonialism; the new imperialism and its impact on Asia and Africa; nationalistic movements in Europe; and the long-term causes of World War I.

IB Psychology A/B

Offered only at: ***Bethesda-Chevy Chase, Richard Montgomery, Rockville, Watkins Mill HS***

2232/2233 CM IB NCAA (AL) **0.5 credit**

This course focuses on the nature of human beings, appreciation of psychology, and methods of psychological inquiry. Students study human behavior through four psychological perspectives: behavioral, cognitive, humanistic/phenomenological, and psychodynamic. Students also study research design, methods, statistics, and ethical issues in psychological research and application and undertake one internally assessed research study.

IB Economics A/B

Offered only at: ***Richard Montgomery HS***

2234/2235 CM IB NCAA (AL) **0.5 credit**

IB Economics A focuses on macroeconomics, the branch of economics that views the economy as a whole. Semester B focuses on microeconomics, which investigates decision making of individual consumers and producers. Students focus on product and resource markets, with particular emphasis on the international economy and the role of the government. International economic topics are emphasized in both semesters.

IB History 2 A/B

Prerequisite: *Attainment of the outcomes of IB History 1*

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

2403/2404 CM IB NCAA (AL) **0.5 credit**

This detailed study of 20th century history completes the requirement for the higher-level IB History examination. The first semester focuses on the causes, practices, and effects of war; the rise of single-party states; and the work of international organizations and minorities in the modern state. Second-semester topics include nationalistic political movements, decolonization, social change, the artist and society, and religion and politics.

IB Information Technology in a Global Society A/B

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

2405/2406 TE CM IB NCAA (AL) **0.5 credit**

This course prepares students to understand the uses of information systems, evaluate the consequences of those technologies on society, discuss the ethical considerations that arise from using information technology, and investigate advances in information technology. The first portion of the course is spent investigating the tools and applications of information technology. The second half looks at the social significance of and ethical considerations arising from information technology.

IB Math Studies A/B

Prerequisite: *Attainment of the outcomes of IB Analysis and Applications of Functions or Algebra 2*

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

3410/3418 CM IB NCAA (AL) **0.5 credit**

This course builds on the concepts of IB Analysis and Application of Functions and Pre-IB Geometry in preparation for the standard-level IB Mathematical Studies examination. Students examine functions (transformation and applications), linear programming, probability, statistics, trigonometry, sequences and series, and solid geometry.

IB Precalculus A/B

Prerequisite: *Attainment of the outcomes of IB Analysis and Applications of Functions or Algebra 2 with Analysis.*

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Springbrook, Watkins Mill HS***

3420/3424 CM IB NCAA (AL) **0.5 credit**

This course builds on the work and modeling in Analysis and Applications. Further emphasis is given to probability, circular functions, two- and three-dimensional vectors, conics, and complex numbers. The concept of limit, derivative, and power series is introduced. Students may complete the internal assessment and sit for the standard-level IB Mathematical Studies examination.

IB HL Mathematics A/B

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

3496/3497 CM (AL) **0.5 credit**

This course is for students who have completed AP Calculus B/C. It prepares students for the HL IB Mathematics examination. Topics covered include additional calculus, sets, relations, and groups, discrete mathematics, series and differential equations, and statistics and probability theory.

IB Biology A/B

Prerequisite: *One year of Honors or Pre-IB Biology and one year of Honors or Pre-IB Chemistry.*

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Springbrook, Watkins Mill HS***

3606/3607 CM IB NCAA (AL) (DP) **1.0 credit**

IB Biology offers extensive laboratory experiences and emphasizes critical analysis of scientific information, evaluation of biological knowledge with respect to those problems facing mankind at present, and synthesis of biological information from different areas of the field. Some topics include biochemistry, cytology, molecular genetics, and heredity and variation. Students prepare for the higher-level IB Biology examination.

IB Chemistry 1 A/B

Prerequisite: *Attainment of the outcomes of Pre-IB or Honors Chemistry.*

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Springbrook HS***

3746/3747 CM IB NCAA (AL) **0.5 credit**

IB Chemistry 1 is a study of the materials of our environment, their properties, and the ways in which they react with each other. Topics of study include stoichiometry, atomic theory, periodicity, bonding, states of matter, energetics, kinetics, equilibrium, acids and bases, oxidation and reduction, organic chemistry, and optional additional studies. This course prepares students for the IB standard-level examination.

IB Physics 1 A/B

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

3844/3845 CM IB NCAA (AL) **0.5 credit**

Students investigate physical laws and theories, relationships of physical phenomena, and interrelationships of physics and other fields of human endeavor. Some topics include vector mathematics, kinematics, dynamics, energy, thermodynamics, electricity and magnetism, and nuclear structure and energy. Additional focus is placed on the social and historical perspective in which physical ideas have developed throughout the world.

IB Physics 2 A/B

Prerequisite: *Attainment of the outcomes of Precalculus and IB Physics 1.*

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Springbrook, Watkins Mill HS***

3846/3847 CM IB NCAA (AL) **0.5 credit**

IB Physics 2 is the second year of a two-year sequence designed to prepare students for the IB Physics examination—higher or standard level. Some topics included are mechanics, molecular behavior, wave behavior, electricity and magnetism, atomic and nuclear physics, astrophysics, thermodynamics, time-varying currents, electronic systems, solid state physics, geometrical optics, particle physics, and special relativity.

IB Visual Arts 1 A/B

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

6102/6103 CM FA IB (AL) **0.5 credit**

Students develop their aesthetic, imaginative, and creative faculties. Emphasis is on visual awareness, multicultural expression, and historical references. An expressive verbal and visual journal, demonstrating the interrelationship between the student's personal research and studio work, is required by the standard-level IB Art and Design assessment.

IB Visual Arts 2 A/B

Prerequisite: *IB Visual Arts 1*

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Rockville, Springbrook, Watkins Mill HS***

6107/6108 CM FA IB (AL) **0.5 credit**

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

IB Advanced Music A/B

Prerequisite: *Music Theory, unless waived by the instructor*

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Rockville, Richard Montgomery HS***

6567/6568 CM FA IB (AL) **0.5 credit**

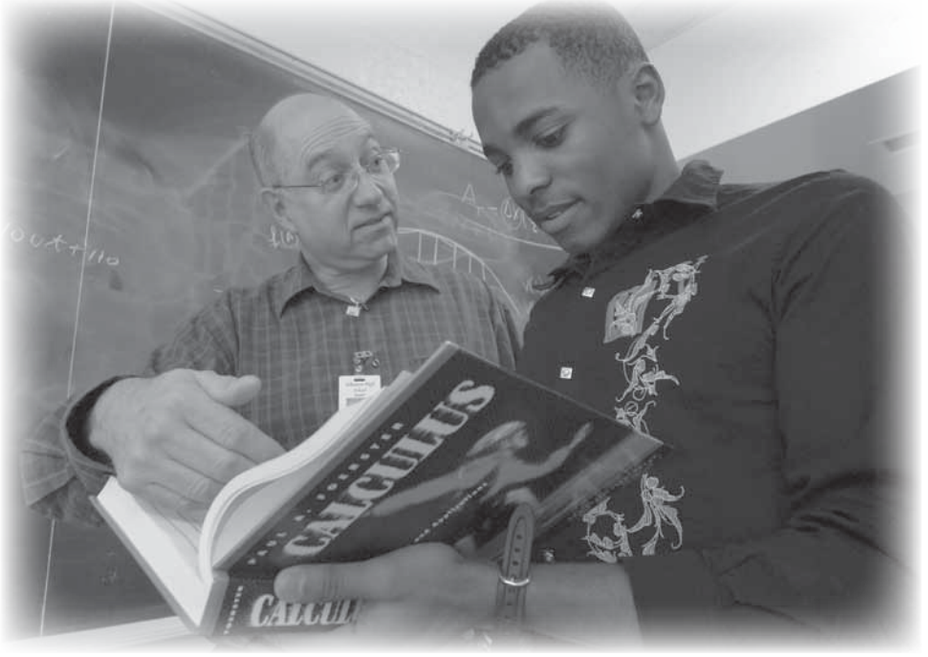
Students learn to recognize the music of various eras and cultures through a detailed study of representative works. The study of musical scores extends students' knowledge of music fundamentals and theory and comprehension of how the changes in composition styles create the music of different times and places. Students may prepare for the standard-level or the higher-level IB examination.

IB Theater 1 A/B

Offered only at: ***Bethesda-Chevy Chase, Albert Einstein, Richard Montgomery, Springbrook, Watkins Mill HS***

8071/8072 CM FA IB (AL) **0.5 credit**

IB Theater explores a range of creative works in a global context and emphasizes practical production by the student. Assessments include a practical play analysis, a reflective and analytical portfolio of their theatrical work, and research that applies theoretical and historical concepts to a contemporary production. Students are prepared for the standard-level IB examination. Writing and thinking skills are reinforced through journaling.



CAREER EXPERIENCES AND CAREER INTERNSHIPS

COLLEGE/CAREER RESEARCH AND DEVELOPMENT—CAREER PATHWAY PROGRAM
(4 credits required)

This pathway will replace Cooperative Work Experience Courses (CWE)—Career Pathway Program.

College/Career Research and Development A/B
8092/8093 **0.5 credit**

Students research current career information for successful career planning and management. Students develop self awareness, career awareness, financial literacy, communication and indispensable work-related knowledge and skill sets. A variety of career and interest assessments, as well as portfolio development, demonstrating workplace and academic readiness, prepare students for college and careers. CCRD links students with industry professionals through on-the-job training to gain first hand experience.

COOPERATIVE WORK EXPERIENCE COURSES (CWE)—CAREER PATHWAY PROGRAM
(4 credits required)

The cooperative work experience program links students with on-the-job training where they work with industry professionals and gain first-hand experience in a career area of their choice. Students earn a salary while working with a local business or government agency. The classroom and work site are integrated for a dynamic orientation to careers and postsecondary education.

Cooperative Work Experience 2 A/B
Prerequisite: *Cooperative Work Experience 1A and 1B and CWE On-the-Job Training A and B.*
Corequisite: *CWE On-the Job Training A and B*
5427/5428 **0.5 credit**

Explore the characteristics and managerial responsibilities of successful entrepreneurs. Project-based activities apply entrepreneurial and business management skills to student-designed projects.

Cooperative Work Experience On-the Job Training A/B
Corequisite: *Concurrent enrollment in a CCRD or CWE class is required. Students must successfully complete the concurrent CWE class to receive OJT credit.*
5439/5440 **0.5 credit**

Students participate in a paid job in conjunction with the CWE class. Students work directly with industry professionals in a career of interest, while refining career goals and postsecondary plans. Student work sites must be approved and supervised by the CWE teacher. OJT is provided during school hours; work-based learning must take place during school hours to allow for required work-site supervision by the CWE teacher. Seventy-five hours of work experience are required per semester.

Cooperative Work Experience On-the-Job Training A/B DP
Corequisite: *Concurrent enrollment in a CCRD or CWE class is required. Students must successfully complete the concurrent CWE class to receive OJT credit.*
5441/5442 (DP) **1.0 credit**

Students participate in a paid job in conjunction with the CWE class. Students work directly with industry professionals in a career of interest, while refining career goals and postsecondary plans. Student work sites must be approved and supervised by the CWE teacher. Work-based learning must take place during school hours to allow for required work-site supervision by the CWE teacher. To earn credit for double period CWE OJT, students are required to have 150 hours of work experience per semester.

Cooperative Work Experience On-the-Job Training A/B TP
Corequisite: *Concurrent enrollment in a CCRD or CWE class is required. Students must successfully complete the concurrent CWE class to receive OJT credit.*
5443/5444 (TP) **1.5 credits**

Students participate in a paid job in conjunction with the CWE class. Students work directly with industry professionals in a career of interest, while refining career and postsecondary plans. Student work sites must be approved and supervised by the CWE teacher. Work-based learning must take place during school hours to allow for required work-site supervision by the CWE teacher. To earn credit for Triple Period OJT, students are required to have 225 hours of work experience per semester.

JUNIOR RESERVE OFFICERS TRAINING CORP COURSES (JROTC)

This program is for students who are interested in becoming a leader and developing self-discipline. Students may select either the Army Junior Reserve Officers' Training Corps (AJROTC) program offered at Magruder High School, or enter one of the Navy Junior Reserve Officers' Training Corps (NJROTC) programs offered at Gaithersburg, Kennedy, Paint Branch, Seneca Valley, and Springbrook high schools. No military obligation is required; however, upon graduation students can gain advanced military pay grades and ROTC and military academy scholarships may be available for qualified students. Transportation is not provided for students who do not attend the school where the courses are offered (exception: Northwest HS students enrolled in the Seneca Valley HS program)

Naval Science 1 A/B
Offered only at: ***Gaithersburg, John F. Kennedy, Paint Branch, Seneca Valley, Springbrook HS***
7911/7912 (5 SSL) **0.5 credit**

Students will experience a military environment and study leadership/discipline, the role of students and adults as citizens, the foundation/organization of the Navy and the Defense Department, the mission of naval ships and aircraft, and Navy terminology. The program includes classroom instruction, physical fitness, military drill and dress, military customs, and leadership training and opportunities.

Naval Science 2 A/B
Prerequisite: *Naval Science 1 A/B (7911/7912)*
Offered only at: ***Gaithersburg, John F. Kennedy, Paint Branch, Seneca Valley, Springbrook HS***
7914/7915 (5 SSL) **5 credit**

This is a year-long course that builds on the precepts and objectives of Naval Science 1 A/B. Students will have the opportunity to gain increased responsibility in leadership positions. Academics will include naval history from the American revolution to the present, military geography, oceanography, meteorology and weather, astronomy, and physical science.

Naval Science 3 A/B
Prerequisite: *Naval Science 2 A/B (7914/7915)*
Offered only at: ***Gaithersburg, John F. Kennedy, Paint Branch, Seneca Valley, Springbrook HS***
7917/7918 (5 SSL) **0.5 credit**

This is a year-long course where students gain additional leadership experiences while holding the cadet officer position. Academics will include naval leadership and discipline and the naval service as a way of life. Shipboard organization, navigation, naval weapon systems, military justice, international law, and the role of sea in U.S. diplomacy and grand strategy are included in the curriculum.

Naval Science 4 A/B

Prerequisite: *Naval Science 3 A/B (7917/7918)*

Offered only at: ***Gaithersburg, John F. Kennedy, Paint Branch, Seneca Valley, Springbrook HS***

7919/7920 (5 SSL) **0.5 credit**

This course is designed to meet the needs of senior cadets participating in the full four-year NJROTC program. Academics will include naval leadership training and evaluation. The practical application of leadership duties and responsibilities are emphasized and will require the cadets to act as class instructors for selected subjects such as military drill, leadership lab, seamanship, and flag drills.

Leadership Education and Training 1 A/B

Offered only at: ***Col. Zadok Magruder HS***

7941/7942 (5 SSL) **0.5 credit**

In this yearlong course, students study the history, organization, and functions of the Army. Academics include leadership development, oral and written communications, maps and navigation, and also drills and ceremonies.

Leadership Education and Training 2 A/B

Prerequisite: *Leadership Education and Training 1 A/B*

Offered only at: ***Col. Zadok Magruder HS***

7944/7945 (5 SSL) **0.5 credit**

This is a yearlong course that builds on the precepts and objectives of Leadership Education and Training 1 A/B. Academics in this course will include first aid and hygiene, American military history, and drug and alcohol abuse. The importance of civilian and military career planning, goal-setting, and time management are included.

Leadership Education and Training 3 A/B

Prerequisite: *Leadership Education and Training 2 A/B*

Offered only at: ***Col. Zadok Magruder HS***

7947/7948 (5 SSL) **0.5 credit**

Leadership principles are applied to resolve situations and to supervise subordinates. Ethical problems caused by technology as well as current and future technological advances in medicine and communication are examined.

Leadership Education and Training 4 A/B

Prerequisite: *Leadership Education and Training 3 A/B*

Offered only at: ***Col. Zadok Magruder HS***

7950/7951 (5 SSL) **0.5 credit**

This is a yearlong course in which students learn the practical application of leadership duties and responsibilities. The program is structured to allow cadets to perform their assigned command or staff duties, act as a class instructor for selected subjects such as leadership lab, and/or act as assistant class instructors for subjects such as first aid and map reading.

CAREER EDUCATION INTERNSHIPS

Internship, Student A/B

Corequisite: *Students may be required by the sponsoring organization to provide appropriate documentation that may include a social security number and/or proof of citizenship.*

7813/7816 **0.5 credit**

This internship complements the student's school program and is pursued under the supervision of school staff. Regularly scheduled in-school seminars explore career and workplace issues. If students wish to learn about society directly and explore various career options, they will benefit from this program. These internships are coordinated at the student's home school. Seventy-five hours of internship experience required per semester (75 hours/.5 credit).

Internship, Student A/B Double Period

Corequisite: *Students may be required by the sponsoring organization to provide appropriate documentation that may include a social security number and/or proof of citizenship.*

7818/7819 (DP) **1.0 credit**

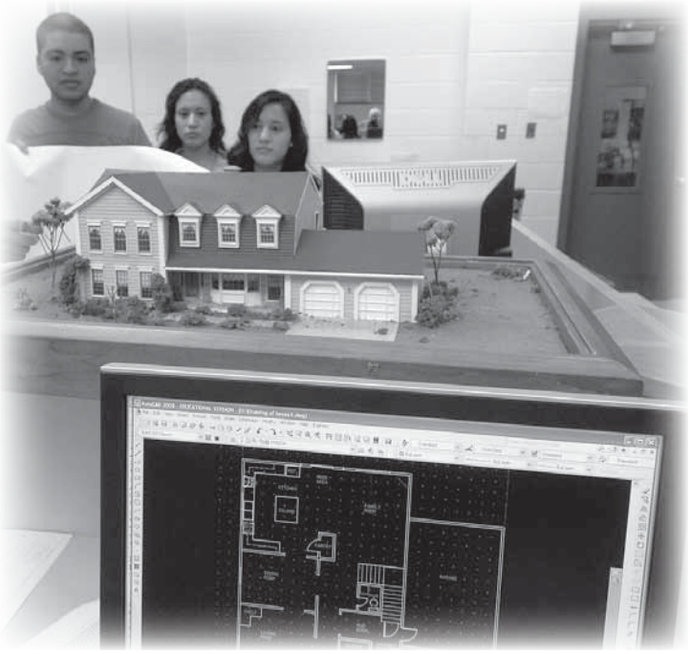
This unpaid internship complements the student's school program and is pursued under the supervision of school staff. Regularly scheduled in-school seminars explore career and workplace issues. If students wish to learn about society directly and explore various career options, they will benefit from this program. These internships are coordinated at the student's home school; and 150 hours of internship experience is required per semester (75 hours/0.5 credit).

Internship, Student A/B Triple Period

Corequisite: *Students may be required by the sponsoring organization to provide appropriate documentation that may include a social security number and/or proof of citizenship.*

7822/7823 (TP) 1.5 credits

This unpaid internship complements the student's school program and is pursued under the supervision of school staff. Regularly scheduled in-school seminars explore career and workplace issues. If students wish to learn about society directly and explore various career options, they will benefit from this program. These internships are coordinated at the student's home school; and 225 hours of internship experience is required per semester (75 hours/0.5 credit).



FOUNDATIONS OFFICE PROGRAMS

The Foundations Office provides programs in partnership with three separate non-profit educational foundations: automotive, construction, and information technology. Each provides a liaison between the business/professional community and MCPS to promote and advance student education, training, and preparation for college and a full range of careers within the automotive, construction, and information technology industries. Additional information may be found at *www.foundationsoffice.org*. All Foundation student programs provide opportunities to earn industry-recognized credentials and provide students entrepreneurial experiences.

Automotive Trades Foundation Programs are located at Damascus, Thomas Edison, Gaithersburg, and Seneca Valley high schools. Three student-run car sales per school year are held, selling over 2000 renovated vehicles to date. Students also donate one renovated vehicle yearly to a deserving Montgomery County organization.

Construction Trades Foundation Programs are located at Damascus and Thomas Edison high schools. Students design, construct, and market student-built houses; 36 houses have been built and sold thus far in Montgomery County.

Information Technology Programs are located at Clarksburg, Thomas Edison, and Rockville high schools. Students renovate, market, and sell donated computers to the community during three yearly sales. Students also donate a refurbished computer lab to a deserving Montgomery County non-profit organization.

Construction Trades Foundation Programs

The Construction and Development Cluster offers two career pathways. A design pathway with the Principles of Architecture and CAD Technology program and a construction pathway that includes 5 construction craft programs. The design and construction of a student house project is part of students experience. The curriculums for all of the programs have post secondary articulation agreements. These programs are also supported by the Montgomery County Students Construction Trades Foundation, Inc. This non-profit foundation is a cooperative venture of the school system and volunteers from local businesses and professionals within the construction industry.

Construction Trades Foundation Programs

Foundations of Building and Construction Technology	5561 (92)/ 5562(92)	(TP)
Foundations of Building and Construction Technology	5559 /5560	(DP)
Construction Management 1 A/B TP	5680 /5681	(TP)
SEPA Construction Topics	8098	
CARPENTRY—CAREER PATHWAY PROGRAM *(4 credits required)*		
Carpentry 1 A/B	5577 /5578	(10 SSL) (DP)
Carpentry 1 A/B	5100 (92)/ 5101(92)	(15 SSL) (TP)
Carpentry 2 A/B	5579 /5580	(10 SSL) (DP)
Carpentry 2 A/B	5639 (92)/ 5640(92)	(15 SSL) (TP)
Internship, Carpentry	5705 (92)	
CONSTRUCTION ELECTRICITY—CAREER PATHWAY PROGRAM *(4 credits required)*		
Electricity (Construction) 1 A/B TP	5109 (92)/ 5110(92)	(15 SSL) (TP)
Electricity (Construction) 2 A/B TP	5595 (92)/ 5596(92)	AT (15 SSL) (TP)
Internship, Electricity (Construction)	5708 (92)	
PRINCIPLES OF ARCHITECTURE AND CAD TECHNOLOGY—CAREER PATHWAY PROGRAM *(4 credits required)*		
Architectural Drafting Techniques TP	5103 (92)	(TP)
Computer-Assisted Drafting (CAD) Technology: Architectural Applications TP	5104 (92)	(TP)
Residential Design Studio TP	5106 (92)	AT CM (15 SSL) (TP)
Advanced CAD Applications TP	5107 (92)	AT CM (TP)
Internship, Principles of Architecture and CAD Technology	5707 (92)	
HEATING AND AIR CONDITIONING *(4 credits required)*		
Heating, Ventilation, and Air Conditioning 1 A/B TP	5123 (92)/ 5129(92)	(15 SSL) (TP)
Heating, Ventilation, and Air Conditioning 2 A/B TP	5127 (92)/ 5128(92)	AT (15 SSL) (TP)
Internship, Heating, Ventilation, and Air Conditioning	5711 (92)	
MASONRY—CAREER PATHWAY PROGRAM *(4 credits required)*		
Masonry 1 A/B TP	5567 (92)/ 5568(92)	(15 SSL) (TP)
Masonry 2 A/B TP	5565 (92)/ 5566(92)	(15 SSL) (TP)
Internship, Masonry	5714 (92)	
PLUMBING—CAREER PATHWAY PROGRAM *(4 credits required)*		
Plumbing 1 A/B TP	5607 (92)/ 5608(92)	(15 SSL) (TP)
Plumbing 2 A/B TP	5605 (92)/ 5606(92)	(15 SSL) (TP)
Internship, Plumbing	5716 (92)	

Construction Trades

Foundations of Building and Construction Technology

Corequisite: *Double Period offered only at Damascus H.S. Triple Period offered only at TEHST*

Offered only at: *Thomas Edison HS of Technology*

5561(92)/5562(92) (TP) **1.5 credits**

5559/5560 (DP) **1.0 credit**

This course is designed for students new to the construction industry. Students experience hand-on activities related to carpentry; electricity; heating, ventilation, and air conditioning (HVAC); masonry; and plumbing in one semester. Standards covered in the core curriculum include basic safety; introduction to construction math; introduction to hand tools; introduction to power tools; introduction to blueprints; basic rigging; basic communication skills; and basic employability skills.

Construction Management 1 A/B TP

5680/5681 (TP) **1.5 credits**

1A covers the characteristics, specifications, properties, terminology, and use of construction materials. The course emphasizes principles and methods for the selection and application or installation of materials and building components. 1B covers construction documents, with emphasis on interpreting contract drawings. Topics include terminology, symbols, and conventions used in both commercial and residential drawings; methods and procedures for reading basic architectural and structural drawings.

SEPA Construction Topics

Prerequisite: *This course is open only to ESOL students enrolled in the SEPA Program. Admission to these courses must be determined by SEPA committee decision at Wheaton and Einstein.*

8098 **1.5 credits**

Students Engaged in Pathways to Achievement (SEPA) program is a career-based instructional program for Spanish-speaking high school ESOL students who have experienced interrupted or limited formal education. To be eligible for the SEPA program, students must be at least eighteen (18) years of age by the end of the school year. Available only to SEPA students in the DownCounty Consortium (DCC).

CARPENTRY—CAREER PATHWAY PROGRAM *(4 credits required)*

The Carpentry program provides students with opportunities to learn about the home building industry. Participants in this program master a variety of construction skills. Students apply their knowledge and skills by participating in the "student-built" house project. Students completing this program are eligible to receive credit at Montgomery College in the Construction Technology Program, as well as industry recognized credentials through the National Center for Construction Education and Research.

Carpentry 1 A/B

Corequisite: *Double Period offered only at Damascus H.S. Triple Period offered only at TEHST*

Offered only at: ***Damascus HS***

5577/5578 (10 SSL) (DP) **1.0 credit**

5100(92)/5101(92) (15 SSL) (TP) **1.5 credits**

Standards covered include orientation to the trade; building materials, fasteners, and adhesives; hand and power tools; reading plans and elevations; floor systems; wall and ceiling framing; roof framing; introduction to concrete, reinforcing materials, and forms; windows and exterior doors; and basic stair layout.

Carpentry 2 A/B

Prerequisite: *Attainment of the outcomes of Carpentry 1 A/B*

Offered only at: ***Damascus HS***

5579/5580 (10 SSL) (DP) **1.0 credit**

5639(92)/5640(92) (15 SSL) (TP **1.5 credits**

Standards covered include commercial drawings; roofing applications; thermal and moisture protection; exterior finishing; cold-formed steel framing; drywall installation; drywall finishing; doors and door hardware; suspended ceilings; windows, doors, floors, and ceiling trim; cabinet installation; and cabinet fabrication.

Internship, Carpentry

Prerequisite: *Attainment of the outcomes of Carpentry 1A/B*

Offered only at: ***Damascus, Thomas Edison HS of Technology***

5705(92) **0.5 credit**

This course provides an internship opportunity related to construction and carpentry. May be repeated for credit.

CONSTRUCTION ELECTRICITY—CAREER PATHWAY PROGRAM *(4 credits required)*

The Construction Electricity program provides students with opportunities to learn about the residential and commercial building industry. Participants master a variety of electrical skills and develop workplace competencies through authentic experiences. Students apply their knowledge and skills to the student built house project. Students who complete this program are eligible to receive credit at Montgomery College in the Construction Technology Program, as well as industry recognized credentials through the National Center for Construction Education and Research.

Electricity (Construction) 1 A/B TP

Offered only at: ***Thomas Edison HS of Technology***

5109(92)/5110(92) (15 SSL) (TP) 1.5 credits

Standards covered include electrical safety; hand bending; fasteners and anchors; electrical theory one; electrical theory two; electrical test equipment; introduction to the National Electrical Code; raceways, boxes, and fittings; conductors; introduction to electrical blueprints; commercial and industrial wiring; and residential wiring.

Electricity (Construction) 2 A/B TP

Prerequisite: *Electricity (Construction) 1 A/B*

Offered only at: ***Thomas Edison HS of Technology***

5595(92)/5596(92) AT (15 SSL) (TP) 1.5 credits

Standards covered include alternating current; motor theory and application; grounding; conduit bending; boxes and fittings; conductor installations; cable tray; conductor terminations and splices; installation of electric services; and circuit breakers and fuses.

Internship, Electricity (Construction)

Prerequisite: *Electricity (Construction) 1A/B*

Offered only at: ***Thomas Edison HS of Technology***

5708(92) **0.5 credit**

This course provides an internship opportunity related to construction and electricity. May be repeated for credit.

PRINCIPLES OF ARCHITECTURE AND CAD TECHNOLOGY—CAREER PATHWAY PROGRAM *(4 credits required)*

The Principles of Architecture and Computer-Assisted Drafting (CAD) Technology is a two-year program that provides an opportunity for students to complete a design pathway. Designing and engineering of physical structures from original concept to complete architectural and engineering plans that includes using AutoCAD software are the major elements of the program. Upon graduation, students will be capable of furthering their education in a number of careers in the construction industry that are related to developing, designing, constructing, and maintaining the built environment.

Architectural Drafting Techniques Triple Period

Offered only at: ***Thomas Edison HS of Technology***

5103(92) (TP) 1.5 credits

This course is an introduction to the techniques and applications to architectural drafting. It is organized around a series of exercises, drawings, and readings that include general drafting techniques; introduction to residential architecture; sketching and free-hand drawings; view development; geometric construction; pictorial drawing; light construction principles; floor plan development; elevation development; foundation development; and perspective development.

Computer-Assisted Drafting (CAD) Technology: Architectural Applications Triple Period

Prerequisite: *Attainment of the outcomes of Architectural Drafting Techniques*

Offered only at: ***Thomas Edison HS of Technology***

5104(92) (TP) 1.5 credits

This course is an introduction to Computer-Assisted Drafting (CAD) Technology as it applies to architectural drawings. The major focus is the mastering of AutoCAD commands and drawing techniques needed in the field of architecture/design/construction. Topics include drawing shapes and constructions, editing operations that increase productivity, dimensioning and using text, creating symbols, and plotting. Students create a series of drawings with the final assignment being a set of plans

Residential Design Studio Triple Period

Prerequisite: *Attainment of the outcomes of Computer-Assisted Drafting (CAD) Technology: Architectural Applications*

Offered only at: ***Thomas Edison HS of Technology***

5106(92) AT CM (15 SSL) (TP) **1.5 credits**

During this course, the Montgomery County Students Construction Trades Foundation, Inc., sponsors a house design competition for the Young American House Program. Students design a single family house that meets established design standards. Students' plans are reviewed periodically by an architectural committee. The primary student outcome is the development of a set of working drawings that meet permitting standards of the Montgomery County Department of Permitting Services.

Advanced CAD Applications Triple Period

Prerequisite: *Attainment of the outcomes of Residential Design Studio*
Offered only at: ***Thomas Edison HS of Technology***
5107(92) AT CM (TP) **1.5 credits**
This course provides further utilization of the knowledge and skills taught in Computer-Assisted Drafting (CAD) Technology: Architectural Applications. Students learn to used advanced system of third-party software designed specifically for architectural and engineering offices. They also learn to develop attributes and other specialized systems necessary to interface their drafting work with other professionally related programs and to customize program menus.

Internship, Principles of Architecture and CAD Technology

Prerequisite: *Attainment of the outcomes of Computer-Assisted Drafting (CAD) Technology: Architectural Applications*
Corequisite: *Attainment of the outcomes of Architectural Drafting Techniques*
Offered only at: ***Thomas Edison HS of Technology, Springbrook HS***
5707(92) **0.5 credit**
Students will have an opportunity to work in an office related to architecture, design, and/or construction. May be repeated for credit.

HEATING AND AIR CONDITIONING—CAREER PATHWAY PROGRAM *(4 credits required)*

The Heating and Air Conditioning program prepares students for the challenges and demands of an exciting and technical career. Students learn a variety of basic and advanced heating, ventilating, and air conditioning (HVAC) principles in a combination of classroom and work-site experiences. An integral part of the instructional program is participation in the "student-built" house project. Students completing this program are eligible to receive credit at Montgomery College in the Construction Technology Program, as well as industry recognized credentials through the National Center for Construction Education and Research.

Heating, Ventilation, and Air Conditioning 1 A/B TP

Offered only at: ***Thomas Edison HS of Technology***
5123(92)/5129(92) (15 SSL) (TP) **1.5 credits**
Standards covered include introduction to HVAC; trade mathematics; copper and plastic piping practices; soldering and brazing; ferrous metal piping practices; basic electricity; introduction to cooling; introduction to heating; and air distribution systems.

Heating, Ventilation, and Air Conditioning 2 A/B TP

Prerequisite: *Attainment of the outcomes of Heating, Ventilation, and Air Conditioning 1 A/B*
Offered only at: ***Thomas Edison HS of Technology***
5127(92)/5128(92) AT (15 SSL) (TP) **1.5 credits**
Standards covered include commercial airside systems; chimneys, vents, and flues; introduction to hydronic systems; air quality equipment; leak detection, evacuation, recovery, and charging; alternating current; basic electronics; electric heating; introduction to control circuit troubleshooting; troubleshooting gas heating; troubleshooting cooling; heat pumps; basic installation and maintenance practices; sheet metal duct systems; and fiberglass and flexible duct systems.

Internship, Heating, Ventilation, and Air Conditioning

Prerequisite: *Attainment of the outcomes of Heating, Ventilation, and Air Conditioning 1A/B*
Offered only at: ***Thomas Edison HS of Technology***
5711(92) **0.5 credit**
This course provides an internship opportunity related to construction and Heating, Ventilation, and Air Conditioning. May be repeated for credit.

MASONRY—CAREER PATHWAY PROGRAM *(4 credits required)*

The Masonry program provides opportunities for students to learn a variety of skills related to brick and block construction. Students gain practical work experience by participating in the "student built" house project. By completing this program, students are eligible to receive industry recognized credentials through the National Center for Construction Education and Research. Approved apprenticeship program, on-the job training, and/or a career as a brick mason are also options for students who complete this program.

Masonry 1 A/B Triple Period

Offered only at: ***Thomas Edison HS of Technology***
5567(92)/5568(92) (15 SSL) (TP) **1.5 credits**
Standards covered include introduction of masonry, masonry tools and equipment, measurements and drawings, mortar, masonry units, and installation techniques.

Masonry 2 A/B Triple Period

Prerequisite: *Attainment of the outcomes of Masonry 1 A/B*
Offered only at: ***Thomas Edison HS of Technology***
5565(92)/5566(92) (15 SSL) (TP) **1.5 credits**
Standards covered include residential plans and drawing interpretation, residential masonry, grout and other reinforcement, metal work in masonry, advanced laying techniques, construction techniques and moisture control, elevated work, and construction inspection and quality control.

Internship, Masonry

Prerequisite: *Attainment of the outcomes of Masonry 1A/B*
Offered only at: ***Thomas Edison HS of Technology***
5714(92) **0.5 credit**
This course provides an internship opportunity related to construction and masonry. May be repeated for credit.

PLUMBING—CAREER PATHWAY PROGRAM *(4 credits required)*

The plumbing program provides students with opportunities to learn the installation, maintenance, and repair of many different types of pipe systems. Plumbers install and repair the water, waste disposal, drainage, and gas systems in homes and commercial and industrial buildings. Students apply their knowledge and skills in the construction of a student built house project. By completing this program, students are eligible to receive credit at Montgomery College in the Construction Technology Program, as well as industry recognized credentials through the National Center for Construction Education and Research.

Plumbing 1 A/B Triple Period

Offered only at: ***Thomas Edison HS of Technology***
5607(92)/5608(92) (15 SSL) (TP) **1.5 credits**
Standards covered include: introduction to the plumbing profession; safety; plumbing tools; introduction to plumbing math; introduction to plumbing drawings; plastic pipe and fittings; copper pipe and fittings; cast-iron pipe and fittings; carbon steel pipe and fittings; corrugated stainless steel tubing; fixtures and faucets; introduction to drain, waste, and vent (DMV) systems; and introduction to water distribution systems.

Plumbing 2 A/B Triple Period

Prerequisite: *Attainment of the outcomes of Plumbing 1 A/B*
Offered only at: ***Thomas Edison HS of Technology***
5605(92)/5606(92) (15 SSL) (TP) **1.5 credits**
Standards covered include plumbing math two; reading commercial drawings; hangers, supports, structural penetrations and fire stopping; installing and testing DWV piping; installing roof, floor, and area drains; types of valves; installing and testing water supply piping; installing fixtures, valves, and faucets; installing water heaters; fuel gas systems; and servicing of fixtures, valves, and faucets.

Internship, Plumbing

Prerequisite: *Attainment of the outcomes of Plumbing 1A/B*
Offered only at: ***Thomas Edison HS of Technology***
5716(92) **0.5 credit**
This course provides an internship opportunity related to construction and plumbing. May be repeated for credit.

AUTOMOTIVE TRADES FOUNDATION PROGRAMS

AUTOMOTIVE TECHNOLOGY—CAREER PATHWAY PROGRAM *(4 credits required)*		
Foundations of Automotive Technology A/B TP	5045 (92)/5046(92)	(15 SSL) (TP)
SEPA Automotive Topics	8099	
AUTOMOTIVE BODY TECHNOLOGY/DEALERSHIP TRAINING—CAREER PATHWAY PROGRAM *(4 credits required)*		
Auto Body Technology/Dealership Training 1 A/B DP	5547 /5548	(10 SSL) (DP)
Auto Body Technology/Dealership Training 1 A/B TP	5553 (92)/5554(92)	(15 SSL) (TP)
Auto Body Technology/Dealership Training 2 A/B DP	5549 /5550	(10 SSL) (DP)
Auto Body Technology/Dealership Training 2 A/B TP	5555 (92)/5556(92)	(15 SSL) (TP)
Auto Body Technology/Dealership Training 3 A/B DP	5551 /5552	(10 SSL) (DP)
Internship, Auto Body Technology	5702 (92)	
AUTOMOTIVE TECHNOLOGY/DEALERSHIP TRAINING—CAREER PATHWAY PROGRAM *(4 credits required)*		
Automotive Technology/Dealership Training 1 A/B	5047 /5048	(5 SSL)
Automotive Technology/Dealership Training 1 A/B Double Period	5072 /5073	(10 SSL) (DP)
Automotive Technology/Dealership Training 1 A/B Triple Period	5061 (92)/5062(92)	(15 SSL) (TP)
Automotive Technology/Dealership Training 2 A/B DP	5049 /5050	AT (10 SSL) (DP)
Automotive Technology/Dealership Training 2 A/B TP	5067 (92)/5068(92)	AT (15 SSL) (TP)
Automotive Technology/Dealership Training 3 A/B DP	5064 /5065	AT (10 SSL) (DP)
Internship, Automotive Technology	5703 (92)	

AUTOMOTIVE TECHNOLOGY—CAREER PATHWAY PROGRAM *(4 credits required)*

Foundations of Automotive Technology A/B TP

Offered only at: *Thomas Edison HS of Technology*

5045(92)/5046(92) (15 SSL) (TP) **1.5 credits**

This course is designed for students new to the automotive program. Standards covered include an introduction to the following areas: tool and equipment safety; preventative maintenance; lubrication system; air brushing; removal and application of paints and finishes; proper use of tools and equipment; application and sanding of body fillers; interior and exterior detailing; application of protective sealers; and employability and communication skills.

SEPA Automotive Topics

Prerequisite: *This course is open only to ESOL students enrolled in the SEPA Program. Admission to these courses must be determined by SEPA committee decision at Wheaton and Einstein.*

8099 **1.5 credits**

Students Engaged in Pathways to Achievement (SEPA) program is a career-based instructional program for Spanish-speaking high school ESOL students who have experienced interrupted or limited formal education. To be eligible for the SEPA program, students must be at least eighteen (18) years of age by the end of the school year. Available only to SEPA students in the DownCounty Consortium (DCC).

AUTOMOTIVE BODY TECHNOLOGY/DEALERSHIP TRAINING—CAREER PATHWAY PROGRAM *(4 credits required)*

The Automotive Body Technology/Dealership Training program prepares students interested in pursuing a career in the automotive repair or painting business. Students learn through authentic experiences as they use tools and materials to repair panels, doors, windows, and other damaged parts of automobile bodies. Students completing this program are eligible to receive recognized industry certifications.

Auto Body Technology/Dealership Training 1 A/B DP

Offered only at: *Gaithersburg HS*

5547/5548 (10 SSL) (DP) **1.0 credit**

5553(92)/5554(92) (15 SSL) (TP) **1.5 credits**

Standards covered include an introduction to the following areas: tool and equipment safety and proper usage; dent repair; rough and finish sanding; application of paint systems; body panel replacement and alignment; minor frame alignment; welding and cutting techniques; and employability and communication skills.

Auto Body Technology/Dealership Training 2 A/B DP

Prerequisite: *Attainment of the outcomes of Auto Body Technology/Dealership Training 1 A/B*

Offered only at: *Gaithersburg HS*

5549/5550 (10 SSL) (DP) **1.0 credit**

5555(92)/5556(92) (15 SSL) (TP) **1.5 credits**

Advanced standards covered include the following areas: tool and equipment use; collision repair and refinishing procedures; fundamentals of unibody construction; estimating repair costs; damage analysis; straightening systems and techniques; welding principles; repairing structural components; corrosion protection; repairing and replacing body panels; repairing trim and plastics; vehicle preparation; refinishing; topcoating; and employability and communication skills.

Auto Body Technology/Dealership Training 3 A/B DP

Prerequisite: *Attainment of the outcomes of Auto Body Technology/Dealership Training 2 A/B*

Offered only at: *Gaithersburg HS*

5551/5552 (10 SSL) (DP) **1.0 credit**

Advanced standards covered include the following areas: collision repair and refinishing shop procedures; fundamentals of unibody construction; tools and equipment; estimating repair costs; damage analysis; straightening systems and techniques; welding principles; repairing structural components; restoring and corrosion protection; repairing and replacing body panels; repairing trim and plastics; vehicle preparation; refinishing; topcoating; and employability and communication skills.

Internship, Auto Body Technology

Prerequisite: *Attainment of the outcomes of Auto Body Technology/Dealership Training 1A/B*

Offered only at: *Thomas Edison HS of Technology, Gaithersburg HS*

5702(92) **0.5 credit**

Automotive Body students extend automotive skills learned in the classroom through work-based experiences. Industry placements are made in partnership with Montgomery County Students Automotive Trades Foundation, Inc., providing meaningful work-based experiences framed around NATEF competencies and ASE industry certifications. Professional automotive technicians are trained as mentors to supervise and lead students toward these challenging industry certifications. May be repeated for credit.

AUTOMOTIVE TECHNOLOGY/DEALERSHIP TRAINING—CAREER PATHWAY PROGRAM *(4 credits required)*

Automotive Technology students are offered an opportunity to train for skilled positions in the automotive professions. This program develops student technical, analytical, and communication skills. Students are provided instruction and hands-on experience in the maintenance, repair, and sales and marketing of automobiles. Students are provided with classroom and laboratory experiences in many areas including engine performance and repair, suspension and steering, brakes, electrical / electronic systems, and heating and air conditioning.

Automotive Technology/Dealership Training 1 A/B

Offered only at: *Damascus, Gaithersburg, Seneca Valley HS*

5047/5048 (5 SSL) **0.5 credit**
5072/5073 (10 SSL) (DP) **1.0credit**
5061(92)/5062(92) (15 SSL) (TP) **1.5 credits**

Standards covered include an introduction to the following areas: tool and equipment safety; introduction to shop equipment; vehicle maintenance; brake service; brake system repair; automotive electricity, battery and charging system; students will also learn communication and employability skills.

Automotive Technology/Dealership Training 2 A/B DP

Prerequisite: *Attainment of the outcomes of Automotive Technology/ Dealership Training 1 A/B*

Offered only at: *Damascus, Gaithersburg, Seneca Valley HS*

5049/5050 AT (10 SSL) (DP) **1.0 credit**
5067(92)/5068(92) AT (15 SSL) (TP) **1.5 credits**

Standards covered include the analysis, diagnosis, and repair of the following systems: steering system ; front and rear suspension; wheel alignment; wheel and tire diagnosis; engine performance; computerized engine diagnosis of related engine systems such as fuel, intake, exhaust, ignition, and emissions; use of diagnostic scan tools; Students will also be trained in employability and communication skills.

Automotive Technology/Dealership Training 3 A/B DP

Prerequisite: *Attainment of the outcomes of Automotive Technology/ Dealership Training 2 A/B*

Offered only at: *Damascus, Gaithersburg, Seneca Valley HS*

5064/5065 AT (10 SSL) (DP) **1.0 credit**

Standards covered include in depth analysis, diagnosis, and repair of the following systems: Brakes; Electrical; suspension/steering; engine performance; computerized engine diagnosis of related engine systems such as fuel, intake, exhaust, ignition, and emissions; use of diagnostic scan tools; Students will also be trained in employability and communication skills.

Internship, Automotive Technology

Prerequisite: *Attainment of the outcomes of Automotive Technology/ Dealership Training 1A/B*

Offered only at: *Damascus, Thomas Edison HS of Technology, Gaithersburg, Seneca Valley HS*

5703(92) **0.5 credit**

Automotive Technology students extend automotive skills learned in the classroom through work-based experiences. Industry placements are made in partnership with Montgomery County Students Automotive Trades Foundation, Inc., providing meaningful work-based experiences framed around NATEF competencies and ASE industry certifications. Professional automotive technicians are trained as mentors to supervise and lead students toward these challenging industry certifications. May be repeated for credit.

NETWORK OPERATIONS TRADES FOUNDATION PROGRAM

The Network Operations Career Pathway Program offers students opportunities to learn technical and problem-solving skills while providing a comprehensive foundation of microcomputer and network technologies. Preparation for international industry credentials validate the knowledge students have attained. Hands on laboratory experiences train students as entry-level technicians in the field of IT as well as for advanced studies in Engineering and IT in colleges, universities and the military. Articulated college credits may be earned through successful completion of the program.

NETWORK OPERATIONS—CAREER PATHWAY PROGRAM *4 credits required)*		
Network Operations A/B TP	4202 (92)/ 4203(92)	AT CM (15 SSL) (TP)
Network Operations 1 A/B, DP	4242 /4243	AT CM (10 SSL) (DP)
Network Operations 2, DP	4244	AT CM (10 SSL) (DP)
Network Operations Internship	4187	AT
Network Operations Guided Research	4188	AT

Network Operations A/B Triple Period

Offered only at: *Clarksburg, Thomas Edison HS of Technology, Rockville HS*

4202(92)/4203(92) AT CM (15 SSL) (TP) **1.5 credits**

Students acquire industry-standard knowledge and skills needed to install, configure, diagnose, and repair PC hardware including power supplies, memory, I/O devices, drives, and peripherals. Students learn to install and troubleshoot a variety of computer operating systems. Students learn networking configuration, protocols, security, fault tolerance, and hardware/ software troubleshooting in local and wide area networks. CompTIA A+/ Network+ certifications and articulated college credits may be earned.

Network Operations 1 A/B, Double Period

Prerequisite: *Successful completion of Network Operations 1A (4242) required prior to Network Operations 1B (4243).*

Offered only at: *Clarksburg, Rockville HS*

4242/4243 AT CM (10 SSL) (DP) **1.0 credit**

Students acquire industry-standard knowledge and skills needed to install, configure, optimize, diagnose and upgrade personal and laptop computers. Content includes power supplies, memory, I/O, storage devices, drives, and peripherals. Students install, configure, and troubleshoot a variety of computer operating systems. Networks, security, safety, and environmental issues are addressed. Aligned to CompTIA A+ Essentials and IT Technician objectives, this course allows students to earn full A+ certification.

Network Operations 2, Double Period

Prerequisite: *Network Operations 1B (4243)*

Offered only at: *Clarksburg, Rockville HS*

4244 AT CM (10 SSL) (DP) **1.0 credit**

Students learn the features and functions of computer network components and acquire the skills needed to install, configure, and troubleshoot networking hardware, peripherals, and protocols. Concepts covered include media and topologies, protocols and standards, network implementation and support. Students learn the layers of the OSI model, LANS, WANS, cabling, and router configuration and management. Students take the CompTIA Network+ certification exam, earning valuable industry-standard certification.

Network Operations Internship

Prerequisite: *Network Operations A/B (4202/4203 or 4242/4243)*

Offered only at: *Clarksburg, Thomas Edison HS of Technology, Rockville HS*

4187 AT **0.5 credit**

Network Operations students extend computer skills learned in the classroom through work-based experiences. Industry placements are made in partnership with Montgomery County Students Information Technology Foundation, Inc., providing meaningful work-based experiences framed around Server+, Security+, or MCSA industry certifications. Trained mentors in the professional IT business community supervise and lead students toward these challenging and advanced industry certifications. May be repeated for credit.

Network Operations Guided Research

Prerequisite: *Network Operations A/B (4202/4203 or 4242/4243)*

Offered only at: *Clarksburg, Thomas Edison HS of Technology, Rockville HS*

4188 AT **0.5 credit**

This course provides school-based learning opportunities for advanced information technology studies. Under the supervision of the Network Operations teacher, students will pursue a project or concentrated study in an area of computer and information sciences related to a networking career, leading to advanced IT certification and college credits. Students may attain such advanced industry certification as Server+, Security+, or MCSA; and/ or dual-enrollment college matriculation. May be repeated for credit.

COUNTYWIDE PROGRAMS

SUPERINTENDENT'S LEADERSHIP PROGRAM

The Superintendent's Leadership Program (SLP) is an honors career and leadership development program for high school seniors in the humanities. Students who have demonstrated outstanding leadership and academic excellence are selected through a highly competitive process.

The SLP is designed to encourage lifelong learning, provide practical experience, and develop global citizenship. Students participate in case studies and team projects, as well as seminars designed to demonstrate the role of leadership. During the program year, students visit and engage in dialogues with government officials, as well as business and civic leaders.

Up to 15 students are selected. Participants devote 15 hours per week to program activities and earn four honors credits. Each internship is designed around a work plan in which the student manages a project of genuine importance to the sponsoring organization. Students learn how to manage projects, overcome challenges, make decisions, and operate as independent leaders and members of teams. The interactive online application is available through the MCPS website. Applicants must have a weighted 3.5 GPA and completed all requirements for graduation except English and Math. Students accepted will be allowed up to four (4) morning classes. The program is open only to rising seniors enrolled in Montgomery County Public Schools.

The deadline for completed applications is March 15, 2008. All materials must be sent to the program office or office email. Applicants will be interviewed in April and receive notification of acceptance in early May.

Significant program components include the following:

- Internships with top-level industry partners
- Field trips to meet with industry executives and community leaders.
- Didactic seminars facilitated by executives, officials, and community leaders.
- Research and writing assignments.
- A class service project.
- Examination of public policy issues through foreign newspapers.

Applications are online. For more information or an application please contact:

Superintendent's Leadership Program
Montgomery County Public Schools
850 Hungerford Drive, Room 251
Rockville, MD 20850
(301) 279-3546
kim_d_jones@mcpsmd.org
www.montgomeryschoolsmd.org/departments/superintendent/leadership

HIGH SCHOOL SCIENCE/MATHEMATICS/COMPUTER SCIENCE MAGNET PROGRAM AT MONTGOMERY BLAIR HS AND POOLESVILLE HS

Recognizing that education is an individual experience that depends on the unique talents and interests of each person, the mission of the Blair Magnet Program is to provide an environment in which each persons education is maximized by emphasizing the interrelationships among the disciplines, developing a repertoire of problem-solving techniques, and pursuing both independent and collaborative research projects.

Enduring Understandings

To realize the above mission, the staff nurtures the special talents of its academically able students by fostering individualism, independent thinking, and self-confidence by challenging those students through a unique, diversified curriculum. The environment, structure, and content promote the self-learner concept in which students participate in constructing their own knowledge base and learn problem- solving strategies that foster the multidisciplinary approach. The scope of their education extends beyond traditional classroom boundaries as students are asked to connect with a community that includes not only parents, mentors, other students, and staff but also a physical environment as diverse as our region.

Overview

The curriculum is designed to enable each student to build a solid foundation in Grades 9 and 10. Core courses in these first two years include physics, chemistry, Earth science, biology, two years of computer science, two years of mathematics, and an interdisciplinary course entitled Research and Experimentation for Problem Solving.

During their junior and senior years, students have opportunities to go beyond traditional high school offerings with more than 25 special courses and independent research projects. Some of these courses include Linear Algebra, Complex Analysis, Discrete Mathematics, Thermodynamics, Quantum Physics, Analytical Chemistry, Marine Biology, Genetic Analysis, Astronomy, Materials Science, Software Design, Computational Methods, Artificial Intelligence, and Research Design.

All students are required to complete the required core courses in Grades 9 and 10, Research Design, Magnet Analysis (AP Calculus BC), and five semesters of magnet electives. All courses in this program are advanced-level courses.

Selection Criteria

Advanced and highly able students who have completed at least Algebra 1 are able to apply to the program in the fall of their eighth grade year. Only 100 students are accepted and they only enter the program in Grade 9. Students are accepted on the basis of demonstrated interest in mathematics, science, computer science, and technology, teacher recommendations; their achievement in Grades 7 and 8; and scores on a reasoning and critical thinking assessment administered by the program. A writing component is included in the application and at the time of testing.

To apply to the Blair Magnet Program, applicants must reside in one of the following high school clusters: Bethesda-Chevy Chase (B-CC), Churchill, the Downcounty Consortium (DCC), the Northeast Consortium (NEC), Walter Johnson, Richard Montgomery, Rockville, Sherwood, Whitman, or Wootton.

MATHEMATICS COURSES

Magnet Geometry A/B

Prerequisite: *Attainment of the outcomes of Algebra 1*
Offered only at: ***Montgomery Blair, Poolesville HS***
3038/3039 CM NCAA (AL) **0.5 credit**

Students study logic, methods of proof (direct/indirect, coordinate) in both two-column and essay forms, constructions, loci, and transformational geometry. All of the objectives of the MCPS Honors Geometry curriculum are taught. Nontraditional topics studied include affine geometry, conics, circuit diagrams, writing a two-bit adder on a circuit board, and an introduction to circular functions.

Magnet Precalculus A,B

Prerequisite: *Magnet or Honors Geometry and teacher recommendation*
Offered only at: ***Montgomery Blair, Poolesville HS***
3045/3046 CM NCAA (AL) **0.5 credit**

The properties of the real numbers and of functions, and the solution of equations in one variable are introduced. The discussion of functions includes all forms of algebraic, exponential, logarithmic, and circular functions. The study of each function includes a precise definition, a consideration of graphs and applications, an analysis of distinguishing features, and an identification of related tangents and slope.

Magnet Precalculus C

Prerequisite: *Magnet Precalculus A and B.*
Offered only at: Montgomery Blair, Poolesville HS
3047 CM NCAA (AL) **0.5 credit**

The definition, properties, and application of matrices are studied. The discussion of functions includes all forms of algebraic, exponential, logarithmic, and circular functions. The study of each function includes a precise definition, a consideration of graphs and applications, an analysis of distinguishing features, and an identification of related tangents and slope.

Magnet Functions A/B

Prerequisite: *Teacher recommendation and the attainment of the outcomes of Magnet or Honors Geometry*
Offered only at: ***Montgomery Blair, Poolesville HS***
3041/3042 CM NCAA (AL) **0.5 credit**

Functions begun in Algebra 1 are continued and expanded to include all forms of algebraic, exponential, logarithmic, and circular functions. The study of each includes a precise definition, a consideration of graphs and applications, an analysis of distinguishing and interesting features, and an identification of related tangents and slopes. Students study trigonometry, approached from circular functions, conics, limits, and derivatives.

Magnet Analysis 1A/B

Prerequisite: *Magnet Precalculus C or Magnet Functions.*
Offered only at: ***Montgomery Blair, Poolesville HS***
3043/3044 CM NCAA (AL) **0.5 credit**

The delta-epsilon definition of the limit of a function is examined and applied to develop the ideas of differentiation and integration. All the nonvector objectives of the MCPS AP calculus curriculum are studied with a greater degree of rigor and sophistication. Students study infinite series, differential equations, and the analysis of the polar plane. Students apply this knowledge to solve problems in the sciences and economics. Students take the AP Calculus BC Exam after completing this course.

Multivariable Calculus and Differential Equations A/B

Prerequisite: *Magnet Analysis 1B with teacher recommendation.*
3048/3049 CM NCAA (AL) **0.5 credit**

The first semester covers three-dimensional analytic geometry and vectors; the calculus of functions of more than one variable, including partial derivatives, vector-valued functions, multiple integrals, volumes, surface area, and the classical theorems of Green, Stokes, and Gauss. The second semester introduces the basic concepts of ordinary differential equations.

Applied Statistics

Prerequisite: *Attainment of the outcomes of Magnet Analysis 1, AP Calculus BC, or teacher recommendation.*

Offered only at: ***Montgomery Blair, Poolesville HS***

3050 CM NCAA AP (AL) **0.5 credit**

Students learn sufficient statistical background to design, collect, and analyze data for surveys and research projects. All the objectives of the MCPS AP statistics curriculum are studied with a greater degree of rigor and sophistication. Students study simple probability theory, counting techniques, and a variety of probability distributions. These distributions justify tests of significance of parametric and nonparametric statistics.

Discrete Mathematics

Prerequisite: *Attainment of the outcomes of Magnet Precalculus or Functions and Analysis of Algorithms or AP computer science*

Offered only at: ***Montgomery Blair, Poolesville HS***

3423 CM NCAA (AL) **0.5 credit**

Students learn the mathematical tools, language, and thought processes used in computer science. The analysis of finite collections of objects provides a solid foundation in set and graph theory. Students study combinations, countability, and number theory to establish the framework for analysis of data structures. Matrices and matrix algebra are studied to describe and manipulate graphs.

Linear Algebra

Prerequisite: *Attainment of the outcomes of Magnet Analysis I or teacher recommendation*

Offered only at: ***Montgomery Blair, Poolesville HS***

3426 CM NCAA (AL) **0.5 credit**

Students learn the theory and practice of matrices and determinants and their use in solving linear equations. They study the structure and properties of linear transformations, vector spaces, and linear programming as they apply to such fields as biology, chemistry, differential equations, economics, psychology, and weather forecasting.

Complex Analysis

Prerequisite: *Attainment of the outcomes of Magnet Analysis 2*

Offered only at: ***Montgomery Blair, Poolesville HS***

3428 CM NCAA (AL) **0.5 credit**

Students are introduced to the theory of functions of complex variables, an essential part of the mathematical background of engineers, physicists, mathematicians, and other scientists. They review complex numbers and study complex functions and the calculus of complex functions, including derivatives and integrals. Other topics studied include series, residues, and conformal mappings.

COMPUTER SCIENCE COURSES

Fundamentals of Computer Science A/B

Offered only at: ***Montgomery Blair, Poolesville HS***

2951/2952 TE CM (AL) **0.5 credit**

Students study both the theory and practice of computer use through a wide variety of activities developed to coordinate with their mathematics and science courses. Students design and implement their own original solutions to given problems, following current structured programming concepts in a high-level language. They learn the inner workings of computer systems and design and build circuitry to accomplish a given task.

Algorithms and Data Structures A/B

Prerequisite: *Fundamentals of Computer Science A/B*

Offered only at: ***Montgomery Blair, Poolesville HS***

2953/2954 AT CM (AL) **0.5 credit**

Students learn object-oriented programming methodology, and the use and implementation of abstract data types using a high-level programming language. Students study object-oriented programming methods in order to design and code programming solutions to problems that require the use of files, control structures, methods, functions, classes, and arrays.

Students study static and dynamic implementation of data structures. Stacks, queues, linked lists, and recursion are emphasized.

Introduction to Networking

Prerequisite: *Attainment of the outcomes of Algorithms and Data Structures and Algebra 2*

Offered only at: ***Montgomery Blair, Poolesville HS***

2955 AT CM (AL) **0.5 credit**

A hands-on course that provides students with an introduction to computer and network systems administration. The important issues of ethics, computer and network security, backup methods, and configuration and maintenance of network services also are studied.

Analysis of Algorithms

Prerequisite: *Attainment of the outcomes of Algorithms and Data Structures A and B*

Offered only at: ***Montgomery Blair, Poolesville HS***

2956 AT CM (AL) **0.5 credit**

Students study the mathematical and empirical analysis of algorithms. Various searching and sorting techniques are examined. Benchmarking, the efficiency of algorithms, and comparative studies are emphasized as well as the current AP computer science case study. All the objectives of the MCPS AP curriculum are studied, with a greater degree of rigor and sophistication. Students are prepared to take the AP Computer Science AB Exam.

Advanced Application Software

Prerequisite: *Attainment of the outcomes of Algorithms and Data Structures or AP Computer Science*

Offered only at: ***Montgomery Blair, Poolesville HS***

2988 AT CM (AL) **0.5 credit**

Self-motivated, self-directed students explore several sophisticated computer application software packages and study programming languages not otherwise offered in the magnet program. Students actively participate in designing their own course goals and projects.

Computer Graphics

Prerequisite: *Attainment of the outcomes of Analysis of Algorithms or AP Computer Science*

Offered only at: **Montgomery Blair, Poolesville HS**

2957 AT CM (AL) **0.5 credit**

An introduction to the use of computers for input, manipulation, and display of graphical information. Students design and code modules to carry out fundamental graphics operations such as transforming, clipping, and zooming two-dimensional objects. Some animation techniques also are studied.

Software Design

Prerequisite: *Attainment of the outcomes of Computer Graphics*

Offered only at: ***Montgomery Blair, Poolesville HS***

2958 AT CM (AL) **0.5 credit**

A formal approach to current techniques in software design and development provides students with a means to apply the techniques as they work in teams in the organization, management, and development of a large software project from start to finish. Software management, program requirements definition, program design methodology, program correctness, documentation, program testing, and program maintenance are studied.

Computer Modeling and Simulation

Prerequisite: *Attainment of the outcomes of Analysis of Algorithms or AP Computer Science*

Offered only at: ***Montgomery Blair, Poolesville HS***

2959 AT CM (AL) **0.5 credit**

The theoretical foundations for modeling and simulating discrete and continuous systems are studied. Students design computer simulations and implement them in a high-level language using current simulation software tools.

Introduction to Artificial Intelligence with LISP

Prerequisite: *Attainment of the outcomes of Analysis of Algorithms or AP Computer Science*

Offered only at: ***Montgomery Blair, Poolesville HS***

2985 AT CM (AL) **0.5 credit**

An introduction to the traditional problems and techniques of artificial intelligence. Students study search strategies, knowledge representation, and an introduction to LISP. Application areas include expert systems, natural language processing, and vision processing.

Computational Methods
Prerequisite: *Attainment of the outcomes of Analysis of Algorithms or AP Computer Science and Analysis 1A*
Offered only at: ***Montgomery Blair, Poolesville HS***
2986 AT CM NCAA (AL) **0.5 credit**
Students create programs using numerical algorithms, analyzing each with respect to requirements and limitations.

INTERDISCIPLINARY COURSES

Research and Experimentation for Problem Solving 1A/B
Corequisite: *Advanced Science 1, Physics/Advanced Science 2, Chemistry*
Offered only at: ***Montgomery Blair, Poolesville HS***
2970/2971 AT CM (AL) **0.25 credit**
This is an engineering, laboratory-based course in which students study, research, and apply concepts studied in their magnet science, mathematics, and computer science classes to solve real-world problems. Topics in Grade 9 include, but are not limited to, indirect measurement techniques and devices, data analysis, computer-aided drawing, materials science, research, and scientific instrumentation.

Research and Experimentation for Problem Solving 2
Prerequisite: *Research and Experimentation for Problem Solving 1 A, B*
Corequisite: *Advanced Science 3, Earth/Space Sciences*
Offered only at: ***Montgomery Blair, Poolesville HS***
2972/2973 AT CM (AL) **0.25 credit**
In Grade 10, the R and E course is linked instructionally to the magnet Earth and Space Science course. Topics include, but are not limited to, engineering design and construction, robotics, remote sensing, data collection with scientific instruments, and data analysis. Teamwork and research skills are emphasized.

Research Design
Prerequisite: *Research and Experimentation for Problem Solving 2*
Offered only at: ***Montgomery Blair, Poolesville HS***
2974 AT CM (AL) **0.5 credit**
Students explore various research methods used in science and technology to bridge the gap between classroom laboratory exercises and real-world research project design and implementation. Through a series of interdisciplinary mini-projects, students gain hands-on experience in developmental, historical, and analytical research. Students discuss ethics in research and analyze oral presentations and research papers as well as the qualities that make an effective team.

Research and Experimentation: Engineering for Problem Solving
Prerequisite: *Attainment of the outcomes of Research Design or teacher recommendations*
Offered only at: ***Montgomery Blair, Poolesville HS***
2975 AT CM (AL) **0.5 credit**
Students select thematic studies and structured projects that are related to the various fields of engineering.

Research Project A/B
Prerequisite: *Research Design*
Offered only at: ***Montgomery Blair, Poolesville HS***
2981/2982 AT CM (AL) **0.5 credit**
Students conduct research projects based on an approved proposal. All students work either independently or on a team, with the guidance of their faculty advisor or mentor and the project coordinator. Students may elect to work outside of the school facility. Requirements include the completion of a journal, project display, oral presentation, and final paper. Students begin their projects in the spring of their junior year and continue into the fall of their senior year.

Guided Research A/B
Prerequisite: *Teacher recommendation and coordinator permission*
Offered only at: ***Montgomery Blair, Poolesville HS***
2977/2978 AT CM (AL) **0.5 credit**
This is an individualized course that addresses the research interests of students who are advanced in a particular subject area. Arrangements are made with a sponsoring teacher for in-depth work in an area of interest, typically involving equipment or materials that go beyond what is available in the classroom. The advisor and student set individual goals and expectations.

Computer-assisted Drafting Software
Prerequisite: *1 credit computer science or equivalent*
Offered only at: ***Montgomery Blair, Poolesville HS***
3558 TE CM (AL) **0.5 credit**
Students learn, compare, and evaluate a variety of computer-assisted drafting software packages and systems.

SCIENCE COURSES

Advanced Science 1, Physics
Prerequisite: *Attainment of the outcomes of Algebra 1*
Offered only at: ***Montgomery Blair, Poolesville HS***
3531 CM NCAA (AL) **1.0 credit**
Students study the same topics and instructional objectives as in the MCPS Honors Physics A and B curriculum. Nonlinear systems are emphasized and are solved by numerical rather than analytical methods. Computer science and mathematics are integrated with the use of vectors, spreadsheets, interfaces, and simulators.

Advanced Science 2, Chemistry
Prerequisite: *Attainment of the outcomes of Advanced Science 1, Physics*
Offered only at: ***Montgomery Blair, Poolesville HS***
3532 CM NCAA (AL) **1.0 credit**
Students study the same topics and instructional objectives as in the MCPS Honors Chemistry A and B curriculum. Additional emphasis is placed on interdisciplinary topics, the production and conservation of energy, computer and mathematical concepts that are related to modeling, and student research.

Advanced Science 3: Earth Space Systems A/B
Offered only at: ***Poolesville HS***
3537/3538 CM (AL) **0.5 credit**
3541 CM NCAA (AL) **1.0 credit**

Advanced Science 4: Biology A/B
Offered only at: ***Poolesville HS***
3539/3540 CM (BCC1) (AL) **0.5 credit**
3542 CM NCAA (AL) (DP) **1.0 credit**

Optics
Prerequisite: *Attainment of the outcomes of Advanced Science 1 or Honors or AP Physics and completion of AP Calculus BC or Analysis 1A*
Offered only at: ***Montgomery Blair, Poolesville HS***
3543 CM NCAA (AL) **0.5 credit**
Students examine geometrical optics, physical (wave) optics, and instrumentation applications. Knowledge of basic calculus topics is necessary for understanding mathematical derivations.

Thermodynamics
Prerequisite: *Attainment of the outcomes of Advanced Science 1 or Honors or AP Physics*
Offered only at: ***Montgomery Blair, Poolesville HS***
3544 CM NCAA (AL) **0.5 credit**
Students are introduced to the macroscopic (observable) level with topics of heat flow, physical properties as a function of temperature changes, specific heat, calorimetry, latent heats of fusion and vaporization, and heat transport. The microscopic topics of Joule equivalent, the laws of thermodynamics, and kinetic molecular theory also are studied. Students study examples from current research in a variety of disciplines

Analytical Chemistry

Prerequisite: *Attainment of the outcomes of Advanced Science 2 or AP Chemistry*

Offered only at: ***Montgomery Blair, Poolesville HS***

3545 CM NCAA (AL) **0.5 credit**

Students learn qualitative and quantitative methods of chemical analysis. Sampling techniques, analytical statistics, units of measurement, and errors in chemical analysis are studied. Students learn traditional techniques in wet chemistry in addition to analytical instrumentation, including, but not limited to, gas chromatography, infrared spectroscopy, atomic absorption spectrophotometry, and nuclear resonance spectroscopy.

Origins of Science

Prerequisite: *Interest in science, history, and the arts*

Offered only at: ***Montgomery Blair, Poolesville HS***

3557 CM NCAA (AL) **0.5 credit**

Students read and analyze important primary sources in the history of philosophy and science. Students replicate original experiments. Major scientific discoveries are presented in the context of contemporary politics, philosophy, and art and of preceding and succeeding scientific developments.

Materials Science

Prerequisite: *Attainment of the outcomes of Advanced Science 2 or AP Chemistry*

Offered only at: ***Montgomery Blair, Poolesville HS***

3546 CM NCAA (AL) **0.5 credit**

Students study and investigate the properties of materials, including, but not limited to, ceramics and glass, natural and synthetic materials, and metals. Projects vary in depth and scope, ranging from the study of toxic materials to the production of synthetic shoes.

Advanced Topics in Earth Science A

Prerequisite: *Attainment of the outcomes of Honors Biology and Chemistry*

Offered only at: ***Montgomery Blair, Poolesville HS***

3547 CM NCAA (AL) **0.5 credit**

Plate Tectonics/Oceanography. The historical development of plate tectonic theory, its application to current research in physical and structural geology, and physical and geological oceanography are studied.

Advanced Topics in Earth Science B

Prerequisite: *Prior completion of any Honors level science course.*

Offered only at: ***Montgomery Blair, Poolesville, Thomas S. Wootton HS***

3548 CM NCAA (AL) **0.5 credit**

Contemporary Astronomy. Basic astronomy is integrated with current topics like black holes, quasars, stellar evolution, and cosmic strings. Historical and mathematical foundations are combined with observations across the spectrum. Data analysis is emphasized.

Quantum Physics

Prerequisite: *Attainment of the outcomes of Advanced Science 1 or Honors or AP Physics*

Offered only at: ***Montgomery Blair, Poolesville HS***

3556 CM NCAA (AL) **0.5 credit**

Modern physical sciences are examined in light of recent discoveries regarding the limits of experience, the atom, and the universe. The course includes a critical analysis of the scientific process, which led to the renunciation of classical physics and the introduction of ideas so foreign to everyday experience as to cause a reassessment of the meaning of physical reality.

Marine Biology

Prerequisite: *Attainment of the outcomes of Honors Biology and Honors Chemistry*

Offered only at: ***Montgomery Blair, Northwood, Poolesville HS***

3553 CM NCAA (AL) **0.5 credit**

Students study basic marine ecological principles and develop an understanding of both the complexity and delicate balance of ocean ecosystems. Relevant science, technology, and societal issues are integrated into the curriculum. Laboratory exercises, field trips, classroom presentations, and literature research are an integral part of the course.

Introductory Genetic Analysis

Prerequisite: *Attainment of the outcomes of Honors Biology and Honors Chemistry*

Offered only at: ***Montgomery Blair, Poolesville HS***

3554 CM NCAA (AL) (DP) **1.0 credit**

Students learn Mendelian, molecular, and medical genetics. The historical aspects as well as our current understanding of the laws governing inheritance are investigated. Students are exposed to hands-on laboratory exercises, problem-solving sessions, Internet activities, student-led seminars, field trips, and other class activities that complement lectures and discussions.

Cellular Physiology

Prerequisite: *Attainment of the outcomes of Honors Biology and Honors Chemistry*

Offered only at: ***Montgomery Blair, Poolesville HS***

3551 CM NCAA (AL) **0.5 credit**

Students study the major topics in molecular and cellular biology, including the cell cycle, cellular macromolecules, the structure and function of cellular organelles, cell communication, cellular energy flow, immunology, and special cell functions. The course includes laboratory investigations in which students use advanced methods of biotechnology to analyze cell structures and explore cellular processes.

Introductory Physical Chemistry

Prerequisite: *Attainment of the outcomes of Advanced Science 2 or AP Chemistry*

Offered only at: ***Montgomery Blair, Poolesville HS***

3614 CM NCAA (AL) **0.5 credit**

Students study topics related to chemical thermodynamics, quantum chemistry, chemical kinetics, chemical equilibrium, and chemical reactions. They learn practical applications through examination of various heat engines and different models of atoms, polyatomic molecules, and atomic bonding. Organic chemistry topics are introduced through the use of instrumentation

Alternatives to Dissection

Dissection is one of many instructional methods that may be used in Biology and AP Biology. Students may request from the teacher alternatives to dissection in Biology and AP Biology.

THOMAS EDISON HIGH SCHOOL OF TECHNOLOGY (TEHST)

Thomas Edison High School of Technology (TEHST) provides all Montgomery County Public Schools students the opportunity to co-enroll in the most advanced academic, technical, and career programs offered in the school system. The mission of TEHST is to provide students with state-of-the-art technological, academic, and interpersonal skills needed to achieve excellence in their chosen fields of study. The variety of career development programs offered at TEHST allow students to explore and experience traditional and nontraditional career options and to prepare for a wide range of expanding and challenging postsecondary options. Students enroll in TEHST programs through their co-enrolled comprehensive high school and can take classes at both their co-enrolled school and TEHST.

Program Offerings

Arts, Humanities, Media, and Communications Cluster
- Printing, Graphics, and Electronic Media Biosciences, Health Science, and Medicine Cluster
- Biotechnology
- Medical Careers

Construction and Development Cluster
- Foundations of Building and Construction Technology
- Carpentry
- Construction
- Electricity
- Heating and Air Conditioning
- Masonry

Plumbing Engineering, Scientific Research, and Manufacturing Technologies Cluster
- Design, Illustrating, and Drafting Technology
- Electronics Technology

Human and Consumer Services, Hospitality, and Tourism Cluster
- Cosmetology
- Nail Technology
- Academy of Hospitality and Tourism
- Professional Restaurant Management

Information Technologies Cluster
- Network Operations
- Web Tools and Digital Media

Transportation, Distribution, and Logistics Cluster
- Automotive Body Technology
- Foundations of Automotive Technology
- Automotive Technology

All programs offered at TEHST are state-approved and most meet the career development graduation requirement for students.

ARTS AND HUMANITIES AT TEHST

PRINTING, GRAPHICS, AND ELECTRONIC MEDIA—CAREER PATHWAY PROGRAM

(4 credits required)

Printing, Graphics, & Electronic Media students learn a variety of graphic design, imaging, and print-related skills to provide a foundation for all aspects of the graphic communications industry. Students use the latest in digital imagery, design, and production with computer technology including advanced photo editing, presentation software, illustration and drawing software, digital video hardware and editing software, and multimedia and web design. Layout, design, and composition activities, as well as offset lithographic production and binding techniques, are included in the program. Also, students learn processes such as 35 mm continuous tone photography and screen printing of cards, posters and T-shirts.

Printing, Graphics, and Electronic Media 1 A/B TP

5118(92)/5119(92) (15 SSL) (TP) **1.5 credits**

Printing, Graphics, and Electronic Media 2 A/B TP

Prerequisite: *Attainment of the outcomes for Printing/Graphics and Electronic Media 1A/1B*

5121(92)/5122(92) (15 SSL) (TP) **1.5 credits**

Internship, Printing Graphics

Prerequisite: *Completion of the course work in 1A/B*

5717(92) **0.5 credit**

SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS AT TEHST

BIOTECHNOLOGY—CAREER PATHWAY PROGRAM

(4 credits required)

Biotechnology is the application of concepts from biochemistry, genetics, and molecular biology. Biotechnology students develop and refine their laboratory and research skills as they improve their scientific investigative techniques. Biotechnology provides an intensive hands-on laboratory program for students that utilize the latest lab equipment and computer technology to investigate the intricacies of protein/DNA science. Laboratory experiences include plant and animal tissue culture, microbiology, polymerase chain reaction techniques, biochemical environmental evaluation, and the latest techniques of recombinant DNA technology.

Biotechnology, Molecular A/B Double Period (SC)

Prerequisite: *Biology A/B or Chemistry A/B*

Corequisite: *Chemistry A/B or Biology A/B. Concurrent enrollment in Biotechnology, Special Topics A/B for Edison students only*

3867(92)/3868(92) CM (BCC2) (AL) (DP) **1.0 credit**

Biotechnology, Molecular A/B Double Period

Prerequisite: *Biology A/B or Chemistry A/B*

Corequisite: *Biology A/B or Chemistry A/B. Concurrent enrollment in Biotechnology, Special Topics A/B for Edison students only*

3873/3874 CM (AL) (DP) **1.0 credit**

Biotechnology, Special Topics A/B

Prerequisite: *Molecular Biotechnology Double Period A/B, Biology A/B or Chemistry A/B*

Corequisite: *Students at Edison must be concurrently enrolled in 3867/3868.*

3871/3872 CM (AL) **0.5 credit**

Guided Research in Biosciences A/B

Prerequisite: *Molecular Biotechnology A/B 3867/3868 or Foundations of Medicine and Health Science A/B 4044/4045 and Anatomy and Physiology for Health Professions A/B 4042/4043.*

3875/3876 CM (AL) **0.5 credit**

Internship, Biosciences A/B (SC)

Prerequisite: *Molecular Biotechnology A/B 3867/3868 or Foundations of Medicine and Health Science A/B 4044/4045 and Anatomy and Physiology for Health Professions A/B 4042/4043.*

3869(92)/3870(92) CM (AL) **0.5 credit**

MEDICAL CAREERS—CAREER PATHWAY PROGRAM

(4 credits required)

Medical Careers is a program for highly motivated students with a special interest in the medical sciences, medical school, and other future medical professions. Instruction focuses on anatomy, physiology, disease processes, patient care skills, and current issues related to the health care profession. Twice weekly a college instructor teaches a Montgomery College (2 credit) course entitled "Medical Terminology." Other areas of emphasis include physical therapy skills, vital signs, principles of infection control, and hospitalized patient care. Students receive CPR for Healthcare Providers certification and have the opportunity for certified nursing assistant (C.N.A.) and geriatric (G.N.A.) certification. Upon successful completion of first semester requirements, the second semester affords students internship opportunities at the National Naval Medical Center and Randolph Hill Nursing Center where students give direct patient care, observe, interview, and assist a wide variety of medical professionals. Medical Careers is articulated with Montgomery College (Hlth105–3 credits).

Medical Careers A/B Double Period

Prerequisite: *Grade of B or better in Biology A/B or Chemistry A/B and a cumulative GPA of 2.5 or better. Students must apply to the program. Students should allow for travel time.*

Corequisite: *Biology A/B or Chemistry A/B (one must be completed prior to enrolling). Concurrent enrollment in Medical Careers Science A/B (3995/3996)*

5833(92)/5834(92) (10 SSL) (DP) **1.0 credit**

Medical Careers Science A/B (SC)

Prerequisite: *Grade of B or better in Biology A/B or Chemistry A/B and a cumulative GPA of 2.5 or better. Students must apply to the program. Allow for 1 period of travel time.*

Corequisite: *Biology A/B or Chemistry A/B (one must be completed prior to enrolling). Concurrent enrollment in Medical Careers A/B.*

3995(92)/3996(92) **0.5 credit**

Medical Careers Science A/B

Prerequisite: *Grade of B or better in Biology A/B or Chemistry A/B and a cumulative GPA of 2.5 or better. Students must apply to the program. Students should allow for 1 period travel*

Corequisite: *Biology A/B or Chemistry A/B (one must be completed prior to enrolling). Concurrent enrollment in Medical Careers A/B.*

3877/3878 **0.5 credit**

Internship, Medical Careers

Prerequisite: *Successful completion of Medical Careers A/B with minimum grade of B, CNA certification, and recommendation of medical careers teacher.*

Corequisite: *Enrollment in an upper-level science course approved by the teacher.*

5415(92) **0.5 credit**

Internship, Medical Careers

Prerequisite: *Successful completion of Medical Careers A/B with minimum grade of B, CNA certification, and recommendation of medical careers teacher.*

Corequisite: *Enrollment in an upper-level science course approved by the teacher.*

5417(92) CM **0.5 credit**

Biology A/B, taken at the student's home school, counts as 1 credit toward the program requirement.

CAREER PATHWAY PROGRAMS IN ENTREPRENEURSHIP

COSMETOLOGY—CAREER PATHWAY PROGRAM *(4 credits required)*

Cosmetology, the science of personal beauty care, is a three-year program totaling 1,500 hours of instruction. Satisfactory completion allows the student to take the Maryland State examination for an operators license. Practical instruction includes manicuring, shampooing, facials, skin care, hair styling, thermal pressing and curling, precision hair shaping, hair coloring, permanent waving, and relaxing. Theory instruction emphasizes professional ethics; hygiene; sanitation; chemistry; bacteriology; anatomy; physiology; histology of the hair, skin, and nails; elements of design; and salon management. Students will be required to take the Maryland State Board of Cosmetologists Examination at the end of the program.

Cosmetology 1A TP

5583(92) (15 SSL) (TP) **1.5 credits**

Cosmetology 1B Double Period

5584(92) (10 SSL) (TP) **1.0 credit**

Cosmetology 2 A/B Double Period

Prerequisite: *Attainment of the outcomes of Cosmetology 1*
Students must complete Cosmetology 2A before taking 2B

Corequisite: *Students must enroll in 0.5 credit of science (3615/3616)*

5643(92)/5644(92) (10 SSL) (DP) **1.0 credit**

Cosmetology Science A/B

Prerequisite: *Science 3615A must be taken before 3616B*

3615(92)/3616(92) **0.5 credit**

Cosmetology 3A TP

Prerequisite: *Attainment of the outcomes of Cosmetology 1 and 2*

5587(92) (15 SSL) (TP) **1.5 credits**

Cosmetology 3B Double Period

Prerequisite: *Attainment of outcomes for Cosmetology 1, 2, and 3A*

5588(92) (10 SSL) (DP) **1.0 credit**

Related Mathematics A/B

Corequisite: *This course is taken in conjunction with Algebra 1A and 1B.*

3231(92)/3232(92) (BCC1) **0.5 credit**

SEPA Cosmetology Topics

Prerequisite: *This course is open only to ESOL students enrolled in the SEPA Program. Admission to these courses must be determined by SEPA committee decision at Wheaton and Einstein.*

8096 **1.5 credits**

MANICURING—NAIL TECHNOLOGY—CAREER PATHWAY PROGRAM *(4 credits required)*

The art and science of Nail Technology is a one year program totaling 350 hours of instruction. Satisfactory completion allows the student to take the Maryland State examination for a nail technician license. Practical instruction includes manicuring, pedicuring, nail tips, nail wraps, acrylic nails, gels, and nail art. Theory instruction emphasizes professional ethics, sanitation, salon safety, nail product chemistry, anatomy and physiology, disorders of the skin and nails, client consultation, salon business management, and selling nail products and services. Students must be 17 years of age to take the licensing exam.

Nail Technology TP A

5671(92) (15 SSL) (TP) **1.5 credits**

Nail Technology TP B

Prerequisite: *Nail Technology A*

5672(92) (15 SSL) (TP) **1.5 credits**

Nail Technology, On The Job Training

Prerequisite: *Nail Technology A and B*

5715(92) **0.5 credit**

ACADEMY OF HOSPITALITY AND TOURISM—CAREER PATHWAY PROGRAM *(4 credits required)*

The National Academy of Hospitality and Tourism, a member of the National Academy Foundation, addresses the needs of the hospitality industry by providing high school students with the education required for a successful career. The Academy provides a curriculum that gives an in-depth look at all aspects of hospitality and tourism, including coursework in business, geography, hospitality, and economics.

Hospitality and Tourism A/B

Prerequisite: *Students must complete Hospitality and Tourism A before taking Hospitality and Tourism B*

5398/5399 (5 SSL) **0.5 credit**

The National Academy of Hospitality and Tourism is a member program of the National Academy Foundation. This course provides an introduction to various components of this industry. Students are given an overview of aspects of business and marketing, opportunities to practice consumer service principles, and exposure to the various careers available in hospitality and tourism.

Economics for AOHT

5400 (5 SSL) **0.5 credit**

This is an economics principles and practices course that parallels the concepts taught in a general high school economics course. Academy students take this course in lieu of the economics course offered at their school. Throughout the course, examples of economic principles are drawn from the world of hospitality and tourism in order to integrate rigorous academic learning and practical business applications.

Hospitality for AOHT
5401 (5 SSL) **0.5 credit**

This course examines the various components of hospitality, including marketing and sales, lodging management, front desk operations, food and beverage, and culinary services. Students explore various career options in hospitality and tourism.

Systems for AOHT
5402 (5 SSL) **0.5 credit**

This course provides an overview of the systems and technology that provide infrastructure for the hospitality and tourism industry, including reservations, transportation, and online systems. Students will learn how to apply these technology principles to multiple aspects of the industry.

Travel Geography for AOHT A
5403 (5 SSL) **0.5 credit**

This course focuses on students developing broad geographic knowledge and skills. Students learn how to use the tools of the geographer as they examine travel geography in relation to the hospitality and tourism industry.

Travel Geography for AOHT B
Prerequisite: *Students must complete Travel Geography for AOHT A before taking B.*

5407 **0.5 credit**

Students will learn how the elements of geography impact travel professionals as they work with clients in the hospitality and tourism industry. Travel geography encompasses the physical elements of a destination—natural features and climate—and the human elements—economic, cultural, and political characteristics. Career opportunities in this industry are examined.

Internship, AOHT
Prerequisite: *Students must complete at least two credits in a related career pathway program.*

5404 (10 SSL) **1.0 credit**

Students apply knowledge and skill sets acquired in their career pathway programs to an authentic internship. Collaborating with professionals and mentors in the related career field, students participate in program-specific learning, leadership seminars, networking opportunities and relevant workplace experiences.

PROFESSIONAL RESTAURANT MANAGEMENT—CAREER PATHWAY PROGRAM *(4 credits required)*

The Professional Restaurant Management program provides students with the opportunity to explore the many career opportunities available in the food service industry. Students develop skills for employment based on industry standards. Students learn safety and sanitation principles, professional food handling techniques, and quantity preparation through the use of commercial equipment and systems technology. Nutrition, menu planning, food cost control, and workplace skills are emphasized throughout the program. The American Culinary Federation (ACF) has certified this program and ACF outcomes have been infused into the curriculum providing industry-based experiences. Students take ServSafe exam for certification.

Professional Restaurant Management 1 A/B TP
4834(92)/4835(92) (15 SSL) (TP) **1.5 credits**

Professional Restaurant Management 2 A/B TP
4837(92)/4838(92) (15 SSL) (TP) **1.5 credits**

Internship, Professional Restaurant Management
Prerequisite: *Students must complete at least two credits in a related career pathway program.*

4820(92) **0.5 credit**

SEPA Culinary Arts Topics
Prerequisite: *This course is open only to ESOL students enrolled in the SEPA Program. Admission to these courses must be determined by SEPA committee decision at Wheaton and Einstein.*

8097 **1.5 credits**

CAREER PATHWAY PROGRAM IN INFORMATION TECHNOLOGIES

Web Technology and Digital Media

Website Development A/B
Prerequisite: *Highly recommended — Software Applications by Design A/B or Discovering Programming Concepts A/B; website Development A is a prerequisite for website Development B*

Corequisite: *Software Applications by Design A/B or Discovering Programming Concepts A/B*

2991/2992 AT CM **0.5 credit**

Students learn web design from storyboard to a finished online web page and develop actual sites from customers' specifications using HTML, Java Script, Cold Fusion, web composers, and object-oriented programming languages. Skills in streaming media, server applications, and 3-D animation are developed. Project management provides students with skills to lead teams through projects, from inception to completion.

Web Tools and Digital Media, Advanced A/B
Prerequisite: *Website Development A/B; Semester A is a prerequisite for Semester B.*

Offered only at: ***Damascus, Gaithersburg, Seneca Valley, Springbrook, Wheaton, Thomas S. Wootton HS***

2936(92)/2937(92) AT CM **0.5 credit**

This course introduces students to advanced web topics such as webscripting, web server administration, and web-based multimedia tools. Students also study digital media and related topics, including audio, video, graphics, text, and animation tools as well as color and animation concepts.

Guided Research—Information Technology A/B
Offered only at: ***Thomas Edison HS of Technology***

2800/2801 **0.5 credit**

This course provides an opportunity for Information Technology students to complete a structured research project related to an IT career field.

FOUNDATIONS OFFICE PROGRAMS

Construction and Development at TEHST

The Construction and Development Cluster offers two career pathways. A design pathway with the Principles of Architecture and CAD Technology program and a construction pathway that includes 5 construction craft programs. The design and construction of a student house project is part of students experience. The curriculums for all of the programs have post secondary articulation agreements. These programs are also supported by the Montgomery County Students Construction Trades Foundation, Inc. This non-profit foundation is a cooperative venture of the school system and volunteers from local businesses and professionals within the construction industry.

Foundations of Building and Construction Technology
Corequisite: *Double Period offered only at Damascus H.S.*
TP offered only at TEHST

5561(92)/5562(92) (TP) **1.5 credits**

SEPA Construction Topics
Prerequisite: *This course is open only to ESOL students enrolled in the SEPA Program. Admission to these courses must be determined by SEPA committee decision at Wheaton and Einstein.*

8098 **1.5 credits**

CAREER PATHWAYS IN THE CONSTRUCTION TRADES FOUNDATION

CARPENTRY (BUILDING AND CONSTRUCTION TECHNOLOGY)—CAREER PATHWAY PROGRAM

The Carpentry program provides students with opportunities to learn about the home building industry. Participants in this program master a variety of construction skills. Students apply their knowledge and skills by participating in the "student-built" house project. Students completing this program are eligible to receive credit at Montgomery College in the Construction Technology Program, as well as industry recognized credentials through the National Center for Construction Education and Research.

Carpentry 1 A/B
Corequisite: *Double Period offered only at Damascus H.S.* TP offered only at TEHST
5100(92)/5101(92) (15 SSL) (TP) **1.5 credits**

Carpentry 2 A/B
Prerequisite: *Attainment of the outcomes of Carpentry 1 A/B*
5639(92)/5640(92) (15 SSL) (TP) **1.5 credits**

Internship, Carpentry
Prerequisite: *Attainment of the outcomes of Carpentry 1A/B*
5705(92) **0.5 credit**

CONSTRUCTION ELECTRICITY—CAREER PATHWAY PROGRAM
The Construction Electricity program provides students with opportunities to learn about the residential and commercial building industry. Participants master a variety of electrical skills and develop workplace competencies through authentic experiences. Students apply their knowledge and skills to the student built house project. Students who complete this program are eligible to receive credit at Montgomery College in the Construction Technology Program, as well as industry recognized credentials through the National Center for Construction Education and Research.

Electricity (Construction) 1 A/B TP
5109(92)/5110(92) (15 SSL) (TP) **1.5 credits**

Electricity (Construction) 2 A/B TP
Prerequisite: *Electricity (Construction) 1 A/B*
5595(92)/5596(92) AT (15 SSL) (TP) **1.5 credits**

Internship, Electricity (Construction)
Prerequisite: *Electricity (Construction) 1A/B*
5708(92) **0.5 credit**

PRINCIPLES OF ARCHITECTURE AND CAD TECHNOLOGY—CAREER PATHWAY PROGRAM *(4 credits required)*
The Principles of Architecture and Computer-Assisted Drafting (CAD) Technology is a two-year program that provides an opportunity for students to complete a design pathway. Designing and engineering of physical structures from original concept to complete architectural and engineering plans that includes using AutoCAD software are the major elements of the program. Upon graduation, students will be capable of furthering their education in a number of careers in the construction industry that are related to developing, designing, constructing, and maintaining the built environment.

Architectural Drafting Techniques TP
5103(92) (TP) **1.5 credits**
This course is an introduction to the techniques and applications to architectural drafting. It is organized around a series of exercises, drawings, and readings that include general drafting techniques; introduction to residential architecture; sketching and free-hand drawings; view development; geometric construction; pictorial drawing; light construction principles; floor plan development; elevation development; foundation development; and perspective development.

Computer-Assisted Drafting (CAD) Technology: Architectural Applications TP
Prerequisite: *Attainment of the outcomes of Architectural Drafting Techniques*
5104(92) (TP) **1.5 credits**
This course is an introduction to Computer-Assisted Drafting (CAD) Technology as it applies to architectural drawings. The major focus is the mastering of AutoCAD commands and drawing techniques needed in the field of architecture/design/construction. Topics include drawing shapes and constructions, editing operations that increase productivity, dimensioning and using text, creating symbols, and plotting. Students create a series of drawings with the final assignment being a set of plans.

Residential Design Studio TP
Prerequisite: *Attainment of the outcomes of Computer-Assisted Drafting (CAD) Technology: Architectural Applications*
5106(92) AT CM (15 SSL) (TP) **1.5 credits**
During this course, the Montgomery County Students Construction Trades Foundation, Inc., sponsors a house design competition for the Young American House Program. Students design a single family house that meets established design standards. Students' plans are reviewed periodically by an architectural committee. The primary student outcome is the development of a set of working drawings that meet permitting standards of the Montgomery County Department of Permitting Services.

Advanced CAD Applications TP
Prerequisite: *Attainment of the outcomes of Residential Design Studio*
5107(92) AT CM (TP) **1.5 credits**
This course provides further utilization of the knowledge and skills taught in Computer-Assisted Drafting (CAD) Technology: Architectural Applications. Students learn to used advanced system of third-party software designed specifically for architectural and engineering offices. They also learn to develop attributes and other specialized systems necessary to interface their drafting work with other professionally related programs and to customize program menus.

Internship, Principles of Architecture and CAD Technology
Prerequisite: *Attainment of the outcomes of Computer-Assisted Drafting (CAD) Technology: Architectural Applications*
Corequisite: *Attainment of the outcomes of Architectural Drafting Techniques*
5707(92) **0.5 credit**
Students will have an opportunity to work in an office related to architecture, design, and/or construction. May be repeated for credit.

HEATING AND AIR CONDITIONING—CAREER PATHWAY PROGRAM *(4 credits required)*
The Heating and Air Conditioning program prepares students for the challenges and demands of an exciting and technical career. Students learn a variety of basic and advanced heating, ventilating, and air conditioning (HVAC) principles in a combination of classroom and work-site experiences. An integral part of the instructional program is participation in the "student-built" house project. Students completing this program are eligible to receive credit at Montgomery College in the Construction Technology Program, as well as industry recognized credentials through the National Center for Construction Education and Research.

Heating, Ventilation, and Air Conditioning 1 A/B TP
5123(92)/5129(92) (15 SSL) (TP) **1.5 credits**

Heating, Ventilation, and Air Conditioning 2 A/B TP
Prerequisite: *Attainment of the outcomes of Heating, Ventilation, and Air Conditioning 1 A/B*
5127(92)/5128(92) AT (15 SSL) (TP) **1.5 credits**

Internship, Heating, Ventilation, and Air Conditioning
Prerequisite: *Attainment of the outcomes of Heating, Ventilation, and Air Conditioning 1A/B*
5711(92) **0.5 credit**

MASONRY—CAREER PATHWAY PROGRAM *(4 credits required)*
The Heating and Air Conditioning program prepares students for the challenges and demands of an exciting and technical career. Students learn a variety of basic and advanced heating, ventilating, and air conditioning (HVAC) principles in a combination of classroom and work-site experiences. An integral part of the instructional program is participation in the "student-built" house project. Students completing this program are eligible to receive credit at Montgomery College in the Construction Technology Program, as well as industry recognized credentials through the National Center for Construction Education and Research.

Masonry 1 A/B TP
5567(92)/5568(92) (15 SSL) (TP) **1.5 credits**
Standards covered include introduction of masonry, masonry tools and equipment, measurements and drawings, mortar, masonry units, and installation techniques.

Masonry 2 A/B TP
Prerequisite: *Attainment of the outcomes of Masonry 1 A/B*
5565(92)/5566(92) (15 SSL) (TP) **1.5 credits**
Standards covered include residential plans and drawing interpretation, residential masonry, grout and other reinforcement, metal work in masonry, advanced laying techniques, construction techniques and moisture control, elevated work, and construction inspection and quality control.

Internship, Masonry
Prerequisite: *Attainment of the outcomes of Masonry 1A/B*
5714(92) **0.5 credit**
This course provides an internship opportunity related to construction and masonry. May be repeated for credit.

PLUMBING—CAREER PATHWAY PROGRAM *(4 credits required)*
The plumbing program provides students with opportunities to learn the installation, maintenance, and repair of many different types of pipe systems. Plumbers install and repair the water, waste disposal, drainage, and gas systems in homes and commercial and industrial buildings. Students apply their knowledge and skills in the construction of a student built house project. By completing this program, students are eligible to receive credit at Montgomery College in the Construction Technology Program, as well as industry recognized credentials through the National Center for Construction Education and Research.

Plumbing 1 A/B TP
5607(92)/5608(92) (15 SSL) (TP) **1.5 credits**
Standards covered include: introduction to the plumbing profession; safety; plumbing tools; introduction to plumbing math; introduction to plumbing drawings; plastic pipe and fittings; copper pipe and fittings; cast-iron pipe and fittings; carbon steel pipe and fittings; corrugated stainless steel tubing; fixtures and faucets; introduction to drain, waste, and vent (DMV) systems; and introduction to water distribution systems.

Plumbing 2 A/B TP
Prerequisite: *Attainment of the outcomes of Plumbing 1 A/B*
5605(92)/5606(92) (15 SSL) (TP) **1.5 credits**
Standards covered include plumbing math two; reading commercial drawings; hangers, supports, structural penetrations and fire stopping; installing and testing DWV piping; installing roof, floor, and area drains; types of valves; installing and testing water supply piping; installing fixtures, valves, and faucets; installing water heaters; fuel gas systems; and servicing of fixtures, valves, and faucets.

Internship, Plumbing
Prerequisite: *Attainment of the outcomes of Plumbing 1A/B*
5716(92) **0.5 credit**
This course provides an internship opportunity related to construction and plumbing. May be repeated for credit.

CAREER PATHWAY PROGRAMS IN THE AUTOMOTIVE TRADES PROGRAM
Students enrolled in programs in the Transportation, Distribution and Logistics Cluster participate in a nationally certified automotive curriculum that includes the repair and reconditioning of cars that are eventually sold through a student run used car dealership. These hands-on activities are planned and coordinated by the Montgomery County Students Automotive Trades Foundation, Inc. This nonprofit foundation is a cooperative venture of the school system and volunteers from local businesses, professionals, and automotive industries.

AUTOMOTIVE TECHNOLOGY—CAREER PATHWAY PROGRAM *(4 credits required)*
The Automotive Technology program is a program that gives students exposure to career opportunities and instructional competencies in the automotive repair fields. Automotive maintenance and basic servicing are the basis for this program. Students gain valuable skills which will prepare them for immediate entry into the automotive industry or provide a foundation for pursuing further study in the Automotive Technology/Dealership Training or Automotive Body Repair Technology/Dealership Training programs.

Foundations of Automotive Technology A/B TP
5045(92)/5046(92) (15 SSL) (TP) **1.5 credits**
This course is designed for students new to the automotive program. Standards covered include an introduction to the following areas: tool and equipment safety; preventative maintenance; lubrication system; air brushing; removal and application of paints and finishes; proper use of tools and equipment; application and sanding of body fillers; interior and exterior detailing; application of protective sealers; and employability and communication skills.

SEPA Automotive Topics
Prerequisite: *This course is open only to ESOL students enrolled in the SEPA Program. Admission to these courses must be determined by SEPA committee decision at Wheaton and Einstein.*
8099 **1.5 credits**
Students Engaged in Pathways to Achievement (SEPA) program is a career-based instructional program for Spanish-speaking high school ESOL students who have experienced interrupted or limited formal education. To be eligible for the SEPA program, students must be at least eighteen (18) years of age by the end of the school year. Available only to SEPA students in the DownCounty Consortium (DCC).

Internship, Foundations of Automotive Technology, DP
Prerequisite: *Attainment of the outcomes of Foundations of Automotive Technology A/B*
5701(92) **1.0 credit**
Automotive Technology students extend automotive skills learned in the classroom through work-based experiences. Industry placements are made in partnership with Montgomery County Students Automotive Trades Foundation, Inc., providing meaningful work-based experiences framed around NATEF competencies and ASE industry certifications. Professional automotive technicians are trained as mentors to supervise and lead students toward these challenging industry certifications. May be repeated for credit.

AUTOMOTIVE BODY TECHNOLOGY AND DEALERSHIP TRAINING—CAREER PATHWAY PROGRAM *(4 credits required)*
Auto Body Repair Technology develops skills for entry-level employment in auto body shops specializing in body repair and painting. Students are provided with a thorough knowledge of automotive restoration and repair through panel installation, trim and glasswork replacement, surface preparation, and painting. Computerized paint matching and mixing is featured along with a state of the art spray booth. Another area of focus includes metal work mastery that trains the student to weld, braze, solder, straighten, and shrink metals. Students take pride in learning the artistry and skill required to restore damaged vehicles to their original condition.

Auto Body Technology/Dealership Training 1 A/B TP
5553(92)/5554(92) (15 SSL) (TP) **1.5 credits**

Auto Body Technology/Dealership Training 2 A/B TP
Prerequisite: *Attainment of the outcomes of Auto Body Technology/ Dealership Training 1 A/B*
5555(92)/5556(92) (15 SSL) (TP) **1.5 credits**

Internship, Auto Body Technology
Prerequisite: *Attainment of the outcomes of Auto Body Technology/ Dealership Training 1A/B*
5702(92) **0.5 credit**

AUTOMOTIVE TECHNOLOGY/DEALERSHIP—CAREER PATHWAY PROGRAM *(4 credits required)*
Automotive Technology students are offered an opportunity to train for skilled positions in the automotive professions. This program develops student technical, analytical, and communication skills. Students are provided instruction and hands-on experience in the maintenance, repair, and sales and marketing of automobiles. Students are provided with classroom and laboratory experiences in many areas including engine performance and repair, suspension and steering, brakes, electrical / electronic systems, and heating and air conditioning.

Automotive Technology/Dealership Training 1 A/B TP
5061(92)/5062(92) (15 SSL) (TP) **1.5 credits**

Automotive Technology/Dealership Training 2 A/B TP
Prerequisite: *Attainment of the outcomes of Automotive Technology/ Dealership Training 1 A/B*
5067(92)/5068(92) AT (15 SSL) (TP) **1.5 credits**

Internship, Automotive Technology
Prerequisite: *Attainment of the outcomes of Automotive Technology/ Dealership Training 1A/B*
5703(92) **0.5 credit**

CAREER PROGRAM PATHWAY IN THE NETWORK OPERATIONS PROGRAM

NETWORK OPERATIONS—CAREER PATHWAY PROGRAM *(4 credits required)*

The Network Operations Career Pathway Program offers students opportunities to learn technical and problem-solving skills while providing a comprehensive foundation of microcomputer and network technologies. Preparation for international industry credentials validate the knowledge students have attained. Hands on laboratory experiences train students as entry-level technicians in the field of IT as well as for advanced studies in Engineering and IT in colleges, universities and the military. Articulated college credits may be earned through successful completion of the program.

Network Operations A/B TP
4202(92)/4203(92) AT CM (15 SSL) (TP) **1.5 credits**

Students acquire industry-standard knowledge and skills needed to install, configure, diagnose, and repair PC hardware including power supplies, memory, I/O devices, drives, and peripherals. Students learn to install and troubleshoot a variety of computer operating systems. Students learn networking configuration, protocols, security, fault tolerance, and hardware/ software troubleshooting in local and wide area networks. CompTIA A+/ Network+ certifications and articulated college credits may be earned.

Network Operations Internship
Prerequisite: *Network Operations A/B (4202/4203 or 4242/4243)*
4187 AT **0.5 credit**

Network Operations students extend computer skills learned in the classroom through work-based experiences. Industry placements are made in partnership with Montgomery County Students Information Technology Foundation, Inc., providing meaningful work-based experiences framed around Server+, Security+, or MCSA industry certifications. Trained mentors in the professional IT business community supervise and lead students toward these challenging and advanced industry certifications. May be repeated for credit.

Network Operations Guided Research
Prerequisite: *Network Operations A/B (4202/4203 or 4242/4243)*
4188 AT **0.5 credit**

This course provides school-based learning opportunities for advanced information technology studies. Under the supervision of the Network Operations teacher, students will pursue a project or concentrated study in an area of computer and information sciences related to a networking career, leading to advanced IT certification and college credits. Students may attain such advanced industry certification as Server+, Security+, or MCSA; and/ or dual-enrollment college matriculation. May be repeated for credit.

RICHARD MONTGOMERY HIGH SCHOOL INTERNATIONAL BACCALAUREATE MAGNET PROGRAM

The International Baccalaureate (IB) Diploma Program at Richard Montgomery High School was the first IB Program in Montgomery County Public Schools. Since 1987, IB at Richard Montgomery has combined the rigor and challenge of the IB curriculum with a competitive, countywide student selection process. Academically exceptional, motivated students are offered entry to the program after a highly selective process that evaluates the student's application, standardized test scores, a writing assessment, teacher recommendations, and academic grades. Only 100 students are accepted and enrolled from a pool of approximately 800 applicants each year.

For more than 19 years, the IB program at Richard Montgomery has ranked among the most successful in the world. In 2006, 99 percent of Richard Montgomerys IB candidates earned the IB diploma; in North America, the average is approximately 77 percent. Richard Montgomery students routinely perform well above worldwide averages on each of the internationally assessed IB examinations. In addition, Richard Montgomery IB teachers include educators who serve internationally as IB examiners and IB trainers. The IB Diploma Program at Richard Montgomery has produced two Rhodes Scholars and one Marshall Scholar, both of which are prestigious national awards.In addition, in 2006 Newsweek ranked Richard Montgomery 15th nationwide in terms of academic rigor.

The selection process for the IB program at Richard Montgomery begins in October when eighth grade students who meet the basic requirements for the program are invited to an informational session at Richard Montgomery. The basic requirements include enrollment in two or more gifted and talented or accelerated classes; completion of Algebra 1 by the end of Grade 8; and completion of the first level of Spanish, French, or Chinese by the end of Grade 8. Bilingual students who are fluent in Spanish, French, or Chinese are also eligible to apply. All application materials are submitted by the December date indicated on the application form, and students complete the magnet test on the January date indicated on the application form. In March students are notified of the status of their application.

For more information about the philosophy and structure of the International Baccalaureate Diploma Program, see the IB Diploma Program Overview elsewhere in this catalog. For more information about the IB Diploma Program at Richard Montgomery High School see the following website: *www.portal control.com/rmhs*

Richard Montgomery offers the following pre-IB and IB courses, which constitute the most diverse course offerings of any IB Diploma Program in MCPS:

Group 1: Language A (English)

Pre-IB English 9 A/B
1022/1023 CM PreIB NCAA (AL) **0.5 credit**

Pre-IB English 10 A/B
1024/1025 CM PreIB NCAA (AL) **0.5 credit**

IB English 1 A/B
1026/1027 CM IB NCAA (AL) **0.5 credit**

IB English 2 A/B
Prerequisite: *IB English 1*
1028/1029 CM IB NCAA (AL) **0.5 credit**

Group 2: Language B (Chinese, French, or Spanish)

Pre-IB Chinese 2A/2B
Prerequisite: *Attainment of the outcomes of Level 1.*
1647/1648 CM PreIB NCAA (AL) **0.5 credit**

Pre-IB French 2A/2B
Prerequisite: *Attainment of the outcomes of Level 1.*
1609/1610 CM PreIB NCAA (AL) **0.5 credit**

Pre-IB Spanish 2A/2B
Prerequisite: *Attainment of the outcomes of Level 1B*
1749/1750 CM PreIB NCAA (AL) **0.5 credit**

Pre-IB Chinese 3A/3B
Prerequisite: *Attainment of the outcomes of Level 2B.*
1649/1650 CM PreIB NCAA (AL) **0.5 credit**

Pre-IB French 3 A/B
Prerequisite: *Attainment of the outcomes of Level 2.*
1617/1618 CM PreIB NCAA (AL) **0.5 credit**

Pre-IB Spanish 3A/3B
Prerequisite: *Attainment of the outcomes of Level 2B*
1717/1718 CM PreIB NCAA (AL) **0.5 credit**

IB Chinese 4 A/B
Prerequisite: *Attainment of the outcomes of Level 3 or Level 3 Immersion.*
1651/1652 CM IB NCAA (AL) **0.5 credit**

IB French 4 A/B
Prerequisite: *Attainment of the outcomes of IB Level 3B*
1619/1620 CM IB NCAA (AL) **0.5 credit**

IB Spanish 4 A/B
Prerequisite: *Attainment of the outcomes of Level 3B or Level 3 Immersion*
1751/1752 CM IB NCAA (AL) **0.5 credit**

IB Chinese 5 A/B
Prerequisite: *Attainment of the outcomes of Level 4B.*
1653/1654 CM IB NCAA (AL) **0.5 credit**

IB French 5 A/B
Prerequisite: *Attainment of the outcomes of IB Level 4B.*
1627/1628 CM IB NCAA (AL) **0.5 credit**

IB Spanish 5 A/B
Prerequisite: *Attainment of the outcomes of IB Level 4B*
1753/1754 CM IB NCAA (AL) **0.5 credit**

IB Chinese 6 A/B
Prerequisite: *Attainment of the outcomes of Level 5B.*
1655/1656 CM IB NCAA (AL) **0.5 credit**

IB French 6 A/B
Prerequisite: *Attainment of the outcomes of IB Level 5B.*
1629/1630 CM IB NCAA (AL) **0.5 credit**

IB Spanish 6 A/B
Prerequisite: *Attainment of the outcomes of IB Level 5*
1755/1756 CM IB NCAA (AL) **0.5 credit**

Group 3: Individuals and Society (History, Economics, Psychology)

Pre-IB Government A/B
2133/2134 CM PreIB NCAA (AL) **0.5 credit**

History, United States, Advanced Placement A/B
2114/2124 CM NCAA AP (BCC1) (AL) **0.5 credit**

IB History 1 A/B
2230/2231 CM IB NCAA (AL) **0.5 credit**

IB History 2 A/B
Prerequisite: *Attainment of the outcomes of IB History 1*
2403/2404 CM IB NCAA (AL) **0.5 credit**

IB Economics A/B
2234/2235 CM IB NCAA (AL) **0.5 credit**

IB Psychology A/B
2232/2233 CM IB NCAA (AL) **0.5 credit**

Group 4: Experimental Sciences (Biology, Chemistry, Physics, Environmental Science)

Pre-IB Biology A/B
3634/3635 CM PreIB NCAA (AL) **0.5 credit**

Pre-IB Chemistry A/B
Prerequisite: *One year of biology.*
3744/3745 CM PreIB NCAA (AL) **0.5 credit**

IB Physics 1 A/B
3844/3845 CM IB NCAA (AL) **0.5 credit**

IB Physics 2 A/B
Prerequisite: *Attainment of the outcomes of Precalculus and IB Physics 1.*
3846/3847 CM IB NCAA (AL) **0.5 credit**

IB Biology A/B
Prerequisite: *One year of Honors or Pre-IB Biology and one year of Honors or Pre-IB Chemistry.*
3606/3607 CM IB NCAA (AL) (DP) **1.0 credit**

IB Chemistry 1 A/B
Prerequisite: *Attainment of the outcomes of Pre-IB or Honors Chemistry.*
3746/3747 CM IB NCAA (AL) **0.5 credit**

IB Environmental Systems A/B
3757/3758 CM IB (AL) **0.5 credit**

Group 5: Mathematics

Pre-IB Geometry A/B
Prerequisite: *Attainment of the outcomes of Algebra 1.*
3208/3209 CM PreIB NCAA (AL) **0.5 credit**

IB Analysis and Applications of Functions A/B
Prerequisite: *Attainment of the outcomes of Pre-IB Geometry.*
3306/3307 CM PreIB (AL) **0.5 credit**

IB Math Studies A/B
Prerequisite: *Attainment of the outcomes of IB Analysis and Applications of Functions or Algebra 2*
3410/3418 CM IB NCAA (AL) **0.5 credit**

IB Precalculus A/B
Prerequisite: *Attainment of the outcomes of IB Analysis and Applications of Functions or Algebra 2 with Analysis.*
3420/3424 CM IB NCAA (AL) **0.5 credit**

Calculus AB, Advanced Placement, A/B
Prerequisite: *Attainment of the outcomes of Precalculus A and B*
3452/3453 CM NCAA AP (BCC1) (AL) **0.5 credit**

Calculus BC, Advanced Placement, A/B
Prerequisite: *Attainment of the outcomes of Precalculus, Honors A and B*
3491/3492 CM NCAA AP (BCC1) (AL) **0.5 credit**

IB HL Mathematics A/B
3496/3497 CM (AL) **0.5 credit**

Calculus with Applications A/B
Prerequisite: *Attainment of the outcomes of Precalculus A and B*
3356/3357 CM NCAA (BCC2) (AL) **0.5 credit**

Statistics, Advanced Placement, A/B
Prerequisite: *Attainment of the outcomes of Algebra 2A and 2B*
3320/3321 CM NCAA AP (BCC2) (AL) **0.5 credit**

Multivariable Calculus and Differential Equations A/B
Prerequisite: *Magnet Analysis 1B with teacher recommendation.*
3048/3049 CM NCAA (AL) **0.5 credit**

Group 6: Electives (Theatre, Visual Arts, Music, Computer Science)

Art and Culture A/B
6454/6455 FA **0.5 credit**

IB Visual Arts 1 A/B
6102/6103 CM FA IB (AL) **0.5 credit**

IB Visual Arts 2 A/B
Prerequisite: *IB Visual Arts 1*
6107/6108 CM FA IB (AL) **0.5 credit**

Music Theory and Composition, Advanced Placement
Prerequisite: *Attainment of the outcomes of Music Theory B or permission of instructor*
6547/6548 CM FA AP (AL) **0.5 credit**

IB Advanced Music A/B
Prerequisite: *Music Theory, unless waived by the instructor*
6567/6568 CM FA IB (AL) **0.5 credit**

IB Theater 1
A/B 8071/8072 CM FA IB (AL) **0.5 credit**

Computer Programming 2, Advanced Placement Computer Science A/B
Prerequisite: *Attainment of the outcomes of Computer Programming 1 A/B*
2901/2902 AT CM AP (AL) **0.5 credit**

Computer Programming 3—Advanced Topics in Computer Science A/B
Prerequisite: *Attainment of the outcomes of Computer Programming 2 A/B*
2965/2966 AT CM AP (AL) **0.5 credit**

Other IB Requirements

Theory of Knowledge 1
2007 CM IB NCAA (AL) **0.5 credit**

Theory of Knowledge 2
2008 CM IB NCAA (AL) **0.5 credit**

IB Theory of Knowledge 1/Extended Essay A/B
2011/2012 CM IB NCAA (AL) **0.5 credit**

POOLESVILLE HIGH SCHOOL—A WHOLE-SCHOOL MAGNET

Get excited! Finally there is a program in Montgomery County Public Schools that has something for everyone. MCPS has a 20 year track record for developing nationally recognized, rigorous instructional programs for highly-able learners. Now these programs are being expanded to the upcounty for students who test into the program as well as for students who reside in the Poolesville attendance area. The whole-school magnet opens the promise of rigorous, engaging courses taught by inspired teachers to all.A whole school magnet is organized around instructional "houses" made up of small learning communities involving multiple disciplines centered on a proven course of study. There are three instructional houses at Poolesville High School:

- Global Ecology House —GEH
- Humanities House —HH
- Science, Math, Computer Science House—SMCSH

Selection and Criteria

Students who reside in Montgomery County may apply to the Global Ecology House (it is a countywide program). To apply to the Humanities House or the Science, Math, Computer Science House students must reside in one of the following high school clusters: Clarksburg, Damascus, Gaithersburg, Magruder, Northwest, Poolesville, Quince Orchard, Seneca Valley or Watkins Mill. Advanced and highly able learners who have completed at least Algebra 1 are able to apply to the programs in the fall of their 8th grade year. Students will then apply to one of the three houses of study at PHS: Global Ecology House, Humanities House or the Science, Math, Computer Science House. Students are accepted on the basis of demonstrated interest; teacher recommendations; their achievement in Grades 7 and 8; and scores on a reasoning and critical thinking assessment administered by MCPS. A writing component is included in the application and at the time of testing.

Transportation

Transportation is provided from central pickup points throughout Montgomery County.

Global Ecology House

This four-year program in the Global Ecology House consists of an interdisciplinary investigation of Earth's ecosystems. A core curriculum of environmental science and social studies is integrated with the traditional English and mathematics to provide a unique learning experience. The program utilizes a hands-on approach to learning whereby concepts learned in the classroom are then applied in real-life field experiences.

Global Ecology students have the opportunity to specialize in environmental science and social studies. Every student has the opportunity to—

- pursue rigorous interdisciplinary science and social studies curricula focused on human impact on the natural environment.
- develop field, laboratory, and research skills in the sciences.
- work with peers to develop and apply the responsibilities of environmental citizenship.

Grade 9 House Focus

In order to achieve the GE certificate of Achievement students must complete the following courses in grade nine.

- GE US History A/B
- GE Environmental Science A/B
- GE Research for Problem Solving A/B
- GE Technological Innovations

Grade 10 House Focus

In order to achieve the GE Certificate of Achievement the following courses must be successfully completed grade 10.

- GE NSL Government A/B or AP American Government with NSL
- Environmental Chemistry A/B
- GE Environmental Science II—Biology A/B

Grade 11 House Focus

In order to achieve the GE Certificate of Achievement the following courses must be successfully completed grade 11.

- AP World History A/B
- GE Environmental Science III—Physics A/B

Grade 12 House Focus

In order to achieve the GE Certificate of Achievement the following courses must be successfully completed grade 12.

- AP Environmental Science A/B

Humanities House

Students in the Humanities House develop critical and flexible thinking skills as part of becoming persons of commitment, vision and action in the world. Drawing on the rich traditions of religion, culture, philosophy, literature, communication and the arts, students and faculty work together to explore complex perspectives on a variety of human concerns.

The Humanities House uses an interdisciplinary approach to learning through English and social studies classes to cultivate an intellectual and imaginative connection between a living past and the global challenges of our contemporary world.

Humanities students specialize in the humanities and media productions. Every Humanities student has the opportunity to—

- pursue rigorous humanities curricula with an interdisciplinary connection among English, social studies, communication and fine arts.
- develop and deepen skills in oral and written communication.
- work with peers to develop top quality print, photo, and video products.

Grade 9 House Focus

In order to achieve the HH Certificate of Achievement the following courses must be successfully completed grade 9.

- Humanities English 9 A/B
- Humanities US History A/B
- Criticism in the Humanities A/B
- Humanities Photography 1 A
- Humanities Oral Interpretation and Media Study

Grade 10 House Focus

In order to achieve the HH Certificate of Achievement the following courses must be successfully completed grade 10.

- Humanities English 10 A/B
- Humanities NSL Government A/B or AP American Government with NSL
- Television Production A
- Introduction to Media Literacy
- Philosophy
- Law

Grade 11 House Focus

In order to achieve the HH Certificate of Achievement the following courses must be successfully completed grade 11.

- Humanities AP Language and Composition A/B
- Humanities AP World History A/B
- Humanities AP Art History A/B

Grade 12 House Focus

In order to achieve the HH Certificate of Achievement the following courses must be successfully completed grade 12.

- AP English Literature and Composition A/B
- AP Human Geography A/B or AP Studio Art A/B
- Humanities Guided Research

SCIENCE, MATH, COMPUTER SCIENCE HOUSE

The Science, Math, Computer Science House students have the opportunity to specialize in a rigorous program focused on problem-solving skills and research. Students will develop and deepen skills in analysis and laboratory work. This interdisciplinary approach to learning allows students to develop the ability to think precisely and creatively. Students work with a dedicated staff and peers to solve science, mathematical and engineering problems in our technological world.

Science, Mathematics, and Computer Science students have the opportunity to specialize in rigorous mathematics and science curricula focused on problem-solving skills and research. Every Science, Mathematics, and Computer Science student has the opportunity to—

- pursue rigorous science, mathematics, and computer science curricula focused on the problem-solving requirements of engineering.
- develop and deepen skills in problem-solving, analysis, and laboratory investigations.
- work with peers to solve mathematical, science, and engineering problems.

Grade 9 House Focus

In order to achieve the SMCSH Certificate of Achievement the following courses must be successfully completed grade 9.

- Advanced Science 1—Physics
- Advanced Science 2—Chemistry
- Magnet Functions A/B or
- Magnet Precalculus A/B or
- Magnet Geometry A/B
- Research and Experimentation for Problem Solving 1 A/B
- Fundamentals of Computer Science A/B

Grade 10 House Focus

In order to achieve the SMCSH Certificate of Achievement the following courses must be successfully completed grade 10.

- Advanced Science 3—Earth Science A/B
- Advanced Science 4—Biology A/B
- Magnet Precalculus C/D or
- Magnet Functions A/B or
- Analysis I A/B
- Computer Programming 1 or 2
- Research and Experimentation for Problem Solving 2 A/B
- Algorithms and Data Structures A/B

Grade 11 House Focus

In order to achieve the SMCSH Certificate of Achievement the following courses must be successfully completed grade 11.

- SCMS Electives (to be determined)
- Magnet Precalculus C/D or
- Analysis I A/B
- Research Design and Research Project A
- Computer Programming 2 or 3

Grade 12 House Focus

In order to achieve the SMCSH Certificate of Achievement the following courses must be successfully completed grade 12.

- SCMS Electives (to be determined)
- Magnet Analysis A/B
- Multivariable Calculus A/B or
- AP Statistics A/B
- Research Project B
- Computer Programming 3

Alternatives to Dissection

Dissection is one of many instructional methods that may be used in Biology and AP Biology. Students may request from the teacher alternatives to dissection in Biology and AP Biology.

APPENDIX

STUDENT SERVICE LEARNING (SSL)

Frequently Asked Questions about SSL

Are SSL, "community service" and "volunteering" the same?

No. SSL is a Maryland State Department of Education graduation mandate that requires planning and documentation. Activities must be secular in nature, supervised by nonprofit, tax-exempt organizations and include preparation, action and reflection phases. A maximum of 8 hours may be earned in a 24-hour period and one service-learning hour is awarded for one hour of service outside of the instructional day.

How many SSL hours are required for MCPS students?

Beginning with the Class of 2011, 75 SSL hours are required for graduation.

Are there high school courses where service-learning activities are infused into the curriculum?

Yes. The National, State and Local Government course and selected elective courses identified in this course bulletin achieve curricular objectives through service learning and reward participating students with automatic SSL hours.

How can MCPS students earn SSL hours?

MCPS students may earn SSL hours through:

1. Full participation in activities and successful completion of courses that achieve curricular objectives through service learning. Specific courses with infused service-learning activities are identified in this Course Bulletin.
2. Full participation in school-sponsored clubs and organizations that address recognized community needs. The teacher/advisor verifies the SSL hours.
3. Full participation in service-learning opportunities in the community with nonprofit, tax exempt organizations that are pre-approved for SSL.

How are student records toward the SSL diploma requirement maintained?

The SSL coordinator in every middle and high school provides information to students about the SSL requirement, activities, and forms. Request for Student Service Learning Preapproval are reviewed and approved by the SSL coordinator in advance of service. Hours documented on verification forms are put into the student record. Hours required, completed and remaining are reflected on the report card every 9 weeks from grade 6 on through high school.

What are the forms used to document SSL and where can they be found?

MCPS Form 560-51; Student Service Learning Activity Verification is required to document every SSL activity. MCPS Form 560-50; Request for Student Service Learning Preapproval is required to be completed and approved by the SSL coordinator in advance of participation in any activity with a nonprofit, tax exempt organization that is not identified at the website www.mcpsssl.org as 'MCPS SSL Approved' in the activity title. SSL forms are available in any middle or high school and can be downloaded from the SSL web site. Students should keep copies of all SSL documents.

Can SSL activities be done with nonprofit organizations that are not listed as pre-approved on the MCPS website *www.mcpsssl.org*?

Yes. Students may earn service-learning hours with nonprofit, tax exempt organizations that are not tagged as MCPS SSL approved at the web site by contacting the Montgomery County Volunteer Center at 240-777-2600 or students may complete MCPS Form 560-50, Request for Student Service Learning Preapproval for approval in advance of the activity.

Must all SSL activities be done with non-profit tax-exempt organizations?

Exceptions to the nonprofit, tax-exempt SSL rule are for-profit assisted-living facilities and nursing homes. Students may earn SSL hours in these facilities with a completed MCPS Form 560-50 Request for Student Service Learning Preapproval approved in advance of the service. All SSL hours must be earned through direct service with residents.

Can religious organizations that are meeting secular needs in the greater community provide SSL hours to students?

Yes. The organization and the opportunities may become preapproved for SSL in MCPS by contacting the Montgomery County Volunteer Center at 240-777-2600 or students may complete MCPS Form 560-50, Request for Student Service Learning Preapproval for approval in advance of the activity.

Are there MCPS awards given to students with exceptional SSL records?

Yes. The Superintendent's Student Service Learning Awards are given to middle school students who have contributed 75 or more hours of service to their communities within a one-year period. Certificates of Meritorious Service are awarded to graduating seniors who have contributed 260 or more hours of service by the time of graduation.

Is there an appeal process for SSL disputes?

Yes. Students may appeal decisions made by the SSL coordinator and SSL advisory committee to the school principal. Extenuating circumstances substantiating the appeal may be presented via a written communication to the administrator.

Can parents or relatives of students sign SSL forms as the organization supervisor?

No.

Where else can I find information about SSL?

Information is available on the MCPS web site at this address: www.mcpsssl.org

Are there timelines for turning in documentation of service?

Yes. Documentation of service performed during the summer must be turned in to the SSL coordinator by the last Friday in September. Documentation of service performed during the first semester must be turned in to the SSL coordinator by the Friday before first semester exams begin; and documentation of service performed during the second semester must be turned in by the Friday before second semester exams begin.

CAREER PROGRAMS AND TECHNOLOGY EDUCATION

Technology Education Credit Courses

The following courses that have been identified by the Maryland State Department of Education (MSDE) to meet the new technology education credit graduation requirements that are being phased into MCPS schools for the graduating class of 2011.

- Foundations of Technology (available at all high schools as a classroom or online course)
- Introduction to Engineering Design—Project Lead The Way (PLTW) (available at all high schools)
- Principles of Engineering (available at all high schools)
- Designing Technology Solutions (being piloted in five high schools)

The Principles of Engineering and Designing Technology Solutions courses have advanced-level course designations.

Pending approval by the MCPS Board of Education (BOE), the following advanced technology education credit will be offered during the 2009-2010 school year: Technological Design; Advanced Design Applications.

Maryland State Department of Education

The state requirements for technology education are available to the public in The Annotated Code of Maryland— Maryland State Board of Education Regulation on Technology Education (COMAR)13A.04.01.01 *www.dsd.state.md.us/ comar/13a/13a.04.01.01.htm*

All courses that meet the technology education graduation requirement for the class of 2012 and beyond (pending approval) must meet or exceed The National Standards for Technological Literacy for:

- The Nature of Technology
- Technology and Society
- Design
- Abilities for a Technological World
- The Designed World

ADDITIONAL LEARNING OPPORTUNITIES

Summer School 2009

The Regional Summer School Program provides an alternative for students to receive credit for select core and non-core courses during the summer. The courses taught follow the same curriculum guidelines as those during the regular school year.

Brochures for the 2009 Regional Summer School Program will be available in all schools by the last week of April 2009. Registration forms, tuition reduction waiver vouchers, and a copy of the summer school brochure will also be available on the MCPS website.

Summer School Sites and Schedules

The planning process for the Regional Summer School Program should be complete by April 1, 2009. Summer School site locations and schedules will be advertised as soon as they are available. The sites for the Regional Summer School Program are selected based upon serving the needs of all students.

Local School Programs

All high schools can also develop their own Local School Program (LSP) to serve the needs of their specific population. The LSP operates independent of the Regional Summer School Program.

Contact Information

Questions regarding Local School Programs should be directed to individual schools. Questions regarding the Regional Summer School Program should be directed to 301-279-3202.

Regional Summer School Program

Carver Educational Services Center
Rockville, MD 20850
Fax: 301-517-5957

STUDENT ONLINE LEARNING

College Board SAT Online Prep Program

This is a non-credit preparation program made available free of charge to all MCPS students through the MCPS/College Board Partnership. The SAT Prep program is a product of the College Board maintained SAT Preparation Center™. It is designed to allow students to practice and review SAT math, critical reading, and writing practice questions including a review of the SAT essay. Students may also download, print, and take a free, official full-length SAT practice test online then review a free score and skills report, and explanations to all test answers.

eLearning Opportunities

Student eLearning, through the Montgomery County Public Schools (MCPS), is a way for high school students to take courses outside of the traditional classroom setting. For more information or to enroll in an online class, please see your school counselor. Visit the eLearning website *www.montgomeryschoolsmd.org/departments/online learning* where you can learn more about eLearning in MCPS, review the titles of all courses approved for MCPS credit, read the answers to Frequently Asked Questions, and take a tour of an online course.

GEORGE B. THOMAS, SR. LEARNING ACADEMIES

Ten Montgomery County Public Schools host free Saturday morning programs, which provide enrichment, tutoring, and mentoring for students in Grades 1 - 12. The programs are called the George B. Thomas, Sr., Learning Academies and are also known as "Saturday Schools."

The George B. Thomas, Sr., Learning Academy, Inc. was established in 1986 by the Mu Nu Chapter of Omega Psi Phi Fraternity as an outgrowth of the Saturday School Initiative of Blacks United for Excellence in Education. Saturday Schools are open to all students. Saturday School sites include Watkins Mill, Gaithersburg, Albert Einstein, Montgomery Blair, John F. Kennedy, Northwest, Paint Branch, Sherwood, Springbrook, and Wheaton high schools.

Contact your local school for more information.

INDEX

NOTES

NOTES

NOTES

NOTES