

PCTVS

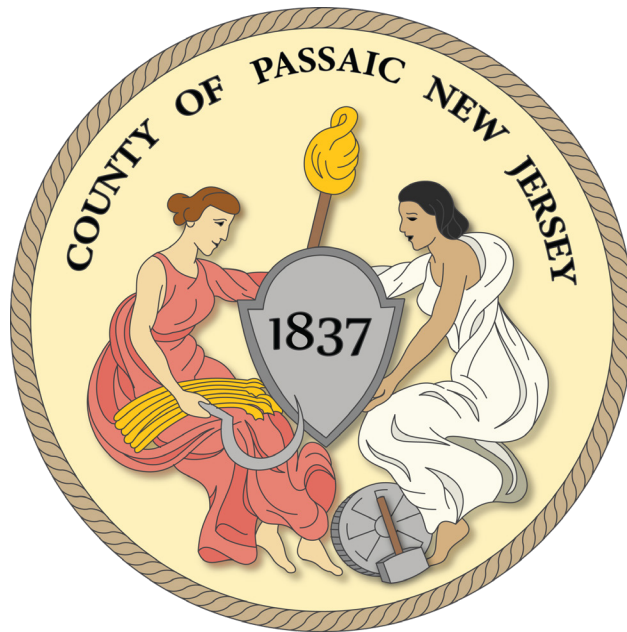
**PASSAIC COUNTY
TECHNICAL-VOCATIONAL
SCHOOLS**



COURSE CATALOG
2023-2024

DISCLAIMER

Passaic County Technical-Vocational School District is an Equal Opportunity Employer (EOE) and does not discriminate on the basis of race, color, creed, national origin, ancestry, age, marital status, familial status, affectional or sexual orientation, gender, religion, disability, social or economic status, etc. PCTVS does not enter into any contracts or agreements with any person, agency, or organization that discriminates in employment practices or the provision of benefits and services. PCTVS is committed to providing equal rights and equitable access to participation in all instructional programs and extracurricular activities without discrimination of any kind.



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GRADUATION REQUIREMENTS

Satisfactory completion of the following academic and vocational course credits shall qualify a pupil for the award of a State endorsed diploma:

All students must have earned a minimum of 167.5 credits in courses designed to meet all of the New Jersey Student Learning Standards including, but not limited to, the following credits:

- **20** credits in Language Arts
- **15** credits in Mathematics
- **15** credits in Social Studies
- **15** credits in Science
- **5** credits in Health, Safety, and Physical Education
- **5** credits in Visual and Performing arts;
- **5** credits in World Languages
- **2.5** credits in Financial Literacy
- **55** credits in Career and Technical Education:
 - Grade 9: 12.5 credits
 - Grade 10: 12.5 credits
 - Grade 11: 12.5 credits
 - Grade 12: 17.5 credits
- Electives as determined by the high school program sufficient to **total a minimum of 167.5 credits.**

Each student is required to successfully complete four years of Career and Technical Education. Students entering at grades ten must satisfactorily complete 32.5 credits of Career and Technical Education /Vocational. Students entering at grade eleven (from another CTE school) must satisfactorily complete 30 credits of Career and Technical Education /Vocational credits.

In addition, all students must meet the NJ Department of Education's assessment(s) requirement(s).

Credit Recovery and Credit Advancement Policy

- Students who must retake a course or subject may only earn or be awarded credits from New Jersey school districts.
- Students who wish to take a course or subject (up to 6 credits per academic year) not previously taken and for which credits or advanced course placement may be awarded may only earn credits from New Jersey school districts or colleges with prior approval by the principal or designee.
- Grades from a course or subject (up to 6 credits per academic year) not previously taken and for which credits or advanced course placement may be awarded shall not be factored into the students' grade point average.
- Students may only take up 24 total credits for courses or subjects not previously taken during their time as a student.
- Students who wish to enroll in an online course or subject for retake purposes or take a course or subject not previously taken and for which credits or placement may be

awarded, may only earn credits through a New Jersey approved virtual school with prior approval by the Principal or designee.

- Up to six credits per academic year will be awarded upon successful completion of a New Jersey approved virtual school course.
- The district will not assume the responsibility for any costs of enrollment, fees, course materials, or required technology for such courses.
- Grades from a New Jersey approved virtual school course or subject (up to 6 credits per academic year) not previously taken and for which credits or advanced course placement may be awarded will not be factored into the students' grade point average.
- Any student enrolled in a New Jersey approved virtual school course will be required to take the course final exam on the premises of Passaic County Technical Institute on the date or dates determined by New Jersey approved virtual school.

Advanced Placement Courses Policy

The Board of Education endeavors to provide an educational program adjusted to the needs of the individual child. Advanced placement courses are by definition, classes recognized by colleges as bona-fide college equivalent work. College credit or advanced standing may be earned by securing a designated rating by the College Board.

The Board believes the opportunity for individualized programming is enhanced by the offering of Advanced Placement classes, whenever a suitable number of qualified students are identified and to the extent of financial resources available. The establishment of Advanced Placement classes also has a positive impact upon the goal of seeking academic excellence in the involved subject areas.

Advanced Placement Exam Requirement:

All students enrolled in any Advanced Placement course offered by the district are required to take the course's Advanced Placement exam. The Advanced Placement exams are taken in order to gain college credit or advanced placement at the college level. Students enrolled in Advanced Placement classes who do not take the Advanced Placement exam for the course will only be awarded General weighting.

Advanced Placement Test Fee Program

The Advanced Placement Test Fee (APTF) program is a federal grant program that enables states to pay part or all of the costs of advanced placement test fees for students who are enrolled in an advanced placement class and qualify as low-income students who are enrolled in an advanced placement course and plan to take an advanced placement test. The program is designed to increase the number of low-income students who take advanced placement tests and receive scores for which college academic credit is awarded. Any student who takes an Advanced Placement Test without being enrolled in an Advanced Placement class is not eligible for financial support.

COURSE DESCRIPTIONS – Basic Skills Instruction

APPLICATIONS OF ALGEBRA 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: BASIC SKILLS INSTRUCTIONS

Building on the understanding of linear, quadratic, and exponential functions from Algebra I, this course will extend function concepts to include polynomial, rational, radical, logarithmic, and trigonometric functions. The standards in this course focus on the real-life applications of algebraic situations and solving equations.

LANGUAGE ARTS LAB 1 :: :: Mixed-grade High :: STEM Academy and PCTI :: BASIC SKILLS INSTRUCTIONS

The Language Arts Lab I curriculum strictly adheres to the New Jersey Student Learning Standards. The class serves as a support to further prepare students for the demands of college and career-readiness. These standards call for the progressive development of reading comprehension in order to allow students to gain a deeper understanding from fictional and informational texts, as a means of preparing them for credit-bearing academic college courses as well as workforce training programs. Through reading an array of contemporary literature and challenging informational text in a range of subjects, students are expected to build knowledge, gain insights, explore possibilities, and broaden their perspectives. Moreover, the ability to write logical arguments based on substantive claims, sound reasoning, and relevant evidence, is a cornerstone of the writing standards, which are essential elements in the Language Arts Lab curriculum. In addition, just as media and technology are integrated throughout school and everyday life in the twenty-first century, skills related to media use (both critical analysis and production of media) are also integrated throughout the standards for Language Arts Lab.

LANGUAGE ARTS LAB 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: BASIC SKILLS INSTRUCTIONS

The Language Arts Lab curriculum strictly adheres to the New Jersey Student Learning Standards. The class serves as a support to further prepare students for the demands of college and career readiness. These standards call for the progressive development of reading comprehension in order to allow students to gain a deeper understanding from fictional and informational text, as a means of preparing them for credit-bearing academic college courses as well as workforce training programs. Through reading an array of contemporary literature and challenging informational text in a range of subjects, students are expected to build knowledge, gain insights, explore possibilities, and broaden their perspectives. Moreover, the ability to write logical arguments based on substantive claims, sound reasoning, and relevant evidence, is a cornerstone of the writing standards, which are essential elements in the Language Arts Lab curriculum. In addition, just as media and technology are integrated throughout school and everyday life in the twenty-first century, skills related to media use (both critical analysis and production of media) are also integrated throughout the standards for Language Arts Lab.

LANGUAGE ARTS LAB 3 :: :: Mixed-grade High :: STEM Academy and PCTI :: BASIC SKILLS INSTRUCTIONS

The Language Arts Lab III strictly adheres to the New Jersey Student Learning Standards. The class serves as a support to further prepare students for the demands of college and career-readiness.

These standards call for the progressive development of reading comprehension in order to allow students to gain a deeper understanding from fictional and informational text, as a means of preparing them for credit-bearing academic college courses as well as workforce training programs. Through reading an array of contemporary literature and challenging informational text in a range of subjects, students are expected to build knowledge, gain insights, explore possibilities, and broaden their perspectives. Moreover, the ability to write logical arguments based on substantive claims, sound reasoning, and relevant evidence, is a cornerstone of the writing standards, which are essential elements in the Language Arts Lab curriculum. In addition, just as media and technology are integrated throughout school and everyday life in the twenty-first century, skills related to media use (both critical analysis and production of media) are also integrated throughout the standards for Language Arts Lab.

MATHEMATICAL MODELING 1 :: :: Mixed-grade High :: STEM Academy and PCTI :: BASIC SKILLS INSTRUCTIONS

The Mathematical Modeling I course is aligned with the Algebra 1 curriculum to provide students with a context for applying Algebra 1 concepts to real-world situations. This course uses mathematical practices as a vehicle for learning mathematical content. For example, students will model with mathematics (CCSSM MP.4), make sense of problems and persevere in solving them (CCSSM MP.1), and construct viable arguments and critique the reasoning of others (CCSSM MP.3).

During the mathematical modeling process, students are presented with a real-world situation that requires simplification. In simplifying the task, students will make reasonable assumptions and approximations. They will identify important quantities and decide which mathematical skills and concepts are relevant to address to the task. After applying mathematics, students will interpret and validate their solution. This often occurs in an iterative process in which students refine and revise their model to come up with a valid solution. Students will present their solution and defend their choices to their peers.

Mathematical content that will appear within mathematical modeling tasks include linear functions, systems of linear equations, exponential functions, polynomials, quadratic functions, and statistics. This course is designed to not only develop mathematical content skills, but also problem-solving skills. Students will be regularly engaged in collaboration and mathematical discourse.

[Alg1 Tasks Aligned to Curriculum.pptx.pdf](#)

READING LAB I :: Mixed-grade High :: STEM Academy and PCTI :: BASIC SKILLS INSTRUCTIONS

The Reading Lab Program is a specialized reading course that is designed to target reading skills that students have not developed. These areas of weakness include phonemic awareness, decoding, phonics, syllabication, fluency, and comprehension. The interactive software program combined with whole group teacher instruction and independent reading is designed to give students the opportunity to make substantial gains in reading.

Blended learning utilized in Read 180 and System 44 is a theory of action. First, adaptive technology delivers individualized instruction and practice.

Next, using the anchor text, the reading teacher guides whole/small group instruction which gives students the opportunity to develop relationships with their classmates and teacher through focused academic interaction and collaboration. Finally, independent reading guides students to both digital and print texts at their reading level, enabling them to transfer reading competence to texts they are interested in.

Both technology and teachers consistently support development of a growth mindset in students by celebrating effort and persistence, providing informed choices, and guiding students to take ownership of learning as they take on new levels of challenge.

Daily classroom practices utilize the components of the Reading Lab in order to instruct students in a range of skills across reading, writing, listening and speaking; this includes grammar and vocabulary. Data is used in Reading Lab to make instructional decisions to meet student needs through direct and indirect instruction.

READING LAB II :: Mixed-grade High :: STEM Academy and PCTI :: BASIC SKILLS INSTRUCTIONS

The Reading Lab Program is a specialized reading course that is designed to target reading skills that students have not developed.

These areas of weakness include phonemic awareness, decoding, phonics, syllabication, fluency, and comprehension. The interactive software program combined with whole group teacher instruction and independent reading is designed to give students the opportunity to make substantial gains in reading.

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Daily classroom practices utilize the components of the Reading Lab in order to instruct students in a range of skills across reading, writing, listening and speaking; this includes grammar and vocabulary. Data is used in Reading Lab to make instructional decisions to meet student needs through direct and indirect instruction.

READING LAB III :: Mixed-grade High :: STEM Academy and PCTI :: BASIC SKILLS INSTRUCTIONS

The Reading Lab Program is a specialized reading course that is designed to target reading skills that students have not developed. These areas of weakness include phonemic awareness, decoding, phonics, syllabication, fluency, and comprehension. The interactive software program combined with whole group teacher instruction and independent reading is designed to give students the opportunity to make substantial gains in reading.

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Both technology and teachers consistently support development of a growth mindset in students by celebrating effort and persistence, providing informed choices, and guiding students to take ownership of learning as they take on new levels of challenge.

Daily classroom practices utilize the components of the Reading Lab in order to instruct students in a range of skills across reading, writing, listening and speaking; this includes grammar and vocabulary. Data is used in Reading Lab to make instructional decisions to meet student needs through direct and indirect instruction.

READING LAB IV :: Mixed-grade High :: STEM Academy and PCTI :: BASIC SKILLS INSTRUCTIONS

The Reading Lab Program is a specialized reading course that is designed to target reading skills that students have not developed. These areas of weakness include phonemic awareness, decoding, phonics, syllabication, fluency, and comprehension. The interactive software program combined with whole group teacher instruction and independent reading is designed to give students the opportunity to make substantial gains in reading.

Blended learning utilized in Read 180 and System 44 is a theory of action. First, adaptive technology delivers individualized instruction and practice. Next, using the anchor text, the reading teacher guides whole/small group instruction which gives students the opportunity to develop relationships with their classmates and teacher through focused academic interaction and collaboration. Finally, independent reading guides students to both digital and print texts at their reading level, enabling them to transfer reading competence to texts they are interested in. Both technology and teachers consistently support development of a growth mindset in students by celebrating effort and persistence, providing informed choices, and guiding students to take ownership of learning as they take on new levels of challenge.

Daily classroom practices utilize the components of the Reading Lab in order to instruct students in a range of skills across reading, writing, listening and speaking; this includes grammar and vocabulary. Data is used in Reading Lab to make instructional decisions to meet student needs through direct and indirect instruction.

COURSE DESCRIPTIONS – CTE

ACAD. OF HEALTH SCIENCES 1 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

The first-year course of the Academy of Health Sciences is designed to expose the student to all aspects of a career in healthcare. It is divided into 4 major sections to build a strong foundation of medical knowledge. Each part is created to enhance and complement the next. It begins with a topic which is the basis of all healthcare careers; infection control and safety. Environmental Health and Safety introduces and explains theory and practical skills to prevent the spread of infection and promote safety among healthcare workers and their patients. It includes a 10-hour OSHA hybrid lesson which will culminate with state certification from OSHA. Once this is complete, Introduction to Medical Terminology will follow with an introduction of medical terminology including anatomical organization of the body, word construction and basic medical terms. This introduction of medical terminology will be a prerequisite to Anatomy and Physiology I & Medical Terminology I. (A and P-I & MT- I).

A and P-I & MT-I is the key component of next part of the Health and Medical Sciences I curriculum. It is designed to introduce students to basic knowledge of medical terminology needed to pursue a career and / or further education in the healthcare profession. It will include key terms related to the study of body systems, anatomy, physiology, medical processes and procedures and a variety of diseases. Informing the students with a comprehensive knowledge of word construction, definition, and the use of terms related to all areas of medical science is a key objective of this course. Several body systems and the corresponding medical terminology related to the systems will be addressed in this medically focused curriculum including: integumentary, skeletal, muscular, neurological, and special senses. This includes not only normal form and function, but disorders, diseases, diagnostics, and treatments as well. It is also a prerequisite to be expanded upon sophomore year in A and P-II & MT- II.

Health Career Exploration is the final topic which includes health care history, systems and economics, and a diverse sampling of career pathways. Furthermore, the course addresses: professionalism, leadership, law, ethics, communication and cultural diversity. Career ready practical skills such as proper body mechanics, aseptic hand washing, proper sanitization of body fluids, donning and doffing personal protective equipment (PPE), and temperature taking (oral, electronic, digital tympanic, temporal) will also be implemented and practiced over this dynamic course of study

ACAD. OF HEALTH SCIENCES 2 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

The second-year course of the Academy of Health and Medical Sciences is also divided into four key areas which include various topics; one of which is a continuation body systems. The remaining 3 areas of study are diverse, thought provoking and intriguing to students who are interested in health care promotion and prevention.

The first half of the year starts with Anatomy and Physiology II & Medical Terms II. This is a continuation of the study of the body systems. It includes examining the: cardiovascular, respiratory, lymphatic, immune, digestive, urinary, endocrine, and reproductive systems. Terminology is the main focus as it relates to these intricate and interesting systems.

The next component is named Global Diseases. It is a six-week exploration of health care from an international view. Its focus is a worldly perspective; and is guided by information supplied by government agencies such as the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO). This area of study is project based and will be a student driven team approach.

An important topic of today's health care is wellness and nutrition. Over a six weeks period nutritional and dietary subject matter is discussed, outlined and defined. In addition, practical skills such as measuring height/weight, Body Mass Index (BMI), Intake and Output, and calorie counts are discussed and practiced with a medical office focus.

Lastly, the year is wrapped up with a recently developed innovative course with a contemporary subject, mental health. Introduction to Mental Health encompasses a basic framework of explaining mental health and its characteristics. Some components address the stigma of mental illness as well as categories of common psychiatric disorders. This is a prerequisite to Advanced Mental Health, which is to be continued in junior year of study.

Overall, sophomore year exposes students to some unfamiliar and unique concepts, as well as addressing essential competencies of healthcare needed for future careers and further education.

[ACAD. OF HEALTH SCIENCES 3](#) :: :: **Mixed-grade High** :: **STEM Academy and PCTI** :: CTE

Junior year of the Academy of Health Sciences is designed to give students an introduction to a variety of health care professions they can one day pursue. The three main areas covered throughout the course will include Therapeutic Services, Introduction to Dental, and Advanced Mental Health.

Therapeutic Services may include any type of assistance that benefits the mind or body. In this section of AOHS III students will learn of different careers that fall under the category of therapeutic services. With a focus on Physical Therapy, our students will be able to identify common injuries or disabilities that require therapy and determine which treatment modality would be best. By utilizing our school's Athletic Training department, we will be able to provide guest speakers, a tour of the facility, demonstration of equipment, and hands-on skills instruction. The goal for this section of the course is to obtain certification as a Physical Therapy Aide.

An Introduction to Dental Assisting will provide students with a basic understanding of dental health professions and the importance of dental care. Students will review basic head and neck anatomy and understand the proper identification of dentition. During this trimester, students will become familiar with basic dental instruments and will understand the importance of sterilization in the dental office setting. By the conclusion of this course section students will be able to demonstrate oral care practices that promote optimal dental health.

As Mental Health continues to be an important aspect for all medical professionals to understand, we are providing a continuation of the introduction to mental health the students received as sophomores.

Advanced Mental Health will spend time covering topics such as Addiction and Substance Abuse, Obsessive Compulsive Disorders, and Gender Identity Dysphoria. In addition to disorders the students will learn how a diagnosis is made and which treatment option is the most beneficial. Students will become familiar with the

American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and will feel more confident using that as a reference guide. Juniors will be able to discuss the pros and cons of medication for mental health disorders and will also be able to compare different psychotherapies.

In general, junior year will provide more discovery and more hands-on experiences for our AOHS students as they prepare to make important decisions regarding their future in health care.

ACAD. OF HEALTH SCIENCES 4 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

For seniors in the Academy of Health and Medical Sciences, there are three pathways to choose from based on their interest in the health care field. The courses are Medical Assisting, EMT, and Physical Therapy.

In Medical Assisting, seniors learn about the administrative and clinical roles needed to work in a medical office. Through theory based teaching and hands on practice, students will become prepared to be certified as a Clinical Medical Assistant by the National Healthcareer Association. Medical Assistants (MAs) are critical members of healthcare teams in a variety of medical settings. As an MA, you are often the first and last person a patient interacts with, making a lasting impact on the patient experience. MAs are flexible, performing a variety of tasks such as: taking patient vital signs, assisting providers with exams and procedures, administering injections or medications, performing EKGs, performing phlebotomy and other lab procedures, checking patients in and out upon arrival and departure, answering phone calls and questions, and maintaining electronic health records.

The EMT course is designed for those interested in the field of Emergency Medical Services. This course is required for individuals volunteering on an ambulance squad or seeking a career in Emergency Medical Services. Upon successful completion of the program, participants are eligible to take the certification examination for the National Registry of Emergency Medical Technicians (NREMT). This course is offered through Passaic County Community College which will not only give students the opportunity to obtain the NREMT, but also earn 8 college credits.

In the Physical Therapy course, students train to be part of a physical therapy team while learning about the human body, specific disorders, and the way physical therapists treat these disorders. Students will explore the history of physical therapy and the relationships between physical therapists, physical therapist assistants, and physical therapy aides. Seniors will learn how to communicate effectively with other health care professionals and patients, understand the medical documentation that physical therapists use, and the principles of ethics and law that affect the PT aide. Senior year will provide time to learn much of the language of PT, proper body mechanics and how to safely move patients, understand the normal gait cycle, and how to help patients walk with assistive devices. Students will also investigate various balance and coordination disorders - valuable knowledge on how to become an important member of the physical therapy team.

ADV. ART/DESIGN 1 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

The classroom utilized by the students is a learning environment based on the elements of an art studio. This course focuses on creating projects like those created in industry. The characteristics of the projects will focus on graphic design, use of digital imaging and creating a commercial art portfolio through all forms of traditional media. All major projects are assigned for submission with an assigned deadline. The visual design process is essential in successful

completion of the students' projects. This process includes: project research, thumbnail sketches, comprehensive sketching or digital composites. In addition to traditional media and digital design tools of computer programs, students will properly handle and use digital cameras, scanners, and other output devices such as printers; and they will be able to use backup storage applicable to their projects. Students will fully understand the requirements of assigned projects; and will complete the projects for submission. They will then keep all process elements together along with a matted composite in their art portfolios for future use. Students will be required to demonstrate ability in all educational projects and assignments.

ADV. ART/DESIGN 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Students will expand knowledge of traditional and digital mediums in a classroom environment based on elements of a cutting-edge art studio. This course focuses on creating professional level pieces with a focus on mixed media, painting, pen and ink, digital painting, vector based graphics and typographic design. New tools such as digital cameras, drawing tablets and digitizer screens with further expand artistic capabilities. All major projects are assigned for submission by an assigned deadline. The visual design process is essential in successful completion of the students' projects which includes: project research, thumbnail sketches, comprehensive sketching or digital composites. In addition to traditional media and digital design tools on the computer, students will properly handle and use, scanners, and other various output devices such as printers and backup storage applicable to projects. Students will fully understand the requirements of assigned projects upon submission then keep all process elements together with matted composite in their art portfolios for future use. Students will be required to demonstrate ability in all educational projects and assignments.

ADV. ART/DESIGN 3 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Each student is expected to successfully complete the course proficiencies that relate to the following topics of Advertising Art and Design 2. Advertising Art and Design III will reinforce areas covered in 1 & 2 and will also introduce new concepts and media. Students will expand knowledge of traditional and digital mediums in a classroom environment based on elements of a cutting-edge art studio. This course focuses on mixed media, traditional painting, digital painting, vector-based graphics, 3D graphics, Animation, 3D printing and typographic design. All major projects are assigned for submission by a given deadline.

The visual design process is essential in successful completion of the students' projects which includes: project research, thumbnail sketches, comprehensive sketching or digital composites. In addition to traditional media and digital design tools on the computer, students will properly handle and use, scanners, and other various output devices such as printers and backup storage applicable to projects. Students will fully understand the requirements of assigned projects upon submission then keep all process elements together with matted composite in their art portfolios for future use. Students will be required to demonstrate ability in all educational projects and assignments.

ADV. ART/DESIGN 4 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Students will combine and master skills from previous courses in order to create a professional level portfolio. This course focuses on creating show pieces to be used in interviews for professional work, art exhibitions and admission requirements for secondary education and art colleges. This course focuses on creating professional level pieces with a focus on mixed media, painting, pen and ink, digital painting, vector-based graphics and typographic design. Tools such as digital cameras, drawing tablets, 3d printers and digitizer screens with further expand artistic capabilities. This All major projects are assigned for submission by an assigned deadline. The visual design process is essential in successful completion of the students' projects which includes: project research, thumbnail sketches, comprehensive sketching or digital composites. In addition to traditional media and digital design tools on the computer, students will properly handle and use, scanners, and other various output devices such as printers and backup storage applicable to projects. Students will fully understand the requirements of assigned projects upon submission then keep all process elements together with matted composite in their art portfolios for future use. Students will be required to demonstrate ability in all educational projects and assignments.

Students will also have to be trained and tested to meet the Adobe Certification standards. Upon receiving a score of 700 or above, students will be certified in the discipline of Adobe Photoshop and meet professional level standards in that software.

AOF 1 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

The Academy of Finance I course begins with an introduction to: Principles of Finance, Financial Services, and Entrepreneurship.

Principles of Finance:

Principles of Finance is a thorough introduction to the concepts, tools, and institutions of finance. Starting with the basics of financial literacy and the function of finance in society. It continues with the topics of income and wealth, including budgeting, personal banking, credit and borrowing, and planning for retirement. Lastly, it explores specific topics of importance in today's world of finance such as risk management and ethics.

Entrepreneurship:

This unit not only addresses skills necessary to become entrepreneurs; but also, the attitudes, characteristics, and techniques that successful entrepreneurs have and are needed to be successful. Building on concepts introduced in Principles of Finance, the Entrepreneurship unit approaches student learning experientially by encouraging students to evaluate, develop, and work with the business ideas previously introduced or those they will conceive during the course.

Students explore the steps necessary for starting a business, including analyzing the market, finding financing, and creating a form of organization that will accommodate future growth. Operational issues that new businesses face, such as regulations, protecting intellectual property, and the financial risks of starting a business are explored. Students examine ethical issues and develop a framework for managing them.

Financial Services:

Financial Services provides students with an overview of banks and other financial services companies. It introduces the origins of money and banking, and then examines the early history of banking in the United States. The unit continues with an introduction to and an in-depth study of the financial services industry; and explores the types of companies that make up this industry. Additionally, students learn about the services offered by such companies and analyze the ways these companies earn profits.

This course also introduces students to the main concepts behind investing; and it discriminates among different ways to invest money.

AOF 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

The Academy of Finance II students will advance in the academy’s curriculum with an introduction to Business Economics, Principles of

Accounting, and Customer Service.

Business Economics:

Business Economics introduces students to the key concepts of economics as they pertain to business. This course discusses the American economy and the factors that influence the success of businesses and products. It describes forms of business ownership, discusses the relationship of labor and business, and provides a broad overview of the global economy. Students also examine careers in business, both as employees and as business owners.

Principles of Accounting:

Principles of Accounting provides students with an understanding of the accounting process and how it facilitates decision making by providing data and information to internal and external stakeholders.

Students learn that accounting is an integral part of all business activities. They learn how to apply technology to accounting by creating formulas and inputting data into spreadsheets. Students also examine career opportunities and the professional certifications and designations earned by individuals in the accounting profession.

Customer Service:

This part of the course introduces students to the concept of service as a critical component of business. It combines current theory and practice with observations of customer service in action, role-playing, and critical analysis of models. Topics include trends, the psychology of interactions between customers and providers, phases of customer service, common mistakes, internal customer service, management, and customer feedback. Students begin to appreciate how the quality of customer service has wide-ranging implications for all professional endeavors.

[AOF 3](#) :: Mixed-grade High :: STEM Academy and PCTI :: CTE

The Academy of Finance III offers students a continuation of their journey in the academy, providing them with an exceptional opportunity to earn 12 college credits. This program builds upon the foundational knowledge gained in previous courses, equipping students with advanced skills in finance and accounting. Through a comprehensive curriculum, students will develop a deeper understanding of key financial concepts and gain practical experience using accounting software.

Course Units:

Financial Accounting I: This course serves as an introduction to the fundamental structure of accounting terminology and procedures within a corporation. Students will learn about the recording and reporting functions, as well as the process of making adjusting entries and preparing financial statements. The course aligns with Berkeley College Financial Accounting I, ACC 1111.

Principles of Management: In this course, students will explore the operational theories of management, focusing on the essential functions of planning, organizing, staffing, directing, and controlling. Emphasis will be placed on the role of managers in creating and maintaining an internal environment conducive to performance. The course aligns with Berkeley College Principles of Management, MGT 2220.

Financial Accounting II: Building upon the concepts learned in Financial Accounting I, this course delves into the corporate form of business organization. Students will study accounting principles related to the valuation of receivables, recording long-term assets, current liabilities, and long-term liabilities. Additionally, the course includes a practical component involving the use of accounting software. This unit aligns with Berkeley College Financial Accounting II, ACC 1112.

Principles of Finance: This course introduces students to the principles of personal finance, empowering them to make informed choices in their financial decision-making. Topics covered include budgeting, investments, risk management, and financial planning. By the end of the course, students will have developed essential skills necessary for managing their personal finances effectively. This unit aligns with Berkeley College Principles of Finance, FIN 2230.

Through the Academy of Finance III, students will gain a comprehensive understanding of finance and accounting principles, preparing them for future academic pursuits and careers in the financial industry. With the opportunity to earn 12 college credits, this program provides a valuable head start towards achieving academic and professional success.

[FIN2230 Personal Finance 2021.docx](#)
[Financial Accounting 1 Syllabus \(1\).pdf](#)
[Financial Accounting II \(1\).pdf](#)
[Syllabus MGT 2220-1.docx](#)

AOF 4 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

The Academy of Finance IV offers students an exciting opportunity to further their knowledge and skills in the field of finance. This advanced course builds upon the foundation laid in previous academy programs and delves deeper into key areas of finance and business.

Introduction to Financial Services: In this unit, students will explore the dynamic world of financial services, including banking, insurance, and securities/brokerage. They will gain insights into essential topics such as financial planning, treasury management, risk management, financial analysis, and securities investments.

Cost Accounting: This course focuses on the application of accounting procedures and concepts in the distribution of costs within business enterprises. Students will learn about job orders and process cost systems to determine unit costs. Additionally, they will study the valuation of expenses and distribution of overhead to facilitate the preparation of financial statements.

Principles of Economics: This unit introduces students to the core principles of micro and macroeconomic theory. Emphasis is placed on the practical applications of these principles in personal, business, and governmental contexts. Topics covered include tradeoffs and opportunity costs, gains from specialization and trade, supply and demand, the role of government in the economy, inflation and unemployment, and the monetary system of the United States.

Business Law I: This course equips students with a comprehensive understanding of the laws relevant to contracts, commerce, property, sales, negotiable instruments, and employment. Students will develop an awareness of business situations that require legal counsel and gain familiarity with the overall structure of the legal system.

By completing the Academy of Finance IV, students will not only deepen their understanding of the financial world but also enhance their skills and knowledge in areas critical to the finance industry. This program sets the stage for future success in finance-related careers and provides a solid foundation for further academic pursuits in the field.

AUTO TECH 1 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

This half-year course will introduce the students with the automotive industry. The examination of the job requirements and an outlook of opportunities for employment in automotive service and repair. Three full year courses will follow to complete the National Institute for Automotive Service Excellence (ASE), Maintenance and Light Repair (MLR) training program. A minimum of 540 hours of combined classroom and lab/on-vehicle service and repair activities will be completed by the end of the fourth year.

Additionally, NATEF policy on its task list serves as a basis for course completion. Which is: Ninety-five percent (95%) of Priority 1 (P-1); eighty percent (80%) of Priority 2 (P-2); and fifty percent (50%) of Priority 3 (P-3) will be taught. The students will demonstrate competency in both written and performance activities. This is a combination of workplace

skills and a unique blend of academic and technical skills. Shop operation procedures and both shop and personal safety rules will be emphasized.

The students will identify, select, operate and maintain the hand tools of the automotive trade. They will identify, operate, maintain and store the equipment used on various automotive tasks such as: hydraulic jacks, safety stands, vehicle lifts, tire mounting and dismounting machines, tire/wheel balancing machines, battery chargers, battery testers, bench grinders, bench vises, parts washing machines, and grease lubricating guns. The students will be able to set a vehicle lift in order to raise a vehicle safely. The students will raise a vehicle using a hydraulic jack safely and will place safety stands under a vehicle correctly to prevent any injury to themselves or cause any damage to the car or equipment.

Students will be introduced to Workplace Employable Skills. Both personality traits and work habits conducive to obtaining and maintaining employment will be stressed. Information need to service a vehicle will be reviewed; students will be able to demonstrate concern, cause, and correct when

preparing vehicles for service. Procedures for writing work orders properly will be examined as well as how to properly return the vehicle to the customer. The students will perform routine scheduled maintenance services to vehicles such as: change engine oil and filter; lubricate moving parts as required by the manufacturer. The students will inspect and refill all fluids found in a vehicle. The students will be able to identify high voltage cables on hybrid vehicles. The students will explain the power-down procedure before working on hybrid vehicles.

On-vehicle service and repair work is scheduled to benefit the students and supplement ongoing instruction on items specified in the NATEF task list. Students will have had instruction and practice on specific repair tasks prior to on-vehicle service and repair work. The primary source of on-vehicles for service and repair will include but not limited to vehicles donated by manufacturers, customer-owner vehicles, training student-owner vehicles and other vehicles. Industry-type completed work orders will be on or attached to all vehicles to be serviced.

[AUTO/COLL.REP 1](#) :: Mixed-grade High :: STEM Academy and PCTI :: CTE

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Our curriculum is a series of individual training modules, which allow instructors the freedom to choose segments that best fit our students’ needs. This approach offers an in-depth coverage of both conventional and innovative collision repair technologies and processes. The program features knowledge-based training and performance-based testing, with an increased emphasis on hands-on tasks. Being current with the most updated repair techniques and methods

affords PCTI the ability to remain at the forefront of collision training. At PCTI we remain proactive with our training but also realize we need to react immediately to any changes in industry vehicle design technology.

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BARBERING 1 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

This course details basic barbering history, life skills, and professional image.

BARBERING 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Barbering II is the second year of the Barbering Program at PCTI. It is a 21st century standards base learning program. It begins with basic skills that are necessary to express creativity in the areas of hair, skin and nail style and care. The future professional will learn the theory of cosmetology in project-based, differentiated instruction, and/or cross content learning activities. Various forms of technology such as: a smart board, e-books, and chrome books will be used in the classroom to acquire the necessary trade skills. In addition, a hands on approach will be used to master the skills required in the profession. Theory will be supplement with: demonstrations, class trips, guest artists from industry, handouts, and other learning tools.

The expectations and goals of the cosmetology program are to train the future professional in proper work habits and behaviors required for employment. Additionally, knowledge of New Jersey State Laws, licensure requirements, rules and regulations, public safety procedures, and practical skills will be addressed. Expectations are to obtain three hundred (300) hours of instruction and performance of knowledge, skills and technique per level. This allows students to obtain a permit for apprenticeship when the student has reaches the third level.

BIO 1: PRINCIPLES OF BIOMEDICAL SCIENCES :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

In this course, students will be introduced to biomedical science through exciting hands-on projects and problems. In this course, students explore concepts of biology and medicine as they take on roles of different medical professionals to solve real-world problems. Over the course of the year, students are challenged in various scenarios including investigating a crime scene to solve a mystery, diagnosing and proposing treatment to patients in a family medical

practice, to tracking down and containing a medical outbreak at a local hospital, stabilizing a patient during an emergency, and collaborating with others to design solutions to local and global medical problems.

The activities and projects in PBS will introduce students to human physiology, basic biology, medicine, research processes, and biotechnological skills that will allow students to design experiments to solve problems. Key biological concepts, including maintenance of homeostasis in the body, metabolism, inheritance of traits, and defense against disease are embedded in the curriculum. This course is designed to provide an overview of all the courses in the biomedical science program and lay the scientific foundation for subsequent courses. Students will practice problem solving with structured activities and progress to open-ended projects and problems that will require them to develop planning, documentation, communication, and other professional skills. Students also have the opportunity to earn dual credits with Rochester Institute of Technology with this course.

BIO 2: HUMAN BODY SYSTEMS :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

In this course, students will examine the interactions of human body systems as they explore identity, power, movement, protection, and homeostasis in the body. Students will build organs and tissues—either using a skeletal Maniken® if they are in the classroom, or using an interactive 3D human model if they are learning away from the classroom. Exploring science in action, they will also use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration, and they will take on the roles of biomedical professionals to solve real-world medical cases.

BIO 3: MEDICAL INTERVENTIONS :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

In the Medical Interventions course, students will investigate the variety of interventions involved in the prevention, diagnosis, and treatment of disease as they follow the lives of a fictitious family. A “How-To” manual for maintaining overall health and homeostasis in the body, the course will explore how to prevent and fight infection, how to screen and evaluate the code in our DNA, how to prevent, diagnose, and treat cancer, and how to prevail when the organs of the body begin to fail. Through these scenarios students will be exposed to the wide range of interventions related to immunology, surgery, genetics, pharmacology, medical devices, diagnostics, and biotechnology, such as ELISA, electrophoresis, and CRISPR-CAS9. Each family case scenario will introduce multiple types of interventions, reinforce concepts learned in the previous two courses, Principles of Biomedical Science and Human Body Systems, and present new content. Interventions may range from simple diagnostic tests to treatment of complex diseases and disorders. These interventions will be showcased across the generations of the family and will provide a look at the past, present, and future of biomedical science. Lifestyle choices and preventive measures are emphasized throughout the course, as well as the important role that scientific thinking and engineering design play in the development of interventions of the future. Students practice problem solving with structured activities and progress to open-ended projects and problems that require them to develop planning, documentation, communication, and other professional skills. Students also have the opportunity to earn dual credits with Rochester Institute of Technology with this course.

BIO 4: BIOMEDICAL INNOVATIONS :: Mixed-grade High :: STEM Academy and PCTI :: CTE

In the Biomedical Innovation course, students will be asked to apply what they have learned in the previous three PLTW Biomedical Science courses to solve unique problems in science, medicine, and healthcare. Students will work systematically through required problems before completing optional directed problems or independent work. Each problem is staged as a mission – a unique set of tasks the students must work through to achieve their desired objective. Students are presented with each problem in a Mission File – a document that includes a case brief, a list of completion tasks, links to available resources, as well as a reflection section. Working through the missions not only exposes students to current issues in biomedical science, but it also provides skills-based instruction in research and experimentation – tools students will use to design innovative solutions to real-world problems. Students will use what they learn in these missions as they develop and implement their independent project at the end of the year. A teacher may use additional resources in the community – the guidance of other teachers in the school, the advice of scientists or biomedical professionals, or the knowledge presented in scientific literature to help students achieve each goal.

In the capstone component of the course, students apply their knowledge and skills to answer questions or solve problems related to the biomedical sciences. Students design innovative solutions for the health challenges of the 21st century as they work through progressively challenging open-ended problems, addressing topics such as clinical medicine, physiology, biomedical engineering, and public health. They have the opportunity to work on an independent project and may work with a mentor or advisor from a university, hospital, physician’s office, or industry. Throughout the course, students are expected to present their work to an adult audience that may include representatives from the local business and healthcare community.

BIOTECHNOLOGY 1 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Biotechnology I, a specialized CTE course provided by the CASE Program of Study, provides students with experiences in industry appropriate applications of biotechnology related to plant and animal agriculture. Students will complete hands-on activities, projects, and problems designed to build content knowledge and technical skills in the field of biotechnology. Students are expected to become proficient at biotechnological skills involving micro pipetting, bacterial cultures and transformations, electrophoresis, and polymerase chain reaction. Students will be introduced to Current Good Documentation Practices throughout the course by thoroughly documenting their experiences in the laboratory. Research and experimental design will be highlighted as students develop and conduct industry appropriate investigations. Students will develop and conduct a research project following the National FFA Agriscience Fair guidelines. From background research through data collection and analysis, students will investigate a problem of their choice and conclude the project by reporting their results in the forms of a research paper and a research poster. Biotechnology I course includes the following units of study: Introduction to Biotechnology, DNA Technologies, Proteins, Agricultural Biotechnology, Research Methods

BUSINESS 1 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Business is the economic pulse of a nation and the world of business needs skilled people who can think critically, analyze information, make decisions, and who are technologically savvy. This course provides students with a comprehensive framework to learn about the fundamental and technical concepts of business and its main functions;

entrepreneurship, marketing, finance, and Logistics and Supply Chain, by engaging them in authentic projects that require critical thinking, decision making, and the use of various forms of technology and computer applications.

Entrepreneurship: provides an introduction to the main theoretical and practical aspects of entrepreneurship; students gain an understanding of how the free enterprise system plays a role in business, evaluate the rewards and risks of business ownership, recognize the differences between different types of business organizations, and develop their communication and problem solving skills through real-life examples and project based activities.

Marketing: This course aims to introduce and develop an understanding of the principles of marketing. Students will apply the marketing concepts and techniques learned to identify the target market for a service or product, evaluate the competition, develop a marketing plan, and use technology to create various types of advertisement.

Principles of Finance: The purpose of this course is to help students acquire the knowledge and skills necessary to make sound financial decisions and achieve a financially successful life. Relevant topics related to finance such as budgeting, saving, investing, and managing credit are introduced with an emphasis on how to keep track of a business' finance.

Global Logistics and Supply Chain Management: Global logistics and supply chain management is a field with continuous growing job opportunities, prospects for advancement and a variety of specializations. This why New Jersey Department of Education, Office of Career and Technical Education and the Southern Regional Education Board (SREB) and Advanced Career consortium of states are developing a program of study that provides high school students with the knowledge and tools to acquire the necessary skills to start a career in this field.

CARPENTRY 2 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Carpentry II is an intermediate-level course that builds upon the foundational knowledge gained in Carpentry I. This course focuses on developing advanced skills and techniques in residential construction. Students will learn the proper and safe use of materials, stationary and portable power tools, and hand tools. The course will cover various aspects of residential construction, including blueprint reading, drawing interpretation, and practical application of wall and roof framing techniques. Emphasis will be placed on precision, accuracy, and adherence to industry standards.

CARPENTRY 3 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Carpentry III is a full year course will further develop skills established in the 9th and 10th grades. Emphasis will be on advanced roof framing techniques, lip and intersecting roofs will be introduced. Additional cabinet making skills will be developed such as laminated plastics, finishing and door making.

CARPENTRY 4 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Carpentry IV is a full year course which further sharpens the skills and techniques established by the previous 2 years. Emphasis is placed on preparing the level 4 student for successful completion of the skills required for employment in the carpentry field.

[COLL.REPAIR TECH 2](#) :: Mixed-grade High :: STEM Academy and PCTI :: CTE

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PCTI is excited about the potential we have to produce world class experts in the auto collision field. Upon graduation, the skills and training we instill in our students provide a competitive edge as they enter the workforce of today’s global market place. Below is a synopsis of the available modules that are part of our challenging, rigorous, dynamic, and comprehensive curriculum at this level:

Safety & PPE; Vehicle Construction; Fundamentals of Collision Damage; Fasteners; Welding & Cutting; General and Nonstructural Repair Tools, Equipment, and Material; Panel Repair; Bolted Part Replacement; Bolted Part Replacement; Welded & Bonded Panel Replacement; Plastic Repair; Glass Movable and Fixed; Structural Component Replacement; Steering & Suspension; Refinishing Tools; Refinishing Materials; Surface Preparation; Paint Application; Specialty Painting; Detailing; Estimating; Employment.

[COLL.REPAIR TECH 3](#) :: Mixed-grade High :: STEM Academy and PCTI :: CTE

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Review of Collision Repair Introduction; Safety Review; Vehicle Construction; Welding & Cutting; Nonstructural Panel Repair II; Bolted Nonstructural Part Replacement II; Welded & Bonded Repair II; Plastic Repair; Glass II; Electrical Systems; Restraint Systems; Refinishing Tools & Equipment II; Refinishing Materials II; Painting Mixing & Reducing; Spray Technique; Surface Preparation; Color Matching; Paint Application; Detailing II.

[COLL. REPAIR TECH 4](#) :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

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COMP SCI: CYBERSECURITY : Mixed-grade High :: STEM Academy and PCTI :: CTE

This course utilizes the Project Lead the Way Cybersecurity curriculum and introduces students to the concepts of cybersecurity. Students are introduced to the tools and concepts of cybersecurity and that are required to create solutions that allow people to share computing resources while protecting privacy. Students develop the knowledge and skills to assess cyber risks to computers, networks, and software programs through the use of virtual labs to discover key concepts of the field. These labs progress from an individual computer to more and more complex network environments, where they will learn how to create solutions to mitigate cybersecurity risks, while understanding the legal environment and ethical computing behavior related to cybersecurity. This course raises students’ knowledge of and commitment to ethical computing behavior. It also aims to develop students’ skills as consumers, friends, citizens, and employees who can effectively contribute to communities with a dependable cyber-infrastructure that moves and processes information safely. In the capstone component of the course, students apply and demonstrate their knowledge and skills to an authentic project as a final program assessment.

COMP SCI: INTRO TO 3D PROGRAMING 4: AR/VR :: Mixed-grade High :: STEM Academy and PCTI :: CTE

This course focuses on the introduction to 3D and VR development with C# in the Unity creation engine. The introduction to 3D development curriculum focuses on building a painting application, animation/game design, and programming using Unity. This course will introduce students to Augmented Reality (AR) and Virtual Reality (VR) interfaces. This course covers basic concepts where the students will create two mini-projects, one focused on AR and one on VR, using prototyping tools. This course will also introduce students to the world of Augmented, Mixed, and Virtual Reality interfaces. These interfaces enable new kinds of user experiences by superimposing digital content onto the user’s real-world view or creating fully immersive virtual world experiences. Students will learn about the

differences between AR/VR, the technical and design requirements, user experiences, and how to prototype and develop your first AR/VR interfaces. Students will also receive an overview of new and evolving interaction design principles and methods, current AR/VR interface development approaches, and how to assess the usability of AR/VR interface. In the capstone component of the course, students apply and demonstrate their knowledge and skills to an authentic design project as a final program assessment.

COMP SCI: INTRO TO DATA SCI. & A.I 4 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Intro to AI, Machine Learning and Data Science is a foundational course in Data Science. The course introduces the different components of the Data Science Lifecycle and the skills needed to structure and organize raw data to interpret and analyze such data for better decision-making.

This course will equip students with the skills used by professional data scientists across all industries. These skills include data collection, cleanup, transformation, analysis, and visualization. Additionally, the course introduces AI by delving into programming concepts that enable its use in computer science and various real-world applications. Students learn about the implications and impact that AI can have on society as they develop a series of projects focused on optimizing and predicting information.

Students will learn to apply the Data Science Lifecycle process by inspecting, cleaning, transforming, and modeling data with the objective of uncovering information that is useful and that can lead to informing conclusions and decision-making. In addition, they will learn to create graphical representations of data. They will use visual elements (charts, graphs, maps) and other data visualization tools to better interpret and understand trends, patterns, and outliers in data.

Students will explore what defines Artificial Intelligence, how it can be used, as well as the social and ethical implications of its application in society. They will work collaboratively on implementing AI in both gaming and chatbot applications. The interaction of humans and chatbots and how AI is implemented to aid business and apps via chatbots is studied in depth. Linear and logistical regression is also examined to create predictive models using complex data sets. In the capstone component of the course, students apply and demonstrate their knowledge and skills to an authentic project as a final program assessment.

COMPUTER SCIENCE 1 :: Cheng, Matthew :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Computer Science students work independently and in teams to develop computational thinking and solve problems. The course does not aim to teach mastery of a single programming language but aims instead to develop computational thinking, to generate interest in the field of Information Technology, and to introduce computational tools that develop creativity.

The course aims to build students' awareness of the tremendous demand for Information Technology specialists and for professionals in all fields who have computational skills. The course also aims to engage students to consider the present and future societal impact of Information Technology.

Throughout the program, students practice problem solving skills with activities that require them to develop planning, documentation, communication, and other professional skills. Students will gain a foundation for creativity, abstraction, algorithms and the global impact of computing. This will be done through the study of the Internet, Data and Programming. Students will be exposed to computer science professionalism through connecting computing, creating computational artifacts, abstracting, analyzing problems and artifacts, communicating and collaborating.

Database applications including data analysis, normalization and Structured Query Language will be delivered

[COMPUTER SCIENCE 2](#) :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Computer Science II is a full year course for students who have successfully completed Computer Science I and are continuing in the Academy of Information Technology. During the second year of study, students will be introduced to 3 major topics that will allow them to expand their Computer Science expertise attained in their first year. This includes learning to design a website for a small business using HTML and CSS while following Technology Project Management procedures and practices in all work, JavaScript Programming, Creating Android Mobile Apps with the MIT App Inventor Open Source Platform and Web Design with Database Concepts/E-Commerce.

WEB DESIGN FOR SMALL BUSINESS

PCCC - Website Design and Tools - (CIS 170)

In this part of the course, students will work in teams to develop a website for a small business utilizing a combination of HTML and CSS and exploring various web design methods and web authoring tools in the process. Throughout the unit, students will be introduced to basic Information Technology Project Management concepts designed to convey the concept of projects, their application in the IT Industry as well as several Information Technology Project Management tools and techniques. Emphasis will be placed on project planning, design and implementation as well as working with technology teams. The software development project life cycle phases will be followed in all work.

MOBILE APP DEVELOPMENT

PCCC - Fundamentals of Computer Science 1 - (CIS 160)

PCCC - Mobile App Development - (CIS 240)

In this part of the course, students will combine their software development and web design skills to develop android applications for mobile devices. Topics covered in this unit will include JavaScript programming, application of algorithms in problem solving, variables, data types, operators, functions, objects and methods, loops, arrays and conditional statements as well as utilizing open-source web platforms for mobile app development.

WEB DESIGN WITH DATABASE CONCEPTS. E-COMMERCE/PORTFOLIOS

In the final part of the course, students will build up their communication and business experience of running web sites with the emphasis the application of JavaScript and Database Concepts. Time will also be spent on design and

development so students can test and debug with programming knowledge while they incorporate additional functions that can be used to enhance their learning experience.

COMPUTER SCIENCE 3 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Computer Science III is a full year course for students continuing in the Academy of Information Technology. The main aspect of the third-year course is to provide an introduction to the theory and practice of computer programming, problem solving skills using Python, and robotic development and programming. Topics include basic strategies for problem solving, conditional statements, repetition, function and other constructs that control the flow of execution of a program. The use of high level data types such as lists, strings, dictionaries in problem representation, visual programming environment (LabVIEW), Robot C coding language, JavaScript coding, and database objects, forms, charts, integration and security. Hands-on laboratory work will be done to solidify each concept.

In this course in addition to mastering the programming and problem-solving materials, it is expected to learn to effectively use learning strategies and materials. Students learn how to efficiently prepare for a knowledge intensive profession. This includes effective use of knowledge resources: reading documentation, asking and answering peer questions, consulting with more experienced persons, and searching on-line for answers. It also includes tools and methodology: testing to verify the correctness of code, use of an integrated development environment (IDE) and debugger, writing specifications and documentation.

PYTHON PROGRAMMING

Seton Hall - Introduction to Computer Science (CSAS 1111)

Introduction to Computer Science I Problem solving using computers. The design and implementation of computer programs. Major areas and issues in computer science including social and ethical concerns. Problem solving and pseudocode. Formal specification and verification. Basic software engineering techniques and software reuse. Data structures. Structured types: arrays, records, files. Objects and methods.

ROBOTICS PROGRAMMING

In the final part of the course, students will explore principles of engineering as well as the exciting world of robotic development and programming to construct and program robotic devices using Lego Mindstorms and Vex Robotics Programming. A visual programming environment (LabVIEW) and RobotC coding language will be utilized to add functionality to completed robots.

COMPUTER SCIENCE 4 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

The Computer Science IV curriculum has a concentration in the following areas:

Ø SQL FUNDAMENTALS: Students will learn how to build simple statements to retrieve, store, or modify data; to write complex queries that draw information from multiple tables; to create or edit tables; and to work with unions, subqueries, self joins, cross joins, inner joins, and outer joins.

Ø INTRODUCTION TO CYBERSECURITY: Students will learn about cybersecurity, digital citizenship, cyber hygiene, cryptography, software security and basic system administration.

Ø PROBLEM SOLVING USING PYTHON: Students will be learning advanced topics in Python like: Simple Graphics, Image Processing, and Graphical User Interfaces. Hands-on laboratory work will be done to solidify each concept.

Ø ARDUINO: There will be a component of Arduino, microcontrollers and electrical circuits. This is intended to get students started with Arduino by creating projects. Concepts that will be covered include: Software setup, Input and Output, Analog and digital sensors, Sound, LCD screens.

Ø PRESENTATIONS: Professional presentations will be an integral part of this course. Every trimester there will be project presentations that will help students in their communication skills. Students will be encouraged to use variety of tools like Audacity, Movie maker, Animation maker, Power point etc.

Ø COMPETITIONS: Students will be encouraged to participate in different competitions. These competitions will give students the opportunity to showcase their knowledge and expertise.

In addition to learning about SQL, cybersecurity and problem solving materials, the students will learn to effectively use different learning strategies and materials. This includes effective use of knowledge resources -- reading documentation, asking and answering peer questions, consulting with more experienced persons, and searching on-line for answers. It also includes tools and methodology – testing to verify the correctness of code, use of an integrated development environment (IDE) and debugger, writing specifications and documentation.

AP Computer Science is a College Board course. This course introduces the student to the object-oriented programming paradigm using Java language. The standard Java library classes from AP Java subset is used. Applications of the following concepts: classes, objects, inheritance, polymorphism, and code reusability are implemented. Hands-on laboratory work will be done to solidify each concept.

COSMETOLOGY 1 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

The Cosmetology Program at PCTI is a 21st century standards base learning program. Cosmetology I begins with basic skills that are necessary to express creativity in the areas of hair, skin and nail style and care. The future professional will learn the theory of cosmetology in project-based, differentiated instruction, and/or cross content learning activities. Various forms of technology: such as a smart board, e-books, and chrome books will be used in the classroom in order for students to acquire the necessary trade knowledge. In addition, a hands on approach will be used to master the skills required in the profession. Theory will be supplement with: demonstrations, class trips, guest artists from industry, handouts, and other learning tools.

The expectations and goals of the cosmetology program are to train the future professional in proper work habits and behaviors required for employment. Additionally, knowledge of New Jersey State Laws, licensure requirements, rules and regulations, public safety procedures, and practical skills will be addressed. Expectations are to obtain three hundred (300) hours of instruction and performance of knowledge, skills and technique per level. This allows students to obtain a permit for apprenticeship in the third level.

COSMETOLOGY 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

The Cosmetology II is the second year of the Cosmetology Program at PCTI. It is a 21st century standards base learning program. It begins with basic skills that are necessary to express creativity in the areas of hair, skin and nail style and care. The future professional will learn the theory of cosmetology in project-based, differentiated instruction, and/or cross content learning activities. Various forms of technology such as: a smart board, e-books, and chrome books will be used in the classroom to acquire the necessary trade skills. In addition, a hands on approach will be used to master the skills required in the profession. Theory will be supplement with: demonstrations, class trips, guest artists from industry, handouts, and other learning tools.

The expectations and goals of the cosmetology program are to train the future professional in proper work habits and behaviors required for employment. Additionally, knowledge of New Jersey State Laws, licensure requirements, rules and regulations, public safety procedures, and practical skills will be addressed. Expectations are to obtain three hundred (300) hours of instruction and performance of knowledge, skills and technique per level. This allows students to obtain a permit for apprenticeship when the student has reaches the third level.

COSMETOLOGY 3 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Cosmetology III emphasizes the application of skills as students will perform services in a salon atmosphere within the classroom. By providing students with real-life experiences in a salon/spa-like setting, they will develop the required “people skills” necessary for success.

Training at this level the student will be able to attain the New Jersey Cosmetology Student Permit. This allows the student to provide all Cosmetology services to the public, both in and out of school. Additionally, the student will be eligible for employment at any state-licensed salon, spa and positions at, but not limited to: cosmetic counters, beauty suppliers, or manufacturers.

Hands-on training will be implemented in all areas of the Cosmetology program. Students will be required to provide services in hair, skin, and nails, as well as serve as receptionists. As a receptionist, the student will be expected to successfully schedule appointments, use the register, and maintain daily salon/client records.

This year utilizes real-life experiences in support of student growth and performance in all components of client services. Every student will be provided the opportunity to become an experienced technician.

COSMETOLOGY 4 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Senior year all proficiencies will be reviewed and reinforced. This year is a transition from school to work. Fourth year students will have the opportunity to perform salon services on clients, as the classroom will be opened on Friday afternoons for salon services. This will be the year the students, who have obtained 1000 hours of training and instruction, are eligible for our School to Career Program. The School to Career Coordinator will assist in job placement and shadowing. This effort will prepare students with adequate work experiences and the ability to develop people skills in a salon/spa industry.

Upon completion of 1000 hours and scoring a minimum of 75% on the written section of the state exam, students will qualify to take the practical part of the licensing exam. If successful students obtain the N.J. State Board of Cosmetology and Hairstyling License which allows them to actively work in salon/spa industry.

CRIMINAL JUSTICE 1 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Criminal Justice/ Public Safety I introduces the novice student to the design and function of the Criminal Justice System. The 9th grade curriculum is a full-year career and technical course that introduces the students to a recognition of the important role played by Criminal Justice in society, and specifically in keeping the public safe. Besides the study of Constitutional Law, Criminal Law, Juvenile issues and Motor Vehicle Law, there is a large component of Civics taught in the ninth-grade curriculum.

This comprehensive program includes both theoretical and practical (hands-on) instruction. Students will be challenged with regular introductions in technology, practical projects and activities, guest presentations and demonstrations from industry personnel, field trips, role-playing activities, and service-learning projects. Instruction includes many of the relevant tools, practices, and techniques utilized in the industry today.

Students will receive an introduction to the following topics: the U.S. legal system and how laws are created, the roles of people associated with the courts, Courtroom Procedures (Trial and Appellate Courts in both state and federal systems), Criminal Law and procedures, U.S. Crime Classifications, identification of federal and state crimes, commonly used defenses to criminal charges, interruption of the U.S. Constitution and Constitutional Law, Corrections, Civics/Civil Law, Methods of Crime Scene Investigation, Collection/Preservation of Evidence, Report Writing, and much more.

CRIMINAL JUSTICE 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Criminal Justice/ Public Safety II enhances the knowledge the student gained in Criminal Justice I. An introduction to the intricate workings of the court system, an understanding how evidence is collected, an understanding of the legislative process, and, how laws are tested in the judicial system will be the focus of instruction. Students can earn up to three college credits for Introduction to Criminal Justice, under a dual enrollment program with Passaic County Community College.

CRIMINAL JUSTICE 3 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Criminal Justice/ Public Safety III is designed to enhance the knowledge the student gained in Criminal Justice I & Criminal Justice II. The students will expand their knowledge of their individual rights and learn how police services are delivered in the context of these rights. Special attention is given to individual's rights and law enforcement responsibilities, methods, restrictions and tactics. Students can earn up to nine college credits under a dual enrollment program with Passaic County Community College.

CRIMINAL JUSTICE 4 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Criminal Justice/ Public Safety IV is designed to enhance the knowledge the student gained in Criminal Justice I, II & III. The students will expand their knowledge of their individual rights and learn how police services are delivered in the context of these rights. Special attention is paid to terrorism and the law enforcement's response as well as criminal investigation. Additionally, students are introduced to the forensic science used in processing evidence. This is a full-year career and technical education course that aims to increase the student's knowledge, understanding and application of Criminal Justice/Public Safety. This program includes both theoretical and practical/hand-on instruction. Students receive challenging college preparatory level instruction. Students can earn up to 12 college credits under a dual enrollment program with Passaic County Community College. The courses are: Investigative Function CJ 105-3 credits, Introduction to Homeland Security, HLS 104 credits, Public Safety Telecommunications CU 114 3 credits, and Emergency Medical Dispatch CJ 115-3 credits.

CS 1: COMPUTER SCIENCE ESSENTIALS :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

This course is an introductory computer science course that empowers students to create authentic artifacts and engage with computer science as a medium for creativity, communication, problem solving, and fun. Unit 1, students learn the problem-solving process, the input-output-store-process model of a computer, and how computers help humans solve problems. Students end the unit by proposing their own app to solve a problem. In Unit 2, students learn to create websites using HTML and CSS inside Code.org's Web Lab environment. Throughout the unit, students consider questions of privacy and ownership on the internet as they develop their own personal websites. In Unit 3, Students learn fundamental programming constructs and practices in the JavaScript programming language while developing animations and games in Code.org's Game Lab environment. Students end the unit by designing their own animations and games. In Unit 4, Students apply the problem-solving process to the problems of others, learning to empathize with the needs of a user and design solutions to address those needs. During the second half of the unit, students form teams to prototype an app of their own design, first on paper and eventually in Code.org's App Lab environment. In Unit 5, Students learn the foundations of computer science and basic programming using CodeHS introduction to Computer Science in Python, with an emphasis on helping students develop logical thinking and problem-solving skills. Then students will explore the impacts of computer science on our society and bring coding off the screen and into the physical world using VEX cars and VEXcode V5 blocks . Students will research professional opportunities in computer science and how computing can be an integral part of all careers today.

[CS 2: COMPUTER SCIENCE PRINCIPLES AP](#) :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Computer Science Principles provides students with a broad exposure to the many aspects of computer science while encouraging creativity, socially responsible choices, and ethical behavior. It inspires algorithmic and computational thinking, helping students see themselves in a career path they might not have initially chosen. **CodeHS.org’s Computer Science Principles (CSP)** curriculum is a full- year, rigorous, entry-level course that introduces high school students to the foundations of modern computing.

The course covers a broad range of foundational topics such as programming, algorithms, the Internet, big data, digital privacy and security, and the societal impacts of computing. Using Python® as a primary tool and incorporating multiple platforms and languages for computation, this course aims to develop computational thinking, generate excitement about career paths that utilize computing, and introduce professional tools that foster creativity and collaboration. Computer Science Principles helps students develop programming expertise and explore the workings of the Internet. Projects and problems include app development, visualization of data, cybersecurity, and simulation. **Project Lead the Way** is recognized by the College Board as an endorsed provider of curriculum and professional development for AP® Computer Science Principles (AP CSP). This endorsement affirms that all components of **Project Lead the Way CSP’s** offerings are aligned to the AP Curriculum Framework standards and the AP CSP assessment.

[CS 3: AP COMPUTER SCIENCE A](#) :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Computer Science A is designed to be a full-year, high school course. Throughout the experience, students cultivate their understanding of coding through analyzing, writing, and testing code as they explore concepts like modularity, variables, and control structures. Computer Science A is designed with alignment to the College Board Computer Science A framework.

Fundamental topics in this course include the design of solutions to problems, the use of data structures to organize large sets of data, the development and implementation of algorithms to process data and discover new information, the analysis of potential solutions, and the ethical and social implications of computing systems. The course emphasizes object-oriented programming and design using the Java programming language. AP Computer Science A is an introductory college-level computer science course.

By the end of the course, students will be able to:

- Understand and communicate how to develop a program.
- Write code using the Java programming language.
- Have confidence in sitting for the AP Computer Science A exam.

Chapter 1 Java Coding Fundamentals

In Chapter 1, students are introduced to (MOD) Modularity, (VAR) Variables, (CON) Control, (IOC) Impact of Computing, and the Computational Thinking Practices of successful computer science professionals. Students learn the fundamentals of coding in Java.

Chapter 2: Iteration and Classes

In Chapter 2, builds on previous understanding of (CON) Control, (MOD) Modularity, (VAR) Variables as students create new, user-defined reference data types in the form of classes. Students will focus on identifying appropriate behaviors and attributes of real-world entities and organizing these into classes. The creation of computer programs can have extensive impacts on societies, economies, and cultures. The legal and ethical concerns that come with programs and the responsibilities of programmers are also addressed in this chapter.

Chapter 3: Arrays

In Chapter 3, students dig deeper into to (VAR) Variables and (CON) Control while utilizing arrays to represent collections of data using a single variable. They will apply standard algorithms to arrays; however, these same algorithms are used with ArrayLists and 2D arrays as well. Students will also utilize standard searching and sorting algorithms. In this chapter, students will also learn about privacy concerns related to storing large amounts of personal data and about what can happen if such information is compromised.

Chapter 4: Inheritance and Recursion

In Chapter 4, students focus on (MOD) Modularity, and (CON) Control as students to categorize classes into hierarchies through inheritance. They will learn about the power of recursion, solving smaller or simpler versions of the same problem rather than attempting an iterative solution.

COMPUTER SCIENCE 4- CAPSTONE :: Mixed-grade High :: STEM Academy and PCTI :: CTE

AP Computer Science is College Board course. This course introduces the student to the object-oriented programming paradigm using Java language. The standard Java library classes from AP Java subset is used. Applications of the following concepts: classes, objects, inheritance, polymorphism, and code reusability are implemented. Hands-on laboratory work will be done to solidify each concept.

CULINARY 1 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Introductory Culinary is part of a ninth-grade level exploratory program, along with Introductory Baking and Pro-Start. This course introduces students to the principles of conduct and employment in the food service industry, coupled with sanitation concepts in the operation of a food service establishment. Professionalism, ethics, and conduct during and after completion of a degree are discussed. Personal hygiene, fire safety regulations, including state and federal laws pertaining to the handling of food products are studied. Beginning culinary techniques are practiced by students. Students can be assigned to the following locations: Bake, SCAF, STEM, TCAF.

CULINARY ARTS 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Culinary 2 is an introduction to the basic and more advanced levels of the following: breakfast cookery, including basic egg preparations, breakfast meats, potatoes, quick breads, batters, farinaceous and hot and cold cereals. Students will experience short order cooking and will gain knowledge of time and temperature in the preparation of various breakfast items. Skills and techniques will be developed in the preparation of meat products, such as sausage-making, and in the preparation of other breakfast meats. Ethnic and multicultural breakfast foods will be explored, as well as creative and modern breakfast alternatives. This course also serves as an introduction to the preparation of various salads, including simple, composed, bound, and hot/cold combinations. Emphasis will be on the preparation of dressings, dips, spreads, classical and modern sandwich-making, identification and use of salad greens, and fruit preparation.

CULINARY ARTS 2 - BAKING :: :: Mixed-grade High :: STEM Academy and PCTI:: CTE

This course is designed to build and hone skills learned in Baking 1 Exploratory. Lessons and units will reinforce and require application of the basics of mixing, shaping and baking for several baked goods including yeast breads, quick breads, cakes, pastry doughs, mousses, sauces, glazes, cookies, decorating, cakes and confections. In addition, students will be introduced to more advanced decorating techniques, and pastry techniques. Students will learn in a well-equipped kitchen and prepare food for school functions and community service events. Students will practice the importance of time management skills, culinary math skills and practice food safety and sanitation procedures.

CULINARY ARTS 3 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Culinary 3 will introduce to additional culinary techniques and practices beginning with the preparation of stocks, sauces, and soups. Students will have the opportunity to prepare vegetables including potatoes. Additionally, they will practice the proper techniques of cooking legumes, grains, pasta, and other starches. Skills and techniques will be developed in the preparation of meats, poultry, and fish. Lastly, students will become familiar with dairy products and their use in the kitchen, and the preparation of beverages.

CULINARY ARTS 3 – BAKING :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

This course is designed to build and hone skills learned in Baking 2. Lessons and units will reinforce and require application of the basics of mixing, shaping and baking for several baked goods including yeast breads, quick breads, cakes, pastry doughs, mousses, sauces, glazes, cookies, decorating, cakes and confections. In addition, students will be introduced to more advanced decorating techniques, and pastry techniques. Students will learn in a well-equipped kitchen and prepare food for school functions and community service events. Students will practice the importance of time management skills, culinary math skills and practice food safety and sanitation procedures.

CULINARY ARTS 4 – :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Culinary 4 is a continuation and reinforcement of the concepts and practices of Production Kitchen Skills. This course exposes the students to more advanced techniques and applications utilizing different cooking methods. Students will be exposed to a variety of seafood items, as well as commercial meat cuts used for beef, lamb, veal, pork, and poultry. Additional skills in the preparation of vegetables, potatoes, legumes, sandwiches, soups, and sauces are also included. Other topics to be discussed are vegetarian preparations, use of cheeses, and buffet presentations.

KITCHEN ASSISTANT :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Kitchen Assistant Year 1 the student will be prepared to work under the supervision of chefs and other food service professionals as kitchen support staff and commercial food preparation workers.

In year 1, the student will be introduced to the professional working of a commercial kitchen. The student will learn safety and sanitation principles. The student will be introduced to the use, maintenance and sanitation of kitchen tools and equipment. Students will learn the proper use and care of kitchen knives. Food preparation principles such as preparation of salads, sandwiches, and breakfast cookery, will be taught. Student will be exposed to a variety of food; their uses, storage, and preparation.

In year 2 the student will continue to review safety and sanitation principles used in food preparation. The student will study various cooking techniques. They will be working with a variety of seasonings and flavorings that will enhance the flavor of the food. Soups and stocks are also on the menu, as well as Legumes, pasta and rice cookery.

In year 3, the student will learn to plan nutritious menu. They will also be able to explain how Standardized recipes help to maintain product consistency. Measuring and conversion skill will maintain that recipe are standardized, Third year students will explore how to cook and care for foods such as fish, poultry, and meats.

In year 4 students will be introduced to baking and pastry applications. Management skills need to aid in foodservice establishment. Learning laws standard and regulation will come in to play, and let not forget the costing of foods. Senior students will be able to put their culinary skills to work in job shadowing and paid internships.

PRO-START 1 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Introductory ProStart is one of five exploration classes in the School of Culinary Arts. The course is designed to give students an introduction to the culinary field as a career pathway. It is a twelve-week class offered along with Introductory Culinary and Introductory Baking. Students become familiar with the structure of the industry, types of ingredients used, kitchen safety, as well as small and large equipment use.

PRO-START 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

ProStart II is part of classes in the School of Culinary Arts. The course is a continuation of ProStart 1 giving students an introduction to the culinary field. It is a twelve-week class offered along with Culinary I or Baking I. Students become familiar with the structure of the industry, types of ingredients used, as well as small and large equipment used.

PRO-START 3 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

ProStart 3 is a course designed for junior Culinary students. This course is to provide an industry driven curriculum which prepares student for a career in the restaurant and food service management. This course will teach a balance perspective which connects the classroom and the culinary industry. This course is structured to teach comprehensive coverage of culinary and management topics: SERV Safe the industry standard of food safety and sanitation practices. The exploration of eggs, dairy, breakfast foods, fruits vegetables, potatoes, grains and pastas.

PRO-START 4 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

ProStart IV is a single semester course designed for the senior culinary and baking students. This course is to provide an industry driven curriculum which prepares student for a career in the restaurant and food service management or baking. This course will teach a balance perspective which connects the classroom and the culinary and baking industries. This course is structured to teach comprehensive coverage of the following culinary and management topics: marketing, managing restaurant costs, sustainability practices, the identification, the safe handling and preparing of meat, poultry, and seafood.

DRAFTING 1 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Architectural Drafting and Design/CAD I

All three trimesters of this course offers a student the basic theory and design techniques necessary to work in drafting, design, engineering, and technical professions. Emphasis is placed on terminology and procedures used in multiview projection, auxiliary and sectional views, dimensioning, and working drawings. Students are encouraged to develop an awareness of proper drafting techniques, the geometry of technical drawing, and new technological advancements in the field of drafting.

This course will also offer an introduction to basic computer-aided drafting and design from an interdisciplinary perspective, with a focus on process skills that include critical thinking, ethical reasoning, effective communication and self-directed learning.

The overall aim is to introduce the student to computer-aided drafting and design practices and help them develop the necessary technical skills to communicate ideas in an understandable, efficient, and accurate manner.

This course provides instruction in preparing various types of basic technical drawings using computer based methods and industrial standard software. It also introduces the student to the many career opportunities available in the computer-aided drafting and design field, and prepares them to enter directly into the work environment or pursue further educational opportunities.

EDUC/CHILD DEVELOPMENT 1 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Child Development I is an enriching foundational course designed to provide students with a comprehensive introduction to the fundamental principles of child development and early childhood education. Our program seamlessly integrates theoretical concepts with hands-on experiences to fully equip students for a rewarding career in early childhood education.

This course equips students with the knowledge and skills required to make informed career decisions and establish secure, nurturing, and stimulating classroom environments that foster the growth and development of young children. Beyond these essential competencies, students will explore critical topics such as classroom design, effective classroom management, literacy development, and lesson planning, ensuring their readiness for success as early childhood educators.

Through project-based learning, collaborative opportunities, and technology integration, our students are encouraged to apply their knowledge, cultivate innovative ideas, and refine their teamwork and communication abilities while enhancing their problem-solving skills. Furthermore, students actively participate in a fieldwork component at a local childcare center, allowing them to practice the knowledge acquired in the classroom in real-world early childhood education settings.

Child Development I is an exceptional choice for those with aspirations of becoming preschool teachers, child care professionals, nannies, or family child care providers. It also lays a solid foundation for individuals seeking to advance their education and pursue careers as elementary school teachers, child psychologists, or other professionals focused on child development.

EDUC/CHILD DEVELOPMENT 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

"The study of child development prepares students to acquire knowledge and understanding of the principles of a child's growth and development. Throughout the course of sophomore year students will be instructed in how ages and stages, brain development and various theories are applied when working in the field with children ages 0-12. This knowledge helps students who go directly into the field after high school in the position of a pre-school teacher, teacher's assistant or home day care provider be better prepared in a professional environment. Furthermore, it is the foundational knowledge needed when pursuing post-secondary degrees to qualify for positions such as program directors, child psychologist, school counselor, social worker, child life specialist, public school teacher or pediatric care.

Using Bloom's Taxonomy and differentiated practices, the students will explore in-depth the theories and techniques needed to become experts in the field of early childhood. Cross content curriculum, integrated units, multi-sensory teaching, multiple intelligences, use of technology, performance-based assessment and other methods will be brought together to allow for a well-rounded student learner. The goal is to expose students to real life situations, engage them in self-directed learning and encourage collaboration as a group. Student-centered collaborative activities will enhance the student's ability to eventually develop and illustrate the fundamental skills practiced by an early childhood employee, social work professional and/or psychologist. Community service and internship/externship experiences allow the students to gain firsthand experiences while integrating the knowledge, skills and techniques addressed in this curriculum. These community service and potential employment activities also provide the students with valuable

immediate feedback from practicing early child care professionals. Additionally, these experiences will provide volunteer hours to be applied towards the Child Development Associate (CDA) 480 hour requirement."

EDUC/CHILD DEVELOPMENT 3 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

The study of child development prepares the student to acquire working knowledge of the principles of a child’s growth and development. Throughout the course of the junior year, skills and strategies will be developed for planning a safe, healthy learning environment and managing an effective program with emphasis on guiding exceptional children and developing as a professional in various human service fields. The use of differentiated practices, including Bloom’s Taxonomy, allows the students to explore in-depth the theories and techniques needed to become experts in the field of early childhood. The cross-content curriculum, integrated units, multi-sensory teaching, multiple intelligences, use of technology, performance based assessment and other methods are utilized to develop a well-rounded student learner. The goal is to expose students to real life situations, engage them in self-directed learning and encourage collaboration. Student-centered collaborative activities enhance the student’s ability to develop and illustrate the fundamental skills practiced by an early childhood employee and human service professionals. base prepares students to work directly in the field after high school as a preschool teacher, teacher’s assistant, or home daycare provider. Student’s will also be prepared to pursue post-secondary degrees to qualify for positions such as public school teacher, program director, school counselor, child psychologist, social worker, child life specialist or in pediatric care.

The use of differentiated practices, including Bloom’s Taxonomy, allows the students to explore in-depth the theories and techniques needed to become experts in the field of early childhood. The cross-content curriculum, integrated units, multi-sensory teaching, multiple intelligences, use of technology, performance-based assessment and other methods are utilized to develop a well-rounded student learner. The goal is to expose students to real life situations, engage them in self-directed learning and encourage collaboration. Student-centered collaborative activities enhance the student’s ability to develop and illustrate the fundamental skills practiced by an early childhood employee and human service professionals.

Community service and internship/externship experiences allow the students to gain firsthand experiences while integrating the knowledge, skills and techniques addressed in this curriculum. These community service and potential employment activities also provide the students with valuable immediate feedback from practicing early childcare professionals. Additionally, these experiences provide volunteer hours to be applied towards the Child Development Associate (CDA) certification, a 480-hour requirement.

EDUC/CHILD DEVELOPMENT 4 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

The Child Development IV program prepares students for careers in child care, education, and development. This program combines classroom instruction with hands-on experience to give students a well-rounded education in child development and early childhood education.

This program includes a comprehensive curriculum that covers various aspects of child development, psychology, and education. Students learn about child growth and development, educational psychology, behavior and guidance, and early childhood curriculum planning.

Practical experience is a crucial part of the program. Students partake in a year-long student teaching experience at local childcare centers or preschools. This hands-on experience allows students to apply the knowledge they gain in the classroom and work directly with children of various age groups.

Dual enrollment is offered, and students can obtain eleven college credits from Passaic County Community College. This beneficial program enables the students to acquire their CDA (Child Development Associate). This certification can be valuable in the job market and may be required for specific childcare and education positions.

Students are also encouraged to engage with the community through volunteer work, internships, or partnerships with local childcare centers or schools.

Upon completion of this program, students may have the opportunity to work as preschool teachers, child care workers, nannies, or family child care providers or continue their education to become elementary school teachers, child psychologists, or other child-focused professionals.

ELECTRIC TECH. 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Electrical Technology Level II is a full year course, which trains students the residential application of Electrical Trades. During the course, students are introduced to safety operations and procedures, basic electrical theory, hand tools, raceways conductors, and the vast options which are available to them in electrical trades. The course is designed to give the students experience in job skills with hands on and basic theory assignments aligned with the New Jersey Student Learning Objectives and the Career and Technical Education Pathway's curriculum standards. Upon completion of this course the students will be able to be employable as entry level apprentices in the electrical trades.

ELECTRIC TECH. 3 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

This course instructs potential electricians in the skills necessary for entry into the job market. During this course, the students are introduced to basic electricity, wiring methods, conduit installation and bending, current interrupting devices, motors, manual and magnetic motor starters, and transformers. The course is designed to give students experience in job skills with hands on assignments and basic theory assignments. Upon completion of this course, the students will be able to approach a prospective employer with job skills that are in demand in the electrical industry.

ELECTRIC TECH. 4 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

This course instructs potential electricians in the skills necessary for entry into the job market. During this course, the students are introduced to basic electricity, wiring methods, conduit installation and bending, current interrupting devices, motors, manual and magnetic motor starters, and transformers. The course is designed to give students experience in job skills with hands on assignments and basic theory assignments. Upon completion of this course, the students will be able to approach a prospective employer with job skills that are in demand in the electrical industry.

ENG 1: ENGINEERING ESSENTIALS :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Engineering Essentials is a full-year course designed to be a high school student’s first exposure to the PLTW Engineering program and is appropriate for students in grades 9-12. In Engineering Essentials, students explore the work of engineers and their role in the design and development of solutions to real-world problems.

The course introduces students to engineering concepts that are applicable across multiple engineering disciplines and empowers them to build technical skills through the use of a variety of engineering tools, such as geographic information systems (GIS), 3-D solid modeling software, and prototyping equipment. Students learn and apply the engineering design process to develop mechanical, electronic, process, and logistical solutions to relevant problems across a variety of industry sectors, including health care, public service, and product development and manufacturing.

Using Project Lead the Way’s activity-, project-, problem-based (APB) instructional approach, students advance from completing structured activities to solving open-ended projects and problems that provide opportunities to develop planning and technical documentation skills, as well as in-demand, transportable skills, such as problem solving, critical and creative thinking, collaboration, communication, and ethical reasoning. The last is particularly important as the course encourages students to consider the impacts of engineering decisions.

Through both individual and collaborative team activities, projects, and problems, students create solutions to problems as they practice common engineering design and development protocols, such as experimental design, testing, project management, and peer review. In addition, the course emphasizes statistical analysis and mathematical modeling – computational methods that are commonly used in engineering problem-solving.

ENG 2: INTRO TO ENGINEERING DESIGN :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Introduction to Engineering Design (IED) is the Year 2 engineering course in the STEM Engineering Program. In IED, students explore engineering tools and apply a common approach to the solution of engineering problems, an engineering design process. Utilizing the activity-project-problem-based (APB) teaching and learning pedagogy, students progress from completing structured activities to solving open-ended projects and problems that require them to plan, document, communicate, and develop other professional skills.

Unit 1 provides an overview of the engineering design process and helps students develop an understanding of the purpose and practice of modeling in engineering communication. Students are introduced to modeling methods and practice modeling skills important to the design of mechanical systems including technical sketching, 3D solid modeling and technical drawing using Computer-Aided Design (CAD), statistical analysis, and prototyping. Emphasis is placed on building CAD skills applied throughout the course. In addition, students learn statistical techniques to evaluate design solutions and apply statistics to inform the design of a game.

Unit 2 emphasizes the design of systems of components. Students are introduced to the concept of reverse engineering and how to investigate and document the design of multi-component systems. Students learn various techniques used to connect components in a system, how systems are designed to allow desired interaction between components, and how to identify and select the materials from which products are made. They are also introduced to methods to improve the manufacturability of a product and reduce production costs. Students learn to apply two methods to create 3D assembly models in CAD and apply those techniques to design and document assemblies.

Unit 3 introduces students to a broader interpretation of the word design to include universal principles that contribute to successful product design. Students are exposed to design principles (other than the visual design principles presented in Unit 2) that can impact the appeal, usability, safety, and sustainability of a product. Design topics that are introduced or reinforced include product life-cycle, sustainability, manufacturability, human centered design, and systems thinking.

Unit 4 focuses on familiarizing students with basic engineering knowledge related to simple mechanical and electrical systems and the use of mathematical models to represent design ideas and to inform design decisions. Students will apply their new knowledge in the design of an electromechanical solution. Students also learn advanced CAD skills to support the design, documentation, and communication of engineering solutions.

ENG 3: PRINCIPLES OF ENGINEERING :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Principles Of Engineering (POE) is a high school-level survey course of engineering. The course exposes students to some of the major concepts that they will encounter in a postsecondary engineering course of study. Students have an opportunity to investigate engineering and high tech career POE gives students the opportunity to develop skills and understanding of course concepts through activity-, project-, and problem-based (APPB) learning. Used in combination with a teaming approach, APPB learning challenges students to continually hone their interpersonal skills, creative abilities, and problem-solving skills based on engineering concepts. It also allows students to develop strategies to enable and direct their own learning, which is the ultimate goal of education.

To be successful in POE, students should be concurrently enrolled in college preparatory mathematics and science. Students will employ engineering and scientific concepts in the solution of engineering design problems. Students will develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges. Students will also learn how to document their work and communicate their solutions to their peers and members of the professional community.

Principles Of Engineering is the second of three foundation courses in the Project Lead The Way high school engineering program. The course applies and concurrently develops secondary-level knowledge and skills in mathematics, science, and technology.

ENGINEERING: CIVIL ENG. & ARCHITECTURE :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Following Project Lead the Way's suggested curriculum, Project Lead the Way Civil Engineering and Architecture course focuses on building and site design and development. In this course, students use 3D architecture design software and apply mathematics, science, and standard engineering projects to create residential and commercial designs.

The Capstone Project included in this curriculum is designed for students to apply the skills and concepts learned to a real-life practical problem of creating a commercial building from initial concept inception to completed project and a physical model presentation to an audience of professionals and prospective clients.

Project-based and Problem-based Learning methods are utilized in this course. Projects allow the students to demonstrate understanding of the subject content, engage in meaningful activities, become independent learners, make connections from prior knowledge, use real life technologies and resources, obtain ownership of their learning, and exhibit growth in social skills, self-management skills, and ability to learn on one's own. Problems are real-life challenges and opportunities for students to apply learned and practice skills in creating a meaningful and useful solution that can be ready for real-life implementation.

ENGINEERING: COMP. INTEGRATED MANUFACT. :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Computer Integrated Manufacturing is one of the specialization courses in the Project Lead the Way Engineering program. The course deepens the skills and knowledge of an engineering student within the context of efficiently creating the products all around us. Students build upon their Computer Aided Design (CAD) experience through the use of Computer Aided Manufacturing (CAM) software. CAM transforms a digital design into a program that a Computer Numerical Controlled (CNC) mill uses to transform a block of raw material into a product designed by a student. Students learn and apply concepts related to integrating robotic systems such as Automated Guided Vehicles (AGV) and robotic arms into manufacturing systems.

ENGINEERING: DIGITAL ELECTRONICS :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

The PLTW Digital Electronics course introduces students to digital circuits in appliances and mobile devices. Course topics include combinational and sequential logic, logic gates, integrated circuits, programmable logic devices, along with other circuit design tools. Students are expected to complete a capstone project aligned to this course by the end of the year.

ENGINE MECHANICS 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Passaic County Technical Institute's automotive program is a National Automotive Technicians Educational Foundation (NATEF) Certified program, which offers students instruction in all the basic areas of automotive technology. It provides a sound educational building foundation for the students with a strong interest in the automotive industry including a description of trade requirements and an insight into the automotive employment opportunities. Occupational and personal safety and health will be emphasized at all levels.

The contents of level II are the Electrical System including meter usage and circuit diagnosis, battery systems, starting and charging systems, lighting systems and body electric systems; Engine Repair including motive types, mechanical testing, engine lubrication and engine cooling; and Brakes including the principles of braking, hydraulics and power brakes, disc brake systems, drum brake systems, wheel bearings and electronic brake control. Automotive Technology II is the first of three full year courses that will follow National

Institute for Automotive Service Excellence (ASE), Maintenance and Light Repair (MLR) training program. A minimum of 540 hours of combined classroom and lab/on-vehicle service and repair activities will be completed by the end of the fourth year. Additionally, NATEF policy on its task list serves as a basis for course completion. Which is: Ninety-five percent (95%) of Priority 1 (P-1); eighty percent (80%) of Priority 2 (P-2); and fifty percent (50%) of Priority 3 (P-3) will be taught. The task-based curriculum teaches industry standards so that the student can have a smooth transition to the work environment.

The students will perform routine scheduled maintenance services to the vehicles. On-vehicle service and repair work is scheduled to benefit the students and supplement ongoing instruction on items specified in the NATEF task list. Students will have had instruction and practice on specific repair tasks prior to on-vehicle service and repair work. The primary source of on-vehicles for service and repair will include but not limited to vehicles donated by manufacturers, customer-owner vehicles, training student-owner vehicles and other vehicles. Industry-type completed work orders will be on or attached to all vehicles to be serviced.

[ENGINE MECHANICS 3](#) :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Passaic County Technical Institute's automotive program is a National Automotive Technicians Educational Foundation (NATEF) Certified program, which offers students instruction in all the basic areas of automotive technology.

It provides a sound educational building foundation for the students with a strong interest in the automotive industry including a description of trade requirements and an insight into the automotive employment opportunities. Occupational and personal safety and health will be emphasized at all levels. Automotive Technology III is the second of three full year courses that will follow National Institute for Automotive Service Excellence (ASE), Maintenance and Light Repair (MLR) training program. Instruction during this year will comprise the following: a review of safety, Steering and Suspension, Auto Transmissions, and Manual Transmissions. A minimum of 540 hours of combined classroom and lab/on-vehicle service and repair activities will be completed by the end of the fourth year. Additionally, NATEF policy on its task list serves as a basis for course completion.

Which is: Ninety-five percent (95%) of Priority 1 (P-1); eighty percent (80%) of Priority 2 (P-2); and fifty percent (50%) of Priority 3 (P-3) will be taught. The task-based curriculum teaches industry standards so that the student can have a smooth transition to the work environment.

The students will perform routine scheduled maintenance services to the vehicles. On-vehicle service and repair work is scheduled to benefit the students and supplement ongoing instruction on items specified in the NATEF task list. Students will have had instruction and practice on specific repair tasks prior to on-vehicle service and repair work. The primary source of on-vehicles for service and repair will include but not limited to vehicles donated by manufacturers,

customer-owner vehicles, training student-owner vehicles and other vehicles. Industry-type completed work orders will be on or attached to all vehicles to be serviced.

ENGINE MECHANICS 4 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Passaic County Technical Institute’s automotive program is a National Automotive Technicians Educational Foundation (NATEF) Certified program, which offers students instruction in all the basic areas of automotive technology. It provides a sound educational building foundation for the students with a strong interest in the automotive industry including a description of trade requirements and an insight into the automotive employment opportunities. Occupational and personal safety and health will be emphasized at all levels. Automotive Technology IV is the last of three full year courses that will follow National Institute for Automotive Service Excellence (ASE), Maintenance and Light Repair (MLR) training program. A minimum of 540 hours of combined classroom and lab/on-vehicle service and repair activities will be completed by the end of the fourth year. Additionally, NATEF policy on its task list serves as a basis for course completion. Which is: Ninety-five percent (95%) of Priority 1 (P-1); eighty percent (80%) of Priority 2 (P-2); and fifty percent (50%) of Priority 3 (P-3) will be taught. The task-based curriculum teaches industry standards so that the student can have a smooth transition to the work environment. The emphasis during this year is Engine Performance; Heating, Ventilation, and Air Conditioning (HVAC); Diagnostics of Engine Performance tasks. The students will perform routine scheduled maintenance services to the vehicles. On-vehicle service and repair work is scheduled to benefit the students and supplement ongoing instruction on items specified in the NATEF task list. Students will have had instruction and practice on specific repair tasks prior to on-vehicle service and repair work. The primary source of on-vehicles for service and repair will include but not limited to vehicles donated by manufacturers, customer-owner vehicles, training student-owner vehicles and other vehicles. Industry-type completed work orders will be on or attached to all vehicles to be serviced.

GLOBAL MANAGEMENT 1 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

This course will offer coursework for students who wish to concentrate on strategies for career development through operational/management of their own business. Students will develop characteristics, habits and practices that will give them effective leadership skills to achieve business success. Students who choose to complete the Business Management track will be introduced to important business concepts such as Business Management, Accounting, Marketing, Personal/Business Finance and will become skillful in computer literacy using Microsoft business applications such as Word, Excel and PowerPoint in a project-based learning environment.

Throughout the course, students are presented problem-solving situations for which they must apply academic and critical-thinking skills.

During the freshman year students developed the Leadership and Communication skills necessary to complement the core business coursework in the Business Management track. Keyboarding skills are introduced early on to achieve usable and/or employable skill levels that can be applied throughout the remainder of the Business Management track. As students acquire computer software application skills they will also be eligible to become Microsoft Office Certified which solidifies their competency in the world of business. Whether furthering their education or embarking on a new

career in a business environment, our students will be well prepared with the application and vast technology know-how that will prepare them to compete and achieve success.

Business Management: The focus on Business Management is to introduce students to the fundamental management functions necessary to start their own business including planning, organizing, leading, and controlling in a Global multi-cultural Business environment. Emphasis is placed on management and leadership skills as well as application of underlying technologies that improve the efficiency in operating a business in a multi-cultural economic environment.

Principles of Accounting: With accounting, students will develop an understanding of debit and credit rules, journal entries, while applying accounting principles for a business. Accounting offers students the opportunity to learn about the financial operations of modern business enterprises and prepares students to make better financial decisions for the future. After students complete Principles of Accounting during their sophomore year, they will be able to earn six college credits by completing College Accounting I and College Accounting II during their junior year.

Principles of Marketing: The Marketing unit focuses on the importance to do market research, identify competition and how to publicize your business. Students will describe the impact of consumer motives on purchasing choices. This unit develops student understanding and skills in the functional areas of marketing including market planning, promotion, and selling. Students acquire an understanding and appreciation of each of the marketing functions and their ethical and legal issues.

Personal / Business Finance: Students will develop the study of financial literacy and study money management as it pertains to budgeting, taxes, maintaining credit and debt, and become an informed consumer on the topics of insurance, savings, investments and identity theft. Additional topics include: careers, budgeting, consumer awareness, how to use and maintain a checking account, types of taxes, and simple investments. Students will develop the skills needed to achieve desired financial growth while analyzing the relationship between education, income, career, and desired lifestyle.

Personal Business Learning Portfolio (PBLP): In addition, students build a Personal Business Learning Portfolio (PBLP) which includes a collection of papers/artifacts/reflections used by students as a capstone of accomplishments, skills, strengths including a business plan, conventional formatted business correspondence, student career planning documents such as a resume, and certificates of accomplishments are all imbedded in the PBLP.

Personal Development

- Interests and skills assessments
- Personality and learning style assessments
- Portfolio (personal profile of activities, volunteer internships, job shadow, awards, presentations, etc. to showcase student work and involvement)
- Study guidelines

Career Development

- Plan for career goals (short term and long term)
- Career exploration and assessment

- Reflections
- Resume and cover letter
- Certificates
- Letter (s) of recommendation

Business Management coursework documents

- Business Plan
- Marketing Plan
- Organizational Chart
- Business Card
- Business memo, letter, invoice, MLA report, table, etc.
- Ad hoc projects

Business Math using Excel: Students will continue to reinforce the skills they learned using Microsoft Excel projects.

GLOBAL MANAGEMENT 2 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

This course will continue to build on the knowledge acquired in Global Management I, expanding knowledge in areas of Operations Management, E-Business Retail Management, Economics, Organizational Behavior and College Accounting I and II. Throughout the course, students are presented problem-solving situations for which they must apply academic and critical-thinking skills. Formal reflection is an on-going component of the course. Students will continue to develop an understanding and skills in such areas as communication skills, emotional intelligence, operations, and acquire an understanding and appreciation of the need for leadership skills. Students will continue to develop the skills needed to communicate in a productive manner using Microsoft Office software applications appropriate for an office setting and collaboration through social media project oriented lessons.

Operations Management: This course focuses on the central role of management in operating a business and determining a company's success. Students will develop strong managerial decision making skills and learn how to manage resources and activities that produce and deliver goods and services to customers. Topics will include an overview of strategic decision making, forecasting, process planning, facility layout, planning and scheduling.

E-Business Retail Management: This unit will offer insight into the strategic opportunities, best practices and emerging trends in internet marketing and e-Business retail management, market research, identifying competition and how to publicize a business. Students will have the opportunity to engage in the day to day operations of a retail business in an online simulated interactive project-based learning environment.

Organizational Behavior: The course provides strategies for decision-making and building effective teams, as well as exploring the difficulties, compromises, and rewards of the collaboration process. In addition, students will learn how to maximize performance and develop communication, teamwork, analytical, and problem solving skills. Students will also develop an understanding of how the dynamics of human behavior of individuals, groups, and structures impact employee behavior in the workplace.

College Accounting I/ II: This course is intended to reinforce the knowledge of accounting principles acquired during the sophomore year in the Business Management track and to learn the principles of corporate, cost, and manufacturing accounting principles. It is intended to prepare students to further their study in accounting and/or business. Students will develop the ability to think logically and enhance their ability to think critically while making decisions that impact the finances of a business or corporation.

Personal Business Learning Portfolio (PBLP): The Students will build a Personal Business Learning Portfolio (PBLP) which includes a collection of papers, artifacts, and reflections used by students as a capstone of accomplishments, skills, and strengths. The PBLP will include, but will not be limited to, business plans, conventional formatted business correspondences, and student career planning documents such as a resume and certificates of accomplishments.

Personal Development

- Interests and skills assessments.
- Personality and learning style assessments.
- Portfolio (personal profile of activities, volunteer internships, job shadow, awards, presentations, etc. to showcase student work and involvement).
- Study guidelines.

Career Development

- Plan for career goals (short term and long term).
- Career exploration and assessment.
- Reflections.
- Resume and cover letter.
- Certificates.
- Letters of recommendation.

Business Management coursework documents

- Business Plan.
- Marketing Plan.
- Organizational Chart.
- Business Cards.
- Business memo, letter, invoice, MLA report, table, etc.
- Other ad hoc projects.

Dual Enrollment with PCCC for College Accounting 101 and 102.

[GLOBAL MANAGEMENT 3](#) :: Mixed-grade High :: STEM Academy and PCTI :: CTE

The curriculum for Global Management III is a task-based curriculum that combines both academic and applied learning in the study of entrepreneurship and business ownership. Students will develop an in-depth knowledge on managing a

business, topics relevant to business law, managing risks through insurance, applying the components of a business plan, and furthering studies in an economic business environment incorporating current global trends. The coursework will include the following units:

Global Management

Explain the strategies that businesses use to compete in the global economy. Recognize the differences between imports and exports and the importance of balance of trade. Analyze the effect of cultural differences, export/import opportunities, and trends on an entrepreneurial venture in the global marketplace.

Fundamentals of Insurance Students will learn the steps necessary to protect themselves from different types of risk including human, natural, and economic by selecting the appropriate insurance option.

Business Law

Students will develop a better understanding of the law in the United States as it pertains to the business world. Topics covered include understanding administrative agencies and government regulations that affect a business, contracts, torts, transfers of property ownership, and international and employment law.

Virtual Business

The Virtual Enterprises International Program is a task-based curriculum that combines both academic and applied learning. Included is a curriculum that presents economic concepts aligned to the day-to-day activities of a Virtual Business. The program empowers students to perform activities and handle responsibilities involved in starting and managing their own business.

Personal Business Learning Portfolio (PBLP) Students are required to build a Personal Business Learning Portfolio (PBLP), including a collection of papers/artifacts/reflections used as a capstone of accomplishments, skills, and strengths. Additionally, a business plan, conventional formatted business correspondences, and student career planning documents are required.

Personal Development

- Interests and skills assessments.
- Personality and learning style assessments.
- Portfolio (personal profile of activities, volunteer internships, job shadow, awards, presentations, etc. to showcase student work and involvement).
- Study guidelines.

Career Development

- Plan for career goals (short term and long term).
- Career exploration and assessment.
- Reflections.

- Resume and cover letter.
- Certificates.
- Letter (s) of recommendation.

Business Management coursework documents

- Business Plan.
- Marketing Plan.
- Organizational Chart.
- Business Cards.
- Business memo, letter, invoice, MLA report, table, etc.
- Other ad hoc projects.

GRAPHIC ARTS 1 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Students will be introduced to Graphic Design and work in an environment that emulates a real-world design studio. This course will focus on building foundations in design and adapting them for the many platforms and devices in which digital content is delivered. Graphic Arts students are taught about design, layout, typography and color theory. Students learn in a hands-on environment, using industry-related technology and software. A focus on concept development and problem solving is emphasized and encouraged. This is done through thumbnails sketches, intermediate rough layouts and final comprehensives. The process is repeated for each project for retention and best practices. Once students have learned the design process, the execution of concepts with the use of technology is emphasized. Students are taught to pay attention to the minute details that are essential to properly finishing a project. Creative and technical skills are necessary to complete projects successfully.

GRAPHIC ARTS 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Students will work in a Graphic Design environment that emulates a real-world design studio. This course will focus on building foundations in design and adapting them for the many platforms and devices in which digital content is delivered. Graphic Arts students are taught about design, layout, typography and color theory. Students learn in a hands-on environment, using industry-related technology and software. A focus on concept development and problem solving is emphasized and encouraged. This is done through thumbnails sketches, intermediate rough layouts and final comprehensives. The process is repeated for each project for retention and best practices. Once students have learned the design process, the execution of concepts with the use of technology is emphasized. Students are taught to pay attention to the minute details that are essential to properly finishing a project. Creative and technical skills are necessary to complete projects successfully.

GRAPHIC ARTS 3 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Students will work in a Graphic Design environment that emulates a real-world design studio. This course will focus on building foundations in design and adapting them for the many platforms and devices in which digital content is delivered. Graphic Arts students are taught about design, layout, typography and color theory. Students learn in a hands-on environment, using industry-related technology and software. A focus on concept development and problem solving is emphasized and encouraged. This is done through thumbnails sketches, intermediate rough layouts and final comprehensives. The process is repeated for each project for retention and best practices. Once students have learned the design process, the execution of concepts with the use of technology is emphasized. Students are taught to pay attention to the minute details that are essential to properly finishing a project. Creative and technical skills are necessary to complete projects successfully.

GRAPHIC ARTS 4 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Graphic Design is a creative process that combines art and technology to communicate ideas. The designer works with a variety of communications tools in order to visually convey a message for a client’s product or service to a particular target audience. This course will give students a foundation in Graphic Design by introducing them to the various aspects of the Graphic Design field.

Students will utilize advanced techniques for Adobe Photoshop, Illustrator and InDesign. They will also add to their toolset by learning how to create interactive portable documents with Adobe Acrobat Professional and website design with Adobe Dreamweaver. This will ensure that students have a well-rounded skill-set in which to continue their education in Graphic Design or enter the workforce. In addition to the computer and software, students will properly handle and use drawing tablets, digital cameras, scanners, and other various output devices such as printers and backup storage disks applicable to projects.

Senior Graphic Arts students will be required to create and maintain a portfolio with a minimum of 12pieces of their design projects. A portfolio is a tangible example of a student’s skill-set and professionalism in visual presentation. Students will be required to demonstrate ability in all educational projects and assignments and test with a minimum of 65% proficiency.

ADOBE CERTIFIED ASSOCIATE CERTIFICATION

Students will be tested for Adobe Certified Associate Certification as their exit exam. The examination will test their proficiency in Adobe Photoshop CS as well as professional design considerations practiced in the industry. This certification exam will also be included in their grades (TEST) and is separate of the Final Exam.

ITNS 1 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

ITNS I is a full year study designed as a course to prepare the student for TestOut's PC Pro certification—a comprehensive, real-world study consisting of all concepts of hardware/peripherals, basic networking, security, operating system (Windows, Mac OS, Linux) installation, maintenance, and troubleshooting, and mobile technologies. Moreover, students will learn how to spec PCs based on customer needs. Acquiring the PC Pro certification will qualify and allow students, should they choose, to pursue CompTIA’s A+ certification.

ITNS 2: IT ESSENTIALS :: Mixed-grade High :: STEM Academy and PCTI :: CTE

ITNS II is a full year study designed as a course to prepare the student TestOut's Network Pro certification—a comprehensive, real-world exam consisting of all concepts of wired and wireless network implementation, Ethernet standards, network hardware and cabling, network management and troubleshooting, network security, routing, and WAN technologies. Moreover, students will learn how to spec and budget for a network based on customer needs. Acquiring the Network Pro certification will qualify and allow students, should they choose, to pursue CompTIA's Network+ certification. Students will study and gain a complete understanding of a network's necessary components, installation, maintenance, security, IP configuration, routing, and troubleshooting skills. They will design and implement a small enterprise network along with security measures

ITNS 3: NETWORKING SYSTEMS :: Mixed-grade High:: STEM Academy and PCTI :: CTE

This course builds on the experience students have gained in the first two years of Information Technology and Network Security, on how to maintain PCs and setup a corporate network. Now you will learn how to protect that network from a myriad of threats. Presenting the evolution of computer security, the main threats, attacks & mechanisms, security protocols, storage protection methods, cryptography, ways of identifying, understanding & recovery from attacks against computer systems. Additionally, various methods of security breach prevention, network systems availability, recovery procedures and counter systems penetrations techniques will be discussed.

ITNS 4: CISCO :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

This course provides a working knowledge of data communication networking devices, using routers and switches as building blocks. Emphasizes device design, functionality with different protocols and standards used network communications. Examples include Ethernet/802.3 standard, Address Resolution Protocol (ARP), Internet Protocol (IP), Transport Control Protocol (TCP), User Datagram Protocol (UDP), and others. Informational Technology and Network Security focuses on Cisco network devices and implementing "Cisco Network Academy Routing and Switching" course fundamentals. This course will also cover emerging technologies in the fields of networking and security.

LOGISTICS 1 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

This sophomore level shop is two and a half periods each day. The course covers the first year of the Rutgers Supply Chain Global Logistics Curriculum along with Financial Accounting and Personal Finance.

Each area of content is described below.

Introduction to Logistics: This introductory course engages students in contextual problems that introduce students to the concepts of supply chains, warehouse location, contingency planning, insourcing and out-sourcing decisions, and expanding existing supply chains. These concepts form the basis of global logistics and supply chain management. Students will explore these concepts to learn how professionals examine options to maximize the use of resources in establishing physical networks. Logistics and Supply chain management is vital to the success of every organization.

Because of this, job prospects for supply chain professionals are projected to grow much faster than other occupations, and prospects for advancement in these fields is tremendous. For these reasons, the academic community has developed a program of study for high school students. The program adopted by Passaic County Technical Institute has been developed by New Jersey Department of Education, Office of Career and Technical Education, and Rutgers University. The curriculum utilizes project-based learning which encourages exploration and acquisition of the basics of supply chain management and global logistics. It also fosters the development of the essential skills such as problem solving, and strategic thinking needed for the workplace. The projects enhance reading, writing and oral communication abilities, and the application of mathematic concepts to authentic career-based content. Functional areas of logistics: The projects expand student understanding of the concepts they discovered in the previous course as they navigate projects on insourcing versus outsourcing, lean manufacturing, warehouse network location and materials planning. Students use their experiences in this course to discover ways in which professionals minimize the outlay of resources while improving efficiency and ability in the global market.

Accounting:(Sept–Feb) Accounting is an essential aspect of every business institution and organization. As future workers, small business owners, and entrepreneurs, students who understand basic accounting principles will more knowledgeably manage their companies’ financial resources. Students will focus on Accounting for a Service Business Organized as a Proprietorship. The game of monopoly is used in class to help provide real world experiences with the basics of accounting.

Personal Finance: (Feb – June) Provide a foundation of financial concepts to prepare students for financial responsibility as they transition from student to becoming financially independent adults. Skills will be developed to prepare students to be able to evaluate financial information and address money challenges as they occur.

[Global Logistics 1 Student Handout.pdf](#)

LOGISTICS 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: CTE

This junior level shop is two and a half periods each day. The course covers the second year of the Rutgers Supply Chain Global Logistics Curriculum along with Financial Accounting II and Business Management. Each area of content is described below.

Logistics and Supply chain management is vital to the success of every organization. Because of this, job prospects for supply chain professionals are projected to grow much faster than other occupations, and prospects for advancement in these fields is tremendous. For these reasons, the academic community has developed a program of study for high school students. The program adopted by Passaic County Technical Institute has been developed by New Jersey Department of Education, Office of Career and Technical Education, and Rutgers University. The curriculum utilizes project-based learning which encourages exploration and acquisition of the basics of supply chain management and global logistics. It also fosters the development of the essential skills such as problem solving, and strategic thinking needed for the workplace. The projects enhance reading, writing and oral communication abilities, and the application

of mathematic concepts to authentic career-based content. Functional areas of logistics: The projects expand student understanding of the concepts they discovered in the previous course as they navigate projects on insourcing versus outsourcing, lean manufacturing, warehouse network location and materials planning. Students use their experiences in this course to discover ways in which professionals minimize the outlay of resources while improving efficiency and ability in the global market.

Accounting II: Accounting is an essential aspect of every business institution and organization. As future workers, small business owners, and entrepreneurs, students who understand basic accounting principles will more knowledgeably manage their companies' financial resources. This year student will complete the accounting cycle for a merchandising business operating as a corporation.

Business Management: presentation to the basic concepts and skills needed to operate and manage a business in a rapidly changing environment.

[Course Description.docx](#)

LOGISTICS 3 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

This senior level shop is three and a half periods each day. The course covers the third and final year of the Rutgers Supply Chain Global Logistics Curriculum along with preparation to earn industry certifications . Each area of content is described below.

Logistics and Supply chain management is vital to the success of every organization. Because of this, job prospects for supply chain professionals are projected to grow much faster than other occupations, and prospects for advancement in these fields is tremendous. For these reasons, the academic community has developed a program of study for high school students. The program adopted by Passaic County Technical Institute has been developed by New Jersey Department of Education, Office of Career and Technical Education, and Rutgers University.

The curriculum utilizes project-based learning which encourages exploration and acquisition of the basics of supply chain management and global logistics. It also fosters the development of the essential skills such as problem solving, and strategic thinking needed for the workplace. The projects enhance reading, writing and oral communication abilities, and the application of mathematic concepts to authentic career-based content. Functional areas of logistics: The projects expand student understanding of the concepts they discovered in the previous course as they navigate projects on insourcing versus outsourcing, lean manufacturing, warehouse network location and materials planning. Students use their experiences in this course to discover ways in which professionals minimize the outlay of resources while improving efficiency and ability in the global market.

Forklift Simulator

Driver Training and Safety Awareness - warehouse managers will no longer be forced to choose between training and productivity out on the floor. With the sit-down counterbalance forklift simulator, training takes place in a safe environment which never interferes with warehouse operations.

Industry Certifications:

OSHA 10

Interactive and immersive online training experience to obtain an OSHA 10-Hour wallet card from the OSHA Training Institute (OTI). The CareerSafe OSHA Outreach Training Program provides training on the recognition, avoidance, abatement, and prevention of safety and health hazards.

Manufacturing Skill Standards Council CLA/CLT

Foundational-Level Certified Logistics Associate CLA Trimester 2

Mid-Level Technical CLT 4.0 Certification CLT Trimester 3

The purpose of the Certified Logistics Technician (CLT)® 4.0 certification program is to recognize through certification, individuals who demonstrate mastery of the core competencies of material handling at the front-line (entry-level to front-line supervisor) through successful completion of the logistics certification assessments. The goal of the CLT certification program is to raise the level of performance of certified logistics technicians both to assist the individuals in finding higher-wage jobs and to help employers ensure their workforce increases the company's productivity and competitiveness.

[GLSCM Course 3 Description 23.pdf](#)

MARKETING 1 :: Mixed-grade High:: STEM Academy and PCTI :: CTE

The Marketing I course provides an understanding of the roles of marketing in the economy and the business firm. The Bureau of Labor Statistics states that by 2018, "marketing-related jobs will increase by 13 percent through 2018, from 623,800 jobs to 704,100 jobs". Job growth will be due to the need to replace workers who leave the occupation or retire and will be spurred by competition for a growing number of goods and services, both foreign and domestic, and the need to make one's product or service stand out in the crowd. In addition, as the influence of traditional advertising in newspapers, radio and network television decreases, marketing professionals are being asked to develop new and different ways to advertise and promote products and services to reach potential customers. Through their experience in this course, students will develop the essential skills for future career prospects in the marketing industry. Some topics that will be covered in the Marketing I course are listed below.

Foundations of Marketing: The fundamental principles of marketing are summed up by the "Four P's": Product, Price, Place, and Promotion. These categories represent means of clarifying ways of providing utility to consumers in an effort to satisfy their needs and wants while pursuing a profit motive.

Marketing & Society: Marketing’s role in the economy is reviewed in the context of the general economic principles that affect consumer behavior and marketplaces. The factors of production, types of economy and the concept of entrepreneurship are introduced. Business ethics and the concept of social responsibility are examined in detail.

Promotion: The remaining elements of the Promotion Mix: advertising, public relations, and sales promotion are explored. Students will learn strategies for developing effective communications designed to stimulate target awareness, interest, desire and action (AIDA). Various media and their cost will be examined for their efficacy in reaching consumers.

Distribution: This section focuses on two specific aspects of the components of the marketing mix.

1. Physical distribution: (the movement of goods from place to place) is examined to identify the various transportation elements available in conjunction with warehousing and inventory management methods.
2. Channels of distribution: the venues where goods and services are made available to customers are presented as essential elements of providing utility to purchasers/users.

Pricing: Elements of effective pricing policies and profitability assurance will be explored in detail. Specific pricing strategies such as prestige, skimming, psychological, odd- even, penetration and others will be learned. In addition, key metrics such as gross profit margin and markup will be introduced.

Branding: This section will cover the fundamental principles underpinning the practices and strategies that support Brand Management, Product Management, and Service Management. In addition, this section will cover the concepts and laws governing trademarks, patents, and copyrights.

Entrepreneurship & Marketing Management: This unit will examine the skills and tools needed to effectively market a new business venture. In this unit students will prepare a professional marketing plan, develop an effective marketing strategy for a business enterprise, and explore careers in the marketing field.

Introduction to Business Finance: This unit is designed to serve as an introduction to the field of business personal finance. Students will explore the methods utilized by businesses in securing and utilizing capital. Major topics of interest include capital budgeting, analyzing financial documents, identifying the cost of capital, and detailing the characteristics of alternative forms of capital.

MARKETING 2 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Building off of the skills acquired in Marketing I, this advanced marketing course develops student understanding and skill in the expanding focus areas of e-marketing, business-to-business marketing, fashion, retail, and sports & entertainment marketing. Financial considerations as they relate to business profit will also be explored through a unit on accounting principles. Throughout the course, students will be presented problem-solving situations for which they must apply academic and critical-thinking skills. The following topic areas will be studied in depth throughout the year:

E-Marketing: This module introduces the role of modern systems, technologies, and communication means in the marketing realm. Students will benefit from understanding the importance of incorporating the most contemporary communications and systems technologies into marketing strategies.

Business-to-Business Marketing: This segment centers on the lesser-known but equally vital component of marketing: the interactions among the non-retail elements of the economy. The unique elements of the B2B environment including sales, trade advertising and promotion, and wholesale pricing strategies will be examined. Students will benefit from understanding how businesses market to, and interact with, one another and contribute to incredibly complex global commercial systems.

Fashion Marketing: Students will gain exposure to the high-profile fashion industry. Emphasis will be placed on the unique challenges of items with a short life cycle, fads, merchandising, and retailing strategies. The interaction of style and culture will be examined as well as the historical aspects of fashion and design. Students will benefit from understanding the importance of the fashion industry both as an integral component of the U.S. economy, but also as an archetype for broader marketing purposes. The fashion industry typically is very interesting to many students.

Retail Marketing: This section describes the world of retailing and offers key principles for effectively managing retail businesses in highly competitive environments. An exploration will be undertaken of retailing as the study of business activities that adds value to the products and services sold to consumers for their personal or family use. Knowledge of retailing principles and practices will help marketing students develop skills for many business contexts. Business managers must have a thorough understanding of how retailers operate and make money so they can get their products on retail shelves and work with retailers to sell them to consumers.

Sports & Entertainment Marketing: This component investigates the application of fundamental marketing principles to the sports and entertainment industries. Students will be granted the opportunity to relate their formative knowledge to a familiar and exciting milieu. Students will gain an understanding of the operations of the multi-billion dollar sports and entertainment industries. In addition to the tangible elements of this unique business sector, relevant parallels to community and national character and identities will underscore the importance of comprehending the prominence of leisure time in human character.

Introduction to Accounting Principles: Principles of Accounting provides students with an understanding of the accounting process and how it facilitates decision making by providing data and information to internal and external stakeholders. Students learn that accounting is an integral part of all business activities. They will learn how to apply technology to accounting by creating formulas and inputting data into spreadsheets.

MARKETING 3 :: Mixed-grade High:: STEM Academy and PCTI :: CTE

The Marketing III course serves as the culminating course in the School of Business Marketing track. As a prerequisite for participating in Marketing III, students have developed a deep understanding of the marketing discipline in Marketing II & I. The Marketing III course will look to strengthen these skills further by focusing on several areas of marketing that are experiencing significant growth opportunity. Additionally, at the conclusion of the year, Marketing

All students will be required to complete a Capstone Portfolio, which will demonstrate their best work over their four years in the School of Business program. The following topics will be studied over the course of the school year:

Advertising & Promotion: This module will analyze the inner workings of the advertising industry and its role in the success or failure of a product. Through their studies students will consider advertising strategies, the growing role of celebrity promotion, and discover how public relations communicate information to consumers. Through this in-depth study of the advertising/public relations system, students will acquire the skills required to prepare for future careers in the industry.

Digital & Social Media Strategies: With the continued advancement in modern communications technology, businesses require marketers to have an intimate knowledge of digital and social media. This topic will provide students with the skills required to explore social media strategies facilitated by Internet, digital and mobile technologies and platforms. Students will learn how to establish realistic business and performance goals; integrate new communications platforms and technologies into existing marketing plans; systematically evaluate new technologies and delivery platforms to determine an optimal marketing mix, given objectives and available resources; and evaluate in-market results.

Hospitality & Tourism Marketing: This learning module will help students appreciate, develop, and manage marketing in the hospitality and travel industry sectors. The course will introduce basic concepts and skills in tourism marketing, and will address differences between tourism and other industries. Students will learn how marketing managers can position their products or destinations to capture customers.

Business Communication: This learning module will focus on the communications skills needed in the business environment. Students will receive a comprehensive view of communication, its scope and importance in business, and the role of communication in establishing a favorable outside the firm environment, as well as an effective internal communications program. The various types of business communication media are covered. This course also develops an awareness of the importance of succinct written expression to modern business communication. Critical thinking and problem solving skills are emphasized. Development of these skills is integrated with the use of technology.

PERF. ARTS DANCE 1 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

In this course, students will gain an understanding of the fundamentals of ballet technique including barre and center floor work; modern dance technique through a semester of Horton and a semester of contemporary modern; jazz dance in technique that employs floor stretches, center warm-up procedures, movement patterns that emphasize simultaneous coordination of multiple rhythm patterns in different parts of the body, and tap dance vocabulary and the development of rhythmically accurate footwork and accompanying body movements. Body placement, alignment, and safe practices are emphasized throughout all technique classes.

During the first year of the dance program students will focus their studies on the fundamentals of dance. Dancer wellness is a focus of this course which includes an introduction to basic anatomy, basic nutrition, and common dance related injuries. Various dance genres from all over the world will be researched and students will learn about influential dance artists and choreographers from all around the world across many dance forms. The course introduces students to the field of dance including dance related careers and dance as a profession.

PERF. ARTS DANCE 2 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

In this course, students will enhance their understanding of the fundamentals of ballet technique including barre and center floor work; modern dance technique through a semester of Horton and a semester of contemporary modern; jazz dance in technique that employs floor stretches, center warm-up procedures, movement patterns that emphasize simultaneous coordination of multiple rhythm patterns in different parts of the body; and tap dance vocabulary and the development of rhythmically accurate footwork and accompanying body movements. Body placement, alignment, and safe practices are stressed throughout all technique classes.

During the second year of the dance program students will focus their studies on the history of dance from its origins to the present, as exemplified by the dancers, choreographers, and teachers who brought about notable changes in the art. The relationship of dance to the larger cultural environment will be discussed. This course is designed to help the student relate his or her own work to the development of the art and to encourage creative critical perception.

PERF. ARTS DANCE 3 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

During the third year of study, students will continue to develop and strengthen their ballet technique including barre and center floor work; modern dance technique through a semester of Horton and a semester of contemporary modern; jazz dance in technique that employs floor stretches, center warm-up procedures, movement patterns that emphasize simultaneous coordination of multiple rhythm patterns in different parts of the body; and tap dance vocabulary and the development of rhythmically accurate footwork and accompanying body movements. Body placement, alignment, and safe practices are a central focus throughout all technique classes.

The third year of study focuses on Composition and dance making. Students will explore various movement and design elements within the choreographic process. Students will explore, understand, and use the elements of dance, dance structures, and choreographic devices as a foundation for dance making and responding to dance.

They will identify, plan and provide solutions to design problems of space, structures, objects, sound and events. Students will gain an aesthetic appreciation for choreographic space, identify significant historical contributions of individuals and events that have shaped and continue to shape contemporary arts, and increase skills in movement analysis, space, harmony, and critique. Students will learn basic notation of movement using the Language of Dance® (LOD) and how to integrate this practice into their composition.

PERF. ARTS DANCE 4 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

During the fourth year of study, students will enhance continue to develop and strengthen their ballet technique including barre and center floor work; modern dance technique through a semester of Horton and a semester of contemporary modern; jazz dance in technique that employs floor stretches, center warm-up procedures, movement patterns that emphasize simultaneous coordination of multiple rhythm patterns in different parts of the body; and tap dance vocabulary and the development of rhythmically accurate footwork and accompanying body movements. Body placement, alignment, and safe practices are stressed throughout all technique classes.

The fourth year of study focuses on choreography. This course investigates areas of creative process, compositional tools, and individual methods in dance making. Individual choreographic projects will be designed and directed by seniors and with special interest and experience in dance composition. Students and faculty will meet regularly to view works-in-progress and to discuss relevant artistic and practical problems. Work will be presented in the Senior Choreography Showcase. The dance lab period is designed to support the creative and technical practices, as well as the practical concerns, of students in their senior year. Audition pieces, resumes, and artistic statements will be developed and discussed in seminar and in conference

PERF. ARTS MUSIC 1 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

This first year CTE course is designed to teach and/or reinforce the basics of instrumental music to provide a groundwork for more advanced study in successive years. Basic music theory is stressed from a written as well as practical standpoint. Basic theory elements include: reading, writing, and performing standard music notation, including the use of accidentals and enharmonic spellings; rhythmic differentiation; meter variety; directional, articulation, dynamic and tempo musical signs and markings; all major and minor keys and related key signatures based on the *Circle of Fifths*, *Order of Flats*, and *Order of Sharps*; major scales; three forms of minor scales; and relative vs. parallel major/minor relationships. Harmonic content includes the study of melodic and harmonic intervals, triads, seventh chords, introductory 4-part writing, chordal analysis and identification using chord symbols and Roman numerals, with slash notation or figured bass notation appropriately to indicate inversions. A discussion of different types of harmonic systems will also be included. Basic chord progressions using only primary chords will include a standard 12-bar blues, and improvisation techniques will be introduced using the blues scale as a base. Notational writing technique will be explored using hand transcription of a printed source. Occasional historic and social references will be made as it relates to the ongoing presentation of syllabus material and in preparation of future study topics of musical historic content in later years of the CTE program.

Practical techniques will include some basic two-handed homophonic piano techniques, rhythmic study, appropriate level study in a methods book series for each student’s primary instrument, the playing of all major scales and the chromatic scale, study in transcription, playing a solo for peers, working together on duets or small chamber group study, larger full group rehearsal and performance technique. Ear training will begin at this level with aural and solfege exercises to concentrate mainly on diatonic intervals using very little chromaticism. Analysis of listening examples will be introduced using a listening diary. Along the way potential professional music-related opportunities, that may or may not include the playing of an instrument, will be discussed.

In addition, students will become aware of available music technologies and be able to use them to their advantage. Besides amplifiers and other manner of sound equipment, students will be able to use computer programs and applications both loaded on the computer and/or available online. These technologies will be used for, among other possibilities, keyboard instruction, theory instruction and reinforcement, sequencing, ear training, musical historical reference, music electronica, and professional quality music printing techniques to name a few.

A. Performance – Emphasis will be on major scale development in all keys; basic reading technique for standard music notation; specific technical issues for each student’s individual instrument; experience playing publicly as a soloist and as a member of a larger ensemble; basic piano playing ability for easy two-handed homophonic music.

B. Music Theory – Basic theory elements include: reading and writing standard music notation including the use of accidentals and enharmonic spellings; rhythmic differentiation; meter; musical signs and markings to include directional signs, articulation marks, dynamics and tempo signs; key signatures of all the keys on the *Circle of Fifths*; major scales; relative minor scales; three forms of the minor scale; relative and parallel modality. Harmonic skills will include interval, triad and seventh chord writing and identification using guitar chord symbols and Roman numeral with figured bass notation for inversions. A discussion of different types of harmony will also be included. Basic chord progressions will include *the 12-bar blues* and improvisation techniques will use *the blues scale*. In addition, there will be study in transcription, transposition, and composition all at an introductory level.

C. Ear Training – Ear training will begin at this level with aural and solfege exercises to concentrate mainly on diatonic melodic content using very little chromaticism. It will also be used in conjunction with theoretical ideas to further reinforce understanding of concepts related to the elements of music as musical sound rather than simply an abstract academic thought. Students will be asked to sing written examples of music as well as write samples of music they hear in the form of easy and short samples of rhythmic and melodic dictation. Listening skills will also be used to aid in musical analysis to help classify music in its appropriate historical, cultural, and/or stylistic genre as well as aid in making personal value decisions about quality of performance or composition.

D. Improvisation/Composition – In short, these ideas refer to the creation of students’ own music. While these concepts will be touched upon in Level 1 on the way to achieving results in other categories, improvisation/composition will become more important in later years as personal creativity is promoted to make music one’s own.

E. Musical Perspective: Historical/Genre/Style/Cultural – While no formal foray in this area will ensue during year one, references will be made to historically related material as music theory is presented. Also, genre classification and/or cultural perspective will be made as is appropriate for varied musical repertoire that may be played or listened to as it comes up.

F. Professionally Related Topics – Study will include shop safety concerns, hearing protection, organization, time management, computer music program tutorials, occupational possibilities, goals setting, motivation, and repertoire/portfolio development as well as other timely or current event related possibilities that present themselves. Attention will also be given to professional expectation as a musician and as an audience member.

PERF. ARTS MUSIC 2 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

This course is designed to enhance the students overall musicianship. This course will provide an ensemble setting for students with previous experience on a woodwind, brass, percussion, or string instrument. Students will be able enhance their technical and musical skills in this performance based class. Students will be required to perform and practice their primary instrument and study music theory, ear training, music history and other related topics required to foster their artistic growth.

Throughout the year students will be taught techniques and exercises that will further their skills on their primary instrument. Students will be expected to practice their instrument and demonstrate technical and musical growth.

Students are expected to practice their instruments at home to reinforce the concepts and skills they are learning in class.

PERF. ARTS MUSIC 3 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

For the sake of convenience this curriculum has been broken down into constituent parts to make it easier to get an overall sense of what will be studied and what will transpire as the course progresses. It should be noted, however, that these parts do not typically live in isolation in a musician's world. Much like the overlapping circles in a Venn diagram, these parts will interact to bring fuller, richer musical meaning and understanding to what is on its face an experiential art form that derives real individual value for the participant in a non-quantifiable aesthetic way. For example, the study of ear training helps a student to understand music theory which in turn can help with more efficient performance or composition of music. Likewise, increased levels of performance ability can help a student to understand the theory behind the music or to achieve a greater accuracy in ear training exercises.

While all these categories will be included in all four levels of the CTE program they might be weighted with more emphasis in one category over another depending on the level year of the program the student is currently in. Third year music students can expect to see a deepening investigation of music theory concepts and a higher level of expectation for personal performance of the student's selected major instrument, mostly for early preparation of a personal repertoire development which could become pertinent should the student elect to audition for a higher level of musical study beyond high school.

A. Performance – The playing of all major and minor scales will be reviewed. Modal scales will be introduced, and students will be expected to play all modes in all keys on their major instrument. Increasingly difficult selections of standard music notation and techniques for its successful performance will be studied; higher level piano playing ability will be explored including the performance of medium easy level piece of piano literature. Students will be expected to perform as part of a large, multi-level CTE ensemble in collaboration with other artistic disciplines. Also, students will again be asked to play a solo for their peers as well as perform any music composed by a classmate to offer aural feedback for their creative efforts. The class will work together to analyze modern pieces of music and make decisions about how they should be performed in preparation for an imaginary engagement or *gig* which will be recorded.

B. Music Theory – While basic theory will constantly be reviewed and reinforced, advanced theory study will include the use of modes from both a parallel and relative modality perspective. Increasingly complex study of rhythmic notation and meter will be investigated. Reasons and techniques for transposition will be introduced including the specific transpositions needed to arrange for many band instruments. Harmony will be further explored as a tool for composition or arranging. Specifically, melodies will be written to align with a given chord progression and likewise chord progressions will be created to support a particular melody. Other melody or harmony lines will be added to further outline the particular chord progression. Also, the concept of secondary dominance will be introduced to address temporary changes of tonal center within a piece of music.

C. Ear Training – Solfege development will continue as rhythms and melodic content gets increasingly intricate. In addition, appropriate levels of rhythmic and melodic dictation will continue to be addressed. Skills will be further developed to analyze and critique various recorded and live performances of music including self-examination. The

ability to begin to hear chord progressions will be introduced. Active listening skills for determining differences in the musical elements of a piece for analysis, critique, and perspective classification purposes will continue to be nurtured.

D. Improvisation/Composition – In the third-year greater demands will be made in creating music. Initially this will entail the combining of prerecorded musical sample elements with recorded elements in a *GarageBand*-type environment to create a piece to be performed for the class. Later, as further harmonic study commences, compositional decisions will be made to create melody with appropriate harmony and additional harmonic layers will be created to broaden the harmonic relevance. Eventually, a culminating composition project will be assigned using a minimum of four different instruments. A score and professional looking parts will be part of the expectation. All the while improvisation will be worked on to align the melodic content rhythmically and harmonically with the underlying musical environment.

E. Musical Perspective: Historical/Cultural/Genre/Style – Students will be exposed to additional composers and music of particular styles and eras that were previously introduced in the level 2 shop year in order to deepen student understanding of these classifications. Additionally, other recordings of works new and old will be introduced and questions of a piece’s genre or culture will be addressed.

F. Professionally Related Topics – A review of concepts of shop safety including hearing protection; a unit on copyright law as it pertains to a composer; goals setting, college investigation, motivation, organization, time management, repertoire development, use of the computer and modern programming for music notation and sequencing. There will also be a discussion about how to set up a college education in a way that may make it more affordable.

PERF. ARTS MUSIC 4 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

This course is designed to enhance the students overall musicianship. This course will provide an ensemble setting for students with previous experience on a woodwind, brass, percussion, or string instrument. Students will be able enhance their technical and musical skills in this performance based class. Students will be required to perform and practice their primary instrument and study music theory, ear training, music history and other related topics required to foster their artistic growth.

Throughout the year students will be taught techniques and exercises that will further their skills on their primary instrument. Students will be expected to practice their instrument and demonstrate technical and musical growth. Students are expected practice their instruments at home to reinforce the concepts and skills they are learning in class.

PERF. ARTS THEATRE 1 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Acting I- This course is the first component in a four year required sequence in Acting. Students engage in a variety of physical work including Improvisation, Meisner method training and various acting techniques in order to release and open emotional and physical range. The students will perform monologues, scenes, plays and webinars. They learn basic acting technique, beginning with work on self, characters that are close to self, and building an ensemble. Students present scene work within the department. This course introduces the student to audition preparation and

the audition process for theater, film, and television. Acting for the Camera, Career Management, Video Production, Screenwriting, Audition Technique, and Musical Theater will be explored at the entry level.

Voice & Diction I- This class focuses on freeing the natural voice, increasing resonance, articulation of consonants and blends, proper placement and breathing, ear training, support and projection in voice production for stage and screen.

Movement for Actors I-The student will become familiarized with Viewpoints, musical theater dance and The Williamson Alexander Technique. The work stimulates the imagination, puts emphasis on physical actions, encourages acting with the whole body and aids in ridding the actor of self-conscious mannerisms. Included in Movement are classes in Yoga, Pilates, relaxation and focus techniques, and Physical and Vocal Improvisation.

Theater History I- Provides an overview of theater terms for actors. Students become acquainted with the workings of professional theater, terminology and the history of the development of the stage and screen. Coursework continues with an overview of theater history that connects purpose, physical design, acting style, and plays and films performed throughout the ages with a focus on 19th -21st century significant artists and playwrights.

Production I-Students will be introduced to auditioning for television, theater and film production and formulating a complete path to a finished product with scenes, plays or performances for their video portfolio. They will have the opportunity to utilize skills and gain additional experience in the mounting of productions, technical theater, performing front of the house and back of the house duties. Career and Financial Management will be explored and equips students with the skills and knowledge they will need to be working actors. Students are introduced to various job opportunities in theater, film, and media where they can apply the skills and techniques they have learned in our program.

PERF. ARTS THEATRE 2 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Theater II is a full year course designed to reinforce what has been introduced in Theater I and to reinforce acting, speech, movement/dance and history based on Konstantin Stanislavski’s Method for Actors from the Moscow Art Theater.

Acting II will continue the work and method of Konstantin Stanislavski and the reinforcement and development of the six Essential Lessons of the Stanislavski system: concentration, emotional recall, dramatic action, characterization, observation and rhythm. The preparation and participation in local, state, regional and national competitions will be required.

Voice II will reinforce the skills needed to produce proper sounds and the way the mechanism of the voice works. We will use the four basic steps in voice production: respiration, vibration, resonance and articulation. We will also develop, in conjunction with Movement for Actors, relaxation and body alignment principles needed for good vocal production. Students will be encouraged to participate in vocal/singing lessons and ensembles offered at PCTI.

Movement II will reinforce correct movement/dance principles needed in auditions and performances. The “Viewpoints” Technique developed by Landau/Rice will be the primary method used to develop and reinforce correct

movement for actors. Beginning/Advanced dance technique in Ballet, Jazz and Broadway-style dance will be reinforced. Students are encouraged to audition and participate in the Dance Club.

Theater History II will focus on the major movements in Theater that have influenced contemporary theater. Contemporary Theater will be reinforced with discussion of the works of Williams, O’Neil, Lorca, Hellman, Miller and Albee. Broadway and The American Theater will be discussed in detail.

Play Production II is important for the beginning actor so that they are able to practice and use the acquired skills and concepts that are introduced and reinforced in Acting, Movement, Voice and History. Therefore, there will be a number of productions during the year that will enable the actor to demonstrate those skills. Students will be required to participate in these productions. Principles of make-up, costume, sound and lighting design will be introduced during the productions. Productions will include one-acts, staged readings, reader’s theater, showcases and full-length plays and musicals

Directing will allow the advanced theater students to choose, design and direct a one-act play of their choosing in conjunction with the instructor. Plays may be of any period in history, may be comedic or dramatic, may be a solo actor or may be a large cast. The play will be produced and will be presented for a grade as part of the work in class. The cast will be chosen from the class and while not required to direct, participation in this project is required of all students in the class.

PERF. ARTS THEATRE 3 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Acting III- The purpose of this course is to develop a close, organic connection between the actor and his or her technique. Building upon Acting I & II the student will decipher the method of acting that best enhances their personal style.

Each student is encouraged to investigate and utilize his or her widest possible range and to develop an individual method of work. All students will prepare 4-6 monologues drawn from contemporary and classical repertory and will explore audition technique in preparation for future training in college, conservatory or work in the profession. Scene studies from a variety of major theatrical periods and styles are rehearsed, examining them in context of each play's content, structure, period, and movement to arrive at a valid character interpretation.

Voice & Diction III - Utilizing previous knowledge the students will continue exercises and technique work. Emphasis is on vocal production and placement, breathe control, articulation, respiration, vibration, resonation, articulation and projection will be applied to scene and monologue work. This course develops the actor's vocal range and quality along with training in the use of standard American speech. Included are exercises in vocal placement, flexibility, ear training, and breath control for television and film.

Movement for Actors III- Actors build upon improvisational skills through short form exercises, games, and activities with a focus on playing in the moment, building story, and operating on impulses. Guest Artist will be brought in to further train students in dance. Viewpoints and Williamson technique will be strengthened and reinforced through various exercises

Theater History III - An historical exploration of the theatre arts in relation to developing world civilizations, this course includes choosing plays to produce from a variety of 19th-21st century significant artist. Students develop a timeline of theater by portraying and performing characters from time periods throughout history. American Film Institute of top 100 films will be utilized to discuss film history and its correlation to theater.

Production III - Students will participate in the development of an annual spring production and possible showcase productions from staging to performing in a variety of areas. In the spring they will have the opportunity to perform or gain experience in the mounting of productions by working with the spring musical. Students will work with teacher to learn the art of the close-up in film acting, using scenes and monologues, in preparation for professional auditions in Film and Television and to fine tune audition video portfolio material for submission to colleges. Afterschool rehearsals are required for all production classes.

PERF. ARTS THEATRE 4 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Theater IV is a full year course designed to reinforce what has been introduced in Theater I, II and III to reinforce acting, speech, movement/dance and history based on Konstantin Stanislavski’s Method for Actors from the Moscow Art Theater.

Acting IV will continue the work and method of Konstantin Stanislavski and the reinforcement and development of the six Essential Lessons of the Stanislavski system: concentration, emotional recall, dramatic action, characterization, observation and rhythm. The preparation and participation in local, state, regional and national competitions will be required.

Voice IV will reinforce the skills needed to produce proper sounds and the way the mechanism of the voice works. We will use the four basic steps in voice production: respiration, vibration, resonance and articulation. We will also develop, in conjunction with Movement for Actors, relaxation and body alignment principles needed for good vocal production. Students will be encouraged to participate in vocal/singing lessons and ensembles offered at PCTI.

Movement IV will reinforce correct movement/dance principles needed in auditions and performances. The “Viewpoints” Technique developed by Landau/Rice will be the primary method used to develop and reinforce correct movement for actors. Beginning/Advanced dance technique in Ballet, Jazz and Broadway-style dance will be reinforced. Students are encouraged to audition and participate in the Dance Club.

Theater History IV will focus on the major movements in Theater that have influenced contemporary theater. Contemporary Theater will be reinforced with discussion of the works of Williams, O’Neil, Lorca, Hellman, Miller and Albee. Broadway and The American Theater will be discussed in detail.

Play Production IV is important for the beginning actor so that they are able to practice and use the acquired skills and concepts that are introduced and reinforced in Acting, Movement, Voice and History. Therefore, there will be a number of productions during the year that will enable the actor to demonstrate those skills. Students will be required to participate in these productions. Principles of make-up, costume, sound and lighting design will be introduced during

the productions. Productions will include one-acts, staged readings, reader’s theater, showcases and full-length plays and musicals.

Directing will allow the advanced theater students to choose, design and direct a one-act play of their choosing in conjunction with the instructor. Plays may be of any period in history, may be comedic or dramatic, may be a solo actor or may be a large cast. The play will be produced and will be presented for a grade as part of the work in class. The cast will be chosen from the class and while not required to direct, participation in this project is required of all students in the class.

PERF. ARTS VOCAL 1 :: Mixed-grade High:: STEM Academy and PCTI :: CTE

For year one of Vocal Technique, students will be taken through a process of enlightenment in Vocal Music. They will begin with Fundamental Theory and Performance preparation in accordance to the New Jersey Student Learning Standards. Students will learn the history and synthesize the elements of music to create and continue the legacy that is music. In this course students will examine how aspects of meter, rhythm, tonality, intervals, chords, and harmonic progressions are organized and manipulated to establish unity and variety in genres of musical compositions. Students will synthesize knowledge of the elements of music in the deconstruction and performance of complex musical scores from diverse cultural contexts. In their studies, students will analyze compositions from different world cultures and genres with respect to technique, musicality, and stylistic nuance, and/or perform excerpts with technical accuracy, appropriate musicality, and the relevant stylistic nuance. Students will cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. Students are to write arguments focused on discipline-specific content.

PERF. ARTS VOCAL 2 :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Year two of Vocal Technique, students will be continuing the process of enlightenment in Vocal Music. They will continue with Fundamental Theory and Performance Preparation in accordance to the New Jersey Student Learning Standards. Students will reinforce the history and synthesize elements of music to create and continue the legacy that is music. Students will also begin to learn piano/keyboard to enhance their vocal techniques. Students will improvise works through the conscious manipulation of the elements of music, using a variety of traditional and nontraditional sound sources, including electronic sound-generating equipment and music generation programs. They will analyze simple pieces for voice or instruments using a variety of traditional and nontraditional sound sources or electronic media. In addition, students will analyze prepared scores using music composition software. Students will cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. Students are to write arguments focused on discipline-specific content.

PERF. ARTS VOCAL 3 :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Year three of Vocal Technique, students will enhance and reinforce their knowledge in Vocal Music. They will continue with Fundamental Theory and Performance Preparation /Repertoire. Students will reinforce the history and synthesize the musical elements to create and continue the legacy that is music. They will also continue to learn piano/keyboard and the benefit of having that knowledge to enhance their vocal technique. Students will have an understanding of how

music is written to understand what the composer intended to impact their performance. They will read, listen, and write notation, for rhythm, pitch, and harmony. Students will improvise works through the conscious manipulation of the elements of music, using a variety of traditional and nontraditional sound sources, including electronic sound-generating equipment and music generation programs. They will use contextual clues to differentiate between unique and common properties and to discern the cultural implications of works of dance, music, theatre, and visual art. Students will also speculate on the artist’s intent, using discipline- specific arts terminology and citing embedded clues to substantiate the hypothesis. Students will cite specific textual evidence to support analysis of science and technical texts, while attending to the precise details of explanations or descriptions. Students are to write arguments focused on discipline-specific content.

PERF. ARTS VOCAL 4 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Year four of Vocal Technique, students will master and reinforce their knowledge in Vocal Music. They will continue with Fundamental Theory and Performance Preparation /Repertoire. Students will reinforce their knowledge of musical history and synthesize the elements to create and continue the legacy that is music. They will also continue to learn piano/keyboard at a higher level to enhance their vocal techniques. Students will have an understanding of how music is written to appreciate what the composer intended, and enhance their performances. They will read, listen, and write notation, for rhythm, pitch, and harmony. Students will improvise works through the conscious manipulation of the elements of music, using a variety of traditional and nontraditional sound sources, including electronic sound-generating equipment and music generation programs. In their studies, students will analyze compositions from different world cultures and genres with respect to technique, musicality, and stylistic nuance, and/or perform excerpts with technical accuracy, appropriate musicality, and the relevant stylistic nuance. Students will cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. Students are to write arguments focused on discipline-specific content.

PLUMBING/HEATING 2 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

The plumbing II course continues to develop the entry-level skills necessary for success in the plumbing trade. This course will enable the student to identify, describe, and use the different types of valves used in various systems of the plumbing trade. Students will learn and be able to demonstrate knowledge of the basic principles of the National Plumbing Code. Students will also learn to read blueprints and create simple isometric drawings of plumbing systems. The student will demonstrate a working knowledge of piping materials and fittings and install tub/shower valves and faucets. Students will learn how to rough in water, waste, and vent pipes for three fixture unit bathrooms. They will understand how to select appropriate materials, complete a materials list, and estimate costs for a specific plumbing job. Students will continue to utilize basic computer skills for web-based projects and continue to explore the many career opportunities available in plumbing.

This plumbing course provides to the student the first basic steps in the plumbing trade. The students will be introduced to and demonstrated the following skills, to include the safe use of plumbing related tools, both power and hand, the use of rulers, soldering techniques and plumbing terminology, along with fitting and valve (copper, steel, and pex) identification. The student will also learn basic drainage, waste and venting skills. Students will be introduced to water heater installations along with faucet installation both kitchen sink and lavatory sinks. Students will learn how to work cooperatively with other trades, along with decision making skills. The student will begin basic computer skills

using the (visio) drawing program and the Google sketch up drawing program. Squares, square roots and basic geometry for plumbing will also be introduced into this class. Green information that reflects the National Green Building Standards (NGBS) ICC 700-2008 will be provided to the students, along with understanding how the plumbing industry has been a leader in the green movement.

PLUMBING/HEATING 3 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

The Plumbing III course continues to develop the entry level skills necessary for success in the plumbing trade. This level 3 course will continue a strong emphasis on shop and job sight safety. Students will learn of the less used but very important hand and power tools associated with a career in plumbing. Students will be able to read architectural blue prints and draw diagrams of plumbing systems. Students will understand the 22 basic principles in the National Standard Plumbing code book and realize why there are plumbing codes. Students will then be able to design and size drainage and water supply systems, prepare and modify the structure for pipe installation, then install drainage and water supply systems. Students will know the proper procedure for testing and supporting new plumbing installations. This course will finish with the students installing fixtures, faucets, and appliances to create a working plumbing facility.

PLUMBING/HEATING 4 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

The plumbing IV course includes advanced plumbing theory and practice. Students will further understand boiler and heating design and installation (to include water and steam units) as well as the National Plumbing Codes. In addition, students will learn general repairs and trouble shooting on heating systems. Students will continue to utilize basic math and its application to the principals of plumbing and heating. By studying plumbing III, students will learn to efficiently price, stock and order plumbing and heating materials. Emphasis is placed on how to find and apply for a job in the plumbing trade. Students are continually required to demonstrate an understanding of job related first aid, and the ability to maintain a clean and orderly work place. Lastly, internet based projects will be continually developed.

PROJECT LEAD THE WAY 3 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Principles Of Engineering (POE) is a high school-level survey course of engineering. The course exposes students to some of the major concepts that they will encounter in a postsecondary engineering course of study. Students have an opportunity to investigate engineering and high tech career POE gives students the opportunity to develop skills and understanding of course concepts through activity-, project-, and problem-based (APPB) learning. Used in combination with a teaming approach, APPB learning challenges students to continually hone their interpersonal skills, creative abilities, and problem-solving skills based on engineering concepts. It also allows students to develop strategies to enable and direct their own learning, which is the ultimate goal of education.

To be successful in POE, students should be concurrently enrolled in college preparatory mathematics and science. Students will employ engineering and scientific concepts in the solution of engineering design problems. Students will develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges. Students will also learn how to document their work and communicate their solutions to their peers and members of the professional community.

Principles Of Engineering is the second of three foundation courses in the Project Lead The Way high school engineering program. The course applies and concurrently develops secondary-level knowledge and skills in mathematics, science, and technology.

PROJECT LEAD THE WAY 4 :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Computer Integrated Manufacturing is one of the specialization courses in the PLTW Engineering program. The course deepens the skills and knowledge of an engineering student within the context of efficiently creating the products all around us. Students build upon their Computer Aided Design (CAD) experience through the use of Computer Aided Manufacturing (CAM) software. CAM transforms a digital design into a program that a Computer Numerical Controlled (CNC) mill uses to transform a block of raw material into a product designed by a student. Students learn and apply concepts related to integrating robotic systems such as Automated Guided Vehicles (AGV) and robotic arms into manufacturing **systems**.

PROTOTYPE MACHINING AND DESIGN 1 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Prototype Machining and Design I is a full year course that introduces students to many different facets of machining and manufacturing.

The focus this year involves the following topics;

Introduction to Machining

Measurement, Materials, and Safety

Job Planning, Benchwork, and Layout

Introduction to CNC.

Students will gain practical experience by working with a variety of basic hand tools and machine tools. Students will use the theory they learn and apply it to practical shop applications.

Students this year are eligible to obtain the Measurement, Materials, and Safety credential from NIMS (National Institute for Metalworking Skills).

PROTOTYPE MACHINING AND DESIGN 2 :: Mixed-grade High :: STEM Academy and PCTI:: CTE

Prototype Machining and Design II is a full year course that builds upon the knowledge gained in the level I course.

The focus this year involves the following topics:

Drill Press

Milling

Lathe

CNC

CAD/CAM Programming & CNC Setup/Operation

Students will gain further practical experience by working with a variety of basic hand tools and machine tools. Students will use the theory they learn and apply it to practical shop applications.

Students this year are eligible to obtain the Job Planning, Benchwork, and Layout credential from NIMS (National Institute for Metalworking Skills).

PROTOTYPE MACHINING AND DESIGN 3 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Prototype Machining and Design III is a full year course that builds upon the knowledge gained in the level I and level II courses.

The focus this year involves the following topics:

Lathe
Grinding
CNC
CAD/CAM Programming & CNC Setup/Operation

Students will gain further practical experience by working with a variety of basic hand tools and machine tools. Students will use the theory they learn and apply it to practical shop applications.

Students this year are eligible to obtain the the CNC Mill OPS and CNC Lathe OPS credentails from NIMS (National Institute for Metalworking Skills).

PROTOTYPE MACHINING AND DESIGN 4 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Machining and Design IV is a full year course that builds upon the knowledge gained in the level I, level II, and level III courses.

The focus this year involves the following topics:

CNC
CAD/CAM Programming & CNC Setup/Operation

Students will gain further practical experience by working with a variety of basic hand tools and machine tools. Students will use the theory they learn and apply it to practical shop applications.

Students this year are eligible to obtain the Haas Basic Mill Operator and Haas Basic Lathe Operator certifications from Haas CNC.

REFRIG/AC 2 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

The HVAC/R II curriculum is designed to build a solid foundation in the basics of the HVAC/R industry and allow the student to fine-tune their craft and abilities. This is to build confidence in routine tasks and prepare to expand their abilities in HVAC/R III. As in every year, we start with safety but this year is in the most depth and includes their Occupational Safety and Health Administration (OSHA) 10-hour safety certification in construction. Then move into

career options within the industry to see where many students find themselves fitting into the industry. This could be in material supply, service, installation, fabrication, design, and more. We cover union and non-union career pathways and help students understand that there are options outside of the traditional college routes. Then we move on to hand tools and power tools. These tools will be described in depth, with common uses, and then practical applications where students will be tested using and selecting the proper tool for the task. While covering the tools, they will be exposed to different materials commonly used in the HVAC/R industry like sheet metal screws, fasteners, anchors, etc. Once students have a handle on the tools and supplies, we will introduce piping and tubing. Students will learn how to identify different types of pipe, tubing, and fittings, select the right material for the task, and learn how to prepare and join piping such as black pipe, PVC pipe, and copper in various methods. We will cover support methods for each type of pipe and/or tubing and pressure test each project. Students will then be introduced to the basic refrigeration cycle including the four main components. We will discuss in-depth the functions of each component and the interconnecting piping between each component. Then add other components and electrical controls which control the flow of the refrigerant within the circuit. Once Students have an understanding, we will begin preparing for the Environmental Protection Agency (EPA) Section 608 Refrigerant Handling Certification. This certification has 4 components and the students will be preparing for Core Section and Type I certification as well as R-410A safety certification in HVAC/R II. After completing the EPA Exams, we turn to basic electricity in HVAC/R and magnetism. Here we will cover what electricity is and how it flows through the HVAC system. We will introduce Ohms Law, wiring schematics (drawings), basic components, and begin building electrical circuits and testing them using electrical meters. At the conclusion of year two, students will have a healthy foundation to build on in year 3.

REFRIG/AC 3 :: Mixed-grade High:: STEM Academy and PCTI :: CTE

HVAC/R III begins as always with safety. Then we break down career options and create a business. This business gives students a glimpse into owning their own business but opens their eyes to what current business owners expect of employees. Students will use real-world pricing of materials, set labor wages, and build repair quotes.

Then see if they made a profit or loss on the job they quoted and performed. Then we begin in-depth about electricity as it pertains to the HVAC/R industry. This includes line voltage components to low voltage controls and basic diagnostic troubleshooting of components within the systems. Students will also install, test, and troubleshoot permanent-split capacitor motors, electronically commutated motors, and X13 constant torque motors. Following electricity, students will build on their prior knowledge of the refrigeration cycle and add accessories to the circuits. Then, students will be introduced to Low Global Warming Potential Refrigerants. These are the newest refrigerants being introduced into the industry and then complete the certification process to handle such refrigerants. After completing certification, students will do a deep dive into residential air conditioning systems including split systems, single-zone ductless, and multi-zone ductless. This includes the components, installations, and maintenance of each piece of equipment.

Students will then pivot back to Environmental Protection Agency 608 certification and complete their Type 2 (medium and high-pressure appliances) and Type 3 (low-pressure) certifications to become Universally certified in refrigerant handling. Afterward, students will learn about residential heating systems including warm air furnaces, hydronic boilers, and steam boilers. This will be covered from the main heating source to the heat emitters located in

the rooms. Heat pumps will briefly be covered as they are covered in depth in HVAC/R IV. After completing HVAC III, students will be ready to apply for summer work and have the opportunity to work through our school-to-careers program as Seniors earning as they learn.

REFRIG/AC 4 :: Mixed-grade High:: STEM Academy and PCTI :: CTE

HVAC/R IV begins with safety, where we cover ladders, torches, electricity, and general shop emergency procedures. Then start our project-based year beginning with residential system design. Students will learn how to perform a load calculation using Manual J software and determine the size of a heating and cooling system for different residential homes. Then they will select the proper equipment to efficiently heat and cool the space. Then move on to the duct design that will support that system. Students will calculate the amount of airflow required for each room and the BTUs for each room. Once that is completed, students will utilize a CAD program to design their duct system and then fabricate that duct system within the shop. While designing and constructing the ductwork, we will cover indoor air qualities and airflow required to support the HVAC system. Students will then learn about heat pump HVAC systems check performance on operating units in the shop and perform basic diagnostics for standard heat pump systems. Following heat pumps, students will complete any missing certifications that were missed in previous years for the Environmental Protection Agency. Concluding this year, students will learn about commercial rooftop equipment and split systems. These systems will be broken down to where students will test, diagnose, repair, and maintain the equipment. Students will then be given service calls and repair tasks where they will work independently and as teams to identify the issues within the system and make the repairs. At the conclusion of the HVAC/R program, students will have the ability to perform routine maintenance, repairs, and refrigerant handling procedures. The skills learned will be valuable to any HVAC/R contractor.

SCH.CONST./CARPENTRY 1 :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Carpentry I is an exploratory course designed to introduce students to the fundamentals of the carpentry trade. This course provides a comprehensive overview of the skills, knowledge, and safety requirements essential for a successful career in carpentry. Students will gain practical experience in working with basic hand tools, portable power tools, and limited stationary machines. Emphasis will be placed on fostering an understanding of basic materials, good practices, and housecleaning, as well as developing essential measuring and math skills necessary for carpentry projects.

SCH.CONST./ELECTRIC 1 :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Electrical Technology Level I is a 36 day course, which trains the students in the fundamentals of the Electrical Traded. During the course, the students are introduced to, Safety operations and procedures, basic electrical theory, hand tools, raceways and conductors, devices and fixtures, enclosures, wiring methods, the National Electrical code, and hands on practical projects The course is designed to give the students a broad overview of the electrical trade with hands on and basic theory assignments, Aligned with the core Curriculum Standards

SCH.CONST./PLUMBING 1 :: Mixed-grade High:: STEM Academy and PCTI :: CTE

The Plumbing #1 program provides the student with an introduction to the Plumbing trade. This will cover basic plumbing math, ruler reading, steel pipe threading, basic copper soldering, basic pex, pro-press and proper installation, basic drainage theory, and History of Plumbing. Also included in this course is a description of employment opportunities available in the plumbing industry and the economic rewards of the plumbing field.

SCH.CONST./REFRIG./AC :: Mixed-grade High:: STEM Academy and PCTI :: CTE

This course is an introduction to the Heating, Ventilation, Air Conditioning, and Refrigeration trade. During the exploratory course of 8 weeks, students will receive basic knowledge of how refrigeration keeps refrigerated goods at safe temperatures, air conditioners keep our homes and businesses comfortable, how ventilation systems keep our air clean and environments safe, and how our homes are kept comfortable in the winter months. Students will gain an understanding of how essential the HVAC/R trade is to our economy and the lifestyle that comes with the career.

SCH.CONST.WELDING 1 :: Mixed-grade High:: STEM Academy and PCTI :: CTE

The Welding program at Passaic County Technical Institute (PCTI) is in the School of Construction Technology. During the first year, the student cycles through all five areas of construction including carpentry, electric, HVAC/Refrigeration, plumbing, and welding. Areas of concentration are based on shop performance, teacher recommendation, overall grades and other related factors. Upon choosing a concentration in Welding, the student will enter the Welding Level II class as a sophomore.

Welding I is an introductory course in welding. This course introduces health and safety, blueprint interpretation, introduction to manual welding and butting processes, basic welding and cutting techniques, basic metallurgy, math and measurement for welders and simple fabrication techniques.

Basic weld inspection methods are demonstrated to evaluate the student's cutting and welding exercises. Students learn the fundamental operating variables and techniques for all the manual welding and cutting processes included in the curriculum. General knowledge of weld types, weld dimensions, weld joint designs and welding position techniques are disseminated into the lessons and demonstrations on each topic.

Students will build a fundamental base of knowledge on which to prepare to accomplish all the requirements for the American Welding Society Entry Level Welder Certification Training Program.

VIDEO PRODUCTION 1 :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Video Production is a consecutive four-year program with sequences designed to allow students to concentrate on multiple aspects of Television and Digital Media production. Students will build on prior knowledge each year, allowing for growth and skills to be refined. Video Production I is designed for ninth grade students whose interests lie in exploration of careers within the Television Production field. In this entry-level course students will mainly be

introduced to the first phase of any production which is Pre-Production. They will develop competencies such as scriptwriting, storyboarding, basic camera functions, shot compositions, shot moves, tripod setup, audio recording and different types and purposes of various microphones. They will also grasp a firm understanding of the history of television, copyright law, and mass media.

Upon arrival, students will be expected to come ready with a passion for media arts. Students will engage themselves developing a media “message” and will acquire the ability to focus on proper setup of a production. They will develop skills such as work ethic, accountability with equipment, responsibility of meeting deadlines, and teamwork in collaborative projects. The goal of this course is to expose students to the variety of pre-production elements necessary to develop a successful production. These elements include storyboarding, scriptwriting, treatments, casting, shooting schedules, copyright permissions, location releases, media releases, researching of facts, teamwork in production, capturing quality audio, and the application of basic editing techniques. Students will be expected to do some “leg-work” for their productions outside of class. Homework will include: researching topics and facts, scriptwriting, storyboarding, contacting potential guests and organizing themselves for filming. With pre-production as part of their homework, the students are able maximize time for production “filming” part of the project. In post-production, student work will often be critiqued, not only by the teacher but also by peers, and may be expected to reshoot, rewrite or re-edit. Critique and reflection are essential parts of the production process and should be met with enthusiasm in an effort to make the best possible production.

Students should expect a number of group activities where collaboration is necessary, however, individual student accountability of content knowledge will be measured and expectations will need to be met. Students in the Video Production I course should leave with the start of their own Website Portfolio with evidence of their work from the course of the year, which they will continue to build into throughout all four years of the program.

VIDEO PRODUCTION 2 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Video Production shop II is a consecutive four-year program with sequences designed to allow students to concentrate on multiple aspects of Television and Digital Media production. Students will build on prior knowledge each year, allowing for growth and skills to be refined. Video Production II is designed for second-year students continuing in career preparation within the Video/TV Production and Digital Media fields. In this second level course students will be use the pre-production phase in a more effective manner to expedite the production phase more efficiently. They will refine their use of pre-production elements such as scriptwriting, storyboarding, basic camera functions, shot compositions, shot moves, tripod setup, audio recording and different types/purposes of various microphones. In an effort to build on prior knowledge students will focus on details of storytelling using A-roll, B-roll, 3 point lighting, capturing quality audio in an effort to improve the entire production process. Sophomore level students will also build upon their editing skills in Final Cut X functioning at a higher level by incorporating technical edit skills such as reverse, speed, color correction, audio sweetening, introduction to animation in After Effects and Introduction to editing in a different software, Adobe Premiere. Students will be expected to continue to demonstrate an eagerness for media arts. Students will continue to focus on developing a media “message” and will acquire a keen attention to detail. They will continue to demonstrate employability skills such as work ethic, accountability with equipment, responsibility with deadlines, and teamwork with one another in collaborative projects. The goal of this course is to increase the skill set and knowledge base of students to include a variety of production styles and effectively demonstrate skills necessary for a successful production. These skills will include ability to draw storyboards, write both two-column and narrative

scripts, write treatments, cast actors, organize shooting schedules, adhere to copyright law, obtain filming permits & permissions, obtain location releases, obtain media releases, cite in credits sources of facts and third party material, demonstrate effective teamwork in production, capture quality audio and incorporate higher level editing techniques. Students will be expected to do some “leg-work” of their productions outside of class for homework which will include such things as researching topics, facts, scriptwriting, storyboarding, contacting potential guests and organizing themselves for filming. With pre-production as part of their home work, the students are able maximize class time for production “filming” part of the project. In post-production, student work will often be critiqued, not only by the teacher but also by peers, and students may be expected to reshoot, rewrite or re-edit. Critique Page 3 of 39 and reflection are essential parts of the production process and should not be met with defensiveness, but rather enthusiasm in an effort to make the best possible production. Students should expect a number of group activities where collaboration is necessary, however, individual student accountability of content knowledge will be measured and expectations will need to be met. Students in the Video Production II course should already have the start of their own Website Portfolio with evidence of their work from freshman year. They will continue to build into throughout the remaining years of the program.

VIDEO PRODUCTION 3 :: Mixed-grade High :: STEM Academy and PCTI :: CTE

Video Production III course is designed for third year students continuing career preparation within the Video/TV Production and Digital Media fields. In this course students will master the pre-production phases effectively to expedite the production process and use higher level effects to incorporate more visually appealing projects. They will continue to demonstrate proficiency from knowledge acquired in Video Production I in their use of pre-production elements such as scriptwriting, storyboarding, basic camera functions, shot compositions, shot moves, tripod setup, audio recording and different types/purposes of various microphones. They will demonstrate prior knowledge from Video Production II by incorporating details of storytelling elements such as A-roll, B-roll, 3point lighting, capturing quality audio and editing proficiencies skills such as reverse, speed, color correction, audio sweetening in Adobe Premiere. Students should come to Video Production III with a strong understanding of After Effects and it’s applications including knowledge of how to create composition, create key frames, adding effects and alteration of colors, solids, and basic motion effects including position, scale, rotation, opacity. Students in Video Production III should have already created a moving solid, a lower third, have understanding of Bezier Curves, and understand concepts such as masking and rotoscoping. As a level III Video Production student, students will be expected to continue to demonstrate an eagerness for media arts. Students will continue to focus on developing a media “message” and will acquire a keen attention to detail. Students will continue to demonstrate employability skills such as work ethic, accountability with equipment, responsibility with deadlines, and teamwork with one another in collaborative projects. The goal of this course is to master various skills to include a variety of production styles while effectively demonstrating requirements necessary for a successful production. These skills will include ability to pitch ideas, draw storyboards, write both two-column and narrative scripts, write treatments, cast actors, organize shooting schedules, adhere to copyright law, obtain filming permits & permissions, obtain location releases, obtain media releases, cite in credits sources of facts and third party material, demonstrate effective teamwork in production, capture quality audio and incorporate higher level editing techniques. Students will be expected to do some “leg-work” of the productions outside of class for homework which will include such things as researching topics, facts, scriptwriting, storyboarding, contacting potential guests and organizing themselves for filming. With pre-production as part of their homework, the students are able maximize class time for production (filming) part of the project. In post-

production, student work will often be critiqued, not only by the teacher but also by peers, and students may be expected to reshoot, rewrite or re-edit. Critique and reflection are essential parts of the production process and should not be met with defensiveness, but rather enthusiasm in an effort to make the best possible production. Students should expect a number of group activities where collaboration is necessary, however, individual student accountability of content knowledge will be measured and expectations will need to be met. Students in the Video Production III course should already have the start of their own Website Portfolio from Video Production levels I & II that showcase evidence of their work from freshman and sophomore years. They will continue to build into throughout the remaining years of the program.

VIDEO PRODUCTION 4 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Video Production IV course is designed for fourth year students continuing career preparation within the Video/TV Production and Digital Media fields. In this course students will master the pre-production phases effectively to expedite the production process and use higher level effects to incorporate more visually appealing projects. They will continue to demonstrate mastery from knowledge acquired in Video Production III, II, and I in their use of pre-production elements such as scriptwriting, storyboarding, basic camera functions, shot compositions, shot moves, tripod setup, audio recording and different types/purposes of various microphones. They will demonstrate mastery of prior knowledge from Video Production II by incorporating details of storytelling elements such as A-roll, B-roll, 3 point lighting, capturing quality audio and editing proficiencies skills such as reverse, speed, color correction, audio sweetening in Adobe Premiere. They will demonstrate mastery of skills taught in Video Production III by building upon After Effects by incorporating compositing, keyframing, masking, rotoscoping, using bezier curves, interpolation, color correction, and using dynamic links between Adobe Premiere and After Effects. In the fourth level of Video Production, students will be expected to continue to perform in professional capacities in media arts skills and Career Technology Educational standards. Students will continue to focus on developing a media “message” and will acquire a keen attention to detail. Students will continue to demonstrate employability skills such as work ethic, accountability with equipment, responsibility with deadlines, and teamwork with one another in collaborative projects. The goal of this course is to master all production skills to include mastery of studio, control room equipment and classroom editing softwares. Students should be able to effectively demonstrate requirements necessary for a successful production. These skills will include the ability to pitch ideas, draw storyboards, write both two-column and narrative scripts, write treatments, cast actors, organize shooting schedules, adhere to copyright law, obtain filming permits & permissions, obtain location releases, obtain media releases, cite in credits sources of facts and third party material, demonstrate effective teamwork in production, capture quality audio, incorporate higher level editing techniques and perform in the studio job roles of a control room multi-camera facility. Students will be expected to do some “legwork” of the productions outside of class for homework which will include activities such as researching topics, facts, scriptwriting, storyboarding, contacting potential guests and organizing themselves for filming. With pre-production as part of their homework, the students are able maximize class time for production (filming) part of the project. In post-production, student work will often be critiqued, not only by the teacher but also by peers, and students may be expected to reshoot, rewrite or re-edit. Critique and reflection are essential parts of the production process and should not be met with defensiveness, but rather enthusiasm in an effort to make the best possible production. Students should expect a number of group activities where collaboration is necessary, however, individual student accountability of content knowledge will be measured and expectations will need to be met. Students in the Video Production IV course should already have their own Website Portfolio from Video Production I, II, and III level courses that showcase evidence of

their work from freshman, sophomore, and junior years. They will continue to build into this website throughout the final year of the program and it will ultimately serve as part of their Final Exam.

WELDING 2 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

After successfully completing the Exploratory Welding segment of the Freshman School of Construction course, and choosing welding as a concentration, students will enter the Welding Level I course as a sophomore.

Welding I is an introductory course that teaches skill proficiency fulfilling prerequisites for the Welding Level II the following year. Students are indoctrinated in the safe and proper use of general welding shop hand tools and power tools, welding power supplies and equipment, manual metal working tools and power metal fabrication equipment. General tool and equipment maintenance and repair procedures are instructed.

Basic weld inspection methods are demonstrated to evaluate the student's cutting and welding exercises. Students learn the fundamental operating variables and techniques for all the manual welding and cutting processes included in the curriculum. General knowledge of weld types, weld dimensions, weld joint designs and welding position techniques are disseminated into the lessons and demonstrations on each topic.

Students will build a fundamental base of knowledge on which to prepare to accomplish all the requirements for the American Welding Society Entry Level Welder Certification Training Program.

WELDING 3 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Welding 3 is an intermediate welding course in which the content of each of the American Welding Society Entry Level Welder core curriculum modules are developed in depth. Units of instruction include advanced hands on training in gas tungsten arc welding, flux-cored arc welding, gas metal arc welding, shielded metal arc welding, oxyfuel cutting, plasma arc and air carbon arc cutting. Each unit is presented as a core program providing a comprehensive content coverage of out of position welding techniques, equipment operation and maintenance, filler materials, base metal joint designs, weld configuration, weld inspection and testing.

Weld quality assurance and quality control curriculum is introduced that relates to the inspection and evaluation of the students weldments, the identification and classification of discontinuities that determine weld acceptability by AWS certification standards. Metallurgy and the welding characteristics of metals are incorporated into lessons providing a complete understanding of each welding process and the metallurgic effects of welding arc heat input on the base metal.

Students will demonstrate the ability to interpret engineering drawings by using blueprints in the fabrication of projects and practice weldments for welding technique training exercises. Welding symbol interpretation is instructed as an integral part of the communication process providing visualization of the intended weld data needed to produce dimensionally accurate quality welds as denoted by the designer.

Students will develop an in depth understanding of the technical information knowledge requirements for the AWS Entry Level Welder certification written test. Students will strive to achieve the welding technique skill levels necessary to accomplish each of the AWS Workmanship Performance Qualification projects required to obtain the Entry Level Welder certification.

WELDING 4 :: :: Mixed-grade High:: STEM Academy and PCTI :: CTE

Welding 4 is the culmination of instruction in the American Welding Society Entry Level Welder curriculum. Each core welding and cutting process will include advanced instruction in equipment maintenance, weld joint preparation, all position welding/cutting techniques and weld testing to certifying standards.

All of the required training modules of welding curriculum will be developed in depth to prepare the student for the Entry Level Welder general knowledge written examination. Students are required to achieve a score above 75% in the general welding knowledge section and a 90% on the safety section.

Each student will interpret the AWS Workmanship Performance Qualification engineering blueprints for each of the required welding processes. Students will prepare all of parts, assemble and tack weld the sample weldments within the tolerances specified on each drawing. Final welding techniques will be performed in the positions denoted on the drawing and in accordance with the AWS welding procedure specification for each welding process. Each of the student's workmanship samples must pass a visual welding inspection and exceed the AWS minimum standards of acceptance criteria for visual weld inspection.

Successful completion of the ELW training curriculum, written examination and the required workmanship samples will satisfy the requirements for the Entry Level Welder certification. The students training record, examination scores and workmanship sample results will be submitted to the AWS. Each qualified student will receive the AWS certification and be entered into the AWS National Registry for a period of one year.

COURSE DESCRIPTIONS – Electives

ACT/SAT PREP - ELA / MATH :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

The ACT/SAT Prep / College Planning course is designed for students to be successful in the selection of and the admission to a college. Students will be prepared to apply for post-secondary education and financial assistance. They will transfer academic skills to postsecondary applications, becoming academically independent with the knowledge of the underlying principles of research methodologies. ACT/SAT Prep /College Planning will prepare students to set goals and develop the skills needed to successfully choose a college to meet their needs. Virtual college trips and materials from the guidance office will be reviewed to aid the students in making choices. During the second half of the year, students are challenged to complete an original research project which includes the collection of qualitative and quantitative data. The literature will be reviewed, and a defined research project will be designed. Using their newly acquired knowledge, students will form a theory to solve a real-world problem, collect and analyze data, and make conclusions. A final presentation of their research with the findings will be made.

AFRICAN AMER.STUDY :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

The purpose of this course is to develop an understanding of the role and contributions of African Americans to the growth and development of the United States. The course offers opportunities to examine the historical significance of African Americans from African Origins through present times. The course will begin a chronological study of the Great Kingdoms of West Africa and their influence on African American culture and history. The course will include the examination of the political, cultural, economic, artistic, and social themes that illustrate the influence and significance of African American experiences in the past and present.

Utilizing the New Jersey State Department of Education’s content standards for Social Studies as a framework for instruction, the focal point of the class will be to develop a student’s understanding and appreciation of African American history. Content will include, but is not limited to West African kingdoms, the African slave trade and European Triangular Trade, colonial slavery, Antebellum, Civil War, military contributions and Civil Rights movements, major historical figures and events in African-American history, and connections to current African-American experiences and movements.

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ANATOMY & PHYSIOLOGY :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

Anatomy and Physiology I is designed primarily for students intending to pursue a career in the health and science industry in general, though it is open to any interested student. Anatomy and Physiology I is the first part of the two-year sequence of the college-level coursework taught under the supervision and according to guidelines stipulated by UMDNJ. This course will focus on basic principles of human body structure, functions, and foundations of pathology.

Students will also learn and master practical laboratory skills that can prove to be useful for future employment with clinical and research institutions. Successful completion of General Biology and completion or parallel enrollment in Chemistry are required for taking Anatomy and Physiology I. In Anatomy and Physiology I the major focus is on the correlation of form and function, beginning at the molecular level and eventually leading to the level of selected organ systems such as: integumentary, skeletal, muscular, and nervous. Normal physiology of the listed systems is studied with pathological highlights. The course also includes the comprehensive study of normal histology. Anatomy and Physiology I includes a required laboratory component. In the laboratory setting, students will examine basic principles of physiology; master macro and microscopic techniques of tissue identification; examine the skeletal system and joints; perform dissections on assorted species in order to compare and contrast superficial and deep musculature, and structures of the eye and brain with that of human anatomy. Students who have successfully passed the first year of

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AP BIOLOGY :: :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

The AP Biology course is designed to be the equivalent of a college-level introductory biology course. The intent of the course is to expose students to higher-level biological principles, concepts, and skills and allow them the opportunity to apply their knowledge to real-life applications. Rather than learning from a micro-level outward, students learn from a macro level inward. Students are also expected to learn not by memorization of facts, but through content and concept application via the AP Biology science practices. The syllabus for this course is designed by the College Board. In the revised AP Biology course, the teacher serves as the facilitator while the students develop as independent thinkers and learners, especially through laboratory investigations. Many concepts that are considered prerequisite knowledge for the course can be reviewed as a home study using rich resources such as assigned websites and journal articles. In class, students are given opportunities to learn and apply their knowledge through the process of inquiry rather than learning from lectures and/or prescribed lab protocols. A sense of wonder and use of original thought is fostered as students are encouraged to extend their learning via scaffolded conceptual understandings and open inquiry. The learning process in the AP Biology course should be rich and impactful. When a student completes the course, he or she should be prepared to do well on the AP Exam as well as in the sequent course in a college or university setting.

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AP CHEMISTRY & LAB :: :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

This AP Chemistry course is designed to be the equivalent of the general chemistry course usually taken during the first year of college. For some students, this course enables them to undertake as freshmen, second-year work in the chemistry sequence in college or to register for courses in other fields where general chemistry is a prerequisite. This course is structured around the six big ideas articulated in the AP Chemistry curriculum provided by the College Board. Students should attain a depth of understanding of the fundamentals of chemistry and reasonable competence in dealing with chemical problems.

The course will also allow students to develop their ability to think clearly and to express their ideas, orally and in writing, with clarity and logic. Furthermore, the laboratory work will be equivalent to a first-year college chemistry course and will require a higher degree of technique, analysis, and accuracy than what is expected of first-year high school chemistry students. A special emphasis will be placed on the seven science practices set forth by the College Board, which capture important aspects of the work that scientists engage in, with learning objectives that combine content with inquiry and reasoning skills. This course is open to all students that have completed a year of high school chemistry and who understand, and are willing to do this, much time will be required outside the class studying, doing homework, writing reports, and finishing lab work if needed.

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AP ENVIRONMENTAL SCIENCE :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

The AP Environmental Science course is designed to be the equivalent of a one-semester, introductory college course in environmental science.

Unlike most other introductory-level college science courses, environmental science is offered from a wide variety of departments, including

geology, biology, environmental studies, environmental science, chemistry, and geography. The AP Environmental Science course has been

developed with the intention to enable students to undertake, as first-year college students, a more advanced study of topics in environmental science. The goal of the AP Environmental Science course is to provide students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving or preventing them. Environmental science is interdisciplinary; it embraces a wide variety of topics from different areas of study. Yet there are several major unifying constructs, or themes, that cut across the many topics included in the study of environmental science.

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AP MACROECONOMICS :: Mixed-grade High :: STEM Academy and Technical Institute :: ELECTIVE

The course prepares students to think like economists by using principles and models to describe economic situations and predict and explain outcomes. Like economists, students do so by using graphs, charts, and data. This course is an introduction to macroeconomics and each student is expected to take the AP Macroeconomics Exam that is administered in May. AP Macroeconomics focuses on the economy as a whole, including economic measures, economic growth, fiscal policy, monetary policy, and international economics. AP Macroeconomics is an introductory college-level course that focuses on the principles that apply to an economic system as a whole. The course places particular emphasis on the study of national income and price-level determination; it also develops students' familiarity

with economic performance measures, the financial sector, stabilization policies, economic growth, and international economics. Students learn to use graphs, charts, and data to analyze, describe, and explain economic concepts.

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AP PRE-CALCULUS :: Mixed-grade High :: STEM Academy and PCTI :: MATH

AP Precalculus centers on functions modeling dynamic phenomena. This research-based exploration of functions is designed to better prepare students for college-level calculus and provide grounding for other mathematics and science courses. In this course, students study a broad spectrum of function types that are foundational for careers in mathematics, physics, biology, health science, business, social science, and data science. Furthermore, as AP Precalculus may be the last mathematics course of a student’s secondary education, the course is structured to provide a coherent capstone experience rather than exclusively focusing on preparation for future courses. Throughout this course, students develop and hone symbolic manipulation skills, including solving equations and manipulating expressions, for the many function types throughout the course. Students also learn that functions and their compositions, inverses, and transformations are understood through graphical, numerical, analytical, and verbal representations, which reveal different attributes of the functions and are useful for solving problems in mathematical and applied contexts. In turn, the skills learned in this course are widely applicable to situations that involve quantitative reasoning. AP Precalculus fosters the development of a deep conceptual understanding of functions. Students learn that a function is a mathematical relation that maps a set of input values—the domain—to a set of output values—the range—such that each input value is uniquely mapped to an output value. Students understand functions and their graphs as embodying dynamic covariation of quantities, a key idea in preparing for calculus. With each function type, students develop and validate function models based on the characteristics of a bivariate data set, characteristics of covarying quantities and their relative rates of change, or a set of characteristics such as zeros, asymptotes, and extrema. These models are used to interpolate, extrapolate, and interpret information with different degrees of accuracy for a given context or data set. Additionally, students also learn that every model is subject to assumptions and limitations related to the context. As a result of examining functions from many perspectives, students develop a conceptual understanding not only of specific function types but also of functions in general. This type of understanding helps students to engage with both familiar and novel contexts.

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AP PSYCHOLOGY :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

The AP Psychology course is designed to introduce students to the systematic and scientific study of the behavior and mental processes of human beings and other animals. Students are exposed to the psychological facts, principles, and phenomena associated with each of the major subfields within psychology. They also learn about the ethics and methods psychologists use in their science and practice.

Upon successful completion of the course requirements, the student will be able to:

1. Define psychology as the scientific study of behavior and mental processes.

2. Analyze the history of psychology and development of major behavioral theories.
3. Compare and contrast major human behavior theories.
4. Identify major fields of psychology.
5. Describe cognitive, social, biological and emotional patterns of human development throughout the life span.
6. Demonstrate an understanding of learning theories and its application in daily life.
7. Describe and analyze major classifications of psychological disorders and therapeutic approaches.
8. Develop an understanding on how individual behavior, group dynamics, cultural differences and biological factors interact and the impact it has on society.
9. Develop effective communication, problem solving, decision making and conflict resolution skills.
10. Develop respect for the mentally ill through knowledge and understanding of mental illness.

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AP RESEARCH :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

AP (Advanced Placement) Research allows students to deeply explore an academic topic, problem, or issue of individual interest. Through this exploration, students design, plan, and conduct a year-long research-based investigation to address a research question. In the AP Research course, students further their skills acquired in the AP Seminar course by understanding research methodology; employing ethical research practices; and accessing, analyzing, and synthesizing information as they address a research question. Students explore their skill development, document their processes, and curate the artifacts of the development of their scholarly work in a portfolio. The course culminates in an academic paper of approximately 4000–5000 words (accompanied by a performance or exhibition of product where applicable) and a presentation with an oral defense.

AP Research is not tied to a specific content area, rather it emphasizes and strives for competency in core academic skills. Students gain Essential Knowledge (EK; “What students will know...”) and develop and apply discrete skills identified in the Learning Objectives (LO; “What students will demonstrate...”) of the Enduring Understandings (EU; “What students will remember in the long term...”) within the five big ideas represented by the acronym QUEST introduced in the prerequisite AP Seminar course:

- **Question and Explore:** Read critically; pose questions and identify issues that compel you to want to explore further.
- **Understand and Analyze:** Use specific tools – such as re-reading, questioning in the text, and considering multiple perspectives – to break down an idea or argument into parts that make sense to you.
- **Evaluate Multiple Perspectives:** Identify a variety of perspectives, viewpoints, and/or arguments of an issue and consider any bias to determine the validity of that point of view.
- **Synthesize Ideas:** Create new perspectives after evaluating other varying perspectives and establishing a unique position or claim using a variety of resources designed for a specific audience.
- **Team, Transform, and Transmit:** Communicate the message clearly and effectively so as to transform both participants and audience.

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[ap-research-course-overview.pdf](#)
[ap-research-course-and-exam-description.pdf](#)

AP SEMINAR :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

AP Seminar is a foundational course that engages students in cross-curricular conversations that explore the complexities of academic and real-world topics and issues by analyzing divergent perspectives. Using an inquiry framework, students practice reading and analyzing articles, research studies, and foundational, literary, and philosophical texts; listening to and viewing speeches, broadcasts, and personal accounts; and experiencing artistic works and performances. Students learn to synthesize information from multiple sources, develop their own perspectives in written essays, and design and deliver oral and visual presentations, both individually and as part of a team. Ultimately, the course aims to equip students with the power to analyze and evaluate information with accuracy and precision in order to craft and communicate evidence-based arguments.

- Students explore the complexities of one or more themes by making connections within, between, and/or among multiple cross-curricular areas and by exploring multiple perspectives and lenses (e.g., cultural and social, artistic and philosophical, political and historical, environmental, economic, scientific, futuristic, ethical) related to those themes.
- Students develop and apply discrete skills identified in the learning objectives of the enduring understandings within the following five big ideas (**QUEST**):

- o Question and Explore.
- o Understand and Analyze.
- o Evaluate Multiple Perspectives.

- o Synthesize Ideas.
- o Team, Transform, and Transmit.

- Students gain a rich appreciation and understanding of issues through the following activities: reading articles and research studies.
- - o reading foundational, literary, and philosophical texts.
 - o viewing and listening to speeches, broadcasts, and/or personal accounts and experiencing artistic works and performances.
 - Students work collaboratively with a team to identify, investigate, analyze, and evaluate a real-world or academic problem or issue; consider and evaluate alternatives or options; propose one or more solutions or resolutions, and present and defend the argument for their solutions through a multimedia presentation.
 - Students work independently to identify a research question based on provided stimulus material; research the issue; analyze, evaluate, and select evidence to develop an argument; present and defend a conclusion, and produce a multimedia presentation to be delivered to their peers.

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COLLEGE LEARNING STRATEGIES :: :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

CLS-105: Syracuse University Project Advance - College Learning Strategies

This course is the study and application of strategic approaches to learning. Strategies are presented and practiced to maximize learning in the context of lectures, readings, recitations, and independent learning situations. The course content is based on applying strategies to the learning requirements of the AP or college-level courses that students are enrolled in concurrently. Class sessions are a series of lectures, discussions, and one-on-one conferences. Students are required to participate in the classes and apply the strategies in their other classes.

CONCERT/MARCHING BAND :: :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

The Concert/Marching Band course is first and foremost one that offers an introduction of playing techniques and music notation knowledge in order to learn how better to play a musical instrument, or to learn how to play a secondary instrument for the first time, at a level that can be implemented in one of the school's performing ensembles if the student desires. Students will undergo universally accepted instrumental learning techniques to progressively advance toward a proficient level of music notation reading and performance at a beginning-intermediate level. Students can also expect to learn some basic knowledge of music theory using written exercises and ear training techniques along the way. Knowledge of the historic development of specific instruments and their related instrument families will be developed. Also, audio and video recordings of professional quality players on each student's instrument will be investigated, analyzed, and critiqued through historical, culturalistic, stylistic, and genre-based filters as well as their performing abilities. Lastly, the student's ability to self-express musical ideas through their instrument using improvisational and compositional techniques will be introduced.

Prerequisite: Student must have at least a measurable amount of previous introductory experience playing an instrument.

Other Notes: Although this course is essentially meant to increase student skills on a primary instrument, secondary instruments are allowed as needed and approved by the band director. As a band class, instrumentation is strictly limited to band instruments which include the woodwind, brass, and percussion families. No stringed instruments are permitted except for electric bass, which can serve to double a band tuba part.

CREATIVE WRITING :: :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

Creative writing is a full-year course that emphasizes improving each student's ability to communicate via the written word. Students will explore a variety of writing methods, including journaling, nonfiction, fiction, drama, poetry, and more. Reading, interpretation, and analysis skills will be strengthened through exposure to various genres (nonfiction, fiction, drama, and poetry) and authors. Students will gain a sound understanding of the elements and forms of writing through the cultivations of their own creations. In this course, students will develop their own writing style with close attention paid to the development of voice. This will be accomplished through the writing and editing process, moving

from initial drafts to perfected pieces. In addition to broadening the literary scope of all students in this course and developing an artistic appreciation for the beauty of language, those enrolled in Creative Writing will learn the value of giving and receiving critiques. This focus on constructive feedback allows students to further develop their communication skills and will strengthen their ability to create future written content.

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[DATA ENTRY/ FILE MANAGEMENT](#) :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

This course is designed to assist students in becoming better digital citizens. Students will learn proper keyboarding posture, hand placement, and finger reaches. Students will learn key workplace skills, such as workplace professionalism, word processing and spreadsheet skills and general usage of technology. In addition, students will learn soft skills for the 21st century workplace, responsible use of technology and how to compose and produce personal, educational, and professional business documents. Finally, students will work toward successful completion of the Microsoft Office Specialist certification exams.

Unit 1: Computer Systems, Configurations, and Software

Students will identify and discuss emerging technologies, identify the uses of fundamental business equipment and associated terminology. They will improve knowledge of equipment care, identify workplace injuries and prevention techniques and demonstrate competence when using various business equipment.

Unit 2: Digital Citizenship

Students will apply guidelines to use the computer safely, recognize threats to PC security and risky internet activities. Students will learn how to model proper management of copyrighted materials, and evaluate the impact of internet social networks, and identify theft.

Unit 3: Introduction to Computer Operating Systems

This unit will introduce students to common computer operating systems. Students will learn how to open, rename, and save a file using the Windows operating system. They will create folders and subfolders and use various search features to find files.

Unit 4: Data Entry/Keyboarding

In this unit, students will learn how to compose on the keyboard and acquire keyboarding techniques. Students will learn proper keyboarding posture, hand placement, and finger reaches. In addition, students will improve their basic office skills in writing by applying capitalization rules, proper punctuation, proper grammar usage, and apply proper sentence structure in all common practices. They will learn how to identify proofreading symbols and identify basic communication skills in an office business environment.

Unit 5: Introduction to Application and Software Administration

This unit will introduce students to common application software administration and identify the purpose of word processing, presentation, and spreadsheet software programs. They will compose and produce personal, educational,

and professional business documents, customize PowerPoint presentations and learn how to deliver effective presentations.

Unit 6: Microsoft Office 365 Cloud-based Software

This unit will introduce students to Microsoft Office 365 cloud-based software. They will compare the features found in Office 365 with what they learned about Microsoft Office 2019. Students will explore the applications included with Office 365.

DIGITAL MEDIA :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

Digital Media is a combination of software, technology, art, and design, brought together strategically to create media in digital format in all platforms. Students will cover image creation, animation, video, photography, podcasting, 3D, and website creation strategies, enabling students to be a greater asset, no matter where they go in life after high school. Students will learn how to use software such as the Adobe Creative Cloud and 3D modeling software while receiving hands-on experience with professional equipment such as the Apple iMac, scanners, photography cameras, video cameras, microphones, Audio recording equipment, green screen, that will help to convey the message they need to. We cover many of the fundamentals of design principles and foundational understandings of each core component.

Students will create projects, utilizing industry-standard software and hardware in a classroom environment that simulates a real-world ad-agency, whose job it is to design, build and create the digital media in all forms, to meet project criteria. Students will learn real-world examples of what it is like to work in a professional environment, learning the production methods for each discipline. Learning the planning, creating, and production processes that will lead them to a successful outcome. Students will be required to demonstrate ability in all educational projects, assignments, and tests with a minimum of 65% proficiency.

Upon completion of this course, students will be able to: understand digital media and the relationship to society, business, ethical and legal issues in digital media. Additionally, they will gain an understanding of production methods to create digital graphics, animations, audio, video, and web-based media.

DRAMA WORKSHOP :: 2 Curriculum Developers :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

This course will include a large practical component of creating and performing theater. The ideal opportunity to “give it a try” or to reinforce fundamental acting techniques. This course will introduce you to acting and public speaking in a supportive and very creative atmosphere. A written component that includes an appreciation of theater, theater critiques, and theater history. Students will read and understand a variety of plays. This course will provide opportunities to explore the social, cultural, ethical, and spiritual beliefs that are often why we write and act.

ECONOMICS/BUS. MGT. :: :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

Economics: Economics will give students a greater understanding of Microeconomics and Macroeconomics. Microeconomics is the study of individuals, households and firms' behavior in decision making and allocation of resources. It generally applies to markets of goods and services and deals with individual and economic issues. Through Microeconomic students will study choices people make, what factors influence their choices and how their decisions affect the goods markets by affecting the price, the supply and demand. Through Macroeconomics students will study the behavior and performance of an economy as a whole. It focuses on the aggregate changes in the economy such as unemployment, growth rate, gross domestic product and inflation.

Business Management: Students learn not only the skills necessary to become entrepreneurs but also the attitudes, characteristics, and techniques that successful entrepreneurs have and that students will need to succeed. Building on concepts introduced in Principles of Finance, the Entrepreneurship curriculum approaches student learning experientially by encouraging students to evaluate, develop, and work with the business ideas they already have or those they conceive during the course. Students explore the steps necessary for starting a business, including analyzing the market, finding financing, and creating a form of organization that will accommodate future growth. They learn about the operational issues that new businesses face, such as regulations, protecting intellectual property, and the financial risks of starting a new business. Students will examine ethical issues and find solutions to correct the issues.

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FORENSICS 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

Forensic Science II is an integral component of the Criminal Justice/Public Safety Curricula offered in grade 12. Law enforcement agencies have expanded their investigative functions, and rely on the advice and technical support from the scientific community. Forensic Science is the application of the science process and content knowledge to laws that are enforced by police departments and other law enforcement agencies.

This comprehensive program includes both theoretical and practical/hands-on instruction. Students receive challenging college preparatory level instruction, including: regular laboratory investigations, the daily infusion of technology, projects and activities, readings and discussions, guest presentations and demonstrations from industry personnel. In addition, students are exposed to career opportunities in the area of Criminalistics and Forensic Science.

Students apply the scientific method and employ related science disciplines to consider aspects of evidence relevant to crime scenes. Forensic Science II is the application of Biology, Chemistry, Physical Science, Mathematics, Psychology and Technology to the analysis of criminal acts and law enforcement. This course focuses on the development of critical thinking skills and the examination of evidence as it relates to crimes and case studies. Instruction includes many of the most relevant tools, practices and techniques utilized today in the field of Forensic Science.

FRESHMEN SEMINAR :: :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

The freshmen seminar will help you build the foundational skills you need to be a happy, healthy, and successful student at STEM and beyond. Students will work on organization and study skills, social-emotional wellness and communication skills, digital literacy, and research tools.

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GENOCIDE & HOLOCAUST STUDIES :: Mixed-grade High :: STEM Academy and PCTI:: ELECTIVE

The purpose of this course is to survey different time periods in history to trace the origins of genocide, its evolution through time, and the impact that these tragedies have had on the world today. As the most well-known case of genocide, the Holocaust will be a special focus of study. By the end of this course, students will become proficient in defining genocide, assessing how it can occur, and determining the role the world should play during these times of crisis. While historical analysis of genocide will be the main focus of the class, a portion of it will also be geared towards encouraging student activism, community outreach and awareness, as well as empathy and support for individuals and countries that have experienced genocide. In addition, the course instruction shall enable students to identify and analyze applicable theories of human nature and behavior and help students understand that genocide is a possible consequence of prejudice and discrimination. Indeed, a study of the Holocaust and genocides can help students understand that issues of moral dilemma and conscience have a profound impact on life. This course will strive to create authentic learning experiences for pupils through field trips. For instance, students will be encouraged to participate in a field trip to the National Museum of the American Indian and the United States Holocaust Memorial Museum in Washington, D.C. This course will motivate the students to realize that each citizen bears a personal responsibility to fight racism and hatred wherever and whenever it happens.

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ILLUSTRATION ART :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

This course is a rigorous introduction to the methods and media of a cutting-edge art studio. Intended for serious students with a skill and passion for art, projects will test and challenge students to learn intermediate and advanced art making skills such as: using perspective, life drawing, portrait study and basic color theory. Students will be using state of the art software in order learn basic Typography, vector-based art and animation and raster based digital painting. Traditional mediums introduced in the course range from, pencil, watercolor, pen and ink to charcoal and pastels. Students will complete projects on firm deadlines and be part of a group critique in front of their peers. Artwork is evaluated on time management and following instruction as well as craftsmanship.

INTRODUCTION TO CODING :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

Introduction to Coding is a one period – full year elective offered to students who are not in Computer Science. The course provides a foundation to students who desire entry level programming skills.

The course aims to build students' awareness of the tremendous demand for Information Technology specialists and for professionals in all fields that possesses software development skills. The course also aims to engage students to consider the present and future impact of Information Technology.

Students work independently to develop computational thinking and problems solving skills. The course does not teach mastery of a single programming language but aims instead to provide a foundation to several current applications programming languages.

Throughout the program, students practice problem solving skills with activities that require them to develop, test and implement programs using current popular programming languages. Students will gain a foundation for creativity, abstraction, and algorithm development.

Various Information topics will be explored such as Computer Number Systems, Hardware and Software, Big Data, Cloud Computing, and Data Mining

INTRODUCTION TO CRIMINAL JUSTICE :: :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

Introduction to Criminal Justice is an elective course designed to introduce students to the knowledge of their individuals rights and learn how a case proceeds through the criminal justice system in the context of these rights This course is available to all students attending Passaic County Technical Institute. Students will learn the workings of law enforcement, the court system, and corrections.

INTRODUCTION TO JAZZ AND DANCE :: :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

In this course, students will be introduced to the basic movement skills in Jazz Dance. Students will be able to identify its terminology as well as explain the historical and cultural significance. Throughout the course, students will apply safety principles as well as learn to use the new technique in a safe manner. They will observe and identify a spectrum of styles within Jazz Dance. Students will continue to use appropriate classroom conventions as both performers and audience members as well as to reflect on their own work and the work of others.

INVENTIONS & INNOVATIONS :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

The Inventions and Innovations course prepares students to compete individually or in teams in organized contests that test their academic knowledge and application of skills. Specific content depends upon the competition. Students will learn about the Creative Design Process, Energy and Power and Sustainable Design in a collaborative environment. They will analyze the impacts of their decisions (environmental, social and economic) while they design, ideate and fabricate. Students will learn to invent and innovate while designing and creating prototypes. They will solve real-world problems, identify tradeoffs, and present their solutions for peer review.

JOURNALISM :: :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

Journalism is a full-year elective course that will equip students with an understanding of the principles and practices of journalism while creating content for the yearbook and other PCTVS publications. Students will learn how to generate

story ideas, gather facts through interviewing and research, develop sources, craft engaging leads and satisfying endings, and write a wide variety of articles that inform and entertain readers. Students will study the basic principles of photojournalism and design and contribute photography to the yearbook, as well as learn the differences between print, digital, corporate communications, and broadcast media. Ultimately, students will learn how to be intelligent consumers of mass media and develop an understanding of the legal and ethical rights and responsibilities of a free press.

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LATIN AMERICAN STUDIES :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

Latin American Studies is a full-year elective course. The course is available to students of diverse grade levels and skills. This course was designed to increase the students' knowledge of Latin American socioeconomics, politics, history, geography, and cultures. The course requires students to apply a variety of social studies skills and concepts to gain an understanding of the region's cultural diversity, values, and lifestyles as well as an appreciation for its contributions to the arts and sciences. The students will examine the region's history in order to understand the political and socioeconomic issues facing Latin Americans and Latin America. The students will evaluate the United States' involvement in foreign and domestic relations within the United States and Latin America. The students will evaluate current events in order to help develop an understanding of our global interdependence. Democratic principles and civic responsibilities will be further emphasized in order to prepare students to be active and responsible citizens. Historical analysis skills will be used to critically evaluate political cartoons, editorial illustrations, photographs, and primary sources. Research and writing skills will be emphasized with an interdisciplinary approach that addresses the state's core content standards in social studies and language arts.

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MULTIMEDIA/CAD :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

The Multimedia/CAD course introduce students to the computer-aided drafting systems available in the industry.

PSYCHOLOGY :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

I. Course Overview

Psychology is a one year elective course offered to students in grade 10, 11 and 12. It is an introductory course that explores major psychological concepts and theories of Human Behavior. Units of study include: Approaches to Psychology, Research, Methods, Life Span Development, Working of the Body and Mind, Learning and Cognitive Processes, Personality, Psychological Disorders/Therapy and Social Psychology. The course is designed to incorporate a personal adjustment as well as a discipline oriented approach.

Psychological concepts will be examined as well as their application to everyday life. Students will experience the fundamentals of group dynamics through a hands on approach. Self-awareness, team building and group dynamics

activities will be the core to the learning process. Emphasis on communication, listening, decision-making and conflict resolution skills will also be incorporated. These skills are aimed at enhancing leadership qualities and character development. It is anticipated that through this course of study and experience, students will gain a greater awareness of self and insight into the dynamics of interpersonal and group relationships. This knowledge and application can assist students in developing vital life skills.

II. Proficiencies

Upon successful completion of the course requirements, the student will be able to:

1. Define psychology as the scientific study of behavior and mental processes.
2. Analyze the history of psychology and development of major behavioral theories.
3. Compare and contrast major human behavior theories.
4. Identify major fields of psychology.
5. Describe cognitive, social, biological and emotional patterns of human development throughout the life span.
6. Demonstrate an understanding of learning theories and its application in daily life.
7. Describe and analyze major classifications of psychological disorders and therapeutic approaches.
8. Develop an understanding on how individual behavior, group dynamics, cultural differences and biological factors interact and the impact it has on society.
9. Develop effective communication, problem solving, decision making and conflict resolution skills.
10. To develop respect for the mentally ill through knowledge and understanding of mental illness.

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PUBLIC SPEAKING :: :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

Public Speaking is a full-year course designed to provide students with the specific skills and strategies necessary to improve their ability to communicate in various speaking situations. Students in Public Speaking study the basic elements of the communication process, practical and social communication skills, and the importance of working together in groups. In addition, students are required to plan, prepare and present a variety of speeches including the following: anecdote, demonstration speech, speech to inform, speech to inspire, speech to persuade, and group discussion.

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SCIENCE ETHICS :: :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

In order to be successful in today's technology-driven workforce, students must be able to solve real problems, reason effectively, and make logical connections. Science Ethics is designed for students to develop the ability to solve complex problems and justify choices by researching ethical dilemmas in each of the DCL STEM Academy career paths: Biomedical & Life Science, Engineering, and Computer Science. Students will be introduced to self-reflection within their own values and the basics of creating a justification using frameworks that guide ethical decision-making.

Knowledge and skills in the sciences and the engineering design process will be utilized to identify problems and formulate appropriate solutions using technology. This course focuses on the examination of case law to draw on facts and apply relevant ethical considerations in order to build skillful and strong justifications. The development of critical thinking skills will be encouraged as students dive into the dualism of objectivity and subjectivity by critiquing the reasoning of others while practicing respectful discourse. Instruction includes the facilitation of ethical discussion and debate to promote insightful reasoning.

SOCIOLOGY :: :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

This course introduces the scientific study of human society, culture, and social interactions. Topics include socialization, research methods, diversity and inequality, cooperation and conflict, social change, social institutions, and organizations. Upon completion, students should be able to demonstrate knowledge of sociological concepts as they apply to the interplay among individuals, groups, and societies. All areas of social life will be examined including work, community, religion, schools, family, gender, race, class, stratification/inequality, and crime/deviance.

Both the theories and methods of sociology will be reviewed. Primary concerns of the course will include the ways in which our behavior is influenced by groups; the nature and functions of the social institutions which we have created; and the relationship that exists between the individual and society. The structure and functions of families in contemporary America and in other settings. Selecting partners, rearing children; old people, nuclear families, extended families, alternative forms, one-parent families, and childless families.

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COURSE DESCRIPTIONS – English

[AP ENGLISH LANG/COMP](#) :: Mixed-grade High :: STEM Academy and PCTI :: ENGLISH

The AP Language and Composition course is a college-level program that introduces students to a wide range of expository prose in order to broaden their scope of rhetorical ideas and deepen their awareness of the power of language. The course is designed to meet the rigorous requirements of a college level writing class and includes expository, analytical, personal, and argumentative texts from a variety of authors and historical contexts. These works provide examples of prose writings that students can emulate in their own writing experiences as they discover and create their own style and voice.

This course provides students with the information necessary to read analytically, formulate theories and arguments based on the readings, and respond by composing articulate essays that utilize advanced elements of sentence structure, syntax, style, purpose, and tone. The purpose of the AP English Language course is to help students “write effectively and confidently in their college courses across the curriculum and in their professional and personal lives.” Using rhetorical principles, students will learn how to become critical thinkers, and apply that knowledge to their writing by revising and improving their essays, as well as critiquing and editing peer essays. In addition, students will be required to thoroughly research relevant topics, synthesize information from a variety of sources, and document their knowledge in a cogent well written report using proper cite notations such as MLA.

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[AP Skills - Google Docs.pdf](#)

[AP LITERATURE/COMP](#) :: Mixed-grade High :: STEM Academy and PCTI :: ENGLISH

A.P. English Literature & Composition is a college-level course offered at the high school level in accordance with College Board requirements described in the AP English Course Description. It is designed to prepare students to successfully complete the A.P. English examination and receive college-level credit at participating colleges and universities. As a study of literature, the A.P. English Literature and Composition course is designed to engage students in the careful reading and critical analysis of imaginative works.

Through the close reading of selected texts, students will deepen their understanding of the ways writers use language to provide both meaning and pleasure for their readers. As they read, students will consider a work’s diction, structure, style, and themes, as well as literary devices such as the use of figurative language, imagery, symbolism, and tone. The course begins with an intensive study of how to effectively analyze fiction through a deeper understanding of the literary tools that authors use. Writing instruction will include attention to developing and organizing ideas in clear, coherent, and persuasive language; a study of the elements of style; and attention to precision and correctness as necessary.

Throughout the course, emphasis will be placed on helping students develop stylistic maturity, which, for A.P. English, is characterized by the following: a balance of generalization with specific illustrative detail; a logical organization, enhanced by specific techniques of coherence such as repetition, transitions, and emphasis; a variety of sentence structures, including appropriate use of subordinate and coordinate constructions; a wide-ranging vocabulary used with denotative accuracy and connotative resourcefulness; and an effective use of rhetoric, including controlling tone, maintaining a consistent voice, and achieving emphasis.

Throughout the course, students will practice both timed essays and longer out-of-class papers. Through constructive feedback from both the instructor and peers, students will revise some of their pieces into polished final drafts. Student success will be evidenced by the careful reading of texts, engagement in class discussions, and timely completion of all work, ever seeking to improve as an accurate reader and effective writer.

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<https://apcentral.collegeboard.org/courses/ap-english-literature-and-composition>

ENGLISH 1 :: Mixed-grade High :: STEM Academy and PCTI :: ENGLISH

The English I Curriculum will adhere strictly to the current New Jersey Student Learning Standards. The standards establish a “staircase” of increasing complexity in what students must be able to read and write so that all students are ready for the demands of college-level and career-level reading and writing by the end of their high school career. There will be a requirement that the progressive development of reading comprehension will allow students to advance through the grades in order to gain more from whatever they read and succeed in entry-level, credit-bearing academic college courses and in workforce training programs. Through reading a diverse array of classic and contemporary literature, as well as challenging informational texts in a range of subjects, students will be expected to build knowledge, gain insights, explore possibilities, and broaden their perspective. Moreover, the ability to write logical arguments based on substantive claims, sound reasoning, and relevant evidence, including research writing and using evidence to support a claim, is a cornerstone of the writing standards, which is an essential element in English I. The standards also require that students gain, evaluate, and present increasingly complex information, ideas, and evidence through listening and speaking as well as through media. Furthermore, students will be expected to grow their vocabularies through a mix of conversations, direct instruction, and reading as well as determine word meanings, appreciate the nuances of words, and steadily expand their repertoire of words and phrases which will prepare students for real-life experience at college and in Twenty-first Century careers. In addition, just as media and technology are integrated in school and life in the Twenty-first Century, skills related to media use (both critical analysis and production of media) are also integrated throughout the standards for the course. The curriculum for English I has been designed to be standards-based with a focus on foundational literacy skills that relate to the content and themes explored within freshman-level World History courses. The use of shared content and themes within the World History and English Language Arts curricula will create more depth of knowledge and skills for all students across multiple content areas.

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ENGLISH 1 (H) :: Mixed-grade High :: STEM Academy and PCTI :: ENGLISH

The English I Honors curriculum is designed for the academically motivated ninth-grade student who has demonstrated advanced proficiency in reading comprehension and writing on a placement test. Students in this course have a proficient knowledge of the writing process and literary devices. Honors students are expected to possess independent critical thinking skills and to function at a faster pace. English I Honors is a challenging year-long course organized around the current Common Core Standards. The standards establish a “staircase” of increasing complexity in what students must be able to read so that all students are ready for the demands of college- and career-level reading by the end of their high school career. Through reading a diverse array of classic and contemporary literature, as well as challenging informational texts in a range of subjects, students will be expected to build knowledge, gain insights, explore possibilities, and broaden their perspectives. Moreover, the ability to write logical arguments based on substantive claims, sound reasoning, and relevant evidence, including research writing and using evidence to support a claim, is a cornerstone of the writing standards, which is an essential element in English I. The standards also require that students gain, evaluate, and present increasingly complex information, ideas, and evidence through listening and speaking as well as through media. Furthermore, students will be expected to grow their vocabularies through a mix of conversations, direct instruction, and reading, as well as determine word meanings, appreciate the nuances of words, and steadily expand their repertoire of words and phrases, which will prepare students for real-life experience at college and in Twenty-First Century careers. The main goal of this course is to promote challenging activities that foster creative ideas, literary analysis, and organizational skills through meaningful class discussions, journal prompts, and a variety of essay forms.

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[English I Honors Student Proficiencies Handout.pdf](#)

ENGLISH 1/ESL 1 :: Mixed-grade High :: STEM Academy and PCTI :: ENGLISH

The English as a Second Language program is designed to assist students whose first language is not English to acquire proficiency in the English language. Students receive developmentally appropriate instruction in the areas of listening, speaking, reading and writing.

Students are assigned to ESL classes according to grade level. Need for ESL services is determined based upon the WIDA Screener and ACCESS test scores, other standardized test scores, prior ESL inclusion, and teacher recommendation. The ESL curriculum is aligned with the New Jersey Student Learning Standards and WIDA Can Do Standards.

English ESL I is designed as an introductory course to increase students’ ability to master English language skills.

Students work on extending background knowledge, increasing vocabulary skills as well as improving reading comprehension and basic writing skills.

Emphasis is made on acquiring skills necessary to function in an English-speaking environment and succeed academically.

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ENGLISH 2 :: 5 Curriculum Developers :: Mixed-grade High :: STEM Academy and PCTI :: ENGLISH

The English 2 Curriculum will adhere strictly to the current New Jersey Student Learning Standards. The standards establish a “staircase” of increasing complexity in what students must be able to read and write so that all students are ready for the demands of college-level and career-level reading and writing by the end of their high school career. English II is a survey of drama, poetry, fiction, nonfiction and short stories. Students develop oral and written skills in interpretation, analysis, and criticism of the literature. Writing assignments offer students opportunities to express and organize their ideas in the following forms: literary analysis; the comparison-contrast essay; the literary research paper; reflective writings; persuasive writings; and creative, imaginative pieces.

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ENGLISH 2 (H) :: Mixed-grade High :: STEM Academy and PCTI :: ENGLISH

The English 2 Honors Curriculum will adhere strictly to the current New Jersey Student Learning Standards. English II Honors is a survey of drama, poetry, fiction, nonfiction, and short stories. In this course, students will develop oral and written skills in interpretation, analysis, and criticism of literature with the purpose of better preparing them for future Honors, Advanced Placement, and higher education courses. Themes for this course include: accepting the consequences of personal choices, society vs. the individual, and the challenges of change in addition to a study of Shakespearean comedy and tragedy.

Throughout the year, students will not only hone their skills in creating claims, using evidence, and providing sufficient reasoning, but will also analyze rhetorical strategies, identify author’s purpose, examine the relevance of historical context, and analyze form and function for different texts and media. Writing assignments for this course will offer students opportunities to express and organize their ideas in the following formats: literary analysis essays, synthesis essays, persuasive essays, literary research papers, and reflection assignments.

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ENGLISH 2/ESL 2 :: Mixed-grade High :: STEM Academy and PCTI :: ENGLISH

Tenth grade ESL is designed to build on the foundations of language developed the previous year. Students work on acquiring more advanced vocabulary as well as improving reading comprehension and speed as well as working on more complex writing tasks. Students begin to master the skills necessary for success on the HSPA exam in junior year.

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ENGLISH 3 :: Mixed-grade High :: STEM Academy and PCTI :: ENGLISH

The English III curriculum will adhere to the current New Jersey Student Learning Standards. The standards establish a “staircase” of increasing complexity in what students must be able to read and write by the end of their time in high school so that all students are ready for the demands of college-level and career-level reading and writing.

Through reading a combination of classic and contemporary American literature, as well as challenging informational texts, students will be expected to build knowledge, gain insights, explore possibilities, and broaden their perspectives on topics such as the American Dream and related themes. Moreover, the ability to write about literature with logical and convincing arguments based on substantial claims, sound reasoning, and relevant evidence, including research writing and using evidence to support a claim, is a cornerstone of the writing standards, which is an essential element in English III. The standards also require that students gain, evaluate, and present information, ideas, and evidence through listening and speaking as well as through the use of multimedia platforms. Students will be expected to share their ideas in writing, verbally through active discussion, and in various presentations throughout the year. In addition, skills related to media use (both critical analysis and production of media) are also integrated throughout the standards for the course. The curriculum for English III has been designed to be standards-based with a focus on literary analysis that relates to the content and themes explored within American History. The use of shared content, primary source documents, and themes within the American History and English Language Arts curricula will create more depth of knowledge and skills for all students across multiple content areas.

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[English III Student Proficiencies Handout.pdf](#)

ENGLISH 3 (H) :: Mixed-grade High :: STEM Academy and PCTI :: ENGLISH

The English III (Honors) curriculum will adhere to the current New Jersey Student Learning Standards.

The standards establish a “staircase” of increasing complexity in what students must be able to read and write by the end of high school so all students are ready for the demands of college-level and career-level reading and writing.

The course is also designed to prepare students to feel comfortable taking a course in AP Literature and Composition or AP Language and Composition for their senior year for the possibility of college credits. Through reading a combination of classic and contemporary American literature, as well as challenging informational texts, students will be expected to build knowledge, gain insights, explore possibilities, and broaden their perspectives on topics such as analyzing the author’s purpose for a text, diving deeper into character analysis, and studying themes such as American Dream. Moreover, the ability to write about literature with logical and convincing arguments based on substantial claims, sound reasoning, and relevant evidence is a cornerstone of the writing standards, which is an essential element in English III (Honors). This includes timed writing on open-ended prompts where students must handwrite their analysis without the assistance of technology. The standards also require that students evaluate and present information, ideas, and evidence through listening and speaking as well as through the use of multimedia platforms. Students will be expected to share their ideas in writing, verbally through active discussions, including Socratic Seminars, and in various presentations throughout the year. In addition, skills related to media use (both critical analysis and production of media) are also integrated throughout the standards for the course. The curriculum for English III (Honors) has been

designed to be standards-based with a focus on literary analysis that relates to the content and themes explored within American History.

Using shared content, primary source documents, and themes within American History and English Language Arts curricula will create more depth of knowledge and skills for all students across multiple content areas.

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[English III \(Honors\) Student Proficiencies Handout \(1\).pdf](#)

ENGLISH 3/ESL 3 :: Mixed-grade High :: STEM Academy and PCTI :: ENGLISH

Eleventh grade ESL is designed to refine the English language skills of the students. Students continue to acquire more advance vocabulary while working on higher level critical thinking skills in reading and writing. Students focus on analysis of literature as a means of perfecting critical thinking skills and respond to literature in writing as a means of honing critical writing skills. In addition, students will become aware of the influence of historical conditions in the development of American literature.

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ENGLISH 4 :: Mixed-grade High :: STEM Academy and PCTI :: ENGLISH

The English IV curriculum strictly adheres to the New Jersey Student Learning Standards. The Standards demonstrate a culmination of the established “staircase” of increasing complexity in what students must be able to synthesize, analyze and interpret reading so that all students are ready for the demands of college and career-level readings. There is a requirement that the progressive development of reading comprehension allows students to advance in order to gain more from fictional and non-fictional texts, credit-bearing academic college courses as well as in workforce training programs. Through reading an array of classical and contemporary literature, as well as challenging informational texts in a range of subjects, students are expected to build knowledge, gain insights, explore possibilities, and broaden their perspectives.

Moreover, the ability to write logical arguments based on substantive claims, sound reasoning, and relevant evidence, including research writing and using evidence to support a claim, is a cornerstone of the writing standards, which is an essential element in English IV. The standards also require that students gain, evaluate, and present increasingly complex information, ideas, and evidence by listening and speaking through various forms of media. Furthermore, students are expected to demonstrate a sophisticated and intricate level of vocabulary through a mix of conversations, direct instruction, and reading as well as the ability to determine word meanings, appreciate the nuances of words, and to steadily expand their repertoire of words and phrases which will prepare students for real life experience at college and in 21st century careers. In addition, just as media and technology are integrated throughout school and everyday life in the twenty-first century, skills related to media use (both critical analysis and production of media) are also integrated throughout the standards for English IV.

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[Eng IV Course Description & Proficiencies.pdf](#)

ENGLISH 4 (H) :: Mixed-grade High :: STEM Academy and PCTI :: ENGLISH

English IV Honors is designed to expose students to understanding the evolution of great works of literature that have impacted upon and have been major reference points in the literary world. The course offers, as a foundation, the study of ancient World literature and runs the gamut from a historical perspective to Shakespeare and beyond. Extensive reading and writing assignments focusing on critical analysis of the various genres as well as visual and oral presentations are required. The main goal of this curriculum is to develop students' understanding of the influences upon, and varied expression of literary themes and characters through the study of representative works of literature from various cultures. Through reading, writing, and projects, students will engage themselves with classic and modern literature in a variety of genres, including prose fiction, poetry, drama, and essays. The students will increase their ability to read critically and write competently about literature. They will engage in interdisciplinary projects, incorporating technology that relates to the year's thematic and literary studies.

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ENGLISH 4/ESL 4 :: Mixed-grade High :: STEM Academy and PCTI :: ENGLISH

Twelfth-grade ESL is designed to refine the English language skills of the students. Students continue to acquire more advance vocabulary while working on higher level critical thinking skills in reading and writing. Moreover, the ability to write logical arguments based on substantive claims, sound reasoning, and relevant evidence, including research writing and using evidence to support a claim, is a cornerstone of the writing standards, which is an essential element in English IV. The standards also require that students gain, evaluate, and present increasingly complex information, ideas, and evidence by listening and speaking through various forms of media. complex information, ideas, and evidence by listening and speaking through various forms of media.

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ESL 1 :: Mixed-grade High :: STEM Academy :: ENGLISH

The English as a Second Language program is designed to assist students whose first language is not English to acquire proficiency in the English language. Students receive developmentally appropriate instruction in the areas of listening, speaking, reading and writing.

Students are assigned to ESL classes according to grade level. Need for ESL services is determined based upon the WIDA Screener and ACCESS test scores, other standardized test scores, prior ESL inclusion, and teacher recommendation. The ESL curriculum is aligned with the New Jersey Student Learning Standards and WIDA Can Do Standards.

English ESL I is designed as an introductory course to increase students' ability to master English language skills. Students work on extending background knowledge, increasing vocabulary skills as well as improving reading comprehension and basic writing skills.

Emphasis is made on acquiring skills necessary to function in an English-speaking environment and succeed academically.

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ESL 2 :: :: Mixed-grade High :: STEM Academy :: ENGLISH

Tenth grade ESL is designed to build on the foundations of language developed the previous year. Students work on acquiring more advanced vocabulary as well as improving reading comprehension and speed as well as working on more complex writing tasks. Students begin to master the skills necessary for success on the HSPA exam in junior year.

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ESL 3 :: :: Mixed-grade High :: STEM Academy :: ENGLISH

Eleventh grade ESL is designed to refine the English language skills of the students. Students continue to acquire more advance vocabulary while working on higher level critical thinking skills in reading and writing. Students focus on analysis of literature as a means of perfecting critical thinking skills and respond to literature in writing as a means of honing critical writing skills. In addition, students will become aware of the influence of historical conditions in the development of American literature.

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COURSE DESCRIPTIONS – Financial Literacy

FINANCIAL LITERACY :: :: Mixed-grade High :: STEM Academy and Technical Institute :: FINANCIAL LITERACY

Personal Financial Literacy will further develop the students’ critical thinking skills through an engaging series of variables/topics which provide a broad spectrum of information. The students will enhance their skills to evaluate conflicting information, weigh the consequences of alternative actions, and arrive at decisions. In addition, the students will develop a better understanding of their respective roles as consumers, employees and investors. Through the use of a variety of resources; including a personal financial literacy textbook and the Internet, students will connect the concepts they learn in the course with the fast-paced, information-based world they live in. Simulations using real-world scenarios that allow students to apply course content in making decisions related to individual or family finances will also be used. Students will develop personal budgets, organize saving and checking accounts, comparative shop for important items, gain knowledge in credit and debt management and understand insurance, investing and taxes. Overall this course will give the students a foundation to develop financial independence.

- [EVERFI-Financial-Literacy-Course-Outline-2019.pdf](#)
- [EVERFI-Financial-Literacy-Curriculum-Guide-2019.pdf](#)
- [EVERFI-Financial-Literacy-Lesson-Crosswalk-2019.pdf](#)
- [EVERFI-Financial-Literacy-National-Standards-Alignment-2019.pdf](#)

FINANCIAL LITERACY/ENTREPRENEURSHIP :: :: Mixed-grade High :: STEM Academy and Technical Institute :: FINANCIAL LITERACY

Personal Financial Literacy will further develop the students’ critical thinking skills through an engaging series of variables/topics which provide a broad spectrum of information. The students will enhance their skills to evaluate conflicting information, weigh the consequences of alternative actions, and arrive at decisions. In addition, the students will develop a better understanding of their respective roles as consumers, employees and investors. Through the use of a variety of resources; including a personal financial literacy textbook and the Internet, students will connect the concepts they learn in the course with the fast-paced, information-based world they live in. Simulations using real-world scenarios that allow students to apply course content in making decisions related to individual or family finances will also be used. Students will develop personal budgets, organize saving and checking accounts, comparative shop for important items, gain knowledge in credit and debt management and understand insurance, investing and taxes. Overall this course will give the students a foundation to develop financial independence.

Business Management: Students learn not only the skills necessary to become entrepreneurs but also the attitudes, characteristics, and techniques that successful entrepreneurs have and that students will need to succeed. Building on concepts introduced in Principles of Finance, the Entrepreneurship curriculum approaches student learning experientially by encouraging students to evaluate, develop, and work with the business ideas they already have or those they conceive during the course. Students explore the steps necessary for starting a business, including analyzing the market, finding financing, and creating a form of organization that will accommodate future growth. They learn about the operational issues that new businesses face, such as regulations, protecting intellectual property, and the financial risks of starting a new business.

Students will examine ethical issues and find solutions to correct the issues.

COURSE DESCRIPTIONS – Math

ADV. ALGEBRA/TRIG :: Mixed-grade High :: STEM Academy and PCTI :: MATH

This course is designed to follow Algebra 2, providing students with a fourth year of college preparatory mathematics. It is an overview of many algebraic topics with an introduction to trigonometry and real-world applications. Some topics of study are equations, inequalities, functions, exponents, logarithms, and trigonometry with applications. This course is not as rigorous as Pre-Calculus, which covers similar content.

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ALGEBRA 1 :: Mixed-grade High :: STEM Academy and PCTI :: MATH

This curriculum is designed to give students a comprehensive education in Algebra 1 topics aligned to New Jersey math learning standards. This course will relate simple mathematical relationships in everyday concepts while also preparing them for higher levels of math.

The course begins with a review of pre-algebra and introduces students to algebraic expressions and linear equations. These skills transfer to solving and graphing one variable linear inequalities. Then, students examine systems of linear equations and systems of linear inequalities to compare situations. After, students explore exponential functions and their graphs, while applying these functions to everyday life. Next, polynomials are introduced through classification and operations, which paves the way for factoring and solving polynomials. This is then related to the graph of a parabola and the quadratic function. Students are exposed to data and statistics, and finally more applications of Algebra 1 to tie the course concepts together.

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ALGEBRA 1 (H) :: Mixed-grade High :: STEM Academy and PCTI :: MATH

The Algebra I Honors curriculum is designed for students who have demonstrated proficiency in mathematics. This course requires students to perform at a high level of abstraction through rigorous questions, mathematical analysis, projects, and real-life applications.

Algebra is the language through which much of mathematics is communicated. Therefore, it is essential for students to master the fundamentals of Algebra I to be able to understand and study higher-level mathematics, and to better understand their world through mathematics. Problem-solving in Algebra I enhances students' understanding of the effective use of mathematics in the workplace and their everyday lives.

Algebra I begins the four-year sequence of college preparatory mathematics. Through this course, students will experience a study of operations on the Real Number System, solving first and second-degree equations, problem-



solving techniques involving real-world situations, graphing linear equations on the coordinate plane, working with exponents, and data analysis, including probability and statistical theory.

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ALGEBRA 2 :: Mixed-grade High :: STEM Academy and PCTI :: MATH

Building on the understanding of linear, quadratic, and exponential functions from Algebra I, this course will extend function concepts to include polynomial, rational, radical, logarithmic, and trigonometric functions. The standards in this course continue the work of modeling situations and solving equations.

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ALGEBRA 2/ TRIG (H) :: Mixed-grade High :: STEM Academy and PCTI :: MATH

Algebra 2 / Trig Honors is not a typical honors course. This course allows students to move through both Algebra 2 and Precalculus topics in an accelerated and advanced way in order to meet the prerequisites for Calculus. Students highly proficient in this course have the option to skip a full year of precalculus and move directly to calculus. Algebra 2 / Trig Honors moves beyond the Algebra 2 curriculum of building on the understanding of modeling and solving linear, quadratic, and exponential functions from Algebra I to include polynomial, rational, radical, and logarithmic functions; the course extends these function concepts to trigonometric functions - the essence of a precalculus course.

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AP CALCULUS A/B :: Mixed-grade High :: STEM Academy and PCTI :: MATH

The overall goal of this course is to help students understand and apply the three big ideas of AB Calculus: limits, derivatives, and integrals and the Fundamental Theorem of Calculus. Embedded throughout the big ideas are the mathematical practices for AP Calculus: reasoning with definitions and theorems, connecting concepts, implementing algebraic/computational processes, connecting multiple representations, building notational fluency, and communicating mathematics orally and in well-written sentences. All students are required to complete summer work reviewing precalculus and Algebra 2 concepts prior to entry in the course. Students will be provided with and expected to use a school-issued graphing calculator.

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[PDF - 2020 AP Calc CollegeBoard Course and Exam Description](#)

AP CALCULUS B/C :: Mixed-grade High :: STEM Academy and PCTI :: MATH



The overall goal of this course is to help students understand and apply the three big ideas of Calculus: limits, derivatives, and integrals and the Fundamental Theorem of Calculus. Additionally, explore the concepts, methods, and applications of differential and integral calculus, including topics such as parametric, polar, and vector functions, and series. Imbedded throughout the big ideas are the mathematical practices for AP Calculus: reasoning with definitions and theorems, connecting concepts, implementing algebraic/computational processes, connecting multiple representations, building notational fluency, and communicating mathematics orally and in well-written sentences.

All students are required to complete summer work reviewing precalculus and Algebra 2 concepts prior to entry in the course. Students will be provided with and expected to use a school issued graphing calculator.

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[AP Course and Exam Description](#)

AP PRE-CALCULUS :: Mixed-grade High :: STEM Academy and PCTI :: MATH

AP Precalculus centers on functions modeling dynamic phenomena. This research-based exploration of functions is designed to better prepare students for college-level calculus and provide grounding for other mathematics and science courses. In this course, students study a broad spectrum of function types that are foundational for careers in mathematics, physics, biology, health science, business, social science, and data science. Furthermore, as AP Precalculus may be the last mathematics course of a student's secondary education, the course is structured to provide a coherent capstone experience rather than exclusively focusing on preparation for future courses. Throughout this course, students develop and hone symbolic manipulation skills, including solving equations and manipulating expressions, for the many function types throughout the course. Students also learn that functions and their compositions, inverses, and transformations are understood through graphical, numerical, analytical, and verbal representations, which reveal different attributes of the functions and are useful for solving problems in mathematical and applied contexts. In turn, the skills learned in this course are widely applicable to situations that involve quantitative reasoning. AP Precalculus fosters the development of a deep conceptual understanding of functions. Students learn that a function is a mathematical relation that maps a set of input values—the domain—to a set of output values—the range—such that each input value is uniquely mapped to an output value. Students understand functions and their graphs as embodying dynamic covariation of quantities, a key idea in preparing for calculus. With each function type, students develop and validate function models based on the characteristics of a bivariate data set, characteristics of covarying quantities and their relative rates of change, or a set of characteristics such as zeros, asymptotes, and extrema. These models are used to interpolate, extrapolate, and interpret information with different degrees of accuracy for a given context or data set. Additionally, students also learn that every model is subject to assumptions and limitations related to the context. As a result of examining functions from many perspectives, students develop a conceptual understanding not only of specific function types but also of functions in general. This type of understanding helps students to engage with both familiar and novel contexts.

[ap-precalculus-course-at-a-glance.pdf](#)

NCAA APPROVED

AP STATISTICS :: Mixed-grade High :: STEM Academy and PCTI :: MATH

The AP Statistics course is equivalent to a one-semester, introductory, non-calculus-based college course in statistics. The course is an excellent option for any secondary school student who has successfully completed a second-year course in algebra and who possesses sufficient mathematical maturity and quantitative reasoning ability. Because second-year algebra is the prerequisite course, AP Statistics usually will be taken in either the junior or senior year. The course introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. There are four themes in the AP Statistics course: exploring data, sampling and experimentation, anticipating patterns, and statistical inference. Students use technology, investigations, problem solving, and writing as they build conceptual understanding. Students who successfully complete the course and exam may receive credit, advanced placement, or both for a one-semester introductory college statistics course.

NCAA APPROVED

[AP Stats CED Course at a Glance.pdf](#)
[AP Stats Course Exam Description.pdf](#)

CALCULUS :: Mixed-grade High :: STEM Academy and PCTI :: MATH

This course is an introduction to calculus intended for those studying business, economics, and the social and life sciences. The following calculus topics are presented with applications in the business world: evaluating limits, methods of finding derivatives, methods of definite and indefinite integration and the calculus of exponential and logarithmic functions. The course stresses applications in business, economics, finance, and investment, as well as the life, health, and environmental sciences. This course is intended to give students the appropriate conceptual and computational mathematical background for future study in business.

PREREQUISITES

Before studying Calculus, all students must have successfully completed coursework for Algebra 1, Geometry, Algebra 2, and Pre-Calculus. Students must be familiar with properties of functions, the algebra of functions, the graphs of functions and the language of functions.

NCAA APPROVED

CALCULUS (H) :: Mixed-grade High :: STEM Academy and PCTI :: MATH

Calculus is a college prep course that introduces students to the four major concepts in calculus: The Limit, The Derivative, The Definite Integral and The Indefinite Integral. This course will prepare students for further study in all branches of higher mathematics, science and related fields. By the end of the course students will have learned algebraic, numerical and graphical methods for differentiating and integrating various algebraic functions and a variety of elementary transcendental functions. The numerical and graphical procedures students learn can be apply to any kind of function they have encountered in their previous courses. The use of technology reinforces these approaches to

confirm and interpret the results. Calculus is a transition course linking the mathematical and algebraic procedures taught in previous classes with the higher-level skills required in post-secondary technical programs.

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DISCRETE MATH :: :: Mixed-grade High :: STEM Academy and PCTI :: MATH

This course is designed for students who have completed their regular mathematics courses through Algebra II (and possibly Trigonometry and Advanced Math) and who do not have either a specific need or an interest in taking Calculus or Computer Science.

The content of Discrete Math’s includes the mathematics of making social decisions, management methodology, analysis of data, basic statistics, making projections of future trends, basic probability and financial decision-making. In line with its objectives, the approach of this course will be problem solving and applications, with students encouraged to make conjectures about methods of solution.

This course will make students aware of a variety of techniques for approaching and solving real-world problems; students will also develop the ability to apply these techniques to new problems. Furthermore, group work will be utilized to develop students’ ability to work with others.

Finally, students should acquire a sense of the utility and value of mathematics beyond the classroom.

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FOUNDATIONS OF ALGEBRA I - A :: :: Mixed-grade High :: STEM Academy and PCTI :: MATH

In Foundations of Algebra I - A, students are presented with course materials that are constantly reviewed, practice and applied to real life test situations. Basic fundamentals are developed step by step to help ensure knowledge and accuracy.

Important mathematical concepts are covered through ongoing work with number facts, computational strategies, and problem solving activities. Students will complete units involving whole numbers with operations, fractions, equations, multi-step equations, ratios/proportions and decimal/percentage. This course is designed to build a student’s confidence and competence in basic mathematical information. Also incorporated into the course lessons are the use of calculators and computers when deemed to be applicable.

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FOUNDATIONS OF ALGEBRA I - B :: Mixed-grade High :: STEM Academy and PCTI :: MATH

In Foundations of Algebra I-B, students are presented with course materials that are constantly reviewed, practice and applied to real life test situations. Basic fundamentals are developed step by step to help ensure knowledge and accuracy. Important mathematical concepts are covered through ongoing work with number facts, computational strategies, and problem-solving activities. Students will complete units involving whole numbers with operations, equations, multi-step equations, graphing linear equations, properties of exponents and polynomials.

This course is designed to build a student's confidence and competence in basic mathematical information. Also incorporated into the course lessons are the use of calculators and computers when deemed to be applicable.

NCAA APPROVED

GEOMETRY :: Mixed-grade High :: STEM Academy and PCTI :: MATH

Moving towards formal mathematical arguments, the standards presented in this high school geometry course are meant to formalize and extend middle grades geometric experiences. This course includes an in-depth analysis of plane, solid, and coordinate geometry as they relate to both abstract mathematical concepts as well as real-world problem situations. Emphasis will be placed on developing critical thinking skills as they relate to logical reasoning and argument. Students will be required to use different technological tools and manipulatives to discover and explain much of the course content. Algebra I skills are used throughout the course. The standards in this course continue the work of modeling situations.

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GEOMETRY (H) :: Mixed-grade High :: STEM Academy and PCTI :: MATH

The Geometry honors curriculum is design for academically motivated students who have an advanced proficiency in mathematics. This course takes a different approach than the standard Geometry course, requiring students to perform at a high level of abstraction. There will be substantially more rigorous questions, mathematical analysis, projects, and real-life problems. This course should bring students to a high level of confidence in their ability to derive and effectively use some of the most fundamental relationships of mathematics. Geometry is the analysis of the characteristics and properties of two and three dimensional geometric shapes and the development of mathematical arguments about geometric relationships. It involves the ability to specify locations and describe spatial relationships using coordinate geometry and other representational systems. It also encompasses the ability to apply transformations and to use symmetry to analyze mathematical situations. It requires the use of visualization, spatial reasoning and geometric modeling to solve problems.

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GEOMETRY/CTE APPLICATIONS :: Mixed-grade High :: STEM Academy and PCTI :: MATH

In Geometry/CTE Applications, students are presented with course materials that are constantly reviewed, practice and applied to real life test situations. Basic fundamentals are developed step by step to help ensure knowledge and accuracy. Important mathematical concepts are covered through ongoing work with number facts, computational strategies, and problem solving activities. Students will complete units involving reasoning in geometry, segments, angles, parallel lines, perpendicular lines, triangle congruence, triangle properties, quadrilaterals, and similar triangles. This course is designed to build a student's confidence and competence in basic mathematical information. Also incorporated into the course lessons are the use of calculators and computers when deemed to be applicable.

MATH IV :: Mixed-grade High :: STEM Academy and PCTI :: MATH

Personal Financial Literacy will further develop the students' critical thinking skills through an engaging series of variables/topics which provide a broad spectrum of information. The students will enhance their skills to evaluate conflicting information, weigh the consequences of alternative actions, and arrive at decisions. In addition, the students will develop a better understanding of their respective roles as consumers, employees and investors. Through the use of a variety of resources; including a personal financial literacy textbook and the Internet, students will connect the concepts they learn in the course with the fast-paced, information-based world they live in. Simulations using real-world scenarios that allow students to apply course content in making decisions related to individual or family finances will also be used. Students will develop personal budgets, organize saving and checking accounts, comparative shop for important items, gain knowledge in credit and debt management and understand insurance, investing and taxes. Overall this course will give the students a foundation to develop financial independence.

MATH/FINANCIAL LITERACY :: Mixed-grade High :: STEM Academy and PCTI :: MATH

Personal Financial Literacy will further develop the students' critical thinking skills through an engaging series of variables/topics which provide a broad spectrum of information. The students will enhance their skills to evaluate conflicting information, weigh the consequences of alternative actions, and arrive at decisions. In addition, the students will develop a better understanding of their respective roles as consumers, employees and investors. Through the use of a variety of resources; including a personal financial literacy textbook and the Internet, students will connect the concepts they learn in the course with the fast-paced, information-based world they live in. Simulations using real-world scenarios that allow students to apply course content in making decisions related to individual or family finances will also be used. Students will develop personal budgets, organize saving and checking accounts, comparative shop for important items, gain knowledge in credit and debt management and understand insurance, investing and taxes. Overall this course will give the students a foundation to develop financial independence.

PRE-CALCULUS :: Mixed-grade High :: STEM Academy and PCTI :: MATH

Precalculus builds upon college-level algebra and trigonometry to prepare students for the study of calculus.

In this course, students study a broad spectrum of function types that are foundational for careers in mathematics, physics, biology, health science, business, social science, and data science. This includes the the study of linear and non-linear functions through common properties, individual attributes, and overall applications. Additional topics will be introduced such as Conics, Ellipses, Hyperbolas and limits of a function. This exploration of functions is designed to better prepare students for college-level calculus and provide grounding for other mathematics and science courses.

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PROBABILITY & STATISTICS :: :: Mixed-grade High :: STEM Academy and PCTI :: MATH

Probability and Statistics is a full year study designed primarily as a preparation course for college, technical school or junior college. The key components in probability are probability terms, the concept of the probability of an event, predicting and determining probabilities, expected value, the relationship between theoretical and experimental probabilities, and compound events. In statistics, the key components are data collection, organization, representation, sampling, central tendency, variance and correlation, and analysis and inference.

Probability and Statistics are the mathematics used to understand chance and to collect, organize, describe, and analyze numerical data. From weather reports to sophisticated studies of genetics, from election results to product preference survey, probability and statistical language and concepts are increasingly present in the media and in everyday conversations. Students need this mathematics to help them judge the correctness of an argument supported by seemingly persuasive data.

Course topics will include the study of introduction to statistics, summarizing and graphing data, statistics for describing, exploring, and comparing data, probability, discrete probability distributions, normal probability distributions, estimates and sample sizes, hypothesis testing, inferences from two samples, and correlation and regression. Graphing calculators, Excel, GeoGebra and real life applications are used throughout the course to develop conceptual understanding and analysis of data.

By the end of the course students will be sensible, critical users of probability and statistics, able to apply the processes and principles developed in this course to real-world problems. Students should not think that those people who did not win the lottery yesterday have a greater chance of winning today! They should not believe an argument merely because various statistics are offered. Rather, they should be able to judge whether the statistics are meaningful and are being used appropriately.

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COURSE DESCRIPTIONS – Health and Physical Education

HEALTH 1 :: :: Mixed-grade High :: STEM Academy and PCTI :: HEALTH

Health I consists of three basic units: Family Life Education, Nutrition, Bullying/Organ and Tissue Donation. Each unit provides and equips students with valuable knowledge and skills necessary for life in today’s society. Family Life education provides instruction in the biological functioning of the reproductive systems, conception, pregnancy, childbirth, contraception and sexually transmitted diseases/infections and AIDS. The Nutrition unit examines the major concepts of nutrition, such as, nutrients and their functions, a healthy plate, selection of a healthy diet and discussion of snacks, fast foods and special diets that are special interest to teenagers. The Bullying/Organ and Tissue donation unit is designed to give students the knowledge and the understanding of the dangers of social networking, internet usage, and peer relationships. Additionally, the ramifications of these behaviors are discussed. The benefits of organ and tissue donations to both individuals and the community are also discussed.

HEALTH 2/DRIVER ED. :: :: Mixed-grade High :: STEM Academy and PCTI :: HEALTH

This course emphasizes the personal, legal, and social implications that are pertinent to the safe and efficient operation of a motor vehicle. Emphasis is also placed on developing prospective drivers who will have the necessary knowledge, habits, skills, and attitudes to become safe drivers. The students will gain the knowledge to make an informed decision regarding organ donation.

The Health component in this course consisting of basic First Aid, Substance Abuse, Organ and Tissue Donation. Each unit provides and equips students with valuable knowledge and skills necessary for life in today’s society.

HEALTH 3 :: :: Mixed-grade High :: STEM Academy and PCTI :: HEALTH

Topics discussed in Health III are birth control, sexually transmitted infections, pregnancy, childbirth and ways to reach overall wellness. In this course the students will be informed about the many forms of birth control, how to prevent pregnancy and STI’s. They will learn about the stages of development as well as the various methods for birthing a child. Finally, this course offers information on wellness to reach his or her potential through “overall wellness.”

HEALTH 4 :: :: Mixed-grade High :: STEM Academy and PCTI :: HEALTH

The Health IV curriculum is designed for students to become aware that health is a state of physical, social, and mental well-being.

The Health IV curriculum presents subject matter organized around 4 major themes: consumer education, interpersonal relations, family life, and human growth and development. The course also provides practical information relating to sexually transmitted diseases/infections, methods of treatment and prevention, communication skills, and contraceptive choices including abstinence. The goal of this course is for the student to understand they are responsible for their decisions.

PHYS. ED 1 :: Mixed-grade High :: STEM Academy and PCTI :: GYM

Physical Education 1 is a comprehensive, introductory course that will enable students to acknowledge and recognize the fundamental components of health-related fitness, motor skills, flexibility, endurance, strength, and coordination. As a graduation requirement, each student must complete and pass all four years of health and physical education. The course consists of three marking periods of physical education and one marking period of health within the school year. During the four year program, students will be introduced to activities and games in a cooperative setting, fitness and wellness concepts, and a variety of individual and team sports. Focusing on wellness for life, students will prepare to continue a lifetime of physical activity. This course is designed to provide the opportunity for students to acquire and develop the skills necessary for a healthy lifestyle through the participation of physical activities. Components of this course include cooperative activities and games, introduction to fitness and wellness, individual sports, and team sports.

PHYS. ED 2 :: Mixed-grade High :: STEM Academy and PCTI :: GYM

Physical Education II is a developmental course that provides opportunities for students to excel and improve their physical and mental wellness from Physical Education I. Students will participate in various activities within the course units that will require them to learn about different motor skills, knowledge and tactics of sports, physical fitness techniques, and interpersonal skills. Throughout the year students will participate in team sports, individual sports, personal fitness, wellness, and cooperative games.

PHYS. ED 3 :: Mixed-grade High :: STEM Academy and PCTI :: GYM

Physical Education III is a progressive course that will enable students to acknowledge and recognize the fundamental components of health-related fitness, motor skills, flexibility, endurance, strength, and coordination. This course is designed to provide the opportunity for students demonstrate and practice the skills necessary for a healthy lifestyle through the participation of physical activities in a proficient manner. Components of this course include cooperative activities and games, fitness and wellness, individual sports, and team sports. Students will also have one marking period of Health during the year. The Health III curriculum is separate from the Physical Education III curriculum and can be reviewed independently.

PHYS. ED 4 :: Mixed-grade High :: STEM Academy and PCTI :: GYM

Physical Education IV is a comprehensive, mastery course that will enable students to acknowledge and recognize the fundamental components of health-related fitness, motor skills, flexibility, endurance, strength, and coordination. This course is designed to provide the opportunity for students to acquire and develop the skills necessary for a healthy lifestyle through the participation of physical activities. Components of this course include cooperative activities and games, introduction to fitness and wellness, individual sports, and team sports.

ROTC 1 :: Mixed-grade High :: STEM Academy and PCTI :: GYM

Course Objectives: The overarching purpose of this course is to engender a sound appreciation for the heritage and traditions of the U.S. NAVY, with recognition that the historically significant role of sea power, and national security will continue to be important in our nation’s future. This course will also enable students to develop a sense of pride in his/her organization, associates, and self. This course will further enable students to develop understanding of maritime geography as it relates to our natural resources, bodies of water, people, governments, the military, and geopolitics. In addition, we provide service to our school and our community by,

- Promoting Patriotism
- Promoting Academic Excellence
- Developing Self Discipline
- Develop an informed and responsible citizen
- Develop a strong and well-rounded character traits
- Develop leadership traits
- Promote the development of teamwork skills
- Provide opportunities for students to assume leadership roles in the program
- Develop qualities of integrity and attention to detail

Eligibility Requirements (general): For a student to join or remain in the PCTVS NJROTC program, he/she must

- Be physically qualified and medically cleared to participate in physical activities. However, careful consideration will be made for some physical limitations with doctor’s note
- Meet and maintain NJROTC grooming standards as outlined in the cadet field manual
- Meet and maintain uniform requirements to include wearing the uniform at least one day per week (Wednesdays)

ROTC 2 :: Mixed-grade High :: STEM Academy and PCTI :: GYM

Course Objectives: The overarching purpose of this course is to engender a sound appreciation for the heritage and traditions of the U.S. NAVY, with recognition that the historically significant role of sea power, and national security will continue to be important in our nation’s future. This course will also enable students to develop a sense of pride in his/her organization, associates, and self. This course will further enable students to develop understanding of maritime geography as it relates to our natural resources, bodies of water, people, governments, the military, and geopolitics. In addition, we provide service to our school and our community by,

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- Meet and maintain uniform requirements to include wearing the uniform at least one day per week (Wednesdays)

ROTC 3 :: Mixed-grade High :: STEM Academy and PCTI :: GYM

Course Objectives: The overarching purpose of this course is to engender a sound appreciation for the heritage and traditions of the U.S. NAVY, with recognition that the historically significant role of sea power, and national security will continue to be important in our nation’s future. This course will also enable students to develop a sense of pride in

his/her organization, associates, and self. This course will further enable students to develop understanding of maritime geography as it relates to our natural resources, bodies of water, people, governments, the military, and geopolitics. In addition, we provide service to our school and our community by,

- Promoting Patriotism
- Promoting Academic Excellence
- Developing Self Discipline
- Develop an informed and responsible citizen
- Develop a strong and well-rounded character traits
- Develop leadership traits
- Promote the development of teamwork skills
- Provide opportunities for students to assume leadership roles in the program
- Develop qualities of integrity and attention to detail

Eligibility Requirements (general): For a student to join or remain in the PCTVS NJROTC program, he/she must

- Be physically qualified and medically cleared to participate in physical activities. However, careful consideration will be made for some physical limitations with doctor’s note
- Meet and maintain NJROTC grooming standards as outlined in the cadet field manual
- Meet and maintain uniform requirements to include wearing the uniform at least one day per week (Wednesdays)

ROTC 4 :: Mixed-grade High :: STEM Academy and PCTI :: GYM

Course Objectives: The overarching purpose of this course is to engender a sound appreciation for the heritage and traditions of the U.S. NAVY, with recognition that the historically significant role of sea power, and national security will continue to be important in our nation’s future. This course will also enable students to develop a sense of pride in his/her organization, associates, and self. This course will further enable students to develop understanding of maritime geography as it relates to our natural resources, bodies of water, people, governments, the military, and geopolitics. In addition, we provide service to our school and our community by,

- Promoting Patriotism

- Promoting Academic Excellence
- Developing Self Discipline
- Develop an informed and responsible citizen
- Develop a strong and well-rounded character traits
- Develop leadership traits
- Promote the development of teamwork skills
- Provide opportunities for students to assume leadership roles in the program
- Develop qualities of integrity and attention to detail

Eligibility Requirements (general): For a student to join or remain in the PCTVS NJROTC program, he/she must

- Be physically qualified and medically cleared to participate in physical activities. However, careful consideration will be made for some physical limitations with doctor's note
- Meet and maintain NJROTC grooming standards as outlined in the cadet field manual
- Meet and maintain uniform requirements to include wearing the uniform at least one day per week (Wednesdays)

COURSE DESCRIPTIONS – Science

[ANATOMY/PHYSIOLOGY 1](#) :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

Anatomy and Physiology I is designed primarily for students intending to pursue a career in the health and science industry in general, though it is open to any interested student. Anatomy and Physiology I is the first part of the two-year sequence of the college-level coursework taught under the supervision and according to guidelines stipulated by UMDNJ. This course will focus on basic principles of human body structure, functions, and foundations of pathology. Students will also learn and master practical laboratory skills that can prove to be useful for future employment with clinical and research institutions. Successful completion of General Biology and completion or parallel enrollment in Chemistry are required for taking Anatomy and Physiology I. In Anatomy and Physiology I the major focus is on the correlation of form and function, beginning at the molecular level and eventually leading to the level of selected organ systems such as: integumentary, skeletal, muscular, and nervous. Normal physiology of the listed systems is studied with pathological highlights. The course also includes the comprehensive study of normal histology. Anatomy and Physiology I includes a required laboratory component. In the laboratory setting, students will examine basic principles of physiology; master macro and microscopic techniques of tissue identification; examine the skeletal system and joints; perform dissections on assorted species in order to compare and contrast superficial and deep musculature, and structures of the eye and brain with that of human anatomy. Students who have successfully passed the first year of.

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[ANATOMY/PHYSIOLOGY 2](#) :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

Anatomy and Physiology II is a full-year in-depth study of the structure and function of the human body. This course follows a sequential development of the major body systems in an organized and structured curriculum. The course is designed to give the student a selective overview of the human anatomical structure and a brief analysis of human physiological principles. Students will be able to apply knowledge gained from this course to their everyday lives, make informed choices as members of the community, as well as to further their careers in medicine, nursing, physical therapy, biological sciences, food services, cosmetology, and other related vocational areas. Laboratory investigations will include simulated blood typing, blood pressure measurement, microscopic slide work, spirometry, and dissection techniques. Students will also design and carry out research investigations using principles of the scientific method and use of proper formats for reporting their findings.

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[AP BIOLOGY & LAB](#) :: Mixed-grade High :: STEM Academy and PCTI :: ELECTIVE

The AP Biology course is designed to be the equivalent of a college-level introductory biology course. The intent of the course is to expose students to higher-level biological principles, concepts, and skills and allow them the opportunity to apply their knowledge to real-life applications. Rather than learning from a micro-level outward, students learn from a macro level inward. Students are also expected to learn not by memorization of facts, but through content and concept application via the AP Biology science practices. The syllabus for this course is designed by the College Board.

In the revised AP Biology course, the teacher serves as the facilitator while the students develop as independent thinkers and learners, especially through laboratory investigations. Many concepts that are considered prerequisite knowledge for the course can be reviewed as a home study using rich resources such as assigned websites, WebQuests, and journal articles. In class, students are given opportunities to learn and apply their knowledge through the process of inquiry rather than learning from lectures and/or prescribed lab protocols. A sense of wonder and use of original thought is fostered as students are encouraged to extend their learning via scaffolded conceptual understandings and open inquiry. The learning process in the AP Biology course should be rich and impactful. When a student completes the course, he or she should be prepared to do well on the AP Exam as well as in the sequent course in a college or university setting.

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AP CHEMISTRY & LAB :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

This AP Chemistry course is designed to be the equivalent of the general chemistry course usually taken during the first year of college. For some students, this course enables them to undertake as freshmen, second-year work in the chemistry sequence in college or to register for courses in other fields where general chemistry is a prerequisite. This course is structured around the six big ideas articulated in the AP Chemistry curriculum provided by the College Board. Students should attain a depth of understanding of the fundamentals of chemistry and reasonable competence in dealing with chemical problems.

The course will also allow students to develop their ability to think clearly and to express their ideas, orally and in writing, with clarity and logic. Furthermore, the laboratory work will be equivalent to a first-year college chemistry course and will require a higher degree of technique, analysis, and accuracy than what is expected of first-year high school chemistry students. A special emphasis will be placed on the seven science practices set forth by the College Board, which capture important aspects of the work that scientists engage in, with learning objectives that combine content with inquiry and reasoning skills. This course is open to all students that have completed a year of high school chemistry and who understand, and are willing to do this, much time will be required outside the class studying, doing homework, writing reports, and finishing lab work if needed.

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AP ENVIRONMENTAL :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

The AP Environmental Science course is designed to be the equivalent of a one-semester, introductory college course in environmental science. Unlike most other introductory-level college science courses, environmental science is offered from a wide variety of departments, including geology, biology, environmental studies, environmental science, chemistry, and geography. The AP Environmental Science course has been developed with the intention to enable students to undertake, as first-year college students, a more advanced study of topics in environmental science. The goal of the AP Environmental Science course is to provide students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving or preventing them. Environmental science is interdisciplinary; it

embraces a wide variety of topics from different areas of study. Yet there are several major unifying constructs, or themes, that cut across the many topics included in the study of environmental science.

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[AP PHYSICS C: MECHANICS](#) :: :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

AP Physics C is a national calculus-based course in physics. It is examined in two separate exams. The two exams correspond to the physics C course sequence. One exam covers mechanics and the other covers electricity and magnetism. This course will cover the mechanics portion of AP Physics C. The syllabus for this course is designed by the College Board. The mechanics course is equivalent to the pre- engineering introductory physics course for university students. The emphasis is on understanding the concepts and skills and using the concepts and formulae to solve problems. Laboratory work is an integral part of this course. It is especially appropriate for students planning to specialize or major in physical science or engineering. The course explores topics such as kinematics; Newton's laws of motion; work, energy and power; systems of particles and linear momentum; circular motion and rotation; and oscillations and gravitation. Introductory differential and integral calculus is used throughout the course.

It will be run as a year-long course and includes an introductory/review section on differential and integral calculus, and vector algebra at the start of the course. At the end of the course, students are expected to take the College Board's exam in May of school year.

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[AP Physics C Mechanics CED.pdf](#)

[BIOLOGY](#) :: :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

Biology is a full-year study of the basic concepts of the living world. The core principles of science are used to promote deep understanding and appreciation of complexity, diversity, and interconnectedness of life on Earth. The course focuses on correlation between structure and function starting at the molecular level and up to the level of organisms; principles of genetics and evolutionary theory; energy transformations within living systems; and interactions between organisms and their environment.

This course is supplemented with a required laboratory component corresponding to the material studied in the classroom. Students will gain skills using laboratory apparatuses and correct laboratory techniques and procedures. They will learn uses of classical and contemporary equipment in biological laboratories. Students will design and carry out investigations using principles scientific method and learn proper formats for reporting their findings.

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BIOLOGY (H) :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

Honors Biology course is a full year in-depth study of the major concepts of the living world. The core principles of science are used to promote deep understanding and appreciation of complexity, diversity, and interconnectedness of life on earth. The course focuses on: correlation between structure and function starting at molecular level and up to the level of organisms; principles of classical and molecular genetics and evolutionary theory; energy transformations within living systems; and interactions between organisms and their environment.

The study of history of major discoveries in Biology will facilitate the understanding and give insight into modern and future problems and solutions. The emphasis is placed on the modern biotechnological and technical advances as applicable to medicine, food production, and human wellness. Students will be able to apply knowledge gained in this course to their everyday lives, make informed choices as members of the community, as well as to further their career in medicine, food services, cosmetology, and other related vocational areas.

Honors Biology course is supplemented with the required laboratory component corresponding to the material studied in the classroom.

Students will gain skills using laboratory apparatus and correct laboratory techniques and procedures. They will learn uses of classical and contemporary equipment in biological laboratory. Dissections of chosen organisms will be used to promote the understanding of organization and functions of living things. Students will design and carry out long and short-term investigations using principles of scientific method and use proper formats for reporting their findings.

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CHEMISTRY :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

Chemistry is a full year course designed to enhance the students' science literacy as well as prepare them for college or technical school. By studying chemistry, the students will be able to understand the nature of materials in this world and the changes they undergo. Investigative and problem solving skills will be developed in order to better ready students for college and careers. The inquisitive world of science should grow interest and curiosity in the minds of students as they study more than just the basics of chemistry.

Chemistry investigates matter and energy and the ways in which these two quantities interact. This course covers the basic concepts of chemistry including describing the common states of matter, making chemical solutions, atomic structure, and organization of the periodic table. A more in-depth look will be given to the characteristics of chemical compounds, including acids and bases, according to how chemical bonds are formed and nomenclature. Types and driving forces of chemical reactions will be investigated, as well as oxidation-reduction and neutralization reactions. Computational skills are developed in order to learn how to approach and solve chemical formula problems and stoichiometric calculations.

Furthermore, students will develop and explain models and theoretical frameworks that have evolved over time. All of these topics will be in terms of real-life applications of chemistry concepts. A hands-on lab-based inquiry experience will complement each major area of study with the correct and safe use of laboratory equipment. This aspect of the

course is designed so that students engage in scientific and engineering practices and apply crosscutting concepts to deepen their understanding of core ideas. In addition to designing and observing experiments, a group process of reflection and discussion will provide a platform for further theoretical investigations and an appreciation for the greater research being done today.

Beyond the field of chemistry, all students will become more proficient in literacy, given reading and writing assignments to bolster this subject. Relevant articles and videos will be used as a research tool to expand the resources a student normally uses in their problem-solving skill set. These informational texts and writing assignments will assure a more comprehensive and balanced student upon exiting the course.

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CHEMISTRY (H) :: :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

Chemistry Honors is a full year study designed primarily as a preparation course for college. It is a body of systematized knowledge gained from observation, study and experimentation. By studying chemistry you will be able to understand the nature of the materials around you and the changes they undergo. An appreciation of how chemistry is related to the other physical sciences such as physics and mathematics will be explored. Students will be made aware of how science is part of your everyday life, as well as understand how people of various cultures have contributed to the advancement of science and technology. Students of honors chemistry will study the historical theories concerning the makeup of matter, the periodicity of the elements, concepts of chemical bonding, and how and why compounds form. The correct use of laboratory equipment will be learned, and laboratory experiments will complement each major area of study.

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[Seton Hall University Project Acceleration](#)

ENVIRONMENTAL SCIENCE :: :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

Environmental Science is a full year course designed to explore how the Earth systems function and how humans influence these systems, giving a big-picture lens to the world and our place within it. Studying environmental science guides our understanding of problems and exploration of solutions to create a movement toward a sustainable society. This course covers the basic concepts of Environmental science including earth systems, interdependence & ecology, humans & the environment, environmental policy, and green technology.

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GEOPHYSICAL SCIENCE :: :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

Geophysical Science is a full year course designed as an introduction to the body of knowledge contained in the earth and physical sciences, including the process of the scientific investigation. Students will study matter, changes in matter, motion and energy, earth sciences, the origin of the universe, natural resources, and the impact of science and technology on the environment.

This course covers the basic concepts of Earth sciences including describing scientific processes, geological time, Earth's history, Earth's interior and surface, and the universe.

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PCCC BIOLOGY :: :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

This is a two-semester college course aligned with Passaic County Community College's Biology I and Biology II and adapted to the high school schedule.

Biology I explores the basic study of the principles underlying the science of cells and organisms. Included are topics related to biochemistry, cell structure and function, effects of the physical environment on cells, genetics, genetic engineering, heredity, evolution, and selected biological problems. Laboratory experiments include investigations of physical and chemical life processes, analysis of cellular components, cellular functions, cell reproduction, and heredity.

Biology II explores the basic study of representative organisms of the five kingdoms, with an emphasis on classification, differential features and reproduction. For the plant and animal kingdoms, it covers fundamentals of development, physiological control systems, organ systems, nutrition, movement, ecology and selected biological problems of representative organisms.

The laboratory sessions include dissections and experimental studies of selected representative organisms for all kingdoms.

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PHYSICS :: :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

Physics deals with the principles upon which the advances in modern technology are based. The major fields of mechanics, sound, and light are covered. As the year progresses, students will discover how unrelated phenomena can be explained with the help of a few fundamental unifying laws, and how a huge body of unrelated information can become unified. For example, out of the many motions of various bodies from the smallest nuclear particle to the giant planets the student will discover a few simple laws that describe all motion. Students will also gain an understanding of Newton's Universal Law of gravitation and Einstein's theory of gravity. An emphasis will be given to physics applications and related careers.

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PHYSICS 1 (H) :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

Physics Honors 1 is a college level, algebra based general physics course somewhat similar to a introductory level university physics course. It is intended to be a second course taken after a first course in physics or general science. Students taking this course should have also taken and mastered the algebra 2 course. Some trigonometry is required and the necessary topics will be covered in a short the math methods review which will be an integral part of this advanced high school physics course.

The course covers five general areas in physics. They are Newtonian mechanics, Circular motion and Gravitation, Energy and Momentum, Vibrations and Waves and Introduction to Electricity.

This course has been approved for a maximum of four (4) college credits through Seton Hall University's Project Acceleration Program. The breakdown is as follows:

- General Physics I: 3 Credits
- Physics Lab I: 1 Credit

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[Seton Hall's Project Acceleration](#)

PHYSICS 2 (H) :: Mixed-grade High :: STEM Academy and PCTI :: SCIENCE

Physics Honors 2 is a college level, algebra based general physics course somewhat similar to a introductory level university physics course. It is intended to be a second course taken after a first course in physics or general science. Students taking this course should have also taken and mastered the algebra 2 course. Some trigonometry is required and the necessary topics will be covered in a short the math methods review which will be an integral part of this advanced high school physics course.

The course covers four general areas in physics. They are electricity and magnetism, optics, special relativity, and atomic and nuclear physics. This course has been approved for a maximum of four (4) college credits through Seton Hall University's Project Acceleration Program. The breakdown is as follows:

- General Physics II: 3 Credits
- Physics Lab II: 1 Credit

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[Seton Hall's Project Acceleration](#)

COURSE DESCRIPTIONS – Social Studies

AMERICAN HISTORY SUPA :: Mixed-grade High :: STEM Academy and PCTI :: SOCIAL STUDIES

This course surveys the first half of United States history (@1492-1865), beginning with the European colonization of the Americas, continuing on through the American Revolution, the ratification of the Federal Constitution, the democratization of politics and religion, territorial expansion and commercial development, increasing sectional tensions over slavery, and ending with the Civil War. Four major themes will define our survey:

- **Global Convergence.** American History began in the midst of a long-duration historical development that we today call "globalization," which had been well under way before Christopher Columbus, but accelerated considerably after 1492. Exploration, trade, religion, politics, and war had brought European, African, and Asian peoples into increasing contact, and to America. In this class we will devote particular attention to the global dimensions of our national history: how world historical events and processes shaped, and were in turn shaped by, the development of the United States.
- **Cosmopolitanism and Enlightenment.** The increasing contact between different peoples had many profound cultural, religious, and intellectual consequences. Knowledge of other cultures and societies led some philosophical individuals to cast a critical eye on their own. Exploration, scientific discovery, and technological innovation weakened traditional religious and political beliefs, and democratized access to knowledge. The United States is in many respects a product of the "Enlightenment" of the eighteenth century, and we will examine how the development and diffusion of technology and education continued to shape its history.
- **Revolutions and Nation-States.** The new spirit of enlightenment, with its invocation to "think for oneself" had important political consequences. In places across the globe, people who had been deemed subjects of a ruler came to think of themselves as citizens of a *nation* who were endowed with rights and empowered to criticize their rulers. In some places, most famously France and the United States, the result was a political revolution that created a more powerful and "modern" nation-state.
- **Slavery and Free Labor.** The notion that an individual is free to work for an employer of his or her own choosing – what we will call "free labor" – would have been strange and inconceivable in 1492, when most labor was "bound" to a lord, a master, or a family member. In 1865, the 13th Amendment to the U.S. Constitution abolished slavery and enshrined free labor as a national principle. We will examine the complicated mixture of social, economic, cultural, and political conflicts and transformations that allowed for the triumph of free labor – while also assessing the limitations of that new ideal.

Students will examine these themes through lectures, short films, digital exhibits, readings, and weekly discussion sections. In doing so, they will:

- Learn to see history as more than just a body of facts to be memorized (even though some of that will prove necessary). They develop a deeper appreciation of history as a mode of inquiry, or a way of thinking about the past that informs our understanding of the present.
- Learn to examine and interpret historical evidence, and appreciate what that evidence can – and cannot – tell us.
- Learn to form judgments and construct arguments about the past, and effectively express them in speech and writing.



- Develop a deeper appreciation of the ways in which active citizenship demands historical thinking.

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[SUPA HST 101: Course Website](#)
[Course Description & Instructional Materials](#)

AP GOVERNMENT :: :: Mixed-grade High :: STEM Academy and PCTI :: SOCIAL STUDIES

AP United States Government and Politics is a college-level introduction to key political concepts, ideas, institutions, policies, interactions, roles, and behaviors that characterize the constitutional system and political culture of the United States. Students will read and analyze U.S. foundational documents, Supreme Court decisions, and other texts and visuals to gain an understanding of the relationships and interactions between political institutions and behavior. They will read and interpret data, develop evidence-based arguments, and engage in an applied civics or politics research-based project.

- The curriculum unit planner is organized around five big ideas, which focus on major concepts in U.S. government and politics.
- Within each big idea a number of enduring understandings (EUs) focus on specific aspects of the big idea and delineate the level of conceptual understanding required of successful AP students in this course.
- Each enduring understanding is aligned with at least one learning objective (LO) that provides a clear and detailed articulation of what students should know and be able to do as they develop conceptual understanding.

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[AP U.S. Government and Politics Course at a Glance](#)
<https://apcentral.collegeboard.org/courses/ap-united-states-government-and-politics>

AP U.S. HISTORY (I) :: :: Mixed-grade High :: STEM Academy and PCTI :: SOCIAL STUDIES

Advanced Placement United States History is a full-year course designed to analyze and examine the political, economic, social and religious issues that shaped this nation from the Pre- Columbian Age to the present. It is a comprehensive program that culminates with the AP Examination. The APUSH course is designed to utilize and improve a student’s critical thinking skills by providing factual knowledge and use of the student’s analytical skills so they may critically assess historical materials, weigh evidence and interpretations. Much focus is also put on synthesizing



information and applying what they learned through document analysis along with document based question (DBQs) and open answer essay writing.

The use of maps, charts, timelines, political cartoons and other visual aids will be utilized and skills such as creating power points, outlining, and timed essay writing will be developed. Since this course is in compliance with the national Advanced Placement criteria, the historical time periods and issues are covered in greater detail and at a more rapid pace than other history classes. APUSH is aimed at providing the students with the learning experience equivalent to that obtained in most college introductory United States History classes. APUSH continues the chronological study of American History from the early settlers to the present day. The themes which will be focused on during the year will be the development of America's identity and culture with its rich diversity. An examination of the demographic changes and economic transformations across the years will emphasize the impact on changing politics, citizenship, reform, religion, and environment. The assessment of our current globalization trends, the preservation of human rights and dignity will also be included. A review of all United States History will occur in preparation for the national exam in early May. The Advancement Placement exam is a requirement of this class with the date and time being determined by the National College Board Testing Service. The student's achieved score will determine the awarded college credit for the AP program nationally.

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[AP U.S. History Course at a Glance](https://apcentral.collegeboard.org/courses/ap-united-states-history)

<https://apcentral.collegeboard.org/courses/ap-united-states-history>

AP U.S. HISTORY (II) :: :: Mixed-grade High :: STEM Academy and PCTI :: SOCIAL STUDIES

Advanced Placement United States History is a full-year course designed to analyze and examine the political, economic, social and religious issues that shaped this nation from the Pre- Columbian Age to the present. It is a comprehensive program that culminates with the AP Examination. The APUSH course is designed to utilize and improve a student's critical thinking skills by providing factual knowledge and use of the student's analytical skills so they may critically assess historical materials, weigh evidence and interpretations. Much focus is also put on synthesizing information and applying what they learned through document analysis along with document based question (DBQs) and open answer essay writing. The use of maps, charts, timelines, political cartoons and other visual aids will be utilized and skills such as creating power points, outlining, and timed essay writing will be developed. Since this course is in compliance with the national Advanced Placement criteria, the historical time periods and issues are covered in greater detail and at a more rapid pace than other history classes. APUSH is aimed at providing the students with the learning experience equivalent to that obtained in most college introductory United States History classes. APUSH continues the chronological study of American History from the early settlers to the present day. The themes which will be focused on during the year will be the development of America's identity and culture with its rich diversity. An examination of the demographic changes and economic transformations across the years will emphasize the impact on changing politics, citizenship, reform, religion, and environment. The assessment of our current globalization trends, the preservation of human rights and dignity will also be included. A review of all United States History will occur in preparation for the national exam in early May. The Advancement Placement exam is a requirement of this class with

the date and time being determined by the National College Board Testing Service. The student's achieved score will determine the awarded college credit for the AP program nationally.

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[AP U.S. History Course at a Glance](#)

<https://apcentral.collegeboard.org/courses/ap-united-states-history>

[AP US HISTORY](#) :: :: Mixed-grade High :: STEM Academy :: SOCIAL STUDIES

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[AP U.S. History Course at a Glance](#)

<https://apcentral.collegeboard.org/courses/ap-united-states-history>

[U.S. HISTORY 1](#) :: :: Mixed-grade High :: STEM Academy and PCTI :: SOCIAL STUDIES

United States History I is a full-year course designed to provide students with content, practical knowledge of U.S. history, practice in critical thinking activities, and experience in effective writing techniques that will better prepare them for future educational endeavors and beyond. During the course, students will analyze and examine the political,

economic, social, and religious issues that molded this nation from its first permanent settlement of Jamestown in 1607 through many of the events and changes that occurred in the post-Civil War era.

From the colonization of America, students will study how early democratic traditions and basic freedoms were instilled into the core values of inhabitants of the New World. When the American Revolution unfolds and the United States is left to form its own government, an understanding of the relevance and importance of those values and freedoms is stressed. As America moves forward into the 19th century, the split in our nation’s values and practices, most demonstrated through issues of slavery and immigration, are highlighted. Even as industrialization and expansion make the U.S. powerful, the students will come to see that those inherent cracks will result in Civil War, and soon thereafter, a new rebirth of the core values upon which our nation was founded.

History is much more than facts and dates to remember. It is an ever-changing discipline.

Therefore, students will learn and practice critical thinking, synthesizing and analyzing skills to discover that while the American experiment has been a great success, the people and leaders of the United States have not always been ethical, nor have they fully acted in a manner intended by the founding fathers. A course goal is to relate such lessons to current events and to students’ own lives in order to teach that one must learn from history the true essence of the human experience. Further skill building to help students in future academic endeavors and beyond will come through the use of maps, charts, timelines and other visual aids along with practice in creating power points, outlining and essay writing.

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U.S. HISTORY 1 (H) :: Mixed-grade High :: STEM Academy and PCTI :: SOCIAL STUDIES

United States History I Honors is a full-year course designed to provide students with content, practical knowledge of U.S. history, practice in critical thinking activities, and experience in effective writing techniques that will better prepare them for future educational endeavors and beyond. During the course, students will analyze and examine the political, economic, social and religious issues that molded this nation from its first permanent settlement of Jamestown in 1607 through many of the events and changes that occurred in the post-Civil War era.

From the colonization of America, students will study how early democratic traditions and basic freedoms were instilled into the core values of inhabitants of the New World. When the American Revolution unfolds and the United States is left to form its own government, an understanding of the relevance and importance of those values and freedoms is stressed. As America moves forward into the 19th century, the split in our nation’s values and practices, most demonstrated through issues of slavery and immigration, are highlighted. Even as industrialization and expansion make the U.S. powerful, the students will come to see that those inherent cracks will result in Civil War, and soon thereafter, a new rebirth of the core values upon which our nation was founded.

History is much more than facts and dates to remember. It is an ever-changing discipline. Therefore, students will learn and practice critical thinking, synthesizing and analyzing skills to discover that while the American experiment has been a great success, the people and leaders of the United States have not always been ethical, nor have they fully acted in a manner intended by the founding fathers. A course goal is to relate such lessons to current events and to students’ own

lives in order to teach that one must learn from history the true essence of the human experience. Further skill building to help students in future academic endeavors and beyond will come through the use of maps, charts, time lines and other visual aids along with practice in creating power points, outlining and essay writing.

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U.S. HISTORY 2 :: Mixed-grade High :: STEM Academy and PCTI :: SOCIAL STUDIES

United States History II is a full year course designed to provide students with content, practical knowledge of U.S. History, practice in critical thinking activities, and experience in effective writing techniques that will better prepare them for future educational endeavors and beyond.

During the course students will analyze and examine the political, economic, social and religious issues that molded this nation from the emergence of modern America and all its reforms to the present. Students will examine the growth and development of the United States from the post-Civil War era into the twenty-first century. They will investigate the origins and development of various concepts, themes, and issues that Americans faced, such as political reforms and social movements.

Students will learn and practice critical thinking, synthesizing and analyzing skills. A course goal is to relate such lessons to current events and to students' own lives in order to teach that one much learn from history the true essence of the human experience. Further skill building to help students in future academic endeavors and beyond will come through the use of maps, charts, time lines and other visual aids along with practice in creating power points, outlining, and essay writing. Key political concepts, ideas, policies, etc. and other texts and visual aids will help garner an understanding for students the relationships and interactions.

The digital age has transformed social studies curriculum allowing twenty-first century learners to transcend the limits of time and place and experience historic events virtually. By expanding their learning networks through online collaboration with experts and other students from around the world, New Jersey social studies students develop an increased depth of understanding of our global society.

Social studies education provides learners with the knowledge, skills, and perspectives needed to become active, informed citizens and contributing members of local, state, national, and global communities in the digital age.

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U.S. HISTORY 2 (H) :: Mixed-grade High :: STEM Academy and PCTI :: SOCIAL STUDIES

United States History II Honors is a full year course designed to provide students with content, practical knowledge of U.S. History, practice in critical thinking activities, and experience in effective writing techniques that will better prepare them for future educational endeavors and beyond.

During the course students will analyze and examine the political, economic, social and religious issues that molded this nation from the emergence of modern America and all its reforms to the present. Students will examine the growth and development of the United States from the post-Civil War era into the twenty-first century. They will investigate the origins and development of various concepts, themes, and issues that Americans faced, such as political reforms and social movements.

Students will learn and practice critical thinking, synthesizing and analyzing skills to discover that while the American experiment has been a great success, the people and leaders of the United States have not always been ethical nor have they fully acted in a manner intended by the founding fathers. A course goal is to relate such lessons to current events and to students' own lives in order to teach that one much learn from history the true essence of the human experience. Further skill building to help students in future academic endeavors and beyond will come through the use of maps, charts, time lines and other visual aids along with practice in creating power points, outlining, and essay writing. Key political concepts, ideas, policies, etc. and other texts and visual aids will help garner an understanding for students the relationships and interactions.

The digital age has transformed social studies curriculum allowing twenty-first century learners to transcend the limits of time and place and experience historic events virtually. By expanding their learning networks through online collaboration with experts and other students from around the world, New Jersey social studies students develop an increased depth of understanding of our global society.

Social studies education provides learners with the knowledge, skills, and perspectives needed to become active, informed citizens and contributing members of local, state, national, and global communities in the digital age.

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WORLD HISTORY :: :: Mixed-grade High :: STEM Academy and PCTI :: SOCIAL STUDIES

World History is a full-year thematic course that aligns with the New Jersey Student Learning Standards. This course is a comprehensive study of World History and human interaction from The Emergence of the First Global Age to the 21st Century. Students will analyze world history, geography, and cultures through in-depth analysis of the evolution of our modern world and its political and economic framework. Students are expected to read related literacy selections, evaluate primary resources, and engage in critical analyses and cultural comparisons. Research and writing skills are emphasized with an interdisciplinary approach. The digital age has transformed social studies education, allowing 21st-century learners to transcend the limits of time and place and experience historic events virtually. By expanding their learning networks through online collaboration with experts and other students from around the world, New Jersey social studies students develop an increased depth of understanding of our global society. At the same time, their understanding of the fundamental principles and values of American democracy and citizenship provides the conceptual framework that allows them to make informed decisions about local, national, and international issues and challenges. Social studies education provides learners with the knowledge, skills, and perspectives needed to become active, informed citizens and contributing members of local, state, national, and global communities in the digital age. PCTI's vision of social studies fosters a population that: is civic minded, globally aware, and socially responsible.

Including, reinforcing fundamental values of American citizenship through active participation in local and global communities.

Making informed decisions about local, state, national, and global events based on inquiry and analysis. Additionally, they consider multiple perspectives, values of diversity, and promote cultural understanding. Utilizing emerging technologies to communicate and collaborate on career and personal matters with citizens of other world regions.

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[World History 2019.docx](#)

WORLD HISTORY (H) :: :: Mixed-grade High :: STEM Academy and PCTI :: SOCIAL STUDIES

The World History Honors course is a full year history course aligned with the New Jersey State Learning Standard. It is designed to explore the significant ideas, themes, events, movements and leaders from the Emergence of the Global Age (1350 AD) to contemporary Issues (1945-Today). The course is organized chronologically and, within broad eras.

Lessons address developments in religion, philosophy, the arts, science and technology, and political history. Students will be expected to complete the extensive analysis of primary and secondary sources. Students will be assessed through formative and summative assessments which include tests, projects, oral presentations, debate, 1:1 lessons and tasks, document based questions (DBQs/RSTs), historical novels, analysis of primary source materials and political cartoons. Students will be engaged in student centered activities which will allow them to explore and process curricular material in intellectual settings that depend on full participation, critical thinking skills and willingness to problem solve.

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COURSE DESCRIPTIONS – World Languages

AMER.SIGN LANG. 1 :: :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

American Sign Language I is a full-year course, which is designed to expose students to the culture and language of the Deaf Community. Students are required to develop both a basic sign language vocabulary and fingerspelling ability and to demonstrate receptive and expressive language skills. Emphasis on cultural perspectives, principles, grammatical processes, non-manual techniques, hearing loss and services for the hearing-impaired will be presented to enable the student to recognize and appreciate the culture and language of the deaf community. The student will develop skills through presentations, videos, in class activities and workbook activities. This curriculum may be modified as per individual student's Individualized Education Plan (IEP).

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AMER.SIGN LANG. 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

American Sign Language – Part II The course is a full-year course, which is designed to continue exposing students to the culture and language of the Deaf Community. Students are required to increase their sign vocabulary and demonstrate improvement in their receptive and expressive language skills. Emphasis on vocabulary, non-manual communication techniques, principles, grammatical processes, and cultural references will be presented to enable the student to understand and appreciate Deaf people. The student will learn Deaf history and analyze how it effects the present-day Deaf Community and Deaf education. The student will develop skills through presentations, videos, and workbook activities. Guest speakers will enable students to interact with members of the Deaf Community. Students will also be filmed to critique his/her expressive skills. This curriculum may be modified as per students IEP.

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AMER.SIGN LANG. 3 :: :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

The American Sign Language III course is a full-year course, which is designed to continue exposure the student to the culture and language of the Deaf. This course moves beyond Sign Language I and II and focuses on developing Sign skills in-depth. The course is taught entirely voice-off and students will have to use their receptive skills to learn new information. Students who complete Sign Language III are expected to be fluent in American Sign Language. Students are required to increase their sign vocabulary and demonstrate improvement in their receptive and expressive skills. Emphasis on vocabulary, non-manual techniques, principles, grammatical processes, and cultural references will be presented to enable the student to understand and appreciate the Deaf population. The student will develop skills through presentations, videos, workbook activities and guest speakers. Students will also be filmed to critique his/her expressive skills. Students have the option of enrolling in Seton Hall University's Project Acceleration and earning 6 college credits for the course.

*This curriculum may be modified as per individual student’s Individualized Education Plan (IEP)

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AP SPANISH :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

The AP® Spanish Language and Culture course is a rigorous course taught **exclusively** in Spanish that requires students to improve their proficiency across the three modes of communication (interpretive, interpersonal and presentational) following the format of the AP exam. The course focuses on the integration of authentic resources including online, print, audio, and audiovisual resources; as well as traditional print resources that include literature, essays, and magazine and newspaper articles; and also a combination of visual/print resources such as charts, tables, and graphs; all with the goal of providing a diverse learning experience. Students communicate using rich, advanced vocabulary and linguistic structures as they build proficiency in all modes of communication toward the Advanced Low level according to the American Council on the Teaching of Foreign Languages Proficiency Scale. Central to communication is the following premise from the Curriculum Framework: *When communicating, students in the AP Spanish Language and Culture course demonstrate an understanding of the culture(s), incorporate interdisciplinary topics (Connections), make comparisons between the native language and the target language, and between cultures (Comparisons), and use the target language in real-life settings (Communities).*

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[AP Spanish Language and Culture Course At a glance.pdf](#)
[ap-spanish-language-and-culture-course-and-exam-description.pdf](#)

ARABIC 1 :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

The Arabic I course is designed as an entry-level course for students seeking knowledge and understanding of the Arabic language and culture. It is designed for novice learner as well as heritage speakers, who are fluent in Arabic but want to improve their reading and writing skills of the language. Students will learn basic vocabulary, common expressions, and the fundamentals of grammar and pronunciation to conduct basic conversations in real situations. The course will also enable students to have a better understanding of the Arabic culture and the variations of it. The main focus will be on building proficiency in the four skills of listening, speaking, reading and writing through the study of the Arabic grammar and syntax.

The class meets every day for 40 minutes and offers five high school credits.

COURSE OBJECTIVES

The Arabic I course objective targets the three modes of communication described by the New Jersey Student Learning Standards for World languages: Interpersonal, Interpretive, and Presentational. Below are definitions of the three modes and the list of primary learning objective areas.

Three Modes of Communication:

- Strand A: The Interpretive Mode’s focal point is communication, in which students demonstrate adequate

understanding of spoken and written communication within the appropriate cultural context.

- Strand B: The Interpersonal Mode concentrates more on engaging students to communicate directly using their oral and written skills.
- Strand C: The core of Presentational Mode is the ability to present concepts and ideas to an audience of listeners or readers with whom there.
 - Spoken Interpersonal Communication
 - Written Interpersonal Communication
 - Audio, Visual, and Audiovisual Interpretive Communication
 - Written and Print Interpretive Communication
 - Spoken Presentational Communication
 - Written Presentational Communication

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ARABIC 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

The Arabic II course is designed for students, who have completed Arabic I. This course is also designed for native or heritage speakers who are fluent in a local Arabic dialect with limited reading and writing skills. Arabic II students will begin to conjugate verbs and use them in present, past, and future tenses. They will also build their vocabulary with additional words and become familiar with new expressions. A great deal of emphasis will be placed on cultural topics in the Arabic speaking world, as well as becoming familiar with the different variations within the culture. The main focus will be on building proficiency in the four skills of listening, speaking, reading and writing through the study of the Arabic grammar and syntax.

The class meets every day for 40 minutes and offers five high school credits.

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CHINESE 1 :: :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

The Chinese I course is designed for students with little or no prior Chinese instruction. The course will help students to become familiar with basic Chinese pronunciation, to know basic information about the Chinese writing system, and to understand how the Chinese language works grammatically.

A great deal of emphasis will be placed on cultural topics in the Chinese speaking world, as well as becoming familiar with the different variations within the culture. The main focus will be on building proficiency in the four skills of listening, speaking, reading and writing through the study of the Chinese grammar and syntax.

The class meets every day for 64 minutes and offers five high school credits.

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CHINESE 2 :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

The Chinese II course is designed for students, who have completed Chinese I. This course is also designed for native or heritage speakers who are fluent in a local Chinese dialect with limited reading and writing skills. Chinese II students will begin to conjugate verbs and use them in present, past, and future tenses. They will also build their vocabulary with additional words and become familiar with new expressions. A great deal of emphasis will be placed on cultural topics in the Chinese speaking world, as well as becoming familiar with the different variations within the culture. The main focus will be on building proficiency in the four skills of listening, speaking, reading and writing through the study of the Chinese grammar and syntax.

The class meets every day for 64 minutes and offers five high school credits.

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CHINESE 3 :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

The Chinese III course is designed for students, who have completed Chinese II. This course is also designed for native or heritage speakers who are fluent in a local Chinese dialect with limited reading and writing skills. Chinese III students will continue to conjugate verbs and use them in present, past, and future tenses/sentences. They will also build their vocabulary with additional words and become familiar with new expressions. A great deal of emphasis will be placed on cultural topics in the Chinese speaking world, as well as becoming familiar with the different variations within the culture. The main focus will be on building proficiency in the four skills of listening, speaking, reading and writing through the study of the Chinese grammar and syntax.

The class meets every day for 64 minutes and offers five high school credits.

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CHINESE 4 :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

The Chinese IV course is designed for students, who have completed Chinese III. This course is also designed for native or heritage speakers who are fluent in a local Chinese dialect with limited reading and writing skills. Chinese IV students will continue to conjugate verbs and use them in present, past, and future tenses/sentences. They will also build their vocabulary with additional words and become familiar with new expressions. A great deal of emphasis will be placed on cultural topics in the Chinese speaking world, as well as becoming familiar with the different variations within the culture. The main focus will be on building proficiency in the four skills of listening, speaking, reading and writing through the study of the Chinese grammar and syntax.

The class meets every day for 64 minutes and offers five high school credits.



NCAA APPROVED

FRENCH 1 :: :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

In French I, students will be introduced to the basics of the French language. Students will learn basic vocabulary, common expressions, and the fundamentals of grammar and pronunciation in order that they can converse on a variety of subjects, such as, family, school, and leisure activities. Students will read simple texts in French, write short paragraphs about familiar topics, and develop their ability to understand spoken French. French I will also introduce students to the various countries, customs, and traditions which comprise the Francophone world.

Successful completion of French I fulfills the one-year of World Language study required by the New Jersey Department of Education.

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FRENCH 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

French two is designed for students who have completed French 1.

In French 2, students will learn to express activities in the past, continue to build vocabulary, and become more proficient in speaking, reading, writing, and comprehension skills. Much emphasis will be placed on the oral use of French in the classroom.

Students will be expected to ask and answer questions in French regularly, using learned vocabulary and correct grammatical structure. Additional emphasis will be placed on cultural topics in French-speaking countries, including current events, the arts, and the French influence in the United States. Students will identify historic landmarks, major cities, holidays, and other cultural aspects of the French-speaking world.

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FRENCH 3 :: :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

French 3 is designed for students who have successfully completed French 1 and French 2. Students will strengthen their knowledge already acquired in the previous two years. Students will also learn how to speak and write in different tenses and acquire the necessary skills to communicate in French.

Reading and speaking correctly will be the main goal in the classroom. A correct use of grammar will also be reinforced. Additional emphasis will be placed on cultural topics in France and French-speaking countries, including current events, the arts and the French influence in the United States and around the world. Students will identify major French art work, literature, historical landmarks and other cultural aspects of the French-speaking world.

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FRENCH 4 :: :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

French IV is designed for students who have successfully completed French 1, 2, and 3. Students will strengthen their knowledge already acquired in the previous three years. Students will also learn how to speak and write in different tenses and acquire the necessary skills to communicate in French.

Reading and speaking correctly will be the main goal in the classroom. A correct use of grammar will also be reinforced. Additional emphasis will be placed on cultural topics in France and French-speaking countries, including current events, sports, arts and the French influence in the United States and around the world. Students will identify major French art work, literature, historical landmarks and other cultural aspects of the French-speaking world.

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JAPANESE 1 :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

Japanese I is a course designed for students with little or no background knowledge of the Japanese language and culture. This course will provide students with basic language and cultural knowledge, strategies, and skills to help them interact in real and social situations they are most likely to encounter in Japan. Students will learn basic Japanese language structures that will serve as a base for further Japanese language acquisition. copy and past course description

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JAPANESE 2 :: :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

Japanese II is designed for students who have completed Japanese I. The Japanese language is very useful in today's global society and will help students to lead a more successful life. Career enhancement, travel, and personal enjoyment are just a few of the reasons for learning Japanese.

Japanese is one of the 'critical' languages in that there are not as many speakers as there is a demand for the language. Therefore, many opportunities will become available to you if fluency in the language is slowly developed. Studying Japanese as a second/ third language will give you a unique opportunity to pursue the world in a different way, explore a cultural heritage beyond that of your own, or simply try something different.

The objective of this course is to teach four skills (reading, writing, listening, and speaking) at the intermediate level. Students will develop a wide variety of communication skills in Intermediate level Japanese.

Each lesson will let students explore Japanese culture and its value through the media, cyber projects, activities, and class trips. Using the textbook, the accompanying workbook, listening materials, and advanced technology, students will acquire a solid foundation in everyday life settings.

Students are encouraged to participate in projects and activities during the course

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JAPANESE 3 :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

Completion of Japanese I & II is a prerequisite. This course is designed for students who wish to develop their language skills at a higher level. It provides students with a basic cultural understanding of today's Japan. Contemporary print and media materials will be used to enhance written as well as oral proficiency. It also develops listening and reading comprehension skills to increase understanding of the complexities of language and vocabulary words.

Moreover, this course includes the review and expansion of essential Japanese grammar and vocabulary necessary for this level.

Students will develop a wide variety of communication skills and each lesson will let students explore Japanese culture and its value through the media, cyber projects, and class trips. Using the text, the accompanying workbook, and listening materials, students will acquire a solid foundation in everyday life settings. Students are encouraged to participate in projects and activities during the course.

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SPANISH 1 :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

In Spanish 1 students will be introduced to common vocabulary, phrases and concepts necessary for daily interpersonal interaction.

Emphasis will be placed on basic communication and comprehension in everyday situations, i.e. survival skills. Students will gain a working knowledge of the basic structure of the target language using the present tense. Students will engage in activities such as, the creation and performance of original dialogues, question and answer situations as posed by the teacher or other students, and various pair and group projects all centered in thematic units. Students will begin to talk about topics and situations that are of interest to them, their friends and the target language community. They will begin to speak Spanish and will discover how they can greet others in Spanish and talk to them about the daily routines of student life. Gradually, they will develop their ability to understand spoken and written Spanish.

Thematic learning objectives are presented within the framework of the three modes of communication, as outlined by the American Council on the Teaching of Foreign Languages (ACFTL): Interpersonal, Interpretive and Presentational. All

activities and assignments are aligned with the three modes and with the NJ Student Learning Standards for the Novice-Mid level.

Three Modes of Communication:

- The Interpersonal Mode is characterized by the active negotiation of meaning among students. Students observe and monitor one another to see how their meanings and intentions are being communicated. Adjustments and clarifications are made accordingly.
- The Interpretive Mode focuses on the appropriate cultural interpretation of meanings that occur in written and spoken form where there is no recourse to active negotiation of meaning with the writer or the speaker.
- The Presentational Mode refers to the creation of oral and written messages in a manner that facilitates interpretation by members of the other culture where no direct opportunity for the active negotiation of meaning between members of the two cultures exists.

(ACTFL Performance Descriptions for Language Learners, p.7)

Additionally, emphasis will be placed on cultural topics dealing with Spanish customs, the arts, and Spanish influence in the United States. Students will recognize and practice culturally appropriate social behaviors and gestures that occur in everyday life. They will identify geographical features, historical landmarks, and major sites of the areas where the target language is spoken and their influences on that culture. The learner will demonstrate cultural knowledge related to the curricular topics presented in the classroom.

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SPANISH 2 :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

Spanish II is designed for students who have completed one year of Basic Spanish I or who have passed a placement test with a sufficient score. Second year students will learn to use different verb tenses (present and past tenses), continue to build vocabulary, and become more proficient in speaking and comprehension skills. Thematic learning objectives are presented within the framework of the three modes of communication, as outlined by the American Council on the Teaching of Foreign Languages (ACTFL): Interpersonal, Interpretive and Presentational. All activities and assignments are aligned with the three modes and with the NJ Student Learning Standards for the Novice-High level.

Three Modes of Communication:

- The Interpersonal Mode is characterized by the active negotiation of meaning among students. Students observe and monitor one another to see how their meanings and intentions are being communicated. Adjustments and clarifications can be accordingly.
- The Interpretive Mode focuses on the appropriate cultural interpretation of meanings that occur in written and spoken form where there is no recourse to active negotiation of meaning with the writer or the speaker.

- The Presentational Mode refers to the creation of oral and written messages in a manner that facilitates interpretation by members of the other culture where no direct opportunity for the active negotiation of meaning between members of the two cultures exists.

(ACTFL Performance Descriptions for Language Learners, p.7)

Themes that will be covered in this level include: review of basic Spanish I concepts, the house, daily routines, shopping, travel and childhood. Additionally, stress will be placed on cultural topics dealing with Spanish customs, the arts, and Spanish influence in the United States. Students will recognize and practice culturally appropriate social behaviors and gestures that occur in everyday life. They will identify geographical features, historical landmarks, and major sites of the areas where the target language is spoken and their influences on that culture. Students will demonstrate cultural knowledge related to the curricular topics presented in the classroom.

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SPANISH 3 :: :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

The Spanish III course is designed for students who have completed Spanish I and II or have taken the STAMP test for placement. A strong language program at the beginning levels that featured thematic instruction with integrated vocabulary, grammar, communication and culture allows students in the upper levels of study to be most successful. The third year will provide further development in the areas of speaking, listening and writing. This course will build communicative activities, pronunciation as well as enhance reading and writing skills. After completing the course, the students will have the necessary skills to advance to higher-level courses.

During the Spanish III course, students will have the opportunity to develop interdisciplinary connections. Moreover, students will analyze and discuss similarities and differences when discussing culture and language elements within Latin American countries. “We know that when students have the opportunity to transfer skills across content areas; the learning becomes deeper and more enduring.”

There is a strong link between the New Jersey State Learning Standards (NJSLS) for English Arts and Literacy in History/Social studies, Science, and Technical Subjects and the New Jersey State Learning Standards for World Languages.

COURSE REQUISITES

Spanish I and II are pre-requisites for Spanish III. The STAMP test may also be used as a measure of proficiency to evaluate placement of students in Spanish III.

COURSE OBJECTIVES

The Spanish III Curriculum presents learning objectives areas within the three modes of communication described by the New Jersey

Student Learning Standards for World languages: Interpersonal, Interpretive, and Presentational (Levels of proficiency). These modes of communication identify what students should know and be able to do across the three modes. Below you can identify the definitions for the three modes and the list of primary learning objective areas Three Modes of Communication:

- Strand A: The Interpretive Mode- focuses on the appropriate cultural interpretation of meanings that occur in written and spoken form where there is no recourse to active negotiation of meaning with the writer or the speaker.
- Strand B: The Interpersonal Mode- is characterized by the active negotiation of meaning among students. Students observe and monitor one another to see how their meanings and intentions are being communicated. Adjustments and clarifications can be made accordingly.
- Strand C: The Presentational Mode- refers to the creation of oral and written messages in a manner that facilitates interpretation by members of the other culture where no direct opportunity for the active negotiation of meaning between members of the two cultures exists.

Learning Objective Areas:

- Spoken Interpersonal Communication
- Written Interpersonal Communication
- Audio, Visual, and Audiovisual Interpretive Communication
- Written and Print Interpretive Communication
- Spoken Presentational Communication
- Written Presentational Communication

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SPANISH COMP/CONV. A (H) :: Mixed-grade High :: STEM Academy and PCTI :: FOREIGN LANGUAGE

Conversational/ Composition A (Honors) is the fourth course in the Spanish sequence in preparing students for the Advanced Placement class and test, which gives students the opportunity to receive college credits. Grammar, reading, writing, speaking, and listening skills are covered at an accelerated pace. This course also prepares the students who have career and business goals by introducing the presentation and interpersonal skills (in Spanish) they will need in various technical work fields. In this course, students will do group and individual research and presentations on various cultural topics. Emphasis is placed in conversational skills, vocabulary and correct usage of the language. Correct pronunciation and oral proficiency are primary goals. This requires a daily emphasis on listening and speaking. Classroom experience will provide an appreciation and development of cultural awareness through various readings, media resources and authentic materials.

COURSE REQUISITES

To be placed in this course, students must have taken Spanish 3. Students may also be placed in the course by taking a placement exam to measure their proficiency levels in Spanish.

Acceptable means to evaluate students' proficiency include but are not limited to the STAMP test with a composite score of 5 (intermediate-Mid) or above, or a placement test designed by a Spanish Instructor.

COURSE OBJECTIVES

Thematic learning objectives are presented within the framework of the three modes of communication, as outlined by the American Council on the Teaching of Foreign Languages (ACFTL): Interpersonal, Interpretive and Presentational. All activities and assignments are aligned with the three modes and with the NJ Student Learning Standards for the Intermediate-Mid level.

Three Modes of Communication:

- The Interpretive Mode- focuses on the appropriate cultural interpretation of meanings that occur in written and spoken form where there is no recourse to active negotiation of meaning with the writer or the speaker.
- The Interpersonal Mode- is characterized by the active negotiation of meaning among students. Students observe and monitor one another to see how meanings and intentions are being communicated. Adjustments and clarifications can be made accordingly.
- The Presentational Mode- refers to the creation of oral and written messages in a manner that facilitates interpretation by members of the other culture where no direct opportunity for the active negotiation of meaning between members of the two cultures exists.

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