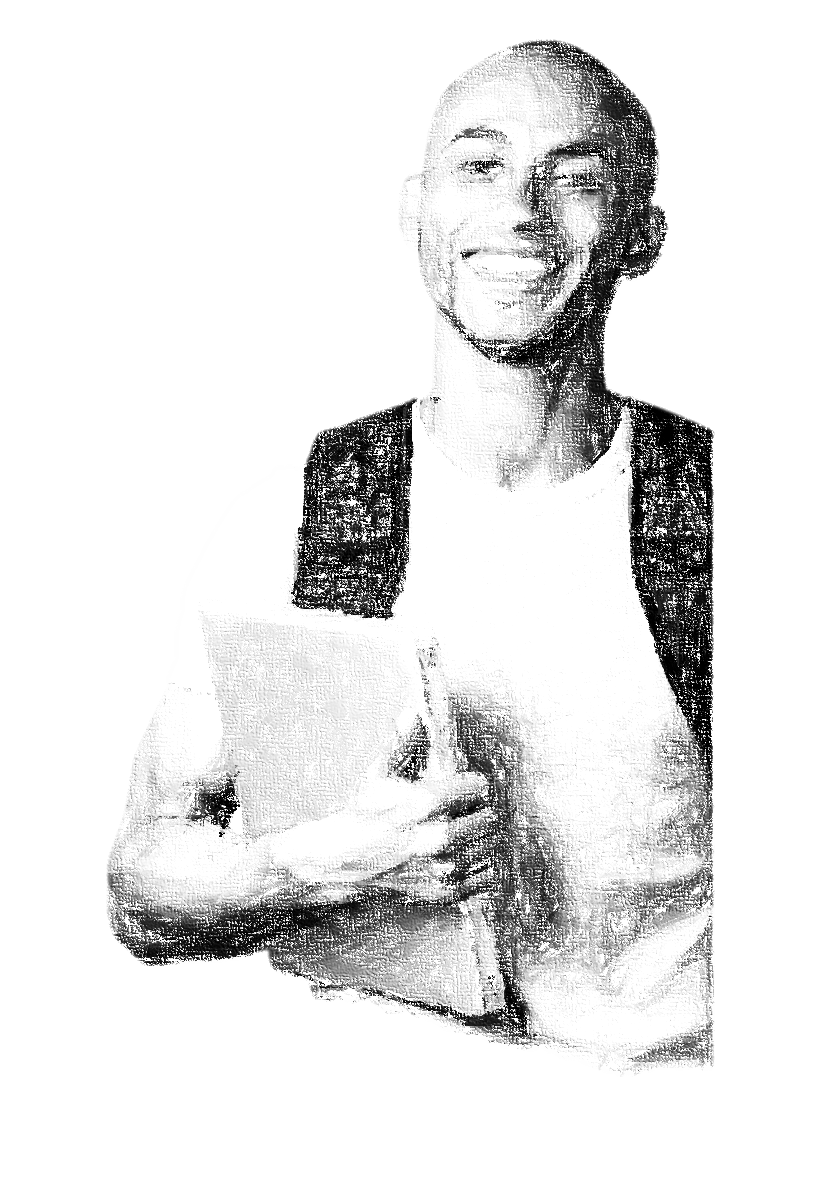


Programs of Study

The Orange Public Schools



**Good to Great**

**\*\*UPDATED 07.10.2022\*\***

Good to Great

**Gerald Fitzhugh, II, Ed.D.**

Superintendent of Schools

**ORANGE HIGH SCHOOL (OHS)**

**ORANGE TWILIGHT PROGRAM**

**ORANGE PREPARATORY ACADEMY (OPA)**

**S.T.E.M INNOVATION ACADEMY OF THE ORANGES (STEM)**

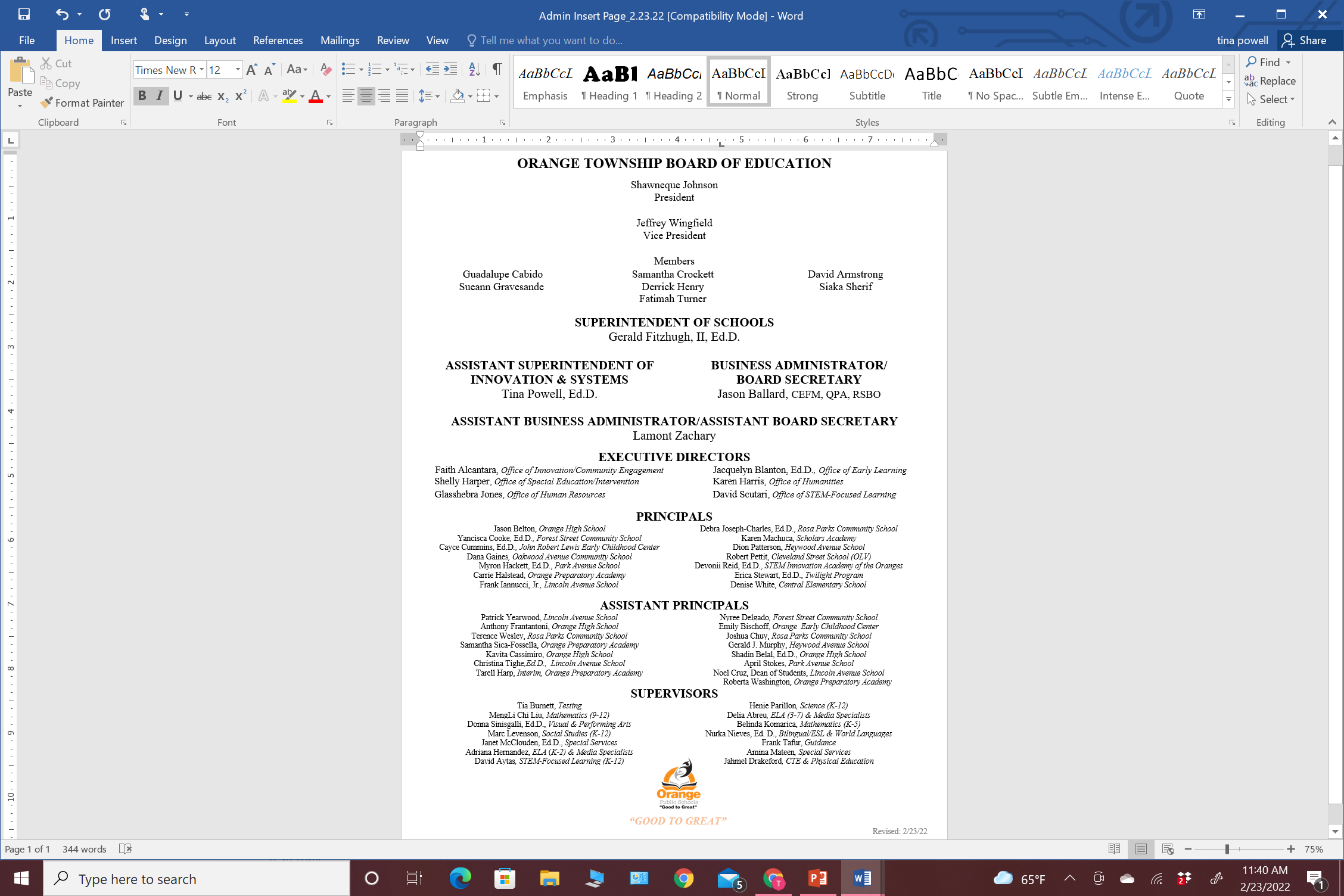
**Orange high school (OHS)**

**Orange Twilight program**

**orange preparatory academy (OPA)**

**S.T.E.M Innovation academy of the oranges (STEM)**

SY2022 - 2023



**HIGH SCHOOL ADMINISTRATORS**

|  |
| --- |
| **ORANGE HIGH SCHOOL** |

Jason Belton, *Principal*

Shadin Belal, Ed.D. *Assistant Principal*

Kavita Cassimiro, *Assistant Principal*

Anthony Frantantoni, *Assistant Principal*

|  |
| --- |
| **ORANGE TWILIGHT PROGRAM** |

Erica Stewart*,* Ed.D. *Principal*

|  |
| --- |
| **STEM INNOVATION ACADEMY OF THE ORANGES** |

Devonii Reid, Ed.D. *Principal*

|  |
| --- |
| **ORANGE PREPARATORY ACADEMY** |

Carrie Halstead, *Principal*

Samantha Fossella, *Assistant Principal*

Roberta Washington, *Assistant Principal*

Table of Contents

[A Message from the Superintendent 6](#_Toc96509059)

[Instructional Levels 7](#_Toc96509060)

[Graduation Requirements 8](#_Toc96509061)

[Grade Progression & Additional Graduation Requirements 8](#_Toc96509062)

[Community Service 8](#_Toc96509063)

[Course Selection 9](#_Toc96509064)

[Course Availability 9](#_Toc96509065)

[OPTION II 10](#_Toc96509066)

[Student, Parent and School Counselor Responsibilities 11](#_Toc96509067)

[Schedule Adjustments 12](#_Toc96509068)

[Add / Drop Policy 13](#_Toc96509069)

[Dual Enrollment College Credit Program 15](#_Toc96509070)

[English Department 14](#_Toc96509071)

[Mathematics Department 23](#_Toc96509072)

[Science Department 30](#_Toc96509073)

[Social Studies 37](#_Toc96509074)

[Physical Education, Health & Safety Department 42](#_Toc96509075)

[World Language Department 44](#_Toc96509076)

[Career and Technical Education Department 46](#_Toc96509077)

[STEM with Emphasis on Engineering and Computer Science 58](#_Toc96509078)

[Visual & Performing Arts Department 62](#_Toc96509079)

[English as a Second Language Department 77](#_Toc96509080)

[Special Education Department 79](#_Toc96509081)

[Internships and Apprenticeships 90](#_Toc96509082)

[Course Paths for the STEM Innovation Academy of the Oranges 91](#_Toc96509083)

[Mathematics 92](#_Toc96509084)

[Humanities 96](#_Toc96509085)

[Science 99](#_Toc96509086)

[Biomedical Science Track 101](#_Toc96509087)

[Mechanical Engineering Track 105](#_Toc96509088)

[Computing Sciences Track 108](#_Toc96509089)

[College and Career Readiness Partnerships 111](#_Toc96509090)

|  |  |  |
| --- | --- | --- |
| **C:\Users\tina4\Desktop\Company Logos\OPS_Logo_Tag_G2G newweb.png** | **Orange Township Public Schools**  Gerald Fitzhugh, II, Ed.D.  Superintendent of Schools | **A close up of a sign  Description automatically generated** |

|  |
| --- |
|  |

# A Message from the Superintendent

Dear Scholars, Parent(s)/Guardian(s), and Caregivers:

The program of study booklet was created to provide our scholars with vast array of academic opportunities to become college and career ready in the 21st Century. With that in mind, this booklet has exciting information regarding course offerings from each of our instructional departments, career and technical department and our strong partnerships with pre-college programs, college and initiatives, and intern/externship experiences. You will find detailed information about each course, credits, prerequisites, honors courses, Advanced Placement (AP) courses and district graduation requirements.

Take the time to look carefully through the many course offerings and their respective curriculum levels and sequences. The program of studies that a student pursues in high school should reflect his or her aspirations, achievements, and aptitudes. Students are encouraged to select courses that will be academically stimulating and personally enriching. The degree to which a student succeeds in school will have a tremendous impact on his or her future. Consult with your counselor, your parent(s)/ guardians, and your teachers to choose the best plan that leads to graduation and future opportunities.

We are in an environment of change and with that said, our academic departments have developed a comprehensive program of study that will prepare our scholars to compete on a global level and be college and career ready in the 21st Century. We achieve this goal by offering our scholars course content that is college bound focused while also providing curricula that equips our learners for immediate career entry upon graduation.

Our scholars are expected to work with their school counselor to develop the best program of study that fosters academic excellence, industry exposure, goal setting, and to continue to lay the foundation for our scholars to be college and career ready as leaders in the 21st Century.

Educationally yours,

**Gerald Fitzhugh,II, Ed.D.**

Gerald Fitzhugh, II, Ed.D.

Superintendent of Schools

# Instructional Levels

In recognition of the abilities, interests, and demonstrated achievements of students, at the high school level offers classroom instruction on various levels. Differentiated instructional strategies and high academic expectations ensure the greatest academic success for each student. Course assignments to a given level and student placement in a given instructional level are the sole prerogatives of the professional staff and the administration. Instructional level assignments are made each spring for the following school year.

**Advanced Placement (AP):** College-level courses that use the College Board Advanced Placement curriculum and prepare students for the AP exam.

**Dual Enrollment**: College and University Memorandums of Understandings (MOU’s) provide college credit and high school credit to students who fulfill the course requirements, including end-of-course exams.

**Honors (H):** A challenging college preparatory program. Honors classes expect students to perform above grade level with critical analysis and in-depth study. Students will be expected to be able synthesize and evaluate information at a high level.

**College Preparatory (CP):** Courses designed for students who are average to above average and have a strong work ethic. This course prepares students for the rigors of college work and/or other experiences after high school.

***Content Specific Resource Placement determined exclusively by the Child Study Team and stipulated in the student’s Individual Education/504 Plan.***

# Graduation Requirements

To receive a New Jersey State endorsed diploma from Orange High School, each student must earn a *minimum* of 125 credits[[1]](#footnote-1). Minimum passing scores are set by the New Jersey State Department of Education. Each year, students in grades nine, ten, and eleven must be enrolled in a program of at least 40 credits. As defined in N.J.A.C. 6A:8-1.3, “Credit” means the award for the equivalent of a class period of instruction, which meets for a minimum of 40 minutes, one time per week during the school year or as approved through N.J.A.C. 6A:8-5.1(a)2. In terms of “seat time,” a standard 5 credit offering equates to 120 minutes total of seat time in 1 semester.

## Grade Progression & Additional Graduation Requirements

* In order for a freshman to be promoted as a sophomore they must earn 30 credits
* In order for a sophomore to be promoted as a junior they must earn 60 credits
* In order for a junior to be promoted to a senior they must earn 95 credits
* In order to graduate, a student must earn a minimum of 125 credits in the required courses for graduation
* 125 credits minimum required to meet graduation requirements
* Proficiency on state assessments
* 60 hours of community Service - 15 hours each year of school (The community service hours are featured on the report card and Genesis)

# Community Service

Our Structured Learning Coordinator in the school district is charged with developing our community partnerships which fosters relationships for our students to earn community services hours, intern/externships opportunities and possible job placement with corporate, non-profit and municipal agencies in Orange and the greater Orange area.

Students are required to complete and log a minimum of 15 hours per year of community service as a part of their graduation requirement of 60 total hours. Students at all grade levels are encouraged and motivated to engage in an extensive volunteer program providing assistance, lending their talents, skills, time, energy, and positive attitudes to a diverse community population. Through the office of the Mayor of Orange and the Municipal Alliance, students may acquire information about a variety of civic organizations that welcome the expertise and assistance of high school students. Students may arrange with middle, elementary, and high school principals to volunteer as mentors, tutors, and other practical and meaningful capacities. Religious and non-secular organizations are additional organizations through which students may devote their services to others.

# Course Selection

The Orange Public School District is dedicated to providing all students with equal access to the curriculum and to all course offerings. Students are encouraged to enroll in rigorous courses that provide opportunities to raise their achievement levels and ensure college and career readiness.

Classes are offered at various levels of difficulty, including foundation, college preparatory (CP), honors, and Advanced Placement (AP). Students receiving final grades of “80’s” or “90’s” in the previous year’s courses are encouraged to consider a more rigorous course level for the subsequent year. Honors and AP courses have a higher level of rigor than CP courses, often requiring higher levels of workload, including extensive independent study.

Students and their parents/guardians are advised to consider individual abilities, interests, and needs; to review prior academic history with regard to specific subjects; and to hold frequent and detailed discussions at home regarding the course selections each year. It is also important to consider teacher and counselor recommendations and to have an ongoing dialogue between and among the guidance counselors, student, and parents. School Counselors are available to assist and support students and parents throughout the scheduling process and can be contacted through the guidance departments:

* **Orange Preparatory Academy** at 973-677- 4135
* **Orange High School** at 973-677- 4050
* **S.T.E.M Innovation Academy of the Oranges (STEM)** 973-677- 4000 Ext. 32700
* **Orange Twilight Program** 973-677- 4135

# Course Availability

In order to provide the broadest program possible to meet the needs of students, full year and semester electives are available in all subject areas. Class sizes are established in order to provide optimum educational opportunities for students, and Orange Public Schools makes every attempt to adhere to these limits. Career and Technical Education (CTE) students are given preferential placement in pathway requirements. Course prerequisites are strictly adhered to. A course might not be offered during a given school year due to low enrollment. It is advisable to consider alternate course options during the scheduling process.

**Full year course:** Parents will be notified after 3, 6, and 9 absences

**Semester course:** Parents will be notified after 2, 4, and 6 absences

**Quarter course:** Parents will be notified after 2 and 4 absences

# OPTION II

**ORANGE BOARD OF EDUCATION POLICY**:

**2320- INDEPENDENT STUDY PROGRAMS** (hereafter “**OPTION II”**)

The Board of Education authorizes an independent study program aimed at achieving the Core Curriculum Content Standards for promotion and graduation purposes in accordance with the requirements of N.J.A.C. 6A:8-5.1(a)ii.

An independent study program and appropriate assessments shall be planned for individuals and/or a group based on specific instructional objectives aimed at meeting or exceeding the Core Curriculum Content Standards. The Principal shall certify completion of the independent study program based on specific instructional objectives.

The Principal may utilize a performance or competency assessment to approve pupil completion of an independent study program, including those occurring all or in part prior to the pupil’s high school enrollment.

A group independent study program shall be approved in the same manner as other approved courses. Independent study programs shall be on file in the school district and subject to review by the Commissioner of Education or designee. (N.J.A.C. 6A:8-5.1 et seq.)

Option II is designed to ensure our scholars are College and Career Ready and have every opportunity for academic achievement to further their education. Our courses are, but not limited to, the following:

1. Credit Recovery;
2. Advanced/Accelerated Credit;
3. Additional Credit;
4. College Credit (in collaboration with our college/university partners);
5. Alternative to Physical Education Course offerings;
6. Independent Study; and
7. Practical Learning Experiences.

Option II requires a comprehensive application that must be completed by the student and signed by the parent and building principal. Option II applications will be made available by the secondary Guidance Departments. ***Credits are determined based on the traditional course offering in which the Option II is replacing.***

# Student, Parent and School Counselor Responsibilities

**Student Responsibilities include, but are not limited to:**

* Adhering to appointments made or assigned with his/her counselor, or see their counselor during lunch, before school, or after school.
* Promptly returning all necessary forms related to the guidance process (ex: college application forms, transcript release forms, etc.).
* Meeting with their counselor’s *yearly* to discuss and sign the Memorandum of Understanding (MOU).

**Parent/Guardian Responsibilities include, but are not limited to:**

* Discuss assignments that are being completed in the classroom.
* Usage of the Genesis Parent Portal to review your child’s progress in each course.
* Communicate to your child the importance of attending school.
* Ensure that your child has a well-balanced meal and sufficient rest.
* Become familiar with your child’s friends and their families.

**School Counselor will assist students in the following:**

* Discuss with students the programs of study and course selection process.
* Conduct individual meetings with students to discuss college and career planning.
* Provide programs to assist students and parents with the college selection, application process, scholarships and financial aid.
* Monitor the students’ Memorandum of Understanding (MOU) to ensure that graduation requirements are met.
* Develop an understanding of the Naviance Family Connection Program.
* Establish an understanding of the college planning timeline.
* Create sessions for student athletes regarding recruitment and NCAA Clearinghouse process.
* Provide seminars and information sessions yearly.

# Schedule Adjustments

The process of registering and scheduling students is both complicated and challenging. It is therefore necessary to ask students to make careful and deliberate choices when they register for classes. If it becomes necessary to make a program change, students requesting a scheduled adjustment must complete the Schedule Change Request Form. Requests for schedule changes will **only** be processed for the reasons listed below. Students will be asked to identify the reason for the change before the form will be accepted for processing. Valid reasons for which a student may request a change of class include:

* An error in placement prerequisite(s); prerequisite(s) are not met
* Successful completion of courses taken in summer school
* An error or omission in transcript or data entry
* Meeting graduation requirements

**\*All other course changes must be approved by the Superintendent of Schools in consultation with the high school principals.**

There are several guidelines to which School Counselors will strictly adhere. They include, but are not limited to, the following:

If a student transfers into a closely aligned course within the same discipline, the new course will replace the related course on the student’s transcript. A change of this nature must take place before the end of the first marking period.

Counselors will work with students to finalize course selections. Any changes in course choices where prerequisites are not an issue must be made before the first day of school, while the counseling staff is still available to address these requests.

Alternate course selections made at the time of registration are considered to be valid choices if the first selections cannot be scheduled (usually due to conflicts in the master schedule). CHOOSE WISELY! Changes in a student’s request and/or final schedule must be made before the first day of school.

**A** **Special Note to Students:**

Please take the time to choose courses that are the best match for you, your interests, your abilities and your goals. Gather information from your teachers, parents, administrators and your counselor as you build your academic program for next year. Careful selections now will mean fewer problems once the academic year begins.

# Add / Drop Policy

Generous and reasonable time limits are given to accommodate students’ requests for schedule changes. It is expected that students will use the time limits allotted. **Any Add/Drop or changes to those students enrolled in advanced courses such as Honors and Advanced Placement will require the sign off from the principal of the school as well as the department’s Executive Director.**

It is the intent of this present policy to provide adequate time for each student in conjunction with parents/guardians, counselors and teachers to develop a program best suited to meet his/her needs. The following procedures have been adopted for adding and dropping courses.

**Once the school year begins in September, the policy regarding the Add/Drop of courses will only be allowed a level change prior to or on the 10th day of school.**



**SCHEDULE CHANGE REQUEST FORM**

**Grades Nine Through Twelve**

**Date \_\_\_\_\_\_\_ Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Student Id# \_\_\_\_\_\_\_\_\_\_\_\_\_Grade \_\_\_\_\_**

**Current Credits\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Class I need to Add/Drop: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Class I need to Add/Drop: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Class I need to Add/Drop: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Class I need to Add/Drop: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Rationale for:**

**Add/Drop\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**PARENT AGREEMENT: I have discussed this change with my son/daughter and agree with this request.**

**Parent Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_ Phone: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**1st Approval: School Counselor Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**2nd Approval: Building Administrator Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**3rd Approval: Executive Director of Department Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_**

**\*The Executive Director signature is mandatory for the change.**

**\* Provide comment in Genesis indicating conference with student and outcome.**

# Dual Enrollment College Credit Program

The dual enrollment college credit program allows high school students to earn college credits and complete their secondary graduation requirements. The Orange Public School District has developed partnerships with a multitude of colleges and universities.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **New Jersey Institute of Technology (STEM)** | | |  | **Fairleigh Dickinson University** | | |
|  | MTH 110 Precalculus  MTH 111 Calculus I  MTH 112 Calculus II  CHEM 125/A Chemistry/Lab  HUM 101 English Composition: Writing, Speaking, Thinking I  CS 100: Roadmap to Computing  FRSC 201 Introduction to Forensic Science | |  |  | AO-E125 Introduction of Digital Media  AO–E126 Digital Media  AO-E127 Filmmaking  CGD 1192 Digital Photography  CGD 1843 Design for the Web | |
| **New Jersey Institute of Technology (Architecture & Design)** | | |  |  | | |
|  | | 21st Century Modes of Design Communication  21st Century Computer Aided Design |  |  | | |
| **Rutgers University** *(See Health Science)* | | |  | **Bard College** | | |
|  | IDST 1230 Fundamentals of Health and Wellness  IDST 2250 Dynamics of Health Care in Society  IDST 1100 Emergency and Clinical Care  IDST 1221 Anatomy and Physiology I | |  |  | Seminar 101 The Examined Life  Seminar 102 Power, Gender, and Identity  Seminar 201 Modernity  Seminar 202 The Age of Uncertainty | |
| **Rochester Institute of Technology** | | |  | **Syracuse University** | | |
|  | CAST-PLTW-101-88 Introduction to Engineering Design  CAST-PLTW-102-88 Principles of Engineering  CAST-PLTW-103-88 Digital Electronics  CAST-PLTW-105-88 Computer Integrated Manufacturing | |  |  | ACC 151 Introduction to Financial Accounting | |
| **Kean University’s Scholars Program** | | |  | **Seton Hall University’s Jr. MBA Seton Hall Program** | | |
|  | MATH 0901 Basic Algebra  MATH 1000 Algebra for College Students  ENGLISH 1025 Introduction to College Composition  ENGLISH 1030 English Composition | |  |  | BITM2701 Management Information Systems | |
|  |  |  |  |  |
|  |  |  |  |  |
| **Essex County College** | | |  | **Hudson County Community College** | | |
|  | English Composition 101  English Composition 102  History 101  History 102  Spanish 101  Spanish 102  Art 101 | |  |  | CAI 115 Food Sanitation and Culinary Principles | |

# English Department

Four years of English is required for all students. **All courses offered are aligned to the** **New Jersey Student Learning Standards**. Educators at Orange High School provide students with rigorous, high quality curricula and classroom experiences in order to fully prepare students to achieve college and career readiness. The English curricula allow students to explore the richness of language, the sophistication of ideas, and the many genres through which authors express views about the world. In doing so, students must grapple with the fundamental structures, paradoxes and limitations contained in language and the complexities of written, visual and non-representational texts. Students will develop a base of knowledge by engaging with and analyzing works of quality and substance. They will become proficient in new areas through research and study. The courses require students to read, analyze, and critique progressively complex texts purposefully and listen attentively to gain both general knowledge and discipline-specific expertise. Through reading, writing, speaking, and listening, students explore what it means to think about language and literature in order to express themselves and become self-directed learners, effectively seeking out and using resources. Students looking for opportunities to challenge themselves are welcome to petition for enrollment in honors or Advanced Placement classes (see the Honors/AP course request form).

**Course Paths for High School English**

**English I**

**English I/H**

**NCA I**

**English II**

**English II/H**

**NCA II**

**English III**

**English III/H**

**Bard Seminar I & II**

**AP Comp & Lang**

**American Studies**

**Literature & Film**

**English IV**

**English IV/H**

**Bard Seminar III & IV**

**AP Comp & Lit**

**American Studies**

**Literature & Film**

**English I (5 credits)**

*Prerequisite: None*

This course is designed to introduce, reinforce, and practice literacy skills and literary analysis through the reading of novels, informational texts, primary sources, plays, short stories, poetry, myths, legends, folktales, etc. Emphasis is placed on developing critical thinking skills, identifying the central idea, recognizing theme, analyzing character, and recognizing an author’s purpose. Students learn to initiate and participate effectively in a range of collaborative discussions with diverse partners on grade appropriate topics, texts, and issues, building on others’ ideas and expressing their own clearly. Additional emphasis is placed on the fundamentals of clear organized writing including sentence structure, paragraphing, usage, and the conventions of Standard English grammar and usage when writing or speaking. Students employ technology thoughtfully to enhance their reading, writing, speaking, listening, and language use. Short as well as more sustained research projects are required as students synthesize multiple sources on subjects while demonstrating understanding of the subject under investigation. Instruction will incorporate test sophistication strategies in preparation for End of Course Exams, as well as the college entrance examinations. Students will engage in reading and writing activities through a mandatory grade-level project over the summer.

.

**Honors English I (5 credits)**

*Prerequisite(s): B or better in 8th grade English; teacher recommendation; or parent or student request*

This course introduces students to the challenges and rigors of the Honors English classes. Students who demonstrate competency through test scores, class work, teacher recommendation, and parent/student request have the opportunity to explore English with more intensity. Like students in standard English I classes Honors English students perform analysis of the novel, short story, informational texts, primary source documents, drama, and poetry. The strength of the Honors course of study lies in the extensions of research and tasks related to the analysis of substantive texts, including the use of sophisticated reasoning skills and effective use of technology as students are challenged to become proficient in new areas through research and study. Students will refine and share their knowledge through writing, speaking, listening and the effective use of Standard English. Instruction will incorporate test sophistication strategies in preparation for End of Course Exams, as well as the college entrance examinations. Students will engage in reading and writing activities through a mandatory grade-level project over the summer.

**English II (5 credits)**

*Prerequisite: English I*

This course is designed to further reinforce and practice literacy skills and literary analysis through the reading of novels, informational texts, primary sources, analytical essays, plays, short stories, and poetry. Emphasis is placed on developing and refining critical thinking skills, identifying the central idea, recognizing theme, analyzing character, and recognizing an author’s purpose. Students initiate and participate effectively in a range of collaborative discussions with diverse partners on grade appropriate topics, texts, and issues, building on others’ ideas and expressing their own clearly. Emphasis is placed on clear organized writing including: sentence structure, paragraphing, usage, and the conventions of Standard English grammar and usage when writing or speaking. Students employ technology thoughtfully to enhance their reading, writing, speaking, listening, and language use. Short as well as more sustained research projects are required as students synthesize multiple sources on subjects while demonstrating understanding of the subject under investigation. Instruction will incorporate test sophistication strategies in preparation for End of Course Exams, as well as the college entrance examinations. Students will engage in reading and writing activities through a mandatory grade-level project over the summer.

**Honors English II (5 credits)**

*Prerequisite(s): Honors English I; B or better in English I; teacher recommendation; or parent or student request*

This course extends the learnings of the English II classes as students continue to develop knowledge of the research processes that includes written and oral argumentation. Students initiate and participate effectively in a range of collaborative discussions with diverse partners on grade appropriate topics, texts, and issues, building on others’ ideas and expressing their own clearly. Students in this course are required to participate in a formal debate. Emphasis is placed on clear organized writing including sentence structure, paragraphing, usage, and the conventions of Standard English grammar and usage when writing or speaking. Students employ technology thoughtfully to enhance their reading, writing, speaking, listening, and language use. Short as well as more sustained research projects are required as students synthesize multiple sources on subjects while demonstrating understanding of the subject under investigation. Instruction will incorporate test sophistication strategies in preparation for End of Course Exams, as well as the college entrance examinations. Students will engage in reading and writing activities through a mandatory grade-level project over the summer.

**English III (5 credits)**

*Prerequisite(s): English II*

This course continues to develop students’ skills in analyzing complex literary and informational texts as students delve deeply into works by acclaimed authors and historical figures, including classics from William Shakespeare, Virginia Woolf, and Kate Chopin; seminal pieces from W.E.B. Du Bois, Booker T. Washington, and Elie Wiesel; and contemporary literature from Tim O’Brien and Louise Erdrich. Through the study of a variety of text types and media, students build knowledge, analyze ideas, delineate arguments, and develop writing, collaboration, and communication skills. Students read, discuss, and analyze literary and nonfiction texts focusing on how authors relate textual elements, such as plot, character, and central ideas, within a text; as well as, use word choice an rhetoric to develop ideas and advance their points of view and purposes. As the course progresses students engage in an inquiry-based, iterative process for research building on work with evidence-based analysis. Students explore topics that lend themselves to multiple positions and perspectives as well as gather and analyze research based on vetted sources to establish a position of their own. Students will refine and share their knowledge through writing, speaking, listening and the effective use of Standard English. Instruction will incorporate test sophistication strategies in preparation for End of Course Exams as well as college entrance exams. Summer reading and writing assignments are required.

**Honors English III (5 credits)**

*Prerequisite(s): Honors English II; B or better in English II; teacher recommendation; or parent or student request*

This course is designed for students who have mastered fundamental literacy skills, who wish to work beyond the scope of the College Preparatory English program and who may wish to take AP courses in English. Honors English III extends learning beyond the standard English III course by deeply probing analytical essays that critique and delve into multiple perspectives around complex literary and informational texts of acclaimed authors and historical figures, including classics from William Shakespeare, Virginia Woolf, and Kate Chopin; seminal pieces from W.E.B. Du Bois, Booker T. Washington, and Elie Wiesel; and contemporary literature from Tim O’Brien and Louise Erdrich. Students will refine and share their knowledge through writing, speaking, listening and the effective use of Standard English. Instruction will incorporate test sophistication strategies in preparation for End of Course and college entrance exams. Students will engage in reading and writing activities through a mandatory grade-level project over the summer.

**English IV (5 credits)**

*Prerequisite(s): English III*

This course is designed to offer a wide range of quality texts that engage students in analysis of autobiographical nonfiction, speeches, poetry, drama, and fiction. The English IV curriculum comprises classic and contemporary voices including Malcolm X with Alex Haley, Leslie Marmon Silko, Henry David Thoreau, Benazir Bhutto, Jared Diamond, William Shakespeare, Tennessee Williams, Jhumpa Lahiri, and Nikolai Gogol. Through the study of a variety of text types and media, students build knowledge, analyze ideas, delineate arguments, and develop writing, collaboration, and communication skills. Students will make effective use of 21st century technology, become proficient in new areas through research and study, read purposefully and listen attentively to gain both general knowledge and discipline-specific expertise. Students will refine and share their knowledge through writing, speaking, listening and the effective use of Standard English. Instruction will incorporate test sophistication strategies in preparation for End of Course and college entrance exams.

**Honors English IV (5 credits)**

*Prerequisite(s): Honors English III; B or better in English III; teacher recommendation; or parent or student request*

This course is designed for students who have mastered fundamental literacy skills and who wish to work beyond the scope of the College Preparatory English program. Honors English IV extends learning beyond the standard English IV course by deeply probing analytical essays that critique and delve into multiple perspectives around complex literary and informational texts of acclaimed authors and historical figures, including Malcolm X with Alex Haley, Leslie Marmon Silko, Henry David Thoreau, Benazir Bhutto, Jared Diamond, William Shakespeare, Tennessee Williams, Jhumpa Lahiri, and Nikolai Gogol. Students will make effective us of 21st century technology, become proficient in new areas through research and study, read purposefully and listen attentively to gain both general knowledge and discipline-specific expertise. Students will refine and share their knowledge through writing, speaking, listening and the effective use of Standard English. Instruction will incorporate test sophistication strategies in preparation for End of Course and college entrance exams.

**Literature and Film (5 credits)**

*Prerequisite(s): English I and II*

*This course can be taken in lieu of English III or IV to fulfill graduation requirements*

This course creates themes that students will study through both literature and film. With the inclusion of informational texts that examine scholarly analysis of the themes, students will experience the rigor necessary to ensure that they are obtaining college and career readiness. Students will engage in an analysis of substantive text as they cite relevant evidence. Students will engage in reading and writing activities through a mandatory grade-level project over the summer. Students will make effective use of 21st century technology, become proficient in new areas through research and study, read purposefully and listen attentively to gain both general knowledge and discipline-specific expertise. Students will refine

and share their knowledge through writing, speaking, listening and the effective use of Standard English.

Instruction will incorporate test sophistication strategies in preparation for end of course and college entrance exams.

**Advanced Placement English Language and Composition (5 credits)**

*Prerequisite(s): Honors English II; B or better in English II; teacher recommendation; or parent or student request*

An Advanced Placement (AP) course in English Language and Composition engages students in becoming skilled readers of prose written in a variety of rhetorical contexts, and in becoming skilled writers who compose for a variety of purposes. This course deeply probes rhetoric and historically significant essays that have impacted American Society. Students will analyze the interactions among a writer’s purpose, audience expectations, and subjects, as well as the way genre conventions and the resources of language contribute to effectiveness in writing. Students will refine and share their knowledge through writing, speaking, listening and the effective use of Standard English. Instruction will incorporate test sophistication strategies in preparation for End of Course and college entrance exams. Students will engage in reading and writing activities through a mandatory grade-level project over the summer.

**Advanced Placement English Literature and Composition (5 credits)**

*Prerequisite(s): AP Language and Composition; Honors English III; B or better in English III; teacher recommendation; or parent or student request*

The Advanced Placement (AP) English Literature and Composition course aligns to an introductory college-level literary analysis course. The course engages students in the close reading and critical analysis of imaginative literature to deepen their understanding of the methods writers use language to provide both meaning and pleasure. As they read, students consider a work's structure, style, and themes, as well as its use of figurative language, imagery, symbolism, and tone. Writing assignments include expository, analytical, and argumentative essays that require students to analyze and interpret literary works. Instruction will incorporate test sophistication strategies in preparation for End of Course and college entrance exams.

**Bard Seminar 101: The Examined Life   
(2.5 credits)**

This course launches the core of the Bard Sequence by introducing students to the close reading of texts and the writing of substantive analytical essays that are the basis of much college work. This seminar course, subtitled The Examined Life, focuses on themes of self-discovery, the relationship of the individual and society, and the nature of values and responsibility. It draws on and develops methods introduced in the Writing and Thinking Workshop, fostering critical thinking and the effective articulation of ideas. In the first semester, reading for the course include Sophocles’ Oedipus Rex and Antigone, Plato’s Symposium, Homer’s Iliad, and the first parts of St. Augustine’s Confessions, as well as selections from the Book of Genesis and other short supplementary readings selected to broaden student’s ideas about literature and philosophy and how to approach texts in various genres.

*Dual Enrollment: Students will receive a grade from Orange High School and 3 college credits from Bard College, depending on the final examination grade*.

**Bard Seminar 102: Power, Gender, and Identity (2.5 credits)**

This course continues our examination of some of the foundational texts of Western literature. After completing the second half of St. Augustine’s Confessions, we will read The Prince by Machiavelli, and Shakespeare’s Hamlet. We will then study selections from John Milton’s Paradise Lost and conclude the

course with Jane Austen’s novel, Pride and Prejudice. The course is designed to develop the students’ ability to respond critically and creatively to these texts through close reading, active discussion and reflective writing. As in the first semester, the theme of ‘personal identity’ will be a key theme, but second semester will place a particular emphasis on the role of power, gender and sexuality in the construction of identity.

*Dual Enrollment: Students will receive a grade from Orange High School and 3 college credits from Bard College, depending on the final examination grade*.

**Bard Seminar 201: Modernity (2.5 credits)**

The seminar explores the development of the central ideas that have come to define the modern world. Its focus is on how nineteenth- and early twentieth-century thinkers in various disciplines confronted what was the accepted order of things, how they proceeded to challenge accepted ideas and categories, and how, finally, they constructed radically different conceptions of the world around them. Students are challenged to understand each text within its historical and intellectual context, and to make comparisons among texts as a means of elucidating those contexts.

*Dual Enrollment:* Students will receive a grade from Orange High School and 3 college credits from Bard College, depending on the final examination grade.

**Bard Seminar 202: The Age of Uncertainty (2.5 credits)**

By the early twentieth century an increasing awareness of the limitations of human knowledge complicated people’s conceptions of, and faith in, science and progress. The twentieth century’s global wars, genocidal destruction, threats of nuclear annihilation and environmental degradation, mass population displacements and increasing globalization have turned modernism’s skepticism into postmodern uncertainty. Developments and discoveries in the physical sciences—and in Quantum Theory, in particular—upset the standard conception of the universe as knowable, revealing instead a world dominated by chance and complexity, one comprehensible only through overlapping, and sometimes contradictory, descriptions. In this seminar, students explore the contemporary culture of conducting a research and writing project inquiring deeply into the controversial ideas of one contemporary writer. Students are encouraged to discover how principles of uncertainty can facilitate thinking about the complex, global world of our new century and their place in it.

*Dual Enrollment:* Students will receive a grade from Orange High School and 3 college credits from Bard College, depending on the final examination grade

**ELECTIVES:**

**African-American Women Writers of the 20th Century (2.5 credits)**

*Prerequisite(s): English I and II*

*Open to students in grades 11-12*

Students in this course will focus their study on the short and long fiction, drama, poetry, and songs that represent the tradition of writing that has become the African –American woman’s telling of her dealings with racial and social identity, self-acceptance, and empowerment as major cultural and historical movement took their course. Through class discussion and activities, as well as independent work, students will engage with the major literary themes that connect African-American women’s stories over time. Students will make effective use of 21st century technology, become proficient in new areas through research and study, read purposefully and listen attentively to gain both general knowledge and discipline-specific expertise. Students will refine and share their knowledge through writing, speaking, listening and the effective use of Standard English. Instruction will incorporate test sophistication strategies in preparation for End of Course and college entrance exams. Students will engage in reading and writing activities through a mandatory grade-level project over the summer.

**Creative Writing (2.5 credits)**

*Prerequisite: None*

*Open to students in grades 10-12*

Creative Writing provides opportunities for students to refine their creative writing skills and abilities beyond those developed in the required English courses. This course encourages students to see creative writing as a unique way of thinking, and as a means of constructing and conveying meaning. Students in the Creative Writing course are encouraged to explore and develop their own ideas. They are also encouraged to explore many different ways of conveying meaning through writing, and to explore how methods and styles vary within cultures and time periods. Through experiences in creative writing, students are encouraged to explore connections between their own writing, the writing of others, and the broader world around them. Students will make effective us of 21st century technology, become proficient in new areas through research and study, read purposefully and listen attentively to gain both general knowledge and discipline-specific expertise. Students will refine and share their knowledge through writing, speaking, listening and the effective use of Standard English. Students will complete a mandated summer research project. This course is an English elective and does not fulfill the English course requirements for graduation.

**Journalism I (5 credits)**

*Prerequisite: None*

This course prepares students to become a member of the Tornado News Staff which produces the school newspaper, *Tornado News*. In this introductory course, students will develop grammar, punctuation, capitalization, vocabulary, and organization skills needed for successful writing. Additionally, students will work on activities that explore various journalistic forms of expression such as straight news, features, editorials, and sports writing. Finally, students in this class will work on techniques such as interviewing, note-taking, and writing leads and writing articles which will make them superior journalists. The First Amendment will also be studied by students in this class.  Students will have the opportunity to produce articles for the Tornado News. Successful completion of this class (an average of 88 or better) will allow a student to enroll in Journalism II.

**Journalism II (5 credits)**

*Prerequisite(s): Grades 10, 11, and 12; B or better in Journalism I; teacher recommendation; parent or student request*

This is a rigorous journalism class, open only to students who successfully complete Journalism I or have special permission from the instructor.  In this course, students will produce the *Tornado News*, the OHS student newspaper.  For the *Tornado News*, students will be assigned articles and stories that must be handed in by established deadline days. Journalists will be responsible for researching their articles and editing their copy through conferences with the teacher. Students may be asked to attend extra-curricular activities in their role as journalists.

Since the *Tornado News* will be printed regularly, students enrolled in this class must have a great interest in disciplined writing. They also must have an intense desire to contribute to a more positive school environment through responsible, mature reporting. Students enrolled in this course will be allowed to take the course for elective credits multiple times.

**Public Speaking (2.5 credits)**

*Prerequisite(s): English I and II*

This course covers the theory and practice of public speaking. Additionally, the course will provide an overview of methods of studying to produce academic and formal presentations. Building on the ancient rhetorical canons including Socrates, Kennedy and Malcolm X speeches; while recognizing unique challenges of contemporary public speaking, the course guides students through topic selection, organization, language, and delivery. Assignments include formal speeches (to inform, to persuade, and to pay tribute), brief extemporaneous speeches, speech analyses, and evaluations. Students will develop skills and confidence in research and organization to support them in creating intellectual presentations and speeches for a multitude of audiences. Students will make effective us of 21st century technology, become proficient in new areas through research and study, read purposefully and listen attentively to gain both general knowledge and discipline-specific expertise. Students will refine and share their knowledge through writing, speaking, listening and the effective use of Standard English. Students will engage in reading and writing activities through a mandatory grade-level project over the summer.

**Information Literacy I, II, III and IV   
(2.5 credits)**

*Prerequisite(s): Teacher Recommendation and qualifying HMHISG Student Reading Inventory (SRI) score*

This course is a comprehensive reading intervention program proven to meet the needs of developing readers. It directly addresses individual comprehension and fluency needs through small group teacher led differentiated instruction and adaptive instructional software focusing on informational texts of varying levels of complexity. Students increase capacity and vocabulary through independently reading high-interest non-fiction and literature. This supplemental program will not fulfill the student’s requirement for English for the school year and will be taken in conjunction with the appropriate grade-level English class.

**SAT Prep Course (2.5 credits)**

*Prerequisite(s): Algebra I, English 9 and 10 are suggested*

SAT Prep is designed to help prepare students for the SAT test. In addition to reviewing the basic verbal and mathematical skills assessed on the SAT test, students learn test-taking strategies specific to the exam.  Although all sections of the SAT will be covered.  Material includes samples with explanations, grading rubrics for peer and self-assessment, practice tests with complete multiple-choice assessments, essays prompts, and study resources. Independent practice is followed by guided collaborative review. Upon successful completion, students will possess the tools necessary to complete the SAT to the best of their ability.  8 Weeks of ELA Instruction and 8 Weeks of Mathematics Instruction.

# Mathematics Department

The goal of the Mathematics course of study in grades 9 through 12 is to provide students with a strong foundation and experience in the application of mathematics, i.e., to formulate key questions, to analyze and conceptualize, and to transfer computational skills and strategies to new situations. All mathematics courses address the New Jersey Student Learning Standards and provide opportunities for success -- encouraging all students to develop a positive attitude about mathematics by engaging them in exploring and solving real life problems, and using mathematics in meaningful ways. The Standards for Mathematical Practice apply throughout each course and, together with the content standards, prescribe that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. The outlined courses support the NJ Department of Education’s minimum mathematics requirements for graduation --15 credits including Algebra I content, Geometry content, and a third year of mathematics that builds upon algebra I and geometry and prepares students for college and 21st century careers. The Orange Public Schools encourages students to take a 4th year of high school mathematics. On average, students with four years of high school mathematics score significantly higher on SAT/ACT exams, are less likely to take remediation classes in their first year of college and are more likely to graduate college within 4 years.

**Course Paths for High School Mathematics[[2]](#footnote-2)**

Traditional Pathway

9th Grade 10th Grade 11th Grade 12th Grade

**Algebra I**

**Algebra I/H**

**Algebra II**

**Algebra II/H**

**Geometry**

**Geometry/H**

**Introduction to**

**Statistics or PreCalculus**

**Applying F&M**

**Algebra II**

**Algebra II Honors**

**Geometry**

**Geometry Honors**

**Introduction to**

**Statistics**

**Precalculus1**

**PreCalculus**

**AP Statistics**

**Introduction to**

**Statistics**

**AP Calculus**

Accelerated Pathway

Alternative Pathway

**Foundations of HS Mathematics**

**Algebra II**

**Algebra I**

**Geometry**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Course Title** | **Course Weight** | **Elective** | **Term** | **Credits** | **Prerequisite** |
| Foundations of High School Mathematics | College Prep |  | Full Year | 10 | Placement Assessment, or school counselor/teacher recommendation |
| Algebra I - Intensive | College Prep |  | Full Year | 10 | 8th grade mathematics |
| Algebra I | College Prep |  | Full Year | 10 | 8th grade mathematics |
| Advanced Topics in Algebra I | College Prep |  | Full Year | 10 | Algebra I |
| Algebra I - Honors | Honors |  | Full Year | 10 | Proficient level or higher in 8th grade state standardized assessment and “B” or higher in 8th grade mathematics; teachers’ recommendation  Proficient level or higher in 7th grade state standardized assessment and “B” or higher in 7th grade mathematics; teacher’s recommendation  or successful completion of the Summer Algebra I Bridge program |
| Algebra II-Intensive | College Prep |  | Full Year | 10 | Algebra I |
| Algebra II | College Prep |  | Full Year | 10 | Algebra I |
| Algebra II Honors | Honors |  | Full Year | 10 | Proficient level or higher in state Algebra II End of Course assessment (if applicable)  and “B” or higher in Algebra I grade; teachers’ recommendation |
| Geometry | College Prep |  | Full year | 5 | Algebra II |
| Geometry - Honors | Honors |  | Full Year | 5 | Proficient level or higher in state algebra II End of Course assessment (if applicable)  and “B” or higher in Algebra II grade; teachers’ recommendation |
| Integrated Mathematics I | Honors |  | Full Year | 10 | STEM Academy Acceptance |
| Integrated Mathematics II | Honors |  | Full Year | 5 | Integrated Mathematics I or Algebra I  STEM Academy Acceptance; District/Teacher recommendation |
| Integrated Mathematics III | Honors |  | Full Year | 10 | Integrated Mathematics II or Algebra II  STEM Academy Acceptance |
| Applying Functions & Modeling | College Prep |  | Full Year | 5 | Algebra I, II & Geometry |
| Introduction to Statistics | Honors | Elective | Full Year | 5 | Completed all three required mathematics courses (Algebra I, II, & Geometry)  and “B” or higher in the previous year mathematics course |
| PreCalculus | Honors | Elective | Full Year | 5 | Completed all three required mathematics courses (Algebra I, II, & Geometry)  and “B” or higher in the previous year mathematics course |
| Calculus (AB) | AP | Elective | Full Year | 5/10 | PreCalculus |
| Calculus (BC) | AP | Elective | Full Year | 5/10 | PreCalculus |
| AP Statistics | AP | Elective | Full Year | 5 | Teacher Recommendation |

**Foundations of High School Mathematics   
(10 credits)**

*Prerequisite(s)*: *Placement Assessment, or school counselor/teacher recommendation*

In this course, students will build and reinforce the foundational mathematics concepts and skills needed to undertake high school-level mathematics courses with confidence. This course includes standards from the conceptual categories that serve as pre-requisite concepts and skills: Number and Quantity, Algebra, Functions, and Geometry. Students will strengthen their foundations of mathematics and be prepared for success in future mathematics courses through the investigation of meaningful problems, individually or in cooperative groups, and while using appropriate technologies,

**Intensive Algebra I (10 credits)**

*Prerequisite: 8th grade mathematics*

In Intensive Algebra I, students focus on linear functions and equations, which provide the mathematical tools necessary for consolidating and representing what they’ve learned in elementary and middle school about ratios and proportional reasoning. Students also study exponential and quadratic functions and equations. Throughout the course, students learn to use basic algebraic tools to represent problem situations and to analyze and solve problems. The instructional model of the course “reverses” the process of presenting concepts and skills first and then giving students an opportunity to work on those skills and concepts. Students learn important concepts and skills by “doing math”. The course employs an instructional model that supports collaborative and investigative learning. It strives to promote a vision of mathematics as a human endeavor. In addition, it fosters interactive learning through student writing, reading, speaking, and collaborative activities so students can learn to work effectively with peers, communicate about mathematics both orally and in writing, reason, justify, and generalize; and advance positive work habits and learning dispositions.

**Algebra I (10 credits)**

*Prerequisite: 8th grade mathematics*

In Algebra I, students formally develop the algebraic skills and concepts necessary to succeed in advanced mathematics courses. During this course, students solve problems and work with different representations of mathematical concepts, ideas, and processes to better understand the world. The topics of the course include patterns and multiple representations, proportional reasoning, percent, and direct variation, solving linear equations, linear functions and inequalities, writing and graphing linear equations, lines of best fit, systems of equations and inequalities, quadratic functions, properties of exponents, polynomial functions rational expressions, probability, statistical analysis, and quadratic and exponential function and logic. To achieve the learning goals of each topic, students respond to questions that ask them to look for patterns, estimate, predict, describe, determine, represent, compare and contrast, calculate, solve, write a rule, generalize, and explain their reasoning.

**Advanced Topics in Algebra I (10 credits)**

*Prerequisite(s): Successful completion of Algebra I*

Advanced Topics in Algebra I is a 5-credit course designed to give students an extended trajectory in Algebra I. Algebra I is a foundational course for all higher levels of mathematics. Improving a student’s overall proficiency in Algebra I will help students to be successful in future mathematics courses and increases their overall college readiness. A passing score on the Algebra I NJSLA is also one of NJ’s requirements for high school graduation. Students who have successfully completed Algebra I but have an NJSLA Algebra I score between 715 and 749 are eligible to take the course.

This course covers advanced Algebraic concepts that build upon:

**Quadratic Functions and Relationships**

•       Exploring quadratic functions

•       Comparing linear and quadratic functions

•       Domain, range, zeros, and intercepts

•       Factored form of a quadratic function

•       Investigating the vertex of a quadratic function

•       Vertex form of a quadratic function

•       Parabola Project

•       Transformations of quadratic functions

**Polynomial Operations and Solving Quadratic Equations**

•       Adding and Subtracting Polynomials

•       Multiplying Polynomials

•       Factoring Polynomials

•       Solving Quadratics by Factoring

•       Special Products

•       Approximating & Rewriting Radicals/Solving by Taking Square root

•       Completing the Square

•       Quadratic Formula

•       Systems of Equations (linear and quadratic)

**Sequences and Exponential Functions**

•       Intro to sequences

•       Writing Arithmetic and Geometric Sequences

•       Sequences as functions

•       Comparing Linear and Exponential Functions

•       Graphs of Exponential Functions

•       Exponential Modeling

**Honors Algebra I (10 credits)**

*Prerequisite(s): Proficient level or higher in 8th grade state standardized assessment and “B” or higher in 8th grade math; teachers’ recommendation or successful completion of the Summer Algebra I Bridge program. Proficient level or higher in 7th grade state standardized assessment and “B” or higher in 7th grade math; teacher’s recommendation*

This honors level Algebra I course is offered to students who have demonstrated superior ability in their previous year math course. Topics studied in the regular Algebra I curriculum are taught at an accelerated pace and are extended and explored in greater depth. Additionally, real life projects relating to the content studied will be completed within each marking cycle**.**

**Intensive Algebra II (10 credits)**

*Prerequisite: Algebra I*

Intensive Algebra II is designed to help students develop successful methods for approaching mathematical learning. In addition to the related content standards for Algebra II, mathematical reasoning, effective communication, making connections, and problem solving are key components of this course. Intensive Algebra II includes seven units of study: linear equations and inequalities, systems of linear equations and inequalities, exponential relationships, quadratic functions and equations, polynomial functions and rational functions, radical functions and rational exponents, and exponential and logarithmic functions.

**Algebra II (10 credits)**

*Prerequisite: Algebra I*

Algebra II is a course that extends the content of Algebra I and provides further development of the concept of a function. The course promotes the understanding of both linear and non-linear functional form, as well as the relationship between text, equations, graphs and tables through the mathematical modeling of realistic situations. Topics includes searching for patterns, quadratic functions, graphs of polynomial functions, polynomial modeling, sequences and series, graphs of rational functions, rational expressions and equations, radical functions, graphs of exponential and logarithmic functions, exponential and logarithmic expressions and equations, mathematical modeling, graphs of trigonometric functions, trigonometric expressions and equations, Interpret Data in a normal probability distribution, make Inference and justify conclusions, and make decisions using complex probability models.

**Honors Algebra II (10 credits)**

*Prerequisite(s): Proficient level or higher in state algebra I End of Course assessment (if applicable) and “B” or higher in Algebra I grade; teachers’ recommendation.*

This is an honors level Algebra II course offered to students who have demonstrated superior ability in algebra I course. Topics studied in the regular Algebra II curriculum will be taught at an accelerated pace and be extended and explored in greater depth. In addition, a real-life project related to the content studied will be completed in each marking cycle**.**

**Geometry (5 credits)**

*Prerequisite:* Algebra II

This course introduces students to the tools central to the study of space and spatial relationships. Throughout the course, students will understand and apply the structure of and relationships within an axiomatic system, become adept with the tools central to the study of space and spatial relationships, use the classical methods of finding the area of two-dimensional shapes, including quadrilaterals and circles, learn basic geometry of three-dimensional shapes including methods of finding simple volumes and surface areas, develop spatial reasoning ability, including the capacity to represent shapes and figures concretely, pictorially, algebraically, and through the use of coordinate systems, and use geometric representations and symbols to solve problems and prove theorems.

**Honors Geometry (5 credits)**

*Prerequisite(s): Proficient level or higher in state algebra II End of Course assessment (if applicable) and “B” or higher in algebra II grade; teachers’ recommendation.*

This is an honors level geometry course offered to students who have demonstrated superior ability in Algebra II course. Topics studied in the regular geometry curriculum will be taught at an accelerated pace and be extended and explored in greater depth. In addition, a real-life project related to the content studied will be completed in each marking cycle**.**

**ELECTIVES:**

**Applying Functions and Modeling (5 credits)**

*Prerequisite(s): Algebra I, II, & Geometry*

This is a full year course designed for students to prepare their college math study and future work related to mathematical model. The course provides students an in-depth study of modeling and mathematical functions. Rich problems and applications abound, many designed to develop and sustain algebra skills. Function applications and modeling should be included throughout the course of study. Appropriate technology, from manipulative to graphing calculators and application software, will be used regularly for instruction and assessment.

**Introduction to Statistics (5 credits**)

Prerequisite(s): Completed all three required math courses (Algebra I, II, & Geometry)

and “B” or higher in the previous year math course.

Introduction to Statistics will introduce students to the practice of elementary statistical tools. The course is a full year, high school level course, designed to prepare its students for future work in Statistics and Probability. The course will involve applying statistical techniques to solving meaningful and practical applications in science, business and various other disciplines. The course will familiarize students with the major concepts and tools for collecting, analyzing and making conclusions about data. The course will cover Probability, Experiment Design, Representation of Data, Measures of Central tendency, Normal distribution, Linear Regression and Multiple Regression. The course will involve the use of a TI-84 calculator.

**Precalculus (5 credits)**

*Prerequisite(s): Completed all three required math courses (Algebra I, II, & Geometry) and “B” or higher in the previous year math course.*

Precalculus focuses on standards to prepare students for more intense study of mathematics. The study of circles and parabolas is extended to include other conics such as ellipses and hyperbolas. Trigonometric functions are further developed to include inverse, general triangles and identities. Matrices provide an organizational structure in which to represent and solve complex problems. Students expand the concepts of complex numbers and the coordinate plane to represent and operate upon vectors.

**AP Calculus AB/Lab (5 credits); separate lab**

*Prerequisite: Precalculus*

AP Calculus AB is intended for students who have a thorough knowledge of college preparatory mathematics including algebra, geometry, and trigonometry. The course provides an opportunity for students to receive credit for college level course work. AP Calculus AB focuses on students’ understanding of calculus concepts and provides experience with methods and applications. The main emphasis of the course is on a multi-representational approach to calculus, with concepts, results, and problems being expressed graphically, numerically, analytically, and verbally. The course involves applying derivative and integration techniques to solving practical applications in science, business, and various other disciplines. The course combines theory, pedagogy and design to master these concepts through cooperative work and research-based rich learning tasks. The goal of this course is for students to have a clear concept of Limits, Differentiation, Integration, Fundamental Theorem of calculus, and Area between various curves, Arc Length, Surface, Series and Convergence.

Students who earn a qualifying score on an AP Exam are typically eligible to receive college credit and/or placement into advanced courses in college.

AP Calculus Lab course is designed to develop mathematical knowledge conceptually, guiding students to connect topics and representations throughout each unit in AP calculus course and to apply strategies and techniques to accurately solve diverse types of problem, interpret results, and support conclusions.

**AP Calculus BC/Lab (5credits); separate lab**

*Prerequisite: Precalculus*

AP Calculus BC is roughly equivalent to both first and second semester college calculus course. The AP course covers topics in differential and integral calculus, including concepts and skills of limits, derivatives, definite integrals, the Fundamental Theorem of Calculus, and series and extends the content to different types of equations. The course introduces additional topics including the application of parametric polar and vector functions, applications and derivatives and integrals and polynomial approximations and series. AP Calculus BC teaches students to approach calculus concepts and problems when they are represented graphically, numerically, analytically, and verbally, and to make connections amongst these representations. Students learn how to use technology to help solve problems, experiment, interpret results, and support conclusions. Students who earn a qualifying score on an AP Exam are typically eligible to receive college credit and/or placement into advanced courses in college.

AP Calculus Lab course is designed to develop mathematical knowledge conceptually, guiding students to connect topics and representations throughout each unit in AP calculus course and to apply strategies and techniques to accurately solve diverse types of problem, interpret results, and support conclusions.

**AP Statistics (5 credits)**

*Prerequisite: Teacher Recommendation*

The AP Statistics course introduces students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students will cultivate their understanding of statistics using technology, investigations, problem solving, and writing as they explore concepts like variation and distribution; patterns and uncertainty; and data-based predictions, decisions, and conclusions. There are four themes evident in the content, skills, and assessment in the AP Statistics course: exploring data, sampling and experimentation, probability and simulation, and statistical inference. Students use technology, investigations, problem solving, and writing as they build conceptual understanding.

**SAT Prep Course (2.5 credits)**

*Prerequisite(s): Algebra I, English 9 and 10 are suggested*

SAT Prep is designed to help prepare students for the SAT test. In addition to reviewing the basic verbal and mathematical skills assessed on the SAT test, students learn test-taking strategies specific to the exam.  Although all sections of the SAT will be covered. Material includes samples with explanations, grading rubrics for peer and self-assessment, practice tests with complete multiple-choice assessments, essays prompts, and study resources. Independent practice is followed by guided collaborative review. Upon successful completion, students will possess the tools necessary to complete the SAT to the best of their ability.  8 Weeks of ELA Instruction and 8 Weeks of Mathematics Instruction.

# Science Department

The goal of the Science courses of study in grades 9 through 12 is to address the Next Generation Science Standards by providing students with a strong foundation and experience in the application of topics in science. The majority of the science offerings are laboratory/inquiry-based; thereby providing students with opportunities to design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings. For science to be taught properly and effectively, labs must be an integral part of the science curriculum. (NRC 2006, p.127).

The outlined courses support the NJ Department of Education’s minimum science requirements for graduation --15 credits including at least five credits in laboratory biology/life science or the content equivalent; an additional laboratory/inquiry-based science course including chemistry, environmental science, or physics; and a third laboratory/inquiry-based science course. The district encourages students interested in Science/STEM-related pursuits to elect an additional course of study in science (e.g. Astronomy, Anatomy and Physiology, Pharmaceutical Science, etc.)

**9th Grade 10th Grade 11th Grade/Electives 12th Grade/Electives**

**Biology**

**Honors Biology**

**Physics**

**AP Physics**

**AP Environmental**

**AP Chemistry**

**Forensic Science**

**Pharmaceutical Sci**

**Astronomy**

**Anatomy/Physiology**

**Hydroponics**

**AP Biology**

**Physics**

**Honors Physics**

**Chemistry**

**Honors Chemistry**

**Environmental**

**Hon Environmental**

**Pharmaceutical Sci**

**AP Biology**

**AP Chemistry**

**Chemistry**

**Honors Chemistry**

**Anatomy/Physiology**

**AP Biology**

**Environmental Science w/Lab (5 credits)**

*Prerequisite: None*

Environmental Science examines the mutual relationships between organisms and their environment. The course allows students to become aware of the interrelationships among plants, animals, and humans. Students apply scientific concepts and principles of modern science to analyze environmental issues in topics such as ecology; humans and the environment; Earth’s resources and sustainability. Studies in Environmental Science include the examining the role of private and governmental decisions involving the environment and engaging in evidence-based decision making in real world contexts. The Environmental Science course emphasizes laboratory investigation (experiences in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC 2006, p. 3). Throughout the process, students design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings.

**Honors** **Environmental Science w/ Lab**

**(5 credits)** *Prerequisite: None*

This course is designed for students who have developed a strong background in science. Coursework includes the study of environmental problems and their effects as students evaluate the effectiveness of proposed solutions. Students apply these core ideas as they make predictions based on observations, writing hypotheses, and designing and conducting field studies and experiments. They will evaluate relative risks associated with these identified problems and examine possible alternate solutions. Students will also apply the concepts of environmental science to their everyday experiences and current events and issues in science, politics, and society. The course also provides opportunities for guided inquiry and student-centered learning to foster critical thinking skills and analyze data to make the claim that alterations to one component of Earth’s system can cause changes to other system components, such as the climate system. The crosscutting concepts of cause and effect, stability and change, energy and matter, and structure and function are also called out as an organizing concept for these disciplinary core ideas.

The Honors Environmental course emphasizes laboratory investigation (experiences in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models) (NRC 2006, p. 3). Throughout the process, students design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings.

**AP Environmental Science w/Lab**

**(5 credits)**

*Prerequisite(s):   ‘B’ or better in the following – Honors Environmental Science and Honors/Algebra 2; teacher, parent, student recommendation, and/or successful completion of entrance exam*

AP Environmental Science is the second of a two-year sequence that is designed to prepare students to take the AP Environmental Science examination. It is an interdisciplinary course that focuses on ecological processes, human impacts on the earth, and how to resolve or prevent natural and human-made environmental problems. In this course of study, students evaluate claims, analyze and interpret data, and develop and use models to explore the core ideas centered on interrelations that exist in abundance within the natural world. Lab and Field Investigations. This AP Environmental Science course includes a strong laboratory and field investigation component, the goal of which is to complement the classroom portion of the course and allow students to learn about the environment through firsthand observation. Upon completion of AP Environmental Science, students should be able to:

* Read, understand, and interpret a variety of scientific information.
* Demonstrate proficiency in explaining, analyzing, and evaluating environmental problems and their solutions.
* Apply the concepts and procedures of scientific reasoning to understanding the natural world.
* Perform field studies and experiments, interpret the results of observations, and communicate results to form conclusions.

**Physics w/Lab (5 credits)**

*Prerequisite: Algebra I[[3]](#footnote-3)*

In this laboratory-based course, students learn the basic motions of the universe and the equations that describe them. Students will perform experiments and interpret the results of observations through topics that include forces and motion, types of interactions, energy, electricity and magnetism, and waves and their applications. The Physics course emphasizes laboratory investigation (experiences in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC 2006, p. 3)). Throughout the process, students design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings.

**Honors Physics w/Lab (5 credits)**

*Prerequisite(s): Algebra I[[4]](#footnote-4) teacher recommendation*

This course is designed for students who have developed a strong background in science. Coursework includes the study of classical mechanics, thermodynamics, electricity, magnetism and nuclear physics. Students will do extensive independent reading and writing assignments, including laboratory reports and research papers. The Honors Physics course emphasizes laboratory investigation (experiences in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC 2006, p. 3)). Throughout the process, students design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings.

**AP Physics w/Lab (5 credits)**

*Prerequisite: ‘B’ or better in Honors/Physics and Algebra I and II; successful completion of Physics Entrance Examination; student should be enrolled in Geometry although*  *the basic use of trigonometric functions can be gained either in the concurrent mathematics course or in the AP Physics 1 course itself.*

AP Physics replaces the former one-year AP Physics B course. The course focuses on the big ideas typically included in the first and second semesters of an algebra-based, introductory college-level physics sequence and provide students with enduring understandings to support future advanced course work in the sciences. Through inquiry-based learning, students will develop critical thinking and reasoning skills, as defined by the AP Science Practices as they explore the “big ideas:”

* Objects and systems have properties such as mass and charge. Systems may have internal structure.
* Fields existing in space can be used to explain interactions.
* The interactions of an object with other objects can be described by forces.
* Interactions between systems can result in changes in those systems.
* Changes that occur as a result of interactions are constrained by conservation laws.
* Waves can transfer energy and momentum from one location to another without the permanent transfer of mass and serve as mathematical model for the description of other phenomena.
* The mathematics of probability can be used to describe the behavior of complex systems and to interpret the behavior of quantum mechanical systems.

Students who earn a qualifying score on an AP Exam are typically eligible to receive college credit and/or placement into advanced courses in college.

**Chemistry w/Lab (5 credits)**

*Prerequisite: Algebra 1*

This course addresses the study of the composition, properties, and reactions of substances. Fundamental concepts include the properties of matter, atomic theory, nuclear chemistry, qualitative rate and equilibrium, periodic trends, bonding and types of reactions. The Chemistry course emphasizes laboratory investigation (experiences in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC 2006, p. 3)). Throughout the process, students design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings. Through in-depth hands-on laboratory experiences with an emphasis on the utilization of mathematical, analytical, and data acquisition skills, key concepts (such as the behaviors of solids, liquids, and gases; acid/base and oxidation/reduction reactions; and atomic structure) are further examined.

**Honors Chemistry w/ Lab (5 credits)**

*Prerequisite: ‘B’ or better in Algebra 1; teacher, parent, student recommendation*

This course highlights the chemical and physical properties of the elements and their compounds. Lab experiments, problem solving and critical thinking skills are emphasized in this course. Honors Chemistry is designed for the student who plans to major in science in college. Topics include: properties of matter, quantum theory, nuclear chemistry, periodic trends, bonding and types of reactions, stoichiometry, qualitative, rate, and equilibrium. The Honors Chemistry course emphasizes laboratory investigation (experiences in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC 2006, p. 3)). Throughout the process, students design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings.

**AP Chemistry w/Lab (5 credits)**

*Prerequisite: ‘B’ or better in the following - Honors/Chemistry and Honors/Algebra 2; teacher, parent, student recommendation, and/or successful completion of entrance exam*

AP Chemistry is the second of a two-year sequence that is designed to prepare students to take the AP Chemistry examination. Topics include atomic theory and structure; chemical bonding; nuclear chemistry; states of matter; and reactions (stoichiometry, equilibrium, kinetics, and thermodynamics). AP Chemistry laboratories are equivalent to those of typical college courses. The key concepts and related content that define the AP Chemistry course and exam are organized around underlying principles that encompass core scientific principles, theories, and processes that cut across traditional boundaries and provide a broad way of thinking about the particulate nature of matter underlying the observations students make about the physical world:

* Chemical elements are the building blocks of matter, which can be understood in terms of the arrangements of atoms.
* Chemical and physical properties of materials can be explained by the structure and the arrangement of atoms, ions, or molecules and the forces between them.
* Changes in matter involve the rearrangement and/or reorganization of atoms and/or the transfer of electrons.
* Rates of chemical reactions are determined by details of the molecular collisions.
* The laws of thermodynamics describe the essential role of energy and explain and predict the direction of changes in matter.
* Bonds or attractions that can be formed can be broken. These two processes are in constant competition, sensitive to initial conditions and external forces or changes.

Students who earn a qualifying score on an AP Exam are typically eligible to receive college credit and/or placement into advanced courses in college.

This course requires that 25 percent of the instructional time engages students in lab investigations. This includes a minimum of 16 hands-on labs (at least six of which are inquiry based), and it is recommended that students keep a lab notebook throughout. Students ask questions, make observations and predictions, design experiments, analyze data, and construct arguments in a collaborative setting, where they direct and monitor their progress.

**Biology w/Lab (5 credits)**

*Prerequisite: None*

The Biology course is designed to provide information regarding the fundamental concepts of life and life processes. This course is a comprehensive study of molecular, cellular, and organismic biology. A key goal of the course is to give students an integrated insight into the modern scientific view of the world. This course includes such topics such as cell structure and function, general plant and animal physiology, genetics, and taxonomy. Classwork includes the study of basic structures and functions and energy requirements of living organisms at the cellular and system level, environmental studies with an emphasis on human impact on the environment, genetics, and evolution. The course emphasizes laboratory investigation (experiences in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC 2006, p. 3)). Throughout the process, students design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings.

**Honors Biology w/Lab (5 credits)**

*Prerequisite(s): Teacher, parent, student recommendation*

This course is a comprehensive study of molecular, cellular, and organismic biology. A key goal of the course is to give students an integrated insight into the modern scientific view of the world. Classwork includes the study of basic structures and functions and energy requirements of living organisms at the cellular and system level, environmental studies with an emphasis on human impact on the environment, genetics, and evolution. Each topic will be illustrated with lab exercises or demonstrations. Students will do extensive independent reading and writing assignments, including laboratory reports and research papers.

**AP Biology w/Lab (5 credits)**

*Prerequisite: ‘B’ or better in the following – Honors Biology and Honors/Algebra 2; teacher, parent, student recommendation, and/or successful completion of entrance exam.*

AP Biology is the second of a two-year sequence that is designed to prepare students to take the AP Biology examination and is the equivalent of a two-semester college introductory biology course. The current framework focuses on depth of student understanding achieved through a change in instruction for acquiring enduring conceptual understanding and the supporting content through Big Ideas. Students will spend more time in inquiry-based learning and developing the reasoning skills necessary to engage in the science practices.

**Big Ideas include:**

1. The process of evolution drives the diversity and unity of life.

2. Biological systems utilize free energy and molecular building blocks to grow, reproduce and maintain dynamic homeostasis.

3. Living systems store, retrieve, transmit and respond to information essential to life processes.

4. Biological systems interact, and these systems and their interactions possess complex properties.

Students who earn a qualifying score on an AP Exam are typically eligible to receive college credit and/or placement into advanced courses in college.

**ELECTIVES:**

**Anatomy and Physiology w/Lab (5 credits)**

*Prerequisite: Biology[[5]](#footnote-5)*

This course follows a sequential study of the major body systems in an organized and structured curriculum. Anatomy and Physiology courses present the human body and biological systems in more detail. The course is designed to give students an overview of human anatomical structure and an analysis of physiological principles. In order to understand the structure of the human body and its functions, students learn anatomical terminology, study cells and tissues, explore functional systems (skeletal, muscular, circulatory, respiratory, digestive, reproductive, nervous, and so on). Topics include laboratory investigations, slide work via microscope studies, computer simulated and/or actual dissections of various animal parts and the study of the human skeleton and other organ models. The Anatomy and Physiology course emphasizes laboratory investigation (experiences in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC 2006, p. 3)). Throughout the process, students design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings.

**Astronomy (5 credits)**

*Prerequisite(s): Physics, Algebra II*

Astronomy is a quantitative physical science that applies physics, mathematics, and statistical analysis to observing, describing, and modeling the universe. This course is aimed at exposing students to interstellar space from the smallest fundamental particles to galaxies. In this course students will learn about the life processes of stars and galaxies, how to model movements of planets and spacecraft, as well as what goes into space travel. The course includes labs to further students understanding of Earth’s place in the universe including a series of computer simulation activities using real data and realistic astronomy tasks. Designed activities will involve graphing, calculations and other procedures.

**Forensic Science w/Lab (2.5 credits)**

*Prerequisite(s): Biology, Chemistry, and* *Physics*

Forensic science is a senior-level course that focuses on the skills and concepts behind crime scene investigation. It is rich in exploration and lab investigation that applies many disciplines of scientific study such as biology/anatomy, chemistry, and physics. This course will help students hone their investigative skills through the exploration of a wide range of science concepts including crime scene processing, physical evidence, fingerprinting, autopsies, forensic anthropology & archeology, forensic entomology, drugs & toxicology, glass comparison, serology & DNA, hair & fiber trace evidence, soil comparison, firearm comparison, tool marks & impressions, document examination, and digital forensics. The Forensic Science course emphasizes laboratory investigation (experiences in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC 2006, p. 3). Throughout the process, students design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings.

**Hydroponics (2.5 credits)**

*Prerequisite(s): Biology and Chemistry*

In this course, students will investigate growing mechanisms and their variables through a hands-on approach. The hydroponics greenhouse, serving as a closed hydroponics system, allows students to grow various fruits and vegetables without the use of soil. Students will learn to address topics such as food production, water management (including testing for water quality, dissolved oxygen, PH, and ammonia), genetics, nutrient exchange and nutrition while simultaneously learning about the world of business, production and marketing. The purpose of the hydroponics course is to nurture students in to apply critical thinking skills around relevant and timely issues affecting their environment, including sustainability and food justice.

**Pharmaceutical Science (5 credits)**

*Prerequisite(s): Algebra I, Biology and Chemistry; teacher, parent, student*

*recommendation, an/or successful completion of entrance exam*

This course provides students with an introduction to the Pharmaceutical Sciences; providing a foundation for those pursuing advanced degrees in health and medicine. Coursework includes the study of organic chemistry, biochemistry, principles of Pathophysiology and Drug Action, Drug Discovery and Development, and Drug classification and mechanism.

# Social Studies

In an age of globalization, interdependence, and rapid change, it is imperative for students to grasp critical and historical thinking skills. In addition, the ability to access, comprehend, analyze, and evaluate different types of media is essential to an informed citizen. The mastery of these skills will enable students to identify the general lessons taught by history and apply them to contemporary issues. The relationships between history, literature, and other diverse cultural factors offer students the opportunity to gain a more meaningful understanding of the global community.  Amistad, Holocaust Studies, Latinx, Financial Literacy, LGBTQ, and Disability History mandates are embedded in each core curriculum.

Grade 9 Grade 10 Grade 11 Grade 12

**AP US History**

**AP World History**

**AP Psychology**

**AP US History**

**AP World History**

**AP Psychology**

**US History II**

**Honors US History II**

**US History II**

**Honors US History II**

**US History I**

**Honors US History I**

US History I

Honors US History I

**Global Studies**

**Honors Global Studies**

Global Studies

Honors Global Studies

**Africana Studies**

**Civics**

**Street Law**

**Economics**

**American Studies**

**Sociology**

**AP Psychology**

**Africana Studies**

**Civics**

**Street Law**

**Economics**

**American Studies**

**Sociology**

**AP Psychology**

**Africana Studies**

**Civics**

**Street Law**

**Economics**

**Sociology**

**Africana Studies**

**Civics**

**Street Law**

**Economics**

**Sociology**

**Africana Studies**

**Civics**

**Street Law**

**Economics**

**American Studies**

**Peer Leadership**

**Sociology**

**Africana Studies**

**Civics**

**Street Law**

**Economics**

**American Studies**

**Peer Leadership**

**Sociology**

**Africana Studies**

**Civics**

**Street Law**

**Africana Studies**

**Civics**

**Street Law**

**Global Studies (5 credits)**

*Prerequisite: None*

This course is designed to enhance basic comprehension of Global Studies with an emphasis in global geography, Holocaust and genocide studies, political science, social institutions, political institutions, economic systems, and world cultures from the Renaissance period, Age of Reason, and Colonialism to the present era. The course analyzes these areas and tracks their evolution throughout the continents of Africa, Asia, America, and Europe. In addition, students are exposed to an in-depth analysis of the humanities in relation to world history and current political world events. The course ultimately enables students to place current global events into a historical context, develop a greater understanding of diverse world cultures, and possess a heightened awareness of multiculturalism in their community. The course ultimately enables students to place current global events into an historical context, develop a greater understanding of diverse world cultures, and construct organized arguments about the content that are sound and defended by their own analysis of evidence.

**Honors Global Studies (5 credits)**

*Prerequisite(s): Teacher recommendation based on data from Social Studies 8*

This course is designed for students who have mastered fundamental social studies skills, who anticipate taking AP courses in History. Students will examine the development of nationalism and the emergence of the modern world from the Middle Ages to the twentieth century. It will provide an introduction to various schools of historic criticism beginning with the process for how history is created. Students should expect extensive reading and writing assignments throughout the year. An emphasis on deconstructing primary source material to defend student constructed claims about major historical events is a critical skill that is necessary for this class.

**United States History I (5 credits)**

*Prerequisite: Global Studies*

This survey course focuses on the historical development of the United States through World War I. This survey course focuses on the historical development of the United States through World War I. Using primary documents and research, students analyze the roles of geography, culture, social movements, political institutions, political philosophy, economic systems, and the contributions of women and historically marginalized populations. They are then presented with situations that require them to utilize these analyses as the building blocks toward a written response. The causal relationships between these factors are examined.  The Amistad Curriculum and Genocide and Holocaust studies are embedded in the course. Through the use of primary documents and research, students analyze the roles of geography, culture, social movements, political institutions, political philosophy, economic systems, and the contributions of women and minorities. The causal relationships between these factors are examined. The Amistad Curriculum and Genocide and Holocaust studies are embedded in the course.

**Honors US History I (5 credits)**

*Prerequisite: A or B in Honors Global Studies and/or teacher recommendation*

This course explores the emergence of the United States from a rebellious colony to an imperial world power. The course examines the political, social, and economic context in which the U.S. Constitution was framed and reconstructs the critical debates of the era. Students explore the parallels between the controversies of America’s formative years and our country’s present-day discourse. This course stresses the values, beliefs, and interests that influenced the political development of the young American nation through World War I. The course uses primary source documents and reconstructed debates to explore the clash of opinions that determined America’s first two centuries. The experience is designed to provide students with the knowledge and skills needed for responsible citizenship today. The Amistad Curriculum and Genocide and Holocaust studies are embedded in the course. Students should expect extensive reading and writing assignments. An emphasis on deconstructing primary source material to defend student constructed claims about major historical events is a critical skill that is necessary for this class.

**United States History II (5 credits)**

*Prerequisite: United States History I*

This survey course centers on the historical development of the United States from the 1929 Depression to the present, including imperialism, immigration, migration within the US, populism, progressive movements, and how wars impacted the US politically, economically, and culturally. The causal relationships between these factors are examined. Using primary documents and research, students analyze the roles of geography, culture, social movements, political institutions, political philosophy, economic systems, and the contributions of women and historically marginalized populations. They are then presented with situations that require them to utilize these analyses as the building blocks toward a written response. The Amistad Curriculum and Genocide and Holocaust studies are embedded in the course.

**Honors US History II (5 credits)**

*Prerequisite(s): A or B in Honors US History I or teacher recommendation*

This course explores the transformation of the North America continents in the early twentieth century. Students examine the complicated and violent way in which expansion affected individual and communities. Explore the jarring economic technological and social changes of 20th Century. The course introduces the causes of the World War II and its implication on the nation's development of foreign policy and immigration. Civil Rights struggles through modern times are analyzed. The course uses primary source documents and reconstructed debates to explore the topics of the course. The experience is designed to provide students with the knowledge and skills needed for responsible citizenship today. Boston University’s Choices Program, the Amistad Curriculum and Genocide and Holocaust Studies are embedded in the course. Student should expect extensive reading and writing assignments. An emphasis on deconstructing primary source material to defend student’s constructed claims about major historical events is a critical skill that is necessary for this class.

**AP US History (5 credits)**

*Prerequisite: “B” or better in US History I and US History II and/or teacher recommendation*

This course is designed to prepare students to successfully take the Advanced Placement exam in U.S. History and to provide the equivalent of a first year college U.S. History course. Students will be expected to do extensive research on topics ranging from Pre-Columbian America & the Colonia period to current day. Students will examine both primary and secondary source documents and develop pertinent vocabulary, reading, writing, and higher order thinking skills. In addition, students will be able to link historical literature of the periods, to relate past and future events with the current events, to establish extensive library skills, and to further develop geography skills such as map, chart, and graph reading. Students will be exposed to small group and large group discussions, debates, panel discussions, interviewing, extensive writing.

**AP World History (5 credits)**

*Prerequisite: “B” or better in US History I and US History II and/or teacher recommendation*

This course focuses on developing students’ understanding of world history from approximately 8000 B.C.E. to the present. The course has students investigate the content of world history for significant events, individuals, developments, and processes in six historical periods, and develop and use the same thinking skills and methods (analyzing primary and secondary sources, making historical comparisons, chronological reasoning, and argumentation) employed by historians when they study the past. The course also provides five themes (interaction between humans and the environment; development and interaction of cultures; state building, expansion, and conflict’ creation, expansion, and interaction of economic systems; development and transformation of social structures) that students explore throughout the course in order to make connections among historical developments in different times and places encompassing the five major geographical regions of the globe: Africa, the Americas, Asia, Europe, and Oceania. AP World History is designed to be the equivalent of a two-semester introductory college or university world history course. Students are expected to read college-level materials and write critically and analytically.

**AP Psychology (5 credits)**

Prerequisite: “*B” or better in US History I and/or teacher recommendation*

This course introduces students to the systematic and scientific study of human behavior and mental processes. While considering the psychologists and studies that have shaped the field, students explore and apply psychological theories, key concepts, and phenomena associated with such topics as the biological bases of behavior, sensation and perception, learning and cognition, motivation, developmental psychology, testing and individual differences, treatments of psychological disorders, and social psychology. Throughout the course, students employ psychological research methods, including ethical considerations, as they use the scientific method, evaluate claims and evidence, and effectively communicate ideas. In addition, students will analyze data from psychological research studies and connect psychological concepts and theories to real-life scenarios

**ELECTIVES:**

**Africana Studies (2.5 credits)**

*Elective open to all students in grades 9-12*

This course will analyze the history of the African diaspora from the ancient empires through the modern times. Students will conduct an in-depth study of African history and culture through art, music, literature, religion, politics, law, science, and business. All aspects of the African diaspora, which include all African descendants on the African continent, the Caribbean, Latin America, and the U.S. respectively, will be closely analyzed. Past and present issues surrounding Pan-Africanism as a movement for liberation and independence will carefully be studied as well. As an extension of the curriculum, students will be afforded the opportunity to attend trips and special presentations. Students will be assessed based on individual and group projects, presentations, and traditional assessments.

**Civics (2.5 credits)**

*Elective open to all students in grades 9-12*

This course is designed to prepare students to be informed, active, and responsible citizens committed to the fundamental values and principles of the American constitutional democracy. Effective and responsible participation in American society requires knowledge and understanding of laws and the impact it has on the individual and society. Students will gain a basic understanding of government, law, politics, and top world affairs. As an extension of the curriculum, students will be afforded the opportunity to participate in related trips. Students will be assessed based on individual and group projects, presentations, and traditional assessments.

**Economics (2.5 credits)**

*Elective open to all students in grades 10-12*

Economicsincludes a study of the foundations of economics, a comparative study of major economic systems in the world today, and an attempt to utilize basic economic ideas and principles for everyday life. The materials used to teach the course as well as the student-centered approach require that students who elect Economics deal with complex concepts, daily reading assignments, active class participation, essay questions on tests, and both independent and group research projects. This course fulfills the Financial Literacy requirement for graduation.

**Criminal Justice/Street Law (2.5 credits)**

*Elective open to all students in grades 9-12*

Criminal Justice/Street Law will analyze the theories and practices of the criminal justice system in the U.S. Traditional studies in juvenile justice, constitutional law, individual rights, fair trial, free press, voters' rights, civil rights, and the penal system are investigated, in addition to exploring students' abilities to think critically about logical information.

**Peer Leadership (5 credits)**

*Open to students in grade 12 with teacher recommendation*

Peer Leadership is a student-to-student mentoring program that utilizes seniors to help freshmen acclimate to their a high school environment by helping them cope with academic and social issues they may encounter. Peer leaders must also engage in activities within the school that promote good citizenship, social activism, and volunteerism.

**Sociology (2.5 credits)**

*Open to students in grades 10-12*

This semester course aims to provide students with comprehensive knowledge and relevant skills in the field of sociology in preparation for more advanced educational exploration into the subject and application to real life experiences. By investigating classical and contemporary sociological theorists, students can apply distinct perspectives of sociology to evaluate social groups, institutions, and problems. The process of socialization occurs for individuals in different ways and through various life stages, and the agents contributing to socialization are essential to this study. In every society, individuals are stratified by social class; recognizing the classification and impact of social class is a complex and rich subject explored as a way to understand why individuals are treated differently based on their background. As students examine how American society operates and how its people behave, they explore topics including: family, minority groups, crime, prison, and poverty.

**Humanities:**

**American Studies (5 credits)**

*Elective: Teacher recommendation; students in grades 11-12*

Students will analyze how music, literature, and popular culture impacted historical events and how they were, in some cases, an outgrowth of political events. This course, co-taught by English teacher and a social studies teacher, examines American historical events through the lens of literary themes, political philosophies, cultural developments and how the voices of the people have shaped this country. Literary analysis and writing skills will be enhanced. Class size is limited, and teacher recommendation is necessary.

# Physical Education, Health & Safety Department

Students must take 1 marking period of Health and Safety and 3 marking periods of Physical Education for each year of high school to meet the New Jersey State requirements. All NJSLS for Health and Physical Education are covered. Option 2 may be substituted for those students participating on an Orange High School sports team or enrolled in Dance.

**Physical Education 12**

**First Aid**

**Physical Education 11**

**Family Living**

**Physical Education 10**

**Safety (Driver’s Education)**

**Physical Education 9**

**Health I**

**Lifelong Health and Fitness**

**Physical Education 9, 10, 11, 12 (4 credits)**

The Physical Education curriculum attempts to stimulate interest and enjoyment in physical skills, sports and other such activities in an effort to promote the importance of physical fitness and to encourage an appreciation for good health habits. Students are taught to develop a sense of responsibility and leadership, improve and maintain muscular control, and become knowledgeable of rules which govern these activities. They will develop habits, which will promote physical fitness.

**Health I - Grade 9 (1 credit)**

*Prerequisite: None; One Marking Cycle*

The Health Education curriculum is designed to promote information and skills students need to become health literate, maintain and improve health, prevent disease and reduce the health-related risk behaviors. The purpose of the program is to insure that each child will grow to understand the importance of personal health for a lifetime of wellness.

**Safety/Driver’s Education – Grade 10**

**(1 credit)**

*Prerequisite: None; One Marking Cycle*

This course covers laws that control our driving privileges, understanding traffic signs, signals and pavement markings, rules of the road, defensive driving, driver problems and what to do in emergencies. It culminates with students taking the New Jersey State Driver’s Written Exams.

**Family Living – Grade 11 (1 credit)**

*Prerequisite: None; One Marking Cycle*

This course focuses on developing skills in problem solving, interpersonal relationships, family management issues, citizenship, and social health problems.

**First Aid – Grade 12 (1 credit)**

*Prerequisite: None; One Marking Cycle*

American Red Cross standard course is taught. Emphasis is on safety, prevention of further injury and cardio-pulmonary resuscitation, and AED use.

**Lifelong Health and Fitness (5 Credits)**

*Prerequisite: Physical Education 9, 10, and 11*

This course can provide students with an understanding of the concepts of physical fitness, and how to apply & incorporate these concepts into their lives today & in the future. This course will cover fitness concepts including, but not limited to:

* + Training Principles
  + Nutrition
  + Motivation

Components of Health Related Fitness: Aerobic Fitness, Muscular Strength & Endurance, as well as Flexibility

* + Body Composition
  + Components of Skill Related Fitness: Agility, Balance, Coordination, Power, Reaction Time, Speed
  + Assessments
  + Program Design
  + Fitness & Aging
  + Activities & Fitness for Life
  + First Aid

This course fulfills the Health (1 credit) and Physical Education (4 credits) requirement for students in 12th grade.

# World Language Department

The World Language program is designed to stimulate curiosity for the love of learning a new language while focusing on developing academic skills in all content areas, as well as promoting cultural awareness, and expanding critical and analytical thinking. The World Language Department encourages the study of one or more languages to promote global understanding. Language expresses the essence of a people and its study fosters a gradually deepening knowledge of the culture, geography, history, and social institutions of other countries. In addition, it provides a differing perspective on one’s own culture and language.

Students will be administered the Standards-Based Measure of Proficiency (STAMP) prior to placement and in junior or senior year to measure achievement. This assessment measures language proficiency in the target language (French, Spanish or Mandarin). It is used to determine accurate level placement for students.  If a sufficient score if obtained, the student is not required to take the 2 years of World Languages to graduate. Junior and seniors can qualify for the Seal of Biliteracy, an award given by the state in recognition of students who have studied and attained proficiency in two or more languages by high school graduation.

**French I (5 credits)**

*Prerequisite: None*

This course aims to develop the necessary basic skills for listening, speaking, reading and writing of French. Writing is limited to basic sentence structure culminating in the ability to structure short compositions. The students are assessed in diverse manners ranging from individual to collective assessments.

**French II (5 credits)**

*Prerequisite: French I or an “A” average in 8th grade French with teacher recommendation*

This course utilizes the skills obtained in French I in order to continue developing the students within the French language. Greater emphasis is placed on listening and speaking. Students acquire a basic grammatical background, enabling them to read French literature in the next two courses.

**French III (5 credits)**

*Prerequisite: French II*

This course consolidates the first two years’ work. Emphasis shifts from the oral production to reading and writing skills. Longer reading assignments from selections of both modern and classical French literature are required as well as essay production.

**AP French Language (5 credits)**

*Prerequisite(s): Three to four years of French or equivalent native fluency*

This course aims to prepare the students for the AP Exam and for further study of French language, culture, and literature. It uses the previous knowledge gained from French Language courses. It demands a great amount of grammar, vocabulary, listening, reading, and writing skills in order to be successful.

**Native Speaker French I (5 credits)**

*Prerequisite(s): STAMP Placement Test*

This course is designed for students who have been formally exposed to listening, speaking, reading and writing French and are interested in continuing their study of the language. It aims to review grammar rules and the orthography. Students will read and write extensively, give oral presentations, and participate in debates, all while learning about the fundamental grammatical structures of French. It is open to any student making high proficiency on the STAMP assessment.

**Native Speaker French II (5 credits)**

*Prerequisite(s): Placement Test and Teacher Recommendation*

This course is designed for students who have been formally exposed to listening, speaking, reading and writing French and are interested in continuing their study of the language. It aims to review grammar rules and the orthography. Students will read and write extensively, give oral presentations, and participate in debates, all while learning about the fundamental grammatical structures of French. It is open to any student making high proficiency on the STAMP assessment.

**Spanish I (5 credits)**

*Prerequisite: None*

This course aims to develop understanding and speaking the language by developing basic skills for listening, speaking, reading and writing of Spanish. Students must master the present tense, as well as basic grammatical structures. Stress is placed on good pronunciation and a strong command of vocabulary.

**Spanish II (5 credits)**

*Prerequisite: Spanish I or Placement test*

This course reinforces skills learned in Spanish I while adding the development of reading and writing skills. It also aims to increase vocabulary and nuances of words in Spanish and more use of Spanish is infused.

**Spanish III (5 credits)**

*Prerequisite: Spanish II*

This course reinforces the skills learned in Spanish II and it also aims to develop other skills in listening, speaking, reading and writing. It concentrates on vocabulary development and verb tenses. Students are expected to comprehend, understand, and participate in discussions and correctly write short paragraphs in Spanish.

*Dual Enrollment-Students may be eligible to earn three (3) college credits from Seton Hall University.*

**AP Spanish Language (5 credits)**

*Prerequisite(s): Three to four years of Spanish or equivalent native fluency*

This course aims to prepare the students for the AP Exam and for further study of Spanish language, culture, and literature. It uses the previous knowledge gained from French Language courses. It demands a great amount of grammar, vocabulary, listening, reading, and writing skills in order to be successful.

**Native Speaker Spanish I (5 credits)**

*Prerequisite(s): STAMP Placement Test*

This course is designed for students who have been formally exposed to listening, speaking, reading and writing Spanish and are interested in continuing their study of the language. It aims to review grammar rules and the orthography. Students will read and write extensively, give oral presentations, and participate in debates, all while learning about the fundamental grammatical structures of Spanish. It is open to any student making high proficiency on the STAMP assessment.

**Native Speaker Spanish II (5 credits)**

*Prerequisite(s): Placement Test and Teacher Recommendation*

This course is designed for students who have been formally exposed to listening, speaking, reading and writing Spanish and are interested in continuing their study of the language. It aims to review grammar rules and the orthography. Students will read and write extensively, give oral presentations, and participate in debates, all while learning about the fundamental grammatical structures of Spanish. This course aims to assist the Spanish native speaker meet the college foreign language requirement. It is open to any student making high proficiency on the STAMP assessment.

# Career and Technical Education Department

Career and Technical Education (CTE) is an educational option that provides learners the opportunity to earn industry-valued credentials, college credit, and workplace experiences incorporating a rigorous academic core coupled with a high-level technical curriculum. The Career and Technical Education Department at Orange High School offers career pathways that lay the foundation for entry into future careers in culinary arts, accounting and entrepreneurship, computer networking, health sciences, graphic arts, government, and digital media/filmmaking. In grade 8 all students take a career interest inventory using the Naviance system. This opens the discussions with school counselors to place students in areas of interest for future careers. In grades 9-12, students who have chosen a career pathway will follow a sequence of courses that culminates with the student receiving an industry valued credential and/or dual enrollment credit, development of a professional portfolio, participation in one or more work-based learning experiences and membership in a Career and Technical Student Organization.  Networking with professionals in the field as well as experiential field trips are also offered.

The Career and Technical Education (CTE) program addresses NJ Student Learning Standards in several core content areas with an emphasis on the learning standards for 21st Century Life and Careers skills specific to each pathway.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Accounting |  | **Introduction to Business Accounting** | | | ⏵ | **Accounting I** | | | ⏵ | **Accounting II** | | |
|  |  |  | | |  |  | | |  |  | | |
| AV Technology  & Film[[6]](#footnote-6) |  | **Introduction to Digital Media** | | | ⏵ | **Digital Media** | | | ⏵ | **Filmmaking** | | |
|  |  |  | | |  |  | | |  |  | | |
| Culinary |  | **Diet and Nutrition** | | | ⏵ | **Basic Foods** | | | ⏵ | **Food Service Preparation** | | |
|  |  |  | | |  |  | | |  |  | | |
| Entrepreneur-  ship |  | **Business Finance** | | | ⏵ | **Introduction to Marketing** | | | ⏵ | **Entrepreneurship** | | |
|  |  |  | | |  |  | | |  |  | | |
| Graphic Arts[[7]](#footnote-7) |  | **Graphic Arts** | | | ⏵ | **Web Design** | | | ⏵ | **Graphic Arts Production** | | |
|  |  |  | | |  |  | | |  |  | | |
| Health Sciences[[8]](#footnote-8) |  | **Dynamics of Health Care in Society** | | | ⏵ | **Fundamentals of Health and Wellness** | | | ⏵ | **Emergency and Clinical Care** | | |
|  |  |  | | |  |  | | |  |  | | |
| CISCO  Networking Academy[[9]](#footnote-9) |  | **Computer TIA A+** | | | ⏵ | **CISCO Networking Academy I** | | | ⏵ | **CISCO Networking Academy II** | | |
|  |  |  | | |  |  | | |  |  | | |
| Navy  JrROTC[[10]](#footnote-10) |  | **Naval Science I** | ⏵ | **Naval Science**  **II** | | | ⏵ | **Naval Science**  **III** | | | ⏵ | **Naval Science**  **IV** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Title** | **Elective** | **Term** | **Credits** | **Prerequisite** |
| Introduction to Business Accounting |  | Semester | 2.5 | None |
| Accounting I |  | Full Year | 5.0 | Introduction to Business Accounting |
| Accounting II |  | Full Year | 5.0 | Accounting I |
| Exploring Digital Media and Film | Elective | Semester | 2.5 | None |
| Introduction to Digital Media |  | Semester | 2.5 | None |
| Digital Media |  | Semester | 2.5 | Introduction to Digital Media |
| Filmmaking |  | Full Year | 5.0 | Introduction to Digital Media and Digital Media |
| Diet and Nutrition |  | Semester | 2.5 | None |
| Basic Foods |  | Semester | 2.5 | Diet and Nutrition |
| Food Service Preparation |  | Full year | 5.0 | Basic Foods |
| Business Finance |  | Semester | 2.5 | Introduction to Business or Financial Literacy |
| Introduction to Marketing |  | Full Year | 5.0 | Business Finance |
| Entrepreneurship |  | Full Year | 5.0 | Introduction to Marketing |
| Introduction to Graphic Arts | Elective | Semester | 2.5 | None |
| Graphic Arts |  | Semester | 2.5 | Art elective or teacher recommendation |
| Web Design |  | Semester | 2.5 | Graphic Arts |
| Graphic Arts Production |  | Full Year | 5.0 | Web Design |
| Introduction to Health Care in Society | Elective | Semester | 2.5 | None |
| Dynamics of Health Care in Society |  | Full Year | 5.0 | None |
| Fundamentals of Health and Wellness |  | Full Year | 5.0 | Dynamics of Health Care in Society |
| Emergency and Clinical Care |  | Full Year | 5.0 | Dynamics of Health Care in Society, Fundamentals of Health and Wellness, Medical Terminology and Chemistry |
| Naval Science I |  | Semester | 2.5 | None |
| Naval Science II |  | Full Year | 5.0 | None |
| Naval Science III |  | Full Year | 5.0 | Naval Science II |
| Naval Science IV |  | Full Year | 5.0 | Naval Science III |
| Computing Ideas | Elective | Full Year | 5.0 | None |
| Computer TIA A+ |  | Full Year | 5.0 | Computing Ideas or Teacher Recommendation |
| CISCO Networking Academy I |  | Full Year | 5.0 | Computer TIA A+ |
| CISCO Networking Academy II |  | Full Year | 5.0 | Cisco Networking Academy I |
| Introduction to Business | Elective | Semester | 2.5 | None |
| Financial Literacy | Elective | Semester | 2.5 | None |
| Culinary Arts | Elective | Full Year | 5.0 | Food Service Preparation |
| Scientific Principles of Nutrition | Elective | Full Year | 5.0 | Must be a sophomore |
| Medical Terminology | Elective | Full Year | 5.0 | Dynamics of Health Care in Society, Biology and Algebra |
| Business Law | Elective | Semester | 2.5 | Introduction to Business or Financial Literacy |

**GRAPHIC ARTS PATHWAY COURSES**

**Introduction to Graphic Arts (2.5 credits)**

*Prerequisite: None*

This course is a foundational course where students will explore visual communication and self-expression from an artistic perspective. Students will create commercial, interactive, and fine art through the lens of creative problem-solving. Exploration of careers in Graphic Arts will provide students with an overview of professions available in this field. All coursework will prepare students to be successful in the Graphic Arts CTE pathway.

**Graphic Arts (2.5 credits)**

*Prerequisite: Art elective or teacher recommendation*

Students will be instructed on graphic design applications on PC platforms. The various software programs and digital applications students will be exposed to include Adobe Creative Suite and Google Apps. Students will learn to design original projects such as advertisements, posters, and t-shirt designs for personal use and for business. Students will leave the course with a strong foundation in graphic design which will enable them to create and sell designs independently. Such a foundation will enhance their prospects for obtaining higher education in the design field and for becoming professional graphic designers.

*Dual Enrollment: Students enrolled in this course will receive a grade from Orange High School and 3 credits from Fairleigh Dickinson University, depending on the final examination grade.*

**Graphic Arts Production (5 credits)**

*Prerequisite: Web Design*

This program is the production course graphic arts and gives students the opportunity to participate in advanced projects as well as work-based learning situations related to Graphic Communications. Students produce page designs and write, edit, and proofread copy, captions, and headlines. Students will have the opportunity to build their portfolios.

*~~Dual Enrollment: Students enrolled in this course will receive a grade from Orange High School and 3 credits from Fairleigh Dickinson University, depending on the final examination grade.~~*

**Web Design (2.5 credits)**

*Prerequisite: Graphic Arts*

Students will be instructed on web design applications on PC platforms. The various software programs and digital applications students will be exposed to include Adobe Creative Suite, HTML, and Google Apps. Students will learn to design and publish original websites for personal use and for business. Students will leave the course with a strong foundation in web design which will enable them to independently create websites. Such a foundation will enhance their prospects for pursuing higher education in graphic design and web design and for becoming professionals in the field.

*Dual Enrollment: Students enrolled in this course will receive a grade from Orange High School and 3 credits from Fairleigh Dickinson University, depending on the final examination grade.*

**BUSINESS ELECTIVES**

**Introduction to Business (2.5 credits)**

*Prerequisite: None*

In this course, students will be introduced to the world of business through real-world applications and experiences. Students will focus on key concepts of business that will lay the foundation for Economics, and Marketing while gaining a deeper knowledge in personal financial literacy standards inclusive of money management, credit and debt management, and planning, saving, and investing. Students who are not in the Accounting and Entrepreneurship Pathways can use this course to satisfy their Financial Literacy graduation requirement.

~~Throughout~~

**Financial Literacy (2.5 credits)**

*Prerequisite: None*

Students will acquire an in-depth understanding of financial, economic, business, entrepreneurial, critical thinking and writing skills to develop their personal finance literacy. The course focuses on career skills, career awareness, exploration, and preparation. Students will learn to assess financial opportunities and determine the relevance, reliability, and importance of financial resources. This course fulfills the Financial Literacy requirement for graduation.

**Business Law (2.5 credits)**

*Prerequisite: Introduction to Business or Financial Literacy*

Students will gain a solid foundation in understanding the legal issues related to topics of business law and personal law. Areas of study will include how laws were formed, procedures in civil and criminal cases, making contracts, terminating contracts, responsibilities of minors, being a consumer, purchasing power, purchasing insurance, personal and real property rights, starting a business and leadership skills.

***Accounting Pathway***

**Introduction to Business Accounting**

**(2.5 credits)**

*Prerequisite: None*

Students will be introduced to the world of business through real-world applications and experiences. Throughout the course, students will focus on key concepts of business that will lay the foundation for advanced courses such as Accounting, Business Law, Business Finance, and Entrepreneurship. This course will provide students with opportunities to develop their 21st Century Skills while learning about the three forms of business, basic accounting principles, business planning, economics, and marketing. Students will gain a deeper knowledge personal financial literacy standard inclusive of money management, credit and debt management, and planning saving, and investing. Students who are not in the Accounting and Entrepreneurship Pathways can use this course to satisfy their Financial Literacy graduation requirement.

**Accounting I (5 credits)**

*Prerequisite(s): Introduction to Business Accounting*

This course is designed to provide students with a foundational level in the computing, classifying, maintaining, recording, and verifying financial transactions and product control including monitoring cash flows. Students will keep and maintain financial records, summarize the records for interpretation, and analyze those records to make informed decisions. In addition to learning the basics of Accounting, students will learn about starting proprietorships, journalize transactions, prepare financial statements, and monitor cash control systems.

**Accounting II (5 credits)**

*Prerequisite(s): Accounting I*

The final course in the Accounting Program’s sequence is designed to provide students with an in-depth review of computing, classifying, maintaining, recording, and verifying financial transactions and product control including monitoring cash flows. Accounting II incorporates the essentials of accounting principles and procedures in managerial, intermediate, and cost accounting with an emphasis on corporate accounting. The course is constructed to enhance 21st Century skills and prepare students for careers in accounting or business.

*Dual Enrollment: Students will receive a grade from Orange High School and college credits from Syracuse University, depending on the final examination grade*.

***Entrepreneurship Pathway***

**Business Finance (2.5 credits)**

*Perquisite: Introduction to Business or Financial Literacy*

The course is designed to provide students with an overview of the principles of business finance. The curriculum focuses on major areas of study, including economics, marketing, accounting procedures, and the global financial market. An integral component of the curriculum is the application of decision-making skills that enables students to become more responsible consumers, producers, or business entrepreneurs.

**Introduction to Marketing (5 credits)**

*Prerequisite(s): Business Finance*

This course will provide students with a basic foundation to further their studies in marketing. Students will study how economic functions are interconnected within the marketplace through the Seven P’s of Marketing: Product, Price, Promotion, Place, Packaging, Positioning, and People. The principles of the course are based on the core concepts of business and marketing, which include but are not limited to economics, finance, and promotion. The communication, employability, and marketing skills learned in this course will increase students’ opportunities for a successful transition in the business world. DECA and FBLA will be utilized as a means to provide students with leadership development through activities and competitive events.

**Entrepreneurship (5 credits)**

*Prerequisite(s): Introduction to Marketing*

This course is designed for students who are interested in business and enhancing their 21st Century Skills. Students in the course will work to develop an entrepreneurial mindset, which will be capable of critical thinking and problem solving in fast-paced business environments. Every student in the course will examine various entrepreneurial ventures and create a for-profit or non-profit venture of their own. Through real-world experiences, students will be engulfed in entrepreneurial concepts, such as creativity, customer focus, and team building. Throughout the course, students will be challenged to identify, develop and self-reflect on their own entrepreneurial strengths and weaknesses.

***Animation, Interactive Technology, Video Graphics, and Special Effects***

**Exploring Digital Media and Film (2.5 credits)**

*Prerequisite: None*

This course is designed for students interested in exploring digital media and film. Students will explore fundamental concepts and technical tools utilized to communicate with an audience. Students will learn the primary functions of digital photography, blogging, podcasting, and creating short films and music. Exploration of careers in Audiovisual (AV), Technology and Film will provide students with an overview of professions available in this field. All coursework will prepare students to be successful in the Animation, Interactive Technology, Video Graphics, and Special Effects CTE pathway.

**Introduction to Digital Media (2.5 credits)**

*Prerequisite(s): None*

This course is designed for students who are interested in digital photography and video production. Students in the course will be provided with opportunities to learn the fundamental conceptual and technical tools to succeed in the world of digital media. In addition to digital photography and video production, students will learn the basics of screenwriting, creating short films and music, and editing videos.

*Dual Enrollment: Students enrolled in this course will receive a grade from Orange High School and 3 credits from Fairleigh Dickinson University, depending on the final examination grade.*

**Digital Media (2.5 credits)**

*Prerequisite(s): Introduction to Digital Media*

The second course of the Animation, Interactive Technology, Video Graphics, and Special Effects Program, students will build upon the essential skills and techniques they were introduced to in Intro to Digital Media with a heavy emphasis on 21st Century Skills and project-based learning. Students enrolled in the course will be provided with projects where they will be able to videotape school events, learn pre-production techniques, enhance their screenwriting skills, acquire producing skills, and promote their own film projects.

***Dual Enrollment****: Students enrolled in this course will receive a grade from Orange High School and 3 credits from Fairleigh Dickinson University, depending on the final examination grade.*

**Filmmaking (5 credits)**

*Prerequisite(s): Introduction to Digital Media and Digital Media*

The final course within the Animation, Interactive Technology, Video Graphics, and Special Effects Program, is designed to place emphasis on project-based learning while taking a hands-on approach to create, produce, and display short films. Students will learn about animation, the art of storytelling, cinematographic elements, video editing, and film promotion through the exploration of film genres and the creation of their own short or feature films.

*Dual Enrollment: Students enrolled in this course will receive a grade from Orange High School and 3 credits from Fairleigh Dickinson University, depending on the final examination grade.*

**CULINARY**

**Diet and Nutrition (2.5 credits)**

*Open to students in grades 9-11*

This one semester course emphasizes personal nutrition and healthy food preparation skills via lessons in personal safety, consumerism, and healthy eating habits. Students are taught the proper use of kitchen tools and equipment and the current dietary guidelines recommended by the USDA.

**Basic Foods (2.5 credits)**

*Prerequisite: Diet and Nutrition.*

This one semester course builds upon the foundations learned in Diet and Nutrition. Students learn about a variety of foods, the best methods to purchase food products, and various cooking techniques used in food preparation. Students will work together as a team to create dishes from many different cultures.

**Foods Service and Preparation (5 credits)**

*Prerequisite: Basic Foods*

A full year course preparing students for employment in the food service industry, preparation of foods, career exploration, service, and serving are the topics covered in this course. Field trips to commercial establishments and culinary schools reinforce the program.

*Dual Enrollment: Students enrolled in this course will receive a grade from Orange High School and 3 credits from Hudson County Community College, depending on the final examination grade.*

**ELECTIVES:**

**Culinary Arts (5 credits)**

*Prerequisite: Food Service and Preparation*

This is an in-depth study of the different types of menus and station set-up pertaining to the culinary cuisine techniques of preparation of various foods and trays used for presentation. The emphasis will be that students learn about yields of foods, organization, and utilization of fundamental cooking techniques. Students will also learn the *functions of catering.*

**HEALTH SCIENCES**

**Introduction to Health Care in Society**

**(2.5 credits)**

*Open to Grade 9 students*

This course is designed to introduce students to the many facets of the health care field. This includes exploration of various careers and an introduction to some basic skills. Field trips and speakers will be utilized to help students make career decisions wisely. Some basic medical terminology is incorporated to help students feel comfortable in the medical environment. Only students who have some interest in the possibility of working in health care are encouraged to enroll in this course.

**Dynamics of Health Care in Society (5 credits)**

*Prerequisite:   Introduction to Health Care in Society. This is the first class in the Health Science Pathway.*

Dynamics of Health Care in Society is an orientation to health care and delivery, from an interdisciplinary perspective, with a focus on process skills to include critical thinking, ethical reasoning, effective communication, and self-directed learning abilities. The professional competencies stress application to general issues and topics common to all health care providers. Emphasis is placed on the role of the health care practitioner as both provider and consumer of health care services. This course is a dual enrollment class with Rutgers School Health Science Program for college credit.

***Dual Enrollment:****Dynamics of Health Care in Society – The student will receive an Orange High School grade and a Rutgers grade.  The Rutgers grade for Dynamics of Health Care in Society - 100% of Rutgers, SHRP standardized exam grade = Rutgers, SHRP grade listed on transcript.*

**Fundamentals of Health and Wellness**

**(5 credits)**

*Prerequisite: Dynamics of Health Care in Society for students who want credit in the Health Science Track.*

This course provides a comprehensive overview of health and wellness. The impact of lifestyle choices on all aspects of personal health are discussed including physical, mental, emotional, social, and environmental. The course will explore topics related to nutrition, physical fitness, stress management, disease prevention, substance abuse, and healthy relationships. The information and skills necessary for making informed and healthful decisions to promote wellness will be discussed with an emphasis on self-responsibility.  Students taking this course have the potential to be dual enrollment in the Rutgers School Health Science Program for college credit.

*Dual Enrollment:  Fundamentals of Health and Wellness – The student will receive an Orange High School grade and a Rutgers grade.  The Rutgers grade is 50% Rutgers, SHRP standardized exam grade + 50% high school grade = Rutgers, SHRP grade listed on transcript.*

**Anatomy and Physiology**

*(See Science Department)*

**Medical Terminology (5 credits)**

*Prerequisite:  Dynamics of Health Care in Society, Biology and Algebra*

Medical Terminology is the study of words that pertain to body systems, anatomy, physiology, medical processes and procedures and a variety of diseases. It provides specialized language for the health care team, enabling health care workers to communicate in an accurate, articulate and concise manner. This course is designed to give the students a comprehensive knowledge of word construction, definition and use of terms related to all areas of medical science. The course includes but is not limited to terms related to anatomy of the human body, functions of health and disease, and the use of language in processing medical/dental records and claim forms.

*Dual Enrollment:  Medical Terminology - The student will receive an Orange High School grade and a Rutgers grade.  The Rutgers grade is 50% Rutgers, SHRP standardized exam grade + 50% high school grade = Rutgers, SHRP grade listed on transcript.*

**Emergency and Clinical Care (5 credits)**

*Prerequisite:  Dynamics of Health Care*

*in Society, Fundamentals of Health and Wellness, Medical Terminology and Chemistry*

*This class is designed for Senior Students Only*

Emergency and Clinical Care is a course that describes how to respond to emergencies before medical help arrives. The course is designed to give the student the knowledge of how to recognize and respond to an emergency. The intent of the course is to help the student feel more confident in his/her ability to act appropriately in the event of an emergency. Students are prepared to 1) obtain a patient medical history, 2) take and record vital signs relative to medical/dental treatment, and 3) acquire cardiopulmonary resuscitation certification.

*Dual Enrollment:  Emergency and Clinical Care - The student will receive an Orange High School grade and a Rutgers grade.  Emergency and Clinical Care: Instructor submits grade based composite of class work and exam from either the American Red Cross or the American Heart Association.*

**Health Occupations Education (2.5 credits)**

*Prerequisite: Dynamics of Health Care in Society, Fundamentals of Health and Wellness, and Emergency and Clinical Care for Grade 12*

The course provides students opportunities for career and college readiness. This course focuses on fundamental knowledge and clinical skills necessary for assistants in various health care areas.  The first unit will focus on providing the student with a strong knowledge base on the healthcare delivery system.  In addition, the student will learn about workplace safety and the roles and responsibilities of a healthcare worker. The focus of the second unit is on the understanding of the administrative skills needed by a medical assistant.  Students will identify basic roles and responsibilities of an administrative medical assistant. Students will also practice patient scheduling and financial accounting.  In addition, the student can obtain a basic understanding of the medical billing process.  The focus of the third unit is on understanding the actual clinical skills needed by a medical assistant.  Students will demonstrate actual skills and practice performance of the skills on volunteers and in medical settings as permitted.  They will also begin to understand employability skills.

**CISCO NETWORKING ACADEMY**

**Explorations in CS: Computing Ideas (5 credits)**

*Prerequisite: None*

This course is a first-year computer science course with a unique focus on creativity and problem-solving. Students explore several important topics of computing, such as programming, digital citizenship, networks, and web design.

**Computer TIA A+ (5 credits)**

*Prerequisite: Computing Ideas or Teacher Recommendation*

The CompTIA A+ course is the industry standard for computer support technicians. The international, vendor-neutral certification proves competence in areas such as installation, preventative maintenance, networking, security and troubleshooting. CompTIA A+ is part of the certification track for corporations such as Microsoft, Hewlett-Packard, Cisco and Novell. Other technology companies, including CompuCom and Ricoh, have made CompTIA A+ certification mandatory for their service technicians.

**Cisco Networking Academy I (5 credits)**

*Prerequisite: TIA A+*

The Academy Lab is designed to accommodate 12 students per class/section. Successful completion of this program leads to a *Cisco Certified Network Associate* (CCNA) certificate. The program is designed to teach students the skills needed to design, build, and maintain small to medium sized networks. This provides them with the opportunity to enter the workforce and/or further their education and training in the computer networking field.

Instruction includes, but is not limited to, the following curriculum components: OSI model and industry standards, network topologies, IP addressing, networking components, basic network design, beginning router configurations and routing protocols.

**Cisco Networking Academy II (5 credits)**

*Prerequisite: Cisco Networking Academy I*

Course topics include: advanced router configurations, LAN switching theory and VLANs, advanced LAN and LAN switched design, Novell IPX, and threaded case studies. Additional skills include WAN theory and design, WAN technology, PPP, frame relay, and ISDN, network troubleshooting, national SCANS skills, and threaded case studies.

Particular emphasis is placed on the use of decision-making and problem-solving techniques in applying science, mathematics, communication, and social studies concepts to solve networking problems. In addition, instruction and training are provided in the proper care, maintenance, and use of networking software, tools, equipment, local, state, and federal safety, building, and environmental codes and regulations. Students who successfully complete this series of courses may take the examination to become a Cisco Certified Network Associate.

**Naval Junior Reserve Officer Training Corps (NJROTC)**

NJROTC is a four-year program offering an opportunity for students to develop skills and knowledge in key areas. This includes classroom study, physical fitness, respectful conduct, good personal appearance, and leadership training. It also gives the student a look at the Navy’s role in U.S. history. NJROTC may be substituted for the Physical Education-Health requirement for graduation.

For students participating in the program, there is no obligation for students to serve in any of the military services after leaving high school. However, for those few students who choose to enter the military, successful participation in NJROTC can enhance admittance to one of the service academies (e.g. West Point, Annapolis, etc.), or earn advanced promotion if enlisting in one of the military branches (e.g. Army, Navy, Coast Guard, etc.).

Male and female students physically qualified to participate in physical education are eligible to apply. Non-physically qualified students may be accepted as special students on a case-by-case basis. Students may apply at any grade level; however, all new students, whatever they grade level, will be placed in a Naval Science I class. Cadets are provided with a complete Navy uniform at no expense to parents. Cadets are expected to wear their complete Navy uniform at least once a week throughout the school year. Grooming standards are consistent with active duty Navy requirements. Cadets are expected to maintain good classroom and school behavior.

The NJROTC program carries out a full schedule of community events and orientation visits. NJROTC is a participatory program. Cadets are expected to actively engage themselves in unit activities. This includes parades, community service projects, memorial programs and orientation visits to military installations. Cadets also work in maintaining the NJROTC program including working in supply and joining academic competitions. Selected older cadets are placed with the Naval Science I classes to exercise their leadership abilities in helping the new cadets.

The NJROTC program runs extensive after school activities including: drill team, color guard, physical fitness team and air rifle team. These teams compete against other JROTC programs in the region and throughout the nation. Successful participation can earn cadets Varsity and Junior Varsity letters.

**Naval Science I - 5310 (2.5 credits)**

*Prerequisite: None*

*Open to all Grade Levels: 9and 10*

A general introduction to the NJROTC program and the information needed to properly wear the Navy uniform. Specific training is provided in basic drill and military formations. Detailed academic units cover the basics of naval science including: leadership, naval ships, civics, sea power, maritime geography, oceanography, seamanship, navigation, naval history and first aid.

**Naval Science II - 5320 (5 credits)**

*Prerequisite: None*

Building on the fundamentals of Naval Science I, this course moves into more detail on program basics. Aspects of moving squads and platoons in military formation are emphasized. Detailed academic units that expand on material presented in Naval Science I includes: leadership, citizenship, naval history and navigation. New material introduced includes naval career planning, shipboard organization, naval weapons, meteorology, survival training and small boat seamanship.

**Naval Science III - 5330 (5 credits)**

*Prerequisite: Naval Science II*

Building on the detailed material provided in Naval Science II, this course continues to expand leadership training and coverage of naval history. Aspects of cadet leadership within the unit are

emphasized. New academic units presented include: military justice, astronomy, international law and the sea, sea power and national security, maneuvering board, naval electronics and naval operations, communications and intelligence.

**Naval Science IV - 5340 (5 credits)**

*Prerequisite: Naval Science III*

As the capstone of the NJROTC program, this course seeks to bring together all the elements of the NJROTC curriculum. Extensive coverage is given to practical leadership problems, both theoretical and those in the unit itself. Students at

this level are expected to be involved in the running of the unit. Students will be involved in preparing the unit for inspection by the Navy and in running the assorted activities of the unit.

Seminar-type academic units will look at the fundamentals and responsibilities of leadership. Detailed material on effective communication will be covered.

# STEM with Emphasis on Engineering and Computer Science

**AP Computer Science A (5 credits)**

*Prerequisite: Introduction to Programming*

Computer Science AP focuses on further developing computational-thinking skills through the medium of Android™ App development for mobile platforms. The course utilizes industry-standard tools such as Android Studio, Java™ programming language, XML, and device emulators. Students collaborate to create original solutions to problems of their own choosing by designing and implementing user interfaces and Web-based databases. This course aligns with the AP Computer Science A course.

**AP Computer Science Principles (5 credits)**

*Prerequisite: Successful completion of Algebra I*

AP Computer Science A with Swift is a College Board Endorsed Provider for the 2020-2021 school year, Apple’s Develop in Swift AP® CS Principles course helps students learn key computing concepts, building a solid foundation in programming with Swift while preparing for the AP® Computer Science Principles exam. They’ll learn about the impact of computing and apps on society, economies, and culture while exploring iOS app development. Lessons take students through the app design process: brainstorming, planning, prototyping, and evaluating an app of their own. Students are presented with new illustrated, fictional stories that follow a group of students and their use of technology helping them to explore the technology behind their activities — encryption, compression, parallel computing — as well as the possible impact of sharing personal information, targeted advertising, authentication and more.

**SMARTLABS**

**SMARTLab I (2.5 credits)**

*Prerequisite: None*

SMARTLab I is an elective course that features a 21st century learning lab designed for the exploration of STEM (science, technology, engineering, and mathematics), digital media arts, alternative energy exploration, college and career pathway exploration and other academic topics through applied technology.

Students engage in real world activities using advanced hardware, scientific and media equipment, hands-on construction kits and flexible furniture systems. Students progress through a series of curriculum guided and self-directed project engagements. As they tackle these projects, they learn essential technology skills and systems, including Mechanics and Structures, Computer Graphics, Science and Data Acquisition, Publishing and Multimedia, Alternative and Renewable Energy, Robotics and Control Technology, Circuitry, and Computer Simulation. This course is a perquisite for career pathways and is additionally open to any student interested in this as an elective.

**SMARTLab II (2.5 credits)**

*Prerequisite: SMARTLab I*

SMARTLab II includes 21st century learning labs designed for the exploration of STEM, digital media arts and other academic topics through applied technology. SMARTLabs are fully integrated classroom systems that include hardware, software, scientific and media equipment, hands-on construction kits and flexible furniture systems. Students’ progress through a series of curriculum-guided and self-directed project engagements. As they tackle these projects, they learn essential technology skills and systems. The support systems provided a*uthentically* assess real learning and the development of 21st century skills Learning Launchers include: Alternative and Renewable Energy, Circuitry, Computer Graphics, Digital Communications, Mechanics and Structures, Robotics and Control Technology, Scientific Data and Analysis, and Software Engineering.

**SMARTLab III (2.5 credits)**

*Prerequisite: SMARTLab II*

Smart Lab III continues the learning launchers from SMARTLab II. Learning Launchers guide SMARTLab learning with a wide selection of hands-on, minds-on projects in STEM and applied technology. Project activities link technology concepts to core academic content in a way that’s engaging, relevant and learner centered. SMARTLabs meet learners where they are and take them as far as they are able to go. Students have the option of completing level two of the Learning Launchers they worked on in SMARTLab II or begin work on additional areas. Learning Launchers include: Alternative and Renewable Energy, Circuitry, Computer Graphics, Digital Communications, Mechanics and Structures, Robotics and Control Technology, Scientific Data and Analysis, and Software Engineering.

**Introduction to Computer Science w/ Python (5 credits)**

*Prerequisite(s): Successful completion of an Algebra I course*

The introduction to Computer Science in Python curriculum teaches the foundations of computer science and basic programming, with an emphasis on helping students develop logical thinking and problem solving skills. In this course, students will learn to design and evaluate solutions and to apply computer science to solve problems through the development of algorithms and programs. They will incorporate abstraction into programs and use data to discover new knowledge. Once students complete the Introduction to Computer Science in Python course, they will have learned material equivalent to a semester college introductory course in Computer Science and be able to program using Python 3.

**App Development in Swift/Fundamentals with Xcode (5 credits)**

*Prerequisite: Successful completion of an Introductory Computer Science course*

This course helps students build fundamentals in iOS app development skills with Swift. They’ll master the core concepts and practices that Swift programmers use daily and build a basic fluency in Xcode’s source and UI editors. Students will be able to create iOS apps that adhere to standard practices, including use of stock UI elements and layout techniques, and common navigation interfaces. They’ll continue to their app design journey by brainstorming, planning, prototyping, and evaluating an app of their own. Guided App Projects help students build an app in Xcode with step-by-step instructions while allowing students try out parts of code with without having to build an entire app from the beginning to accelerate their coding Swift skills. Xcode Playgrounds helps students learn key programming concepts as they write Swift code in playgrounds—an interactive coding environment that lets them experiment with code and see the results immediately.

|  |
| --- |
| Project Lead the Way (PLTW) |

In PLTW (Project Lead the Way) Engineering, students engage in open-ended problem solving, learn and apply the engineering design process, and use the same industry-leading technology and software as are used in the world’s top companies. Students investigate topics such as aerodynamics and astronautics, biological engineering and sustainability, and digital electronics and circuit design, giving them an opportunity to learn about different engineering disciplines before beginning post-secondary education or careers. Schools offer a minimum of three courses by the end of the third year of implementation: Introduction to Engineering Design, Principles of Engineering, and any specialization course or the capstone course.

**Engineering Essentials (5 credits)**

*Prerequisite: none*

Engineering Essentials is a full-year course designed to be a high school student’s first exposure to the PLTW Engineering program. 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.

**Introduction to Engineering Design (5 credits)**   
*Prerequisite: None*

Students dig deep into the engineering design process, applying mathematics, science, and engineering standards to hands-on projects. They work both individually and in teams to design solutions to a variety of problems using 3D modeling software and use an engineering notebook to document their work.

**Principles of Engineering (5 credits)**

*Prerequisite: Introduction to Engineering Design*

Through problems that engage and challenge, students explore a broad range of engineering topics, including mechanisms, the strength of structures and materials, and automation. Students develop skills in problem solving, research, and design while learning strategies for design process documentation, collaboration, and presentation.

**Digital Electronics (5 credits)**

*Prerequisite: Principles of Engineering*

From smart phones to appliances, digital circuits are all around us. This course provides a foundation for students who are interested in electrical engineering, electronics, or circuit design. Students study topics such as combinational and sequential logic and are exposed to circuit design tools used in industry including logic gates, integrated circuits, and programmable logic devices.

**Computer Integrated Manufacturing Systems (5 credits)**

*Prerequisite(s): Principles of Engineering*

Description: Computer Integrated Manufacturing (CIM) is the study of manufacturing planning, integration, and implementation of automation.  The course explores manufacturing history, individual processes, systems, and careers. In addition to technical concepts, the course incorporates finance, ethics, and engineering design. This reflects an integrated approach that leading manufacturers have adopted to improve safety, quality, and efficiency.  Utilizing the activity-project-problem-based (APPB) teaching and learning pedagogy, students will analyze, design, and build manufacturing systems. While implementing these designs, students will continually hone their interpersonal skills, creative abilities, and understanding of the design process. Students apply knowledge gained throughout the course in a final open-ended problem to build a manufacturing system.

Computer Integrated Manufacturing is a high school level course that is appropriate for students interested in manufacturing and automation.  The course applies and concurrently develops secondary-level knowledge and skills in mathematics, science, and technology.

# Visual & Performing Arts Department

The Visual and Performing Arts Department offers an Academy that provides Dance, Digital Recording, Instrumental, Theatre, Vocal and Visual Art Pathways, giving students the opportunity to concentrate in a specific area of the arts. Students interested in pursuing college and a career in the arts may enroll in the Visual and Performing Arts Academy of their choosing and follow the recommended pathway during their high school years. Those students who are interested in a fine art class may take a survey course to determine if they would like to continue the pathway or experience another survey course.

Visual & Performing Arts Academy

Dance Pathway

Grade 9 Grade 10 Grade 11 Grade 12

Dance I

Global Studies

Honors Global Studies

Dance II

US History I

Honors US History I

Dance IV

AP US History

AP World History

AP Psychology

Dance III

US History II

Honors US History II

**Dance I (5 credits)**

*Prerequisite: None*

Students will learn the dance genres of ballet, jazz, modern, ballroom and hip hop.  The course will also cover various styles of world dance including Latin, African, Middle Eastern, and

other cultures. In addition, students will focus on dance terminology, technique, history, and choreography.  Written and oral critiques of significant works as well as peer-works will also be included. Students will study various careers in the field of dance. Dance courses require students to be properly dressed and participate in various school and community performances.

**Dance II (5 credits)**

*Prerequisite: Dance I, Intro to Dance, or Teacher recommendation/audition*

Students will continue to expand on their ballet techniques as well as their techniques in modern, contemporary, improvisation, and jazz.  They will concentrate on the modern techniques of Graham, Horton, Limóne, O’Donnell, Duncan, and Dunham. Written and oral critiques of significant works as well as peer-works will also be included. Dance courses require students to be properly dressed and participate in various school and community performances.

**Dance III (5 credits)**

*Prerequisite: Dance II, Intermediate Dance, or Teacher recommendation/audition*

Dance III builds upon the foundation of technique and principles of dance. Discussions about history and dance performances with a more critical point of view will take place. Dance courses require students to be properly dressed and participate in various school and community performances. By the end of the year, students will select their best works and create a dance reel for the following year’s college admissions.

**Dance IV (5 credits)**

*Prerequisite: Dance III, or Teacher recommendation/audition*

This advance level course requires the student to demonstrate the elements of dance, which includes an emphasis on all dance genres that expands the dancer beyond proficient and accomplished levels of dance. This course includes advanced choreography applying the appropriate techniques to various genres. The students will study dance history, significant artists, and styles of dance. Knowledge gained in class will give inspiration to create original choreography. For their capstone, students will create a dance reel and assemble required materials for college admissions. Ongoing rehearsals for auditions will be performed throughout the year along with developing important aspects of their portfolio including, professional photos. Written and oral critiques of significant works as well as peer-works will also be included in this coursework. This class will participate in a winter and spring performances and selected juniors and seniors will culminate the year with a dance demonstrating their original choreography. Dance courses require students to be properly dressed and participate in various school and community performances.

Visual & Performing Arts Academy

Digital Recording Pathway

Grade 9 Grade 10 Grade 11 Grade 12

Digital Recording I

Global Studies

Honors Global Studies

**0**

Digital Recording II

US History I

Honors US History I

Digital Recording III

*Elective(s):*

Music Theory

US History II

Honors US History II

Digital Recording IV

*Elective(s):*

Music Theory

AP Music Theory

AP US History

AP World History

AP Psychology

**Digital Recording I (5 credits)**

*Prerequisite: None*

Digital Recording\_I will introduce the fundamentals of audio recording and the digital audio workstation (DAW). Basic acoustics, principles of analog and digital audio basics will be established. Other entry-level basics include studio set-up, microphone and basic mixing techniques.

**Digital Recording II (5 credits)**

*Prerequisite: Digital Recording I*

This course is designed to explore the elements of recording, mixing, and mastering in the digital realm. The roles of engineer, producer, technician and musician will be covered.  Students will participate in studio positions with group and individual projects.

**Digital Recording III (5 credits)**

*Prerequisite: Digital Recording II*

Digital Recording III continues the path of music production and the elements of digital recording. Students will continue to expand on their knowledge of music production focusing on mixing, mastering, plug-ins, virtual-instruments and sequencing on Digital Audio Workstations (DAWs) using Pro Tools, Digital Performer and/or Logic. Students will produce original material and begin to assemble works for college entry.

**Digital Recording IV (5 credits)**

*Prerequisite: Digital Recording III*

This course involves advanced theories and practices of digital audio production techniques. The course includes conceptualizing, producing, directing, recording, editing and mixing multi-track digital audio projects. Students will assemble their best works to prepare a capstone for college entry.

**Music Theory (5 credits)**

*Prerequisite: Formal music experience of two or more years or Teacher recommendation /audition/test*

An advanced course designed for junior or senior high school students to explore the underlying fundamentals of music theory, composition, notation and application. The students will study significant vocal artists and continue to develop their ability to observe, analyze, evaluate, and interpret the different techniques and genres and create works of their own. This course will prepare the future music major for college entry-level acceptance with appropriate rigor. Piano keyboard skills are covered; prior keyboard skills are an advantage but not necessary.

**AP Music Theory** **(5 credits)**

*Prerequisite(s): Music Theory*

This course will introduce students to musicianship, theory, musical materials, and procedures. The student’s ability to read and write musical notation is fundamental to this course. It is also strongly recommended that the student will have acquired at least basic performance skills in voice or on an instrument.

The integrates aspects of melody, harmony, texture, rhythm, form, musical analysis, elementary composition and history and style. The students will study significant vocal artists and continue to develop their ability to observe, analyze, evaluate, and interpret the different techniques and genres. Musicianship skills such as dictation, listening skills, sight-reading, and keyboard harmony are considered an important part of the theory course.

Visual & Performing Arts Academy

Instrumental Music Pathway

Grade 9 Grade 10 Grade 11 Grade 12

Concert Band III

Elective(s):

Music Theory

US History II

Honors US History II

Concert Band IV

Elective(s):

Music Theory

AP Music Theory

AP US History

AP World History

AP Psychology

Concert Band I

Global Studies

Honors Global Studies

Concert Band II

US History I

Honors US History I

Percussion IV

Elective(s):

Music Theory

AP Music Theory

AP US History

AP World History

AP Psychology

Percussion II

US History I

Honors US History I

Percussion III

Elective(s):

Music Theory

Percussion I

Global Studies

Honors Global Studies

Piano IV

Elective(s):

Music Theory

AP Music Theory

AP US History

AP World History

AP Psychology

Piano I

Global Studies

Honors Global Studies

Piano II

US History I

Honors US History I

Piano III

Elective(s):

Music Theory

US History II

Honors US History II

Strings Ensemble IV

Elective(s):

Music Theory

AP Music Theory

AP US History

AP World History

AP Psychology

Strings Ensemble I

Global Studies

Honors Global Studies

Strings Ensemble III

Elective(s):

Music Theory

US History II

US History II

Honors US History II

Strings Ensemble II

US History I

Honors US History I

**Concert Band I (5 credits)**

*Prerequisite: None*

This course is an integral part of the instrumental pathway and is a requirement for woodwind, brass, and instruments. Educational emphasis is placed on performing in a concert band, taking direction from the conductor, and contributing their part to the whole.  The course will advance the student in instrumental technique, and further their development of music reading and comprehension skills. The students will study significant artists and works in instrumental music with an advanced ability to observe, analyze, evaluate, and interpret the different techniques and genres. Students will perform in and be expected to participate in mandatory rehearsals, recitals, music festivals, competitions and various performances throughout the year including the annual winter and spring concerts. Students are required to practice a *minimum* of 30-minutes daily beyond the normal class schedule and bring their instrument to class.

**Concert Band II (5 credits)**

*Instrumental Academy & Elective Students*

*Prerequisite: Concert Band I, previous instrumental course, or teacher recommendation/audition*

Concert Band II continues to expand on students’ group performance skills in woodwind, and brass instruments. This course furthers the development of music theory and reading comprehension. The students will study significant artists and works in instrumental music with an advanced ability to observe, analyze, evaluate, and interpret the different techniques and genres. Students will perform in traditional and contemporary chamber music and be expected to participate in mandatory rehearsals, recitals, music festivals, competitions and various performances throughout the year including the annual winter and spring concerts. Students are required to practice a *minimum* of 30-minutes daily beyond the normal class schedule and bring their instrument to class.

**Concert Band III (5 credits)**

*Prerequisite: Concert Band II or Teacher recommendation/audition*

Students will continue to develop instrumental techniques and will perform various musical genres.  Emphasis is placed on symphonic concert music, i.e., transcription, classical, standards and contemporary/pop music. The students will study significant artists and works in instrumental music with an advanced ability to observe, analyze, evaluate, and interpret the different techniques and genres. Public performances are required as well as rehearsals for winter and spring concerts. Students are required to practice a *minimum* of 30-minutes daily beyond the normal class schedule and bring their instrument to class.

**Concert Band IV (5 credits)**

*Prerequisite: Concert Band III or Teacher recommendation/audition*

In this course, students should be at an advanced level and will be combining elements of Concert Band I - III.  Students in this course will be refining their skills and should be rehearsing and performing pieces that reflect their level of experience. This course will also allow the students the time and opportunity to put together a portfolio, which will include college audition tapes, and clips of their work done throughout the course of their overall instrumental experience.

**Percussion I (5 credits)**

*Prerequisite: None*

Percussion I is for students of all levels interested in learning percussion skills as well as those with prior experience, who would like to further their ability in the art of percussion. Emphasis is placed on the fundamentals of percussion performance using traditional instruments such as snare drums, timpani, keyboards, quads and drum sets as well as the use of non-traditional instruments known as ‘trash percussion.’ Skills in tonal, technical, rehearsal, aural, and rudimentary music theory will also be explored. Members of the Percussion Ensemble will combine with musicians of the Concert Band for large performances and can participate in a variety of co-curricular music ensembles and activities throughout the school year. In addition to several formal concerts, members are required to attend rehearsals and perform for various school and community concerts. Attendance at these functions when scheduled outside of school hours is a course requirement.

**Percussion II (5 Credits)**

*Prerequisite: Percussion I or Teacher recommendation/audition*

In this course, percussion students perform together and expand on the basic elements and rudiments of percussion. Students will learn about the characteristics of the snare and bass drums, cymbals, tambourine, triangle, and other similar instruments of the unpitched percussion family. Students will learn concepts like grips, posture, and the proper use of drumsticks and mallets as well as rhythms.

**Percussion III (5 credits)**

*Prerequisite: Percussion II or Teacher recommendation/audition*

In this course, students are at an intermediate level and will expand their knowledge about the elements of mallet percussion and pitched percussion instruments. Students will explore the ideas and concepts of instruments like the marimba, vibraphone, chimes, glockenspiel, and other similar instruments. Students will continue to master rhythms by learning about, and applying knowledge of common musical terms and symbols like rim shot, edge tap, back stick etc.

**Percussion IV (5 credits)**

*Prerequisite: Percussion III or Teacher recommendation/audition*

In this course, students should be at an advanced level and will be combining elements of both pitched and unpitched instruments. Students will perform pieces that involve a full percussion ensemble as well as solo pieces to meet the student’s individual level. Students in this class will assemble a portfolio for college applications in the form of audition tapes, videos and recordings of their work created throughout the course of their percussion experience.

**Piano I (5 credits)**

*Prerequisite: None*

This course is designed to help you develop comprehensive practice strategies as well as how to develop your dexterity and playing abilities.

**Piano II (5 credits)**

*Prerequisite: Piano I or Teacher recommendation/audition*

The intent of course is the development of piano proficiency skills. Focus is given to basic keyboard technique, score reading and performance, sight-reading, harmonization, accompanying, and transposition.

**Piano III (5 credits)**

*Prerequisite: Piano II or Teacher recommendation/audition*

The course objective is to further the advanced student’s piano skills and perform more intermediate-level repertoire. Students will become proficient at sight-reading and continue to learn a more in-depth study of music theory.

**Piano IV (5 credits)**

*Prerequisite: Piano III or Teacher recommendation/audition*

This course is designed for students who desire to continue developing and advancing their piano skills and furthering their education in music theory. Music theory will be scaffolded on the knowledge obtained in Piano III. Students will continue their music education by studying ear training, rhythmic dictation and sight-reading.

**Strings Ensemble I (5 credits)**

*Prerequisite: None*

This course is a requirement for all strings students who are in the Instrumental Music Pathway.  Emphasis is placed on performing in a string ensemble, taking direction from the conductor and contributing their part in the ensemble.  The course will advance the student in instrumental technique and further their development of music literacy. The students will study significant musicians and works in instrumental music. The course promotes the students’ ability to observe, analyze, evaluate, and interpret different techniques and genres. Students will learn how to perform classical and popular music and be required to participate in mandatory rehearsals and performances throughout the year including the annual winter and spring concerts. Students are required to practice a *minimum* of 30-minutes daily beyond the normal class schedule and bring their instrument to class.

**Strings Ensemble II (5 credits)**

*Prerequisite: Strings Ensemble I, previous instrumental course, or teacher recommendation/audition*

This course promotes the refinement of instrumental technique, music literacy, independent musicianship, individual style, and a deeper understanding of small group ensemble and orchestral scores. Students will be offered small and large ensemble experiences, as well as individual studies. Advanced training in skills and techniques will be provided individually or via small group instruction. The course promotes the students’ ability to observe, analyze, evaluate, and interpret different techniques and genres. Students will learn how to perform classical and popular music and be required to participate in mandatory rehearsals and performances throughout the year including the annual winter and spring concerts. Students are required to practice a *minimum* of 30-minutes daily beyond the normal class schedule and bring their instrument to class.

**Strings Ensemble III (5 credits)**

*Prerequisite: Strings II or Teacher recommendation/audition*

Strings Ensemble III will provide strings players with the opportunity to improve on their technical skills. Vibrato will be introduced and will continue to expand on their knowledge of core signatures and learn new hand positions including, second, third, and fifth positions. A variety of bow skills will be mastered, and students will gain more control of pitch and rhythms. Participation in small and large ensembles as well as individual studies will take place. Students will be required to attend mandatory rehearsals and performances throughout the year and are required to practice a *minimum* of 30-minutes daily beyond the normal class time and bring their instrument to class.

**Strings Ensemble IV (5 credits)**

*Prerequisite: Strings III or Teacher recommendation/audition*

Strings Ensemble IV will focus on prepared solo performances and audition skills. Students will work to advance skills and techniques individually and via small group instruction. Students will be offered small and large ensemble experiences as well as individual studies. Students are required to practice a *minimum* of 30-minutes daily beyond the normal class schedule and bring their instrument to class.

Visual & Performing Arts Academy

Theatre Pathway

Grade 9 Grade 10 Grade 11 Grade 12

Acting I

Global Studies

Honors Global Studies

Acting III

US History II

Honors US History II

Acting II

US History I

Honors US History I

Acting IV

AP US History

AP World History

AP Psychology

**Acting I (5 credits)**

*Prerequisite: Admission to Drama Academy*

Acting I is an introduction to the basic elements of acting. Students train in exercises to develop concentration, imagination and life observation. Course work includes exercises in improvisation, exploring awareness, relaxation, observation, the senses, voice, and physical and emotional life. Out-of-class assignments include required readings from acting texts and plays. Attendance at several theatre productions during the school year is required.

**Acting II (5 credits)**

*10th & 11th Grade Drama Academy Students*

*Prerequisite: Acting I, Introduction to Drama, or Teacher recommendation/audition*

Acting II is a continuation of characterization and script analysis using the basic elements of acting. The course focuses on expanding the necessary skills to develop characterization in monologues and scenes from contemporary plays. Topics explored include theatre history, technical theatre, and playwriting. Attendance at several theatre productions during the school year is required.

**Acting III (5 credits)**

*Prerequisite: Acting II, or Teacher recommendation/audition*

This acting class continues the exploration of beginning performance skills through scene study, textural analysis, and character exploration. Scene work will focus on breaking down the play, analysis, identity, motivation and action. Attendance at several theatre productions during the school year is required.

**Acting IV (5 credits)**

*Prerequisite: Acting III, or Teacher recommendation/audition*

Acting IV is a scene study course, which includes audition techniques, camera skills and preparation for the professional world of acting. The course continues the exploration of performance skills through exercises in improvisations and the refinement of physical, vocal, emotional, and imaginative awareness.

Building on the foundation of theory and experience by scaffolding previous learnings, this course provides Theatre Pathway students with a comprehensive and integrated seminar to guide them toward the realization of a creative capstone project. Each student will write and produce their own theatrical production. The creation and presentation of two student showcases is required. Students will present an audition showcase featuring monologues to be used for college and professional auditions. Students will also write an original one-act or full-length play or musical as a final project that will be performed at the end of the year showcase. Out-of-class assignments include the reading of plays and theoretical works on acting techniques. Attendance at theatrical productions is required. This course includes analytic and critical writing assignments; scene preparation, and rehearsal.

Visual & Performing Arts Academy

Visual Art Pathway

Grade 9 Grade 10 Grade 11 Grade 12

Illustration

Elective(s):

AP Studio Art

Fibers

US History II

Honors US History II

Elements of Art

AP US History

AP World History

AP Psychology

Drawing II

Global Studies

Honors Global Studies

Drawing I

US History I

Honors US History I

Drawing I

US History I

Honors US History I

Painting I

Global Studies

Honors Global Studies

Painting II

Elective(s):

AP Studio Art

Fibers

US History II

Honors US History II

Elements of Art

AP US History

AP World History

AP Psychology

Elements of Art

AP US History

AP World History

AP Psychology

Ceramics I

Global Studies

Honors Global Studies

Drawing I

US History I

Honors US History I

Ceramics II

Elective(s):

AP Studio Art

Fibers

US History II

Honors US History II

**Elements of Art (5 credits)**

*Prerequisite: None*

In this course, students will be introduced to the basic elements of art including line, shape, form,

value, space, color, and texture. This beginner level class is a foundation course, from which all other courses will build upon. Students will use a variety of art materials and mediums in this course while learning about art themes and styles.

**Drawing I (5 credits)**

*Prerequisite: Elements of Art I or Teacher recommendation/portfolio*

This course teaches skills in both artistic styles and techniques using various materials. Drawing mediums include, but are not limited to, pencil, pen and ink, charcoal and crayon. Students will draw from a variety of subject matter under natural and artificial lighting. Freehand drawing along with computer manipulation will be explored, and the application of transferring finished drawings to t-shirts and/or various surfaces will be introduced. Students will also

study significant artists and develop their ability to observe, analyze, evaluate, and interpret the different techniques and genres. Student work will be displayed in various contests and exhibits throughout the year.

**Drawing II (5 credits)**

*Prerequisite: Drawing I or Teacher recommendation/portfolio*

This course expands on basic drawing techniques with greater intensity, detail and depth. The course aims to significantly strengthen the artist’s observational and analytical drawing skills.  Outdoor natural landscapes will be utilized along with in class still-life set-ups. The course introduced new media. The human form is given a more detailed study. This course is needed to prepare students for advanced art courses, such as Illustration, etc.

**Painting I (5 credits)**

*Prerequisite: Drawing I, or Teacher recommendation/portfolio*

Students work with tempera, watercolor, pastels, and acrylics.  Coursework includes still life, life studies, landscapes and non-objective art. Exploring the medium of painting is exciting and fun and helps students understand *aesthetics* (the study of what is pleasing). Students will study significant artists and continue to develop their ability to observe, analyze, evaluate, and interpret the different techniques and genres. Paintings will be done on several different backgrounds such as plaster-clay, canvas, and paper.  Student work will be displayed in various contests and exhibits throughout the year.

**Painting II (5 credits)**

*Prerequisite: Painting I or Teacher recommendation/portfolio*

Painting II will begin by experimenting with advanced painting methods and continues with the development of independent work. Students will learn to master the use of both acrylics and oils and learn to stretch and prime their own canvases. Students will explore significant artists and important modern and historical paintings. Students will analyze and critique significant works of art and the works of their peers. During the school year, students will select paintings to compile in a college portfolio.

**Ceramics I (5 credits)**

*Prerequisite: Drawing I or Teacher recommendation/portfolio*

Students will learn to work with clay and understand the properties of clay. Students will also learn the basic hand-building techniques, ex: pinch, coil, and slab. Decorative techniques incorporating glaze, painting and under-glaze. Student work will be displayed in various contests and exhibits throughout the year. Students will study significant artists and develop their ability to observe, analyze, evaluate, and interpret the different techniques and genres.

**Ceramics II (5 credits)**

*Prerequisite: Intro to Ceramics or Ceramics I*

This course offers students the opportunity to explore more complex projects including, hand-building, slab, and wheel thrown techniques. In addition, the course will cover advanced decorative techniques, loading the kiln, and studio responsibilities. Students will study significant artists and continue to develop their ability to observe, analyze, evaluate, and interpret the different techniques and genres. Student work will be displayed in various contests and exhibits throughout the year.

**AP Studio Art (5 credits)**

*Prerequisite: Two years of high school art courses or teacher recommendation/portfolio*

The Advanced Placement program is comprised of a college-level course and exam for highly motivated students of visual arts. The two Studio Art portfolios are designed for students who are seriously interested in the practical experience of art. AP Studio Art is not based on a written examination; instead, students submit portfolios for evaluation at the end of the school year.

**Fiber Arts (5 credits)**

*Prerequisite: None or Introduction to Fibers*

Students will work with fibers using a variety of materials including yarns, reeds, beads, papers, thread, fabric and more. Some functional products that will be created during the year include tapestries, weavings, coiled baskets, and jewelry. Students will also delve into the craft of bookmaking and fabrics design. The elements of design will be applied to the form and function of each work of art. Students’ work will be displayed in various contests and exhibits throughout the year.

**Illustration (5 credits)**

*Prerequisite: Drawing II or Teacher recommendation/portfolio*

Illustration fine tunes the technical drawing skills of the student. The course allows students to design and create original storyboards and develop their own characters to illustrate the story.   The students will study significant artists. Students’ work will be displayed in various contests, and exhibit analyze, evaluate, and interpret the different techniques and styles found in illustration.

Visual & Performing Arts Academy

Vocal Music Pathway

Chorus II

Global Studies

Honors Global Studies

Chorus I

US History I

Honors US History I

Grade 9 Grade 10 Grade 11 Grade 12

Chorus III

Elective(s):

Music Theory

AP US History

AP World History

AP Psychology

Chorus IV

Elective(s):

Music Theory

AP Music Theory

US History II

Honors US History II

**Chorus I (5 credits)**

*Prerequisite: None*

This course is an integral part of the vocal pathway and is a requirement for all vocal music majors. Students will learn breath support and practice vocal exercises designed to strengthen the young voice and expand on range. Emphasis is placed on performing in a choir, taking direction from the conductor, and contributing their part to the whole.  The course will advance the student in vocal techniques and further their development of music reading and literacy skills. The students will study significant vocal artists and begin to observe, analyze, evaluate, and interpret the different techniques and genres. Students will learn how to perform classical and popular music and are required to participate in mandatory rehearsals and performances throughout the year including the annual winter

and spring dance performances.

**Chorus II (5 credits)**

*Prerequisite:  Chorus I or Teacher recommendation/audition*

This course continues to expand on students’ group performance skills using blending and balancing techniques. Students will continue to develop their voice as they sing classical and contemporary repertories in vocal ensembles and large choirs. This course will further the development of music theory and literacy as students expand their knowledge in music notation and reading. Students will study significant vocal artists and continue to develop their ability to observe, analyze, evaluate, and interpret the significant musical works. Students will be required participate in mandatory rehearsals and performances throughout the year including the annual winter and spring concert performances.

**Chorus III (5 credits)**

*Prerequisite: Chorus II or Teacher recommendation/audition.*

This course will continue to increase students’ levels of music literacy by mastering reading and sight-singing. Students will sing a variety of genres from classical to pop in musical ensembles and large choirs. Students will expand their knowledge of significant solo artists and choirs by analyzing, interpreting and evaluating their works. This is a performance course and students will be required participate in mandatory rehearsals and performances throughout the year including the annual winter and spring concert performances.

**Chorus IV (5 Credits)**

*Prerequisite: Chorus III or Teacher recommendation/audition*

In this advanced chorus, students will learn and apply the advanced skills of singing and reading music. Students will sing advanced repertoire from various eras of musical history and styles:

including gospel, musical theater, pop, and classical. Students will take a leadership position in the chorus and help beginners in their mastery of vocal pedagogy. Students will be required participate in mandatory rehearsals and performances throughout the year including the annual winter and spring concert performances.

**Music Theory (5 credits)**

*Prerequisite: Formal music experience of two or more years, or teacher recommendation/ audition/test. Prior keyboard skills are an advantage but not necessary*

Music Theory is advanced course for students to explore the underlying fundamentals of music theory, composition, notation and application, as well as creating works of their own. The course will explore significant compositions and allow students to develop their music literacy to an advanced level. This course will prepare the future music major for college entry-level acceptance with appropriate rigor. Piano/keyboard skills are covered.

**AP Music Theory (5 credits)**

*Prerequisite(s): Music Theory or Teacher recommendation/audition/test. It is recommended, but not required that the student has acquired at least basic performance skills in voice or on an instrument.*

This course will introduce students to musicianship, theory, musical materials, and procedures. This course emphasizes aspects of music, melody, harmony, texture, rhythm, form, musical analysis, elementary composition, style and, the history of music. The students will study significant vocal artists and continue to develop the ability to observe, analyze, evaluate, and interpret the different techniques and genres. Musicianship skills such listening,

dictation, sight-reading, and keyboard harmony are considered an important part of the

theory course. The student’s ability to read and write musical notation is fundamental to this course.

Visual and Performing Arts Survey Courses

Survey courses are one-semester allowing students to explore different content areas in the arts to determine where their interest may lie.

**Crafts (2.5 credits)**

*Prerequisite: None*

This is a half-year course that explores the art of various cultures as well as investigating basic artistic techniques used in these works of art.  Students explore the fascinating world of art through the eyes of the cultures being studied.

**Fundamentals of Theatre (2.5 credits)**

*Prerequisite: None*

This course presents an overview of the elements of theatre. Units of study include technical theatre, playwriting, directing, history, set design and analysis of theatrical components. Attendance at, as well as responses to several stage productions scheduled during the term is recommended.

**Intermediate Dance (2.5 credits)**

*Prerequisite: Intro to Dance or Teacher recommendation/audition*

Students at the intermediate level will get a more in-depth study of jazz and modern genres and will expand their knowledge to include improvisation, contemporary and musical theatre.  All units will focus on terminology, technique, history, culture and choreography. Written and oral critiques of significant works as well as peer-works will also be included. This course will bring attention to the various careers that are incorporated in the field of dance.

**Introduction to Ceramics (2.5 credits)**

*Prerequisite: None*

Students will learn to work with clay and understand the its properties (how it is formed, etc.). Students will also learn the basic hand-building techniques, ex: pinch, coil, and slab. The students will study significant artists and develop their ability to observe, analyze, evaluate, and interpret the different techniques and genres.  Decorative techniques incorporating glaze, painting and under-glaze will be explored. Student work will be displayed in various contests and exhibits throughout the year.

**Introduction to Dance (2.5 Credits)**

*Prerequisite: None*

Students will study the genres of ballet, jazz, and modern dance with a focus on terminology, technique, history, culture and choreography.  Written and oral critiques of significant works as well as peer-works will also be included. Additionally, the course will bring attention to the various careers that are incorporated in the field of dance.

**Introduction to Drama (2.5 credits)**

*Prerequisite: None*

This performance course will include the history of theater and develop, through workshop exercises, dramatic techniques in acting from improvisation to play production. Students will perform skits, scenes and plays to enjoy the experience of acting. Actors fine tune their prior acting skills and develop different characters. Attendance at, as well as responses to several stage productions scheduled during the term is recommended.

**Introduction to Fiber Arts (2.5 credits)**

*Prerequisite: None*

In this course students will learn to work with fibers in a variety of techniques and functions including yarns, weaving, decorative fabrics, dyes on fabric, dyes with wax for batik, paper manipulation, paper mâché, plaster, and coil baskets, fashion design. (Fiber refers to any type of yam, thread, fabric, or reed.) The elements of design will be applied to the form and function of each work of art. Student work will be displayed in various contests and exhibits. Students will learn artistic skills in such areas as, but not limited to, basket weaving, sculpture, mosaics, jewelry-making, masks, metal and wire techniques, and much more. Students will create many projects during their time in class and work is exhibited throughout the school and in the annual student art show.

**Introduction to Music (2.5 credits)**

*Prerequisite: None*

The course is designed to help students develop an appreciation and understanding of the non-performing depths of music.  Small units make it possible to introduce many subjects, stimulating curiosity and the desire for further learning. Students enrolled in this class will be exposed to professional concerts and learn the importance of music in their lives.

# English as a Second Language Department

Orange Public Schools implements a high-intensity English as a Second Language (ESL) Program for Port-of-Entry, Beginner and Intermediate students in grades 9-12. These students are taught English by an ESL certified teacher. They also receive mathematics, science and social studies instruction from certified content area teachers along with an ESL certified teacher who co-teaches in these classes to facilitate the learning for ESL students.

**ELL Classes- Students will receive credit as per the subject area course catalog**

To provide rigorous and appropriate content instruction while maintaining support in English Language acquisition through the ESL program, English Language Learners (ELL) classes are offered at OHS. The delivery model for this class consists of one content teacher and one ESL teacher who facilitate instruction by clarifying vocabulary and concepts in the content presented. Students are scheduled according to their current appropriate grade level.

**Newcomers’ Academy I (5 credits)**

*Prerequisite: Placement test score*

The Newcomers’ Academy (NCA) serves students who are port-of-entry or beginning students in grades 9-12. Through a high-intensity ESL model, students receive ESL instruction in the four language domains (listening, speaking, reading and writing). Students are also exposed to literature while utilizing ESL methodologies, and blended learning platforms. This ESL course satisfies one year of English towards graduation – English I.

**Newcomers’ Academy II (5 credits)**

*Prerequisite: Placement test score*

The Newcomers’ Academy (NCA) serves students who are port-of-entry, beginning, or developing students in grades 10-12. Through a high-intensity ESL model, students receive ESL instruction in the four language domains (listening, speaking, reading and writing). Students are also exposed to literature while utilizing ESL methodologies, and blended learning platforms. This ESL course satisfies one year of English towards graduation – English II.

**ESL Intermediate (5 credits)**

*Prerequisite: Placement test score*

This course utilizes interventions and a comprehensive reading program designed to develop and increase reading fluency and comprehension skills for English-language learners. Students receive daily interactive instruction in critical reading, vocabulary, writing and language skills. In addition, daily computer work with the instructional software provides reading, writing, vocabulary and spelling practice using highly interesting nonfiction content. Students also read fiction and/or nonfiction daily for independent reading and writing, thus helping them becomes skilled, independent English readers and writers. This course provides elective credits to students receiving the support.

**ESL Advanced (5 credits)**

*Prerequisite: Placement test score*

This course utilizes interventions and a comprehensive reading program designed to further develop and increase reading fluency and comprehension skills for English-language learners. Students receive daily interactive instruction in critical reading, vocabulary, writing and language skills. In addition, daily computer work with the instructional software provides reading, writing, vocabulary and spelling practice using highly interesting nonfiction content. Students also read fiction and/or nonfiction daily for independent reading and writing, thus helping them becomes skilled, independent English readers and writers. This course provides elective credits to students receiving the support.

**Summer ESL Academy**

This program is designed to assist students with interrupted formal education (SIFE) earn a high school diploma. Students will complete classes, using the appropriate number of hours, to fulfill graduation requirements in all subject areas. Classes will be co-taught by content area and ESL teachers.

*See* <https://www.nj.gov/education/bilingual/resources/sife.htm> for additional information.

# Special Education Department

The Department of Special Education of the Orange Township Public Schools is committed to providing all students, regardless of skill level, an appropriate and meaningful education.

Our secondary Special Education programs follow a normal progression as students’ transition from middle to high school. The Child Study Team plays a major role in overseeing the implementation of the Individual Education Plans (IEP’s)  for classified students.  In accordance with student's IEP’s, classified students are scheduled in general education classes in all areas of the curriculum to the fullest possible extent.  Secondary programs include self-contained, resource replacement and in-class support.  
  
Students participate in a variety of regular education settings, including physical education, health, and multiple electives.  All students have the opportunity to participate in extra-curricular clubs and sports programs.  Functional Life Skills and vocational opportunities are provided for students with severe cognitive delays.

Students at the age of fourteen and over will participate in their individual transitional planning.  Staff members assist in the development of skills that students will need to acquire after high school.  Students are encouraged to understand the nature of their disability, identify the information included in their IEP's, and take an active role in their annual IEP meetings.

**Special Education Programs**

**In-class Support Program:** In-class support program provides specialized instruction organized around a single subject and is provided to students with disabilities by an appropriately certified teacher of “Students with Disabilities.” Students are provided modifications to the instructional strategies, testing procedures or other specialized instructions to assist them in accessing the general education curriculum in accordance with the student’s IEP. An in-class resource program shall be provided in the student’s general education class at the same time as the rest of the class. A student receiving an in-class resource program or an in-class program of supplementary instruction shall be included in activities such as group discussions, special projects, field trips and other regular class activities as deemed appropriate in the student’s IEP.

**Pull-out Program:** Pull-out replacement resource programs include specialized instruction organized around a single subject and provided to students with disabilities by an appropriately certified teacher of “Students with Disabilities.” The general education curriculum and instructional strategies may be modified based on the student’s IEP. The resource program teacher shall have primary instructional responsibility for the student in the pull-out replacement resource program and shall consult with the general education classroom teacher as appropriate.

**Autism Program:** The Autism program is designed to serve students who have been identified as having Autism Spectrum Disorders (ASD). Program components include highly structured, individualized programming, intensive communication and language training, social skills training, utilization of natural environments for instruction, Applied Behavioral Analysis (ABA), positive behavioral programming, and educationally-based sensory activities, as appropriate. The foundation is one providing structure and consistency with a positive, nurturing approach. The program offers a low student to teacher ratio which permits instructional emphasis upon the development of skills in academic content areas, communication, self-management of behavior, daily living, and socialization.

**Language Learning Disabilities Program:** A special class program shall serve students who have intensive educational, behavioral, and other needs related to their disability in accordance with their IEP. Placement in a special class program shall occur when the IEP team determines that the nature and severity of the student’s disability is such that no other school-based program will meet the severity of the student’s needs.

Special class program for students with learning and/or language disabilities may be organized around the learning disabilities or the language disabilities or a combination of learning and language disabilities.

**Multiple Disabilities Program:** A special class program shall serve students who have intensive educational, behavioral, and other needs related to their disability in accordance with their IEP. Placement in a special class program shall occur when the IEP team determines that the nature and severity of the student’s disability is such that no other school-based program will meet the severity of the student’s needs.

The special class program is designed for students with multiple disabilities means that a person has more than one disability, the combination of which causes educational needs that they cannot be accommodated in a special education program solely for one of the impairments.

**Behavioral Disabilities Program:** A special class program shall serve students who have intensive educational, behavioral, and other needs related to their disability in accordance with their IEP. Placement in a special class program shall occur when the IEP team determines that the nature and severity of the student’s disability is such that no other school-based program will meet the severity of the student’s needs. Academic instruction in a small, structured learning environment that is characterized by individualized and differentiated instruction.

The Behavioral Disabilities program serves students who exhibit behaviors that require direct and consistent instruction in replacement behaviors; direct and consistent oversight and feedback regarding the demonstration of behavioral and social skills that impede their inclusion in the general curriculum; regular and consistent access to goal-oriented counseling, self-regulation, positive behavioral plan and social skills development that result in a decrease of inappropriate and defiant behavior.

**Cognitive Disabilities Program:** A special class program shall serve students who have intensive educational, behavioral, and other needs related to their disability in accordance with their IEP. Placement in a special class program shall occur when the IEP team determines that the nature and severity of the student’s disability is such that no other school-based program will meet the severity of the student’s needs. The nature and intensity of the student’s educational needs shall determine whether the student is placed in a program that addresses mild to moderate disabilities or cognitive disabilities. Students in this program participate in the Dynamic Learning Maps Statewide assessments.

**Eastwick College and HoHoKus Vocational Shared Time Program**

Eastwick Education and HoHoKus Vocational Shared Time Program provides students the opportunity to receive daily occupational training as part of their junior and/or senior year of high school.  Students' attend Monday-Friday from 11:30 a.m. to 2:00 p.m.

**Trades**

With the trade industry going strong, an education in the field can provide a number of career opportunities. This program provides students training in a variety of trade fields including plumbing, electrical, electronics, carpentry, welding, and machine and automotive service. Student's study two components each year they are in attendance.

***Carpentry with Workplace Math | 60 Hours Theory 165 Hours Lab/Shop***:

Carpentry with Workplace Math course focuses on the fundamentals of building projects in accordance with blueprints and building codes. Safety and compliance with regulations and codes are an integral part of the curriculum. The use of hand tools, chisels, planes, saws, and drills will be taught. In addition, students will develop a foundation in mathematical principles necessary for the building trades and carpentry.

There are two components within the carpentry course:

* ***Structural Carpentry*:** framing, roofing, door and window installation, and finishing carpentry.
* ***Wood Technology:*** basic woodworking projects building benches, cabinets, bookshelves, picture frames, and bird houses.

***Building/Home Maintenance with Workplace Mathematics | 60 Hours Theory, 165 Hours Lab/Shop:***

*The overall fundamentals of building and home maintenance emphasis on safety procedures and troubleshooting techniques. Students learn maintenance and repair for the home in plumbing, electric, carpentry, heating/cooling, and general maintenance of commercial buildings. The course also includes fundamental techniques for interior and exterior decorating, as well as basic mathematics and career awareness.*

***Electrical Technology and Repair with Science | 60 Hours Theory, 165 Hours Lab/Shop****:*

*Electrical Technology and Repair with Science course provides instruction in the fundamentals of basic alternating and direct current electrical theory. Residential/commercial* building construction and maintenance are reviewed, including proper safety procedures. Wiring techniques, grounding principles, meters, and electrical instrumentation will be highlighted. Electrical system concepts are discussed and the science of electricity is covered in detail.  The course includes a study of alternative energy concepts, including solar, wind, and hydroelectric power. Digital electronics theory and concepts have been added to the program in order to advance student awareness of the latest technologies and applications.

***Machine Shop/Precision Sheet Metal with Mathematics | 60 Hours Theory, 165 Hours Lab/Shop****:*

Upon successful completion of Machine Shop/Precision Sheet Metal with Mathematics course, students will gain a broad understanding of the principles of machine shop and precision sheet metal.  Student will learn:  safety, mathematics, blueprint reading, measuring devices, machine tool technology, and careers in manufacturing.  During Shop activities student will learn: safety, set-up and operation of hand tools, bench work, saws, drill press, lathes, millers, and sheet metal machinery.

***Residential Plumbing with Workplace Math | 60 Hour Theory, 165 Hours Lab/Shop:***

Students learn the fundamentals of plumbing theory, with an emphasis on safety procedures and troubleshooting techniques. Students learn maintenance, repair, and replacement of all residential plumbing fixtures, building and plumbing codes, print reading, and the proper use of plumbing tools. The course covers the basic mathematics needed to be a plumber.

***Automotive Service Training | 60 Hours Theory, 165 Hours Lab/Shop:***

Automotive Service Training course prepares students for a career in automotive technology, instructing them in shop safety and procedures, and the proper use of tools and diagnostic equipment.  Students will gain knowledge and skills in automotive service and repair, parts supply and after-market product installation. Students learn the theory and practice behind basic service engine repair, engine performance, electrical systems, brakes systems, suspensions and steering in shop. Completing this program will prepare students to take the national American Service Excellence (ASE) test.

***Welding and Metal Theory with Science | 60 Hours Theory, 165 Hours Lab/Shop:***

Welding and Metal Theory with Science course covers theory, fundamentals of operation, equipment used, and techniques recommended for all welding and cutting processes currently being used commercially. General shop safety, safety attitudes, and specific welding shop safety are covered throughout the curriculum. Blueprint reading, mathematics for welders and the science of gases are also covered.

***Healthcare Assistant****:*

The Healthcare Assistant program allows students to work in a variety of healthcare fields, including medical front office, reception, and home health aide. Students are introduced to managed care, patient encounter form, and common legal issues. Additionally, students will learn abstract information from patient records to complete a variety of medical documents. An introduction to the principles of anatomy and physiology is included to help students gain a better understanding of the body’s vital systems, and the basics of medical terminology and word structure are covered.

***Medical Front Desk | 175 Hours Theory, 50 Hours Lab:***

The Medical Front Desk course introduces students to the administrative aspects of a medical front office and provides an introduction to anatomy and physiology lab. Students work with a simulated kit and are trained to schedule appointments, maintain records, and perform basic billing and coding. Introduction to medical terminology is taught with the basics of root, prefix, and suffix. In addition, the course provides a foundation in mathematical principles necessary for the medical office.

***Home Health Aide | 100 Hours Theory, 125 Hours Lab/Clinical:***

Home Health Aide course provides students with opportunities to learn and develop care plans, assist with vital signs including temperature, pulse, and respiration, and create detailed records of their findings. Topics covered include anatomy and physiology, bedside manner, ambulation, transfer techniques, interdisciplinary resident care, nutrition, feeding/dietary assistant, Alzheimer’s training, safety, communication and proper use of resources emphasized throughout the program.

**Culinary Arts**

The culinary arts program provides students with a solid foundation in culinary theory and a wide range of skills necessary to enter the food service industry. Emphasis is placed on current industry cooking, baking methods and techniques. Students receive hands-on experience in the kitchen, including catering.

***Culinary Arts I | 60 Hours Theory, 165 Hours Lab:***

* Introduction to the field of culinary arts including knife skills, cooking techniques, kitchen equipment, culinary terms, food safety and sanitation
* Overview of careers and culinary history
* Food preparation and serving techniques
* Use of weights and measurements, and formula conversions

***Culinary Arts II | 60 Hours Theory, 165 Hours Lab:***

* Introduction to the principles and techniques of baked goods, breads, and pastries
* Basic skills in the areas of stocks, sauces, soups, meats, poultry, vegetables, and other areas of food preparation
* Introduction to the catering industry: food preparation, serving, and costs.

***Culinary Arts III | 60 Hours Theory, 165 Hours Lab each semester:***

* Introduction to the management concerns of food costs
* Introduction to the hospitality field and careers related to the industry
* Exploration of American Regional, Italian, Chinese, and other ethnic cuisines

|  |
| --- |
| **Foundations Program** |
|  |
| **Foundations of English 9**  Prerequisite: None  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the student’s needs and IEP goals and objectives.  This course is designed to introduce, reinforce, and practice reading skills and literary analysis through the reading of novels, informational texts, primary sources, plays, short stories, poetry, myths, legends, folktales, etc. Emphasis is placed on developing critical thinking skills, identifying the main idea, recognizing theme, analyzing character, and recognizing an author’s purpose. Students learn to initiate and participate effectively in a range of collaborative discussions with diverse partners on grade appropriate topics, texts, and issues, building on others¿ ideas and expressing their own clearly and persuasively. Additional emphasis is placed on the fundamentals of clear organized writing including: sentence structure, paragraphing, usage, and the conventions of Standard English grammar and usage when writing or speaking. Students employ technology thoughtfully to enhance their reading, writing, speaking, listening, and language use. Short as well as more sustained research projects are required and students will synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. Students will engage in reading and writing activities through a mandatory grade-level project over the summer. |
|  |
| **Foundations of English 10**  Prerequisite: Foundations of English 9  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the student’s needs and IEP goals and objectives.  This course further develops reading skills for literary analysis using various genres. Emphasis is on inferential comprehension and study skills. Instruction will continue to develop skill in sentence structure, organization of ideas, and editing for effective grammar, word usage and mechanics of the conventions of Standard English grammar and usage when writing or speaking. Students employ technology thoughtfully to enhance their reading, writing, speaking, listening, and language use. Short as well as more sustained research projects are required and students will synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation while incorporating outlining, paraphrasing, and citations. Instruction will incorporate test sophistication strategies in preparation for End of Course Exams as well as college entrance exams. Students will engage in reading and writing activities through a mandatory grade-level project over the summer. |
|  |
| **Foundations of English 11**  Prerequisite(s): Foundations of English 10  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the student’s needs and IEP goals and objectives.  This course is designed to acquaint students with the development of American Literature from the colonial period through the 21st century. Students will continue to receive instruction in the development of inferential comprehension skills and study skills. In addition, there will be an emphasis on sentence structure, organization of ideas, and the development of editing skills. A formal research paper, including outlining, documentation, and bibliography is required. Students will make effective use of 21st century technology, become proficient in new areas through research and study, read purposefully and listen attentively to gain both general knowledge and discipline-specific expertise. Students will refine and share their knowledge through writing, speaking, listening and the effective use of Standard English. Instruction will incorporate test sophistication strategies in preparation for End of Course Exams as well as college entrance exams. Summer reading and writing assignments are required. |
|  |
| **Foundations of English 12**  Prerequisite(s): Foundations of English 11  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the student’s needs and IEP goals and objectives.  This course is designed for students who have mastered fundamental literacy skills, who wish to work beyond the scope of the College Preparatory English program and who may wish to take AP courses in English. Through the lens of American literature, students will be introduced to various literary genres and schools of literary criticism such as Political Criticism, Sociological Criticism, and Marxist Criticism extend students understanding and appreciation of literature through critical reading and composition. Students will make effective use of technology, become proficient in new areas through research and study, read purposefully and listen attentively to gain both general knowledge and discipline-specific expertise. Students will refine and share their knowledge through writing, speaking, listening and the effective use of Standard English. Instruction will incorporate test sophistication strategies in preparation for End of Course and college entrance exams. Students should expect to continue the examination of substantive texts through extensive reading and writing assignments inclusive of relevant and thorough evidence throughout the year. Students will engage in reading and writing activities through a mandatory grade-level project over the summer. |

|  |
| --- |
| **Foundations of Math 9/Algebra I**  Prerequisite(s): None  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the student’s needs and IEP goals and objectives.  In Intensified Algebra I, students focus on linear functions and equations, which provide the mathematical tools necessary for consolidating and representing what they learned in elementary and middle school about ratios and proportional reasoning. Students also study exponential and quadratic functions and equations. Finally, throughout the course, students learn to use basic algebraic tools to represent problem situations and to solve important classical problems. The instructional model of the course reverses the process of presenting concepts and skills first and then giving students an opportunity to work on those skills and concepts. Students learn important concepts and skills by ¿doing math¿. The course employs an instructional model that supports collaborative, investigative, and learning. It strives to promote a vision of mathematics as a human endeavor. In addition, it fosters interactive learning through student writing, reading, speaking, and collaborative activities so students can learn to work effectively with peers; communicate about mathematics both orally and in writing; promote students¿ abilities to reason, justify, and generalize; and advance students¿ positive work habits and learning dispositions. This will require students to use one of their quarterly electives (40 minutes every day) as additional instruction time for the first marking period only. |
| **Foundations of Math 10/Algebra II**  Prerequisite: Foundations of Math 9/Algebra I  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the student’s needs and IEP goals and objectives  Algebra II is a course that extends the content of Algebra I and provides further development of the concept of a function. The course promotes the understanding of both linear and non-linear functional form, as well as the relationship between text, equations, graphs and tables through the mathematical modeling of realistic situations. Topics includes searching for patterns, quadratic functions, graphs of polynomial functions, polynomial modeling, sequences and series, graphs of rational functions, rational expressions and equations, radical functions, graphs of exponential and logarithmic functions, exponential and logarithmic expressions and equations, mathematical modeling, graphs of trigonometric functions, trigonometric expressions and equations, Interpret Data in a normal probability distribution, make Inference and justify conclusions, and make decisions using complex probability models. |
| **Foundations of Math 11/Geometry**  Prerequisite: Foundations of Math 10/Algebra II  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the student’s needs and IEP goals and objectives  Geometry is the third course in mathematics for high school students. Within this course, students will have the opportunity to make conjectures about geometric situations and prove in a variety of ways, both formal and informal, that their conclusion follows logically from their hypothesis. The course includes the study of plane and three-dimensional figures. Logical thinking is explored through deductive and inductive methods. Topics include the geometry of points, lines and planes, properties of congruence and similarity, trigonometry, circles and spheres, coordinate geometry, area, and volume, and applications of probability. |
| **Foundations of Math 12/PreCalculus** |
| Prerequisite: Foundations of Math 11/Geometry  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the student’s needs and IEP goals and objectives.  Pre-calculus focuses on standards to prepare students for more intense study of mathematics. The study of circles and parabolas is extended to include other conics such as ellipses and hyperbolas. Trigonometric functions are further developed to include inverse, general triangles and identities. Matrices provide an organizational structure in which to represent and solve complex problems. Students expand the concepts of complex numbers and the coordinate plane to represent and operate upon vectors. Probability rounds out the course using counting methods, including their use in making and evaluating decisions. The Common Course Mathematical Practice Standards apply throughout each course and, together with the content standards, prescribe that students experience mathematics as a coherent, useful, and logical subject that make use of their ability to make sense of problem situations. |
| **Foundations of Social Studies 9/Global Studies**  Prerequisite: None  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the student’s needs and IEP goals and objectives.  This course is designed to enhance basic comprehension of Global Studies with an emphasis in global geography, Holocaust and genocide studies, political science, social institutions, political institutions, economic systems, and world cultures from the Renaissance period, Age of Reason, and Colonialism to the present era. The course analyzes these areas and tracks their evolution throughout the continents of Africa, Asia, America, and Europe. In addition, students are exposed to an in-depth analysis of the humanities in relation to world history and current political world events. The course ultimately enables students to place current global events into a historical context, develop a greater understanding of diverse world cultures, and possess a heightened awareness of multiculturalism in their community. |
| **Foundations of Social Studies 10/United States History I**  Prerequisite: Foundations of Social Studies 9/Global Studies  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the student’s needs and IEP goals and objectives.  This course focuses on the historical development of the United States to 1877 covering Pre-Columbian civilizations, early European settlements, American colonies and cultural comparison, North and South America, American War for Independence, U.S. Constitution, national growth and expansion, Civil War and Reconstruction. The course also analyzes the role of geography, culture, social movements, political institutions, political philosophy, economic systems, contribution of women and minorities, and examines the causal relationships between these factors and events in early American History. |
| **Foundations of Social Studies 11/** **United States History II**  Prerequisite: Foundations of Social Studies 10/United States History I  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the student’s needs and IEP goals and objectives.  This course centers on the historical development of the United States from 1877 to present including the industrial transformation of the nation, expansionism, the industrial revolution, Imperialism, the growth of cities and immigration, the rise and fall of populism, progressive movement and the culture of the 1920¿s, the Great Depression, World Wars I & II, the Cold War, the Holocaust, the Korean War, the Vietnam Conflict, the Civil Rights Era, and the 1960s to current issues in American politics and society. The course also analyzes the role of geography, culture, social movements, political institutions, political philosophy, economic systems, contributions of women and minorities and the examination of the causal relationships between these factors and events in modern American History. |
| **Foundations of Social Studies 12**  Prerequisite: United States History II  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the student’s needs and IEP goals and objectives.  This course centers on the historical development of the United States from 1877 to present including the industrial transformation of the nation, expansionism, the industrial revolution, Imperialism, the growth of cities and immigration, the rise and fall of populism, progressive movement and the culture of the 1920¿s, the Great Depression, World Wars I & II, the Cold War, the Holocaust, the Korean War, the Vietnam Conflict, the Civil Rights Era, and the 1960s to current issues in American politics and society. The course also analyzes the role of geography, culture, social movements, political institutions, political philosophy, economic systems, contributions of women and minorities and the examination of the causal relationships between these factors and events in modern American History. |
| **Foundations of Science 9/Environmental Science**  Prerequisite: None  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the students needs and IEP goals and objectives.  Course Description: This course is designed to allow students to explore and discuss debated scientific issues in modern society. Units covered include animals, environment, and health, land use, natural resources, and biotechnology. Students will obtain information about topics via case studies to evaluate the relative risks associated with presented problems, and to examine alternative solutions for resolving and/or preventing them. |
| **Foundations of Science 10/Biology**  Prerequisite: Foundations of Science 9/Environmental Science  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the student’s needs and IEP goals and objectives.  Course Description: This course is a comprehensive study of molecular, cellular, and organismic biology. A key goal of the course is to give students an integrated insight into the modern scientific view of the world. Classwork includes the study of basic structures and functions and energy requirements of living organisms at the cellular and system level, environmental studies with an emphasis on human impact on the environment, genetics, and evolution. Each topic will be illustrated with lab exercises or demonstrations. Students will engage in research-based writing assignments involving laboratory activities and projects. |
| **Foundations of Science 11/Chemistry**  Prerequisite: Foundations of Science 10/Biology  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the student’s needs and IEP goals and objectives.  Course Description: This course addresses the fundamental concepts of chemistry to include properties of matter, atomic theory, nuclear chemistry, qualitative rate and equilibrium, periodic trends, bonding and types of reactions. Concepts and skills are reinforced through in-depth hands-on laboratory experiences with an emphasis on the utilization of mathematical, analytical, and data acquisition skills. |
| **Foundations of Science 12**  Prerequisite(s): Foundations of Science 11/Chemistry  This course will follow the general education curriculum, with appropriate modifications to pace, complexity, and assessment, as determined by the student’s needs and IEP goals and objectives.  Course Description: This course is a comprehensive study of molecular, cellular, and organismic biology. A key goal of the course is to give students an integrated insight into the modern scientific view of the world. Classwork includes the study of basic structures and functions and energy requirements of living organisms at the cellular and system level, environmental studies with an emphasis on human impact on the environment, genetics, and evolution. Each topic will be illustrated with lab exercises or demonstrations. Students will engage in research-based writing assignments involving laboratory activities and projects. |
| **Life Skills**  Life Skills is a full year course focusing on the building of confidence, gaining independence in lifelong learning skills that include the following topics:   * Cooking * Laundry * Job skills * Health & hygiene * Transportation * General house cleaning * Financial skills |

# Internships and Apprenticeships

**Structured Learning Experience** (Credits determined by length of internship or apprenticeship)

*Prerequisite(s): Open to students in Grades 10-12*

Structured Learning Experiences are experiential, supervised, educational activities designed to provide students with exposure to the requirements and responsibilities of specific job titles or job groups. The learning experience can be aligned with a student’s career and educational goals. The experience may be helpful in making career and educational decisions.

Students are provided with a planned program of job training and work experience appropriate to individual ability. This program is coordinated with learning in the school-based learning component. It provides real or simulated tasks that promote and develop a broad range of transferable skills.

The Structured Learning Experience Coordinator (SLEC) collaborates with businesses, colleges and community-based organizations to develop meaningful paid or unpaid internships and apprenticeships for eligible students throughout the district.

**Participating sites and programs are selected based on location, student learning potential, and future hiring potential.**

# Course Paths for the STEM Innovation Academy of the Oranges

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **9** | | **10** | **11** | | **12** | Credits |
| **English** | American Experiences (5) | | Political Studies (5) | HUM 101 English Composition: Writing, Thinking, Speaking I (5)  Can test for AP Exam\*\*\* | | *AP English Lit (5)* | 4 years/ 20 credits  (20 credits) |
| **History** | American Experiences (5) | | Political Studies (5) | World History (5) | | *Research Methods & Analysis (2.5)* | 3 years/ 15 credits[[11]](#footnote-11)  (17.5 credits) |
| **Mathematics** | Integrated Math I (10)  OR  Integrated Math II (5) | | Integrated Math II (5)  OR  Integrated Math III (10)  Option:  MTH 110 PreCalc (2.5) | Integrated Math III (10) /MTH 110 PreCalc (2.5) OR  MTH 111 Calculus I (5) | | MTH 111 Calculus I (5)  OR  MTH 112 Calculus II (5)  Can test for AP Exam\*\*\* | 3 years/ 15 credits[[12]](#footnote-12)  (22.5 credits) |
| **Science** | Biomedical Science (Bio)  (PLTW-PBS) (5) | | Honors Physics (5) | AP Environmental Science or  CHEM 125/A General Chem I & Lab (5) | | PHY 111/A Physics I & Lab (5)/Honors Physics  2022-2023  AP Selection or other | 3 years/ 15 credits[[13]](#footnote-13)  (20 credits) |
| **Track Electives**  -          **Engineering**  -          **Biomedical**  -          **The Computing Sciences** | Introduction to Engineering/Design (10)  *AND*  Explorations in CS: Computing Ideas (1) | | Computer Integrated Manufacturing Systems  *OR*  Intro to CS w/Python  *OR*  Human Body Systems (10) | Principles of Engineering and Design  *OR*  AP Computer Science A  *OR*  Medical Interventions (10)  CS 100 Option | | Senior Capstone –  PLTW Engineering Design and Development  *OR*  PLTW Cybersecurity  *OR*  PLTW Biomedical Innovations (10)  + NJIT Coursework | Electives: 12.5 credits  and 21st century life and Careers:  5 credits  (41 credits) |
| **Health/Physical Education** | Health/  Phys Ed (5) | | Health/  Phys Ed (5) | Health/  Phys Ed (5) | | Health/  Phys Ed (5) | 4 years/3.75 credits  4 years/1.25 credits |
| **World Language** |  | |  | World Language 1 (5) | | World Language 2 (5) | 2 years/10 credits  (10 credits) |
| **Financial Literacy** |  | |  |  | | Financial Lit (2.5) | 1 semester/ 2.5 credits |
| **Visual/Performing Arts** | Graphic Arts & Digital Design I (5) | | Graphic Arts & Digital Design II (5) |  | |  | 2 years/10 credits |
| **21st Century Life and Careers** | Career Readiness (2.5) | | Career Readiness (2.5) |  | |  | 1 year/ 5 credits |
| TOTAL CREDITS | | | | | | | Totals:  **State Req’d:**  120 credits  **School (min):**  163.5 credits |
| Other NJIT Electives: | | | | | | | |
| GUR Options  CS 100 Roadmap to Computing (3 credits)  Econ 265 Microeconomics (3 credits)  Econ 266 Macroeconomics (3 credits)  FED 101 Fundamentals of Engineering Design (2 credits)  SS 201 Economics (3 credits) | | MET 103 Engineering Graphics & Intro to CAD (2 credits)  MET 105 Applied CAD (2 credits)  IT 101 Introduction to Information Technology (3 credits)  Major Electives  IT 230 Computer Systems Security  IT 265 Game Architecture & Design | | | IT 330 Computer Forensics  IT 332 Digital Crime  IT 430 Ethical Hacking for System Admin  CS 104 Computer Programming & Graphics Problems  IS 117 Intro to Web Dev  IS 218 Building Web Applications | | |

## Mathematics

**Integrated Mathematics I (Honors) (10 credits)**

*Prerequisite(s): STEM Academy Acceptance*

The Integrated Mathematics I curriculum is designed to promote depth of knowledge and conceptual understanding in 6 critical areas organized into units designed to deepen and extend students’ understanding of linear relationships; done in part by contrasting them with exponential phenomena, and in part by applying linear models to data that exhibit a linear trend. Topics studied in the regular Integrated Mathematics I curriculum are taught at an accelerated pace and are extended and explored in greater depth using real life projects incorporated into each marking cycle.

**Critical Area 1:** Students work with expressions and creating equations; using quantities to model and analyze situations, to interpret expressions, and by creating equations to describe situations.

**Critical Area 2:** Students model relationships between quantities; using function notation and develop the concepts of domain and range; exploring examples of functions, including sequences; interpreting functions given graphically, numerically, symbolically, and verbally, and translating between representations, and understand the limitations of various representations. They compare and contrast linear and exponential functions, distinguishing between additive and multiplicative change. They interpret arithmetic sequences as linear functions and geometric sequences as exponential functions.

**Critical Area 3:** Students analyze and explain the process of solving an equation and to justify the process used in solving a system of equations.

**Critical Area 4:** Students use more formal means of assessing how a model fits data. Students use regression techniques to describe approximately linear relationships between quantities and graphical representations and knowledge of the context to make judgments about the appropriateness of linear models.

**Critical Area 5:** Students establish triangle congruence criteria, based on analyses of rigid motions and formal constructions. They solve problems about triangles, quadrilaterals, and other polygons. They apply reasoning to complete geometric constructions and explain why they work.

**Critical Area 6**: Students use a rectangular coordinate system to verify geometric relationships, including properties of special triangles and quadrilaterals and slopes of parallel and perpendicular lines.

The Mathematical Practice Standards apply throughout each unit together with the content standards and prescribe that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations.

**Integrated Mathematics II Honors (5 credits)**

*Prerequisite(s): STEM Academy Acceptance; District/Teacher recommendation; Integrated Math I or Algebra I*

The Integrated Mathematics II curriculum is designed to promote depth of knowledge and conceptual understanding in 6 critical areas organized into units designed to deepen and extend students’ mathematical understanding. The focus of Mathematics II is on quadratic expressions, equations, and functions; comparing their characteristics and behavior to those of linear and exponential relationships. The need for extending the set of rational numbers arises and real and complex numbers are introduced so that all quadratic equations can be solved. The link between probability and data is explored through conditional probability and counting methods, including their use in making and evaluating decisions. The study of similarity leads to an understanding of right triangle trigonometry and connects to quadratics through Pythagorean relationships. Circles, with their quadratic algebraic representations, round out the course. The Mathematical Practice Standards apply throughout each course and, together with the content standards, prescribe that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. Topics studied in the regular Integrated Mathematics II curriculum are taught at an accelerated pace, and are extended and explored in greater depth using real life projects incorporated into each marking cycle.

**Critical Area 1:** Students extend the laws of exponents to rational exponents and explore distinctions between rational and irrational numbers and explore relationships between number systems: whole numbers, integers, rational numbers, real numbers, and complex numbers.

**Critical Area 2:** Students consider quadratic functions, comparing the key characteristics of quadratic functions to those of linear and exponential functions. They expand their experience with functions to include more specialized functions -- absolute value, step, and those that are piecewise-defined.

**Critical Area 3:** Students create and solve equations, inequalities, and systems of equations involving exponential and quadratic expressions.

**Critical Area 4:** Students expand their ability to compute and interpret theoretical and experimental probabilities for compound events and make use of geometric probability models wherever possible.

**Critical Area 5:** Students build a formal understanding of similarity and congruence and apply similarity in right triangles to understand right triangle trigonometry and develop facility with geometric proof.

**Critical Area 6:** Students prove basic theorems about circles and use the Cartesian coordinate system to write the equation of a circle, graph in the coordinate plane, and apply geometric techniques for solving quadratic equations.

**Integrated Mathematics III (Honors) (10th- 10 credits; 11th – 5 credits)**

*Prerequisite(s): STEM Academy Acceptance; District/Teacher recommendation; Integrated Mathematics II*

Integrated Mathematics III aims to apply and extend what students have learned in previous courses by focusing on finding connections between multiple representations of functions, transformations of different function families, finding zeros of polynomials and connecting them to graphs and equations of polynomials, modeling periodic phenomena with trigonometry, and understanding the role of randomness and the normal distribution in making statistical conclusions.   [Read More...](http://cpm.org/int3/)

Students use problem-solving strategies, questioning, investigating, analyzing critically, gathering and constructing evidence, and communicating rigorous arguments justifying their thinking. Students learn in collaboration with others while sharing information, expertise, and ideas.

**Key concepts addressed in this course include students’ ability to:**

* Visualize, express, interpret and describe, and graph functions (and their inverses, in many cases).
* Use of variables and functions to represent relationships given in tables, graphs, situations, and geometric diagrams, and recognize the connections among these multiple representations.
* Apply multiple algebraic representations to model and solve problems presented as real-world situations or simulations.
* Perform operations with complex numbers, and solving quadratics with complex solutions.
* Apply the Law of Sines and Law of Cosines.
* Model with periodic phenomena with trigonometric functions.
* Calculate the sums of arithmetic and geometric series, including infinite geometric series.
* Apply concepts of randomness and bias in survey design and interpretation of the results.
* Use of a normal distribution to model outcomes and to make inferences as appropriate.
* Use of computers to simulate and determine complex probabilities.
* Use of margin of error and sample-to-sample variability to evaluate statistical decisions.
* Solving trigonometric equations and proving trigonometric identities
* Apply concepts associated with Precalculus.

**NJIT MTH 110 PreCalculus (2.5 credits; 4 NJIT credits)**

*Prerequisite: Successful completion of Integrated Mathematics, I, II, and III*

In this dual enrollment course(w/NJIT), students learn how to use logarithmic functions and equations to model real-world problems; understand characteristics of trigonometric functions and graph these functions; proof trigonometric identities and find inverses of trigonometric functions; apply laws of sines and cosines to solve problems; use matrices to represent multivariable systems and solve the systems; perform elementary row operations of matrices and find the inverse of matrices; use polar coordinates and forms for graphing and writing equations. By successfully completing this course, student should gain all topics essential to the study of Calculus course.

**NJIT MATH 111 Calculus I (5 credits; 4 NJIT credits)**

*Prerequisite: Successful completion of Algebra I, Algebra II, Geometry, and PreCalculus*

In this dual enrollment course (w/NJIT), students learn about limits and their central role in calculus, derivatives and their relationship to instantaneous rates of change, understand many practical applications of derivatives, gain experience in the use of approximation in studying mathematical and scientific problems, and learn about integrals: their origin in the area problem and their relationship to derivatives. Students will gain an appreciation for the importance of calculus in scientific, engineering, computer, and other applications. Students will also gain experience in the use of technology to facilitate visualization and problem solving. Course Outcomes Students will have improved logical thinking and problem-solving skills. Students will have a greater understanding of the importance of calculus in science and technology. Students will be prepared for further study in mathematics as well as science, engineering, computing, and other areas.

**NJIT MATH 112 Calculus II (5 credits; 4 NJIT credits)**

*Prerequisite: Successful completion of Calculus I*

In this dual enrollment course (w/NJIT), students will (a) develop greater depth of understanding of integration and its importance in scientific and engineering applications, (b) learn about series, including their convergence properties and their use in representing functions, (c) gain experience in the use of approximation in studying mathematical and scientific problems and the importance of mathematically understanding and evaluating the accuracy of approximations, (d) learn new ways of mathematically representing curves and how to use calculus in these settings, and (e) learn alternative coordinate systems which are natural for many problems and learn how calculus can be applied in these systems.

**Course Outcomes:**

·   Students have improved logical thinking and problem-solving skills.

·   Students have a greater understanding of the importance of calculus in science and technology.

·   Students are prepared for further study in mathematics as well as science, engineering,

computing, and other areas.

## Humanities

**American Experiences (Honors) (10 credits)**

*Prerequisite(s): STEM Academy Acceptance*

The American Experiences course takes an interdisciplinary approach to the study of the role of history, geography, culture, social movements, political institutions, political philosophy, economic systems, etc. through the examination of historical contexts (namely the historical development of the United States, 1585 - 1877). Through these experiences, students will explore how Americans create meaning in their lives and make sense of the world in which they live. This integrated approach to the literary, political, social, and economic patterns of our past and present develops in the students the capacity to work critically, independently, and collaboratively. Students use literary interpretation, analysis, comparisons, and evaluations to read and respond to representative works of historical and cultural significance appropriate for grade 9. This course is truly interdisciplinary in that students are enriched by an analysis of the American experience from the perspective of both literature and history.

Students grow in their knowledge of the fundamentals of two disciplines as they develop a sophisticated and critical understanding of American history and culture and also learn how to use written language in effective and powerful ways. The strength of the Honors course of study lies in the extensions of research and tasks related to the analysis of substantive texts and includes real life projects incorporated into each marking cycle.

**Political Studies (Honors) (10 credits)**

*Prerequisite(s): STEM Academy Acceptance; American Experiences (10 credits)*

The Political Studies Course integrates the study of various political systems, both nationally and internationally. It maintains a concentrated focus on the development of the state of the nation, political parties and use of power. Also discussed will be the importance of the use of power as an influential tool, and its impact on political figures throughout history and current world politics. Students use literary interpretation, analysis, comparisons, and evaluations to read and respond to representative works of historical and cultural significance appropriate for the grade. This course is truly interdisciplinary in that students are enriched by an analysis of the Political experience from the perspective of both literature and history.

Activities included are guest speakers from government, field trips to the Local Court House(s) as well as congresses on current hot topics issues. Current political issues are rarely one-sided and the exploration of multiple points of view increases understanding and critical thinking. Students will produce and a present a digital portfolio tracking bias of the media concerning a specific hot topics or persons in present-day news. The major focus will be on national issues and their impact locally. The strength of the Honors course of study lies in the extensions of research and tasks related to the analysis of substantive texts and includes real life projects incorporated into each marking cycle. This course satisfies the requirements for English II and U.S. History II.

**HUM 101 English Composition: Writing, Speaking, Thinking I (5 credits; 3 NJIT credits)**

*Prerequisite: Successful completion of English I and II*

This dual enrollment course (w/NJIT), focuses on developing advanced written and oral communication skills that students will use within and beyond college. Students will learn to communicate with a variety of audiences in a variety of settings: academic, professional, civic, and personal. At the conclusion of the course, students will be expected to demonstrate proficiency in six core competency areas: rhetorical knowledge; critical thinking, reading, and writing; composing process; knowledge of conventions; composing in electronic environments; and information literacy.

**Advanced Placement (AP) English Literature and Composition (5 credits)**

*Prerequisite(s): Successful completion of AP Language and Composition or Honors English III*

The Advanced Placement (AP) English Literature and Composition course aligns to an introductory college-level literary analysis course. The course engages students in the close reading and critical analysis of imaginative literature to deepen their understanding of the methods writers use language to provide both meaning and pleasure. As they read, students consider a work's structure, style, and themes, as well as its use of figurative language, imagery, symbolism, and tone. Writing assignments include expository, analytical, and argumentative essays that require students to analyze and interpret literary works. Instruction will incorporate test sophistication strategies in preparation for End of Course and college entrance exams.

Unit 1: Short Fiction I: Critical reading, interpretation, and analysis of prose

Unit 2: Poetry I: Critical reading and analysis of poetry

Unit 3: Longer Fiction 1 or Drama I: Analysis of literary techniques and character development

Unit 4: Short Fiction II: Exploration of characters’ roles, conflict and author’s perspective in fiction

Unit 5: Poetry II: Exploration of how structure and figurative language impact meaning

Unit 6: Longer Fiction II or Drama II: Analysis of techniques and character development in longer works

Unit 7: Short Fiction III: Exploration of works of fiction and how they reflect the author’s experience

Unit 8: Poetry III: Exploration of how contracts, ambiguous language, and technique impact meaning

Unit 9: Longer Fiction III or Drama III: Application of literary techniques and interpretations on longer texts to formulate nuanced analyses

**Research Methods and Data Analysis (2.5 Credits)**

*Prerequisite(s): Successful completion of Algebra I and an introductory CS offering*

This course introduces students to quantitative and qualitative methods for conducting meaningful inquiry and research. The course will provide an overview of the important concepts of research design, data collection, statistical and interpretative analysis, and final report presentation. Students will gain an overview of research intent and design, methodology and technique, format and presentation, and data management and analysis informed by commonly used statistical methods. The course will develop each student’s ability to use this knowledge in academic level research assignments.

**Graphic Arts & Digital Design I (5 Credits)**

*Prerequisite(s): None*

Graphic art is any visual artistic representation typically produced in two-dimensions and includes painting, drawing, photography, printmaking. Graphic art also consists of drawn plans and layouts for interior and architectural designs. Design in the graphic arts often includes typography but also encompasses original drawings, plans, and patterns for the decorative arts (e.g., furniture, tapestry, ceramics), interiors, and architecture. Digital design refers to what is created and produced for viewing on a screen and can include content such as multimedia presentations, web ads, digital billboards and signage, 2D animation and 3D modelling. Standard industry tools for digital design include Illustrator©, Photoshop© and InDesign© and languages featured in digital assets such as HTML, JavaScript and CSS3.

This course introduces students to the principles and techniques associated with both graphic arts (e.g. visual perception, value/shadowing, perspective (linear & atmospheric), and color/line/contour) and incorporates visual communication in digital and non-digital environments. Emphasis will be placed on the design-process using methods, strategies, and techniques to create original student artwork. Students will apply their knowledge of the elements and principles of design in order to strengthen their ability to visually communicate ideas on and off-screen. This course explores a range of design techniques using traditional art genres (portrait, still life, landscape) and media (graphite, charcoal, pen & ink) and software programs such as Adobe Photoshop and Illustrator.

Students will analyze, critique artworks and learn about the origins of graphic design in the history of art. Students will be exposed to a variety of disciplines within the graphic and digital design field, which include but are not limited to logo design, poster design, typography, packaging design, and illustration to create portfolios, presentations, and showcases in traditional and digital media.

**Graphic Arts & Digital Design II (5 Credits)**

*Prerequisite(s): None*

In this course, students continue to address the principles and techniques associated with both graphic arts (e.g. visual perception, value/shadowing, perspective (linear & atmospheric), and color/line/contour) and incorporates visual communication in digital and non-digital environments. Emphasis will be placed on the design-process using advanced features of programs such as Adobe Photoshop and Illustrator, Raster Pixlar, Graphic Designer and Desktop publishing with Adobe Spark, Canvas, Piktochart.

## 

## Science

**EVSC 125: Fundamentals of Environmental Science (5 credits; 3 NJIT credits)**

*Prerequisites: None*

This dual enrollment course (w/NJIT) is an introductory course to the interdisciplinary study of the complex interactions that occur among and within environmental systems: air, water, and terrestrial environs. The course includes an emphasis on anthropocentric effects on these environmental systems. It is provided as a part of a curriculum in applied environmental science and as such emphasizes problem identification and engineered solutions. The course serves as an introduction to further advanced study specializing in environmental science and engineering.

**NJIT CHEM 125/125A General Chemistry I w/ Lab (5 Credits, 4 NJIT Credits)**

*Prerequisite: Honors Chemistry*

This full-year, dual enrollment course (w/NJIT) focuses introducing the basic concepts of chemistry, including chemical reactions and bonding, electronic and molecular structure, gases and thermochemistry. The lab experiments are designed to provide students with practical experience and train students with laboratory techniques/equipment common to chemistry laboratories.

**Physics (Honors) (5 credits)**

*Prerequisite: Algebra I*

This course is designed for students who have developed a strong background in science.  Coursework includes the study of classical mechanics, thermodynamics, electricity, magnetism and nuclear physics.  Students will do extensive independent reading and writing assignments, including laboratory reports and research papers. The Honors Physics course emphasizes laboratory investigation (experiences in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC 2006, p. 3)). Throughout the process, students design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings.

**NJIT PHYS 111/A Physics I w/Lab (5 Credits, 4 NJIT Credits)**

*Pre- or co-requisite: Calculus I*

Physics is one of the most fundamental of the sciences. Physics is also the foundation of all engineering and technology. For this course, which is the first of the introductory Physics series, you can expect to be assessed on the following learning outcomes:

1. Manipulate vectors in components form and as magnitude/direction. Perform vector operations such as addition, subtraction, scalar, and cross products.

2. Recall the definitions and relationships involving position, velocity, speed, acceleration.

3. Apply the equations governing 1-D constant acceleration to mechanical systems for various initial conditions.

4. Apply the equations governing 2-D constant acceleration to mechanical systems for various initial conditions.

5. Comprehend the meaning of the equations governing net force and acceleration (Newton’s Laws) for linear motion, and be able to manipulate them in conjunction with a free-body diagram to obtain any desired quantitative relationship.

6. Understand the extension of free-body diagrams and Newton's laws to rotational motion.

7. Understand the extension of free-body diagrams and Newton's laws to frictional forces.

8. Comprehend the definitions and application of work, energy, and conservation of energy principles to solving mechanical and non-conservative systems.

9. Comprehend the meaning of equations governing momentum, impulse, and collisions. Apply the equations governing momentum, impulse, and collisions mechanical systems for various initial conditions. Understand under what conditions momentum is conserved and how to use this relation to calculate unknown quantities based on physical relationships, initial conditions, and known quantities.

10. Define and calculate the center of mass of a system as well as the moment of inertia.

11. Extend the concepts and equations of 1-D constant acceleration to rotational motion for various initial conditions.

12. Understand the extension of linear motion equations to rotational motion. Comprehend the meaning of the equations governing rotational motion and acceleration, and be able to manipulate them in conjunction with a free-body diagram to obtain any desired quantitative relationship.

13. Understand the extension of work, energy, and conservation of energy principles to rotational motion.

14. Recall the definitions of angular momentum. Apply this concept to conservation of angular momentum.

15. Apply concepts of Newton's Laws to equilibrium of linear and rotational motion.

16. Understand the extension of conservation of energy and mass equations to fluid dynamics.

17. Understand the extension of Newton's Laws and energy concepts to gravitation.

**NJIT’s FRSC 201 Introduction to Forensic Science (5 credits)**

*Prerequisite: Biology, Chemistry, Teacher recommendation Corequisite: Physics*

Course Description: Forensic Science is the application of science to the law. This course introduces students to the m any disciplines of forensic science and how they are us ed in our criminal justice system. Students will be introduced to the science behind these disciplines and how forensic science techniques are used in crime laboratories throughout the United States and abroad. Guest lecturers and practitioners will offer insights into their day-to-day investigative work and how they face technological challenges and success. The scientific method will be emphasized throughout the course.

## Biomedical Science Track

**Principles of Biomedical Science (Honors) (5 credits)**

*Prerequisite(s): STEM Academy Acceptance*

The Principles of Biomedical Science (PBS) course provides an introduction to biomedical science through exciting hands-on projects and problems. Students investigate concepts of biology and medicine as they explore health conditions including heart disease, diabetes, sickle-cell disease, hypercholesterolemia, and infectious diseases. Students will investigate lifestyle choices and medical treatments and demonstrate how the development of disease is related to changes in human body systems. The activities and projects in PBS introduce students to human physiology, basic biology, medicine, and research processes and 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 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. The PBS course emphasizes laboratory investigation (experiences in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC 2006, p. 3)). Throughout the process, students design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings.

The following is a summary of the NGSS- and Common Core aligned units of study that are included in the course for the academic year. The course emphasizes laboratory investigation (experiences in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC 2006, p. 3)). Throughout the process, students design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings. Real life projects are incorporated into each marking cycle.

**PBS Unit Summary**

* Unit 1 The Mystery
* Unit 2 Diabetes
* Unit 3 Sickle Cell Disease
* Unit 4 Heart Disease
* Unit 5 Infectious Disease
* Unit 6 Post Mortem

\* Additional units of study include extension related to content tested on the New Jersey Biology Competency Test (organization and development, matter and energy transformation, interdependence, heredity, reproduction, evolution and diversity, etc.)

**Human Body Systems (Honors) (10 credits)**

*Prerequisite(s): STEM Academy Acceptance; Introduction to Biomedical Science*

In the Human Body Systems (HBS) course, students examine the interactions of body systems as they explore identity, communication, power, movement, protection, and homeostasis. Students design experiments, investigate the structures and functions of the human body, and use data acquisition software to monitor body functions such as muscle movement, reflex and voluntary action, and respiration. Exploring science in action, students build organs and tissues on a skeletal manikin, work through interesting real world cases, and often play the role of biomedical professionals to solve medical mysteries. 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.

The following is a summary of the NGSS and Common Core aligned units of study that are included in the course for the academic year. The course emphasizes laboratory investigation (experiences in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC 2006, p. 3)). Throughout the process, students design investigations, engage in scientific reasoning, manipulate equipment, record data, analyze results, and discuss their findings. Real life projects are incorporated into each marking cycle.

* Unit 1…………Identity
* Unit 2…………Communication
* Unit 3…………Power
* Unit 4…………Movement
* Unit 5…………Protection
* Unit 6…………Homeostasis

**Medical Interventions (Honors) (10 credits)**

*Prerequisite: Successful completion of The Human Body Course*

In the Medical Interventions (MI) course, Medical 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, and diagnostics. Each family case scenario will introduce multiple types of interventions, reinforce concepts learned in the previous two courses, 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.

The following is a summary of the units of study that are included in the course for the academic year. Alignment with NGSS, Common Core, and other standards are available through the PLTW Alignment web-based tool. Activities, projects, and problems are provided to the teacher in the form of student-ready handouts, teacher notes, and supplementary materials, including resource documents, student response sheets, and presentations.

**MI Unit Summary**

* Unit 1…………How to Fight Infection
* Unit 2…………How to Screen What Is in Your Genes
* Unit 3…………How to Conquer Cancer
* Unit 4…………How to Prevail When Organs Fail

**Biomedical Innovation (Honors) (10 Credits)**

*Prerequisite: Successful completion of Medical Intervention*

This is the final course of the PLTW Biomedical Science sequence. In the Biomedical Innovation (BI) 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.

In the Biomedical Innovation course, students will be asked to apply what they have learned in the previous three 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.

**BI Unit Summary**

* Problem 1…………Design of an Effective Emergency Room
* Problem 2…………Exploring Human Physiology
* Problem 3…………Design of a Medical Innovation
* Problem 4…………Investigating Environmental Health
* Problem 5…………Combating a Public Health Issue
* Problem 6…………Molecular Biology in Action (Optional)
* Problem 7…………Forensic Autopsy (Optional)
* Problem 8…………Independent Project (Optional)

## Mechanical Engineering Track

**Introduction to Engineering Design (Honors) (10 credits)**

*Prerequisite(s): STEM Academy Acceptance*

Introduction to Engineering Design (IED) is a high school level foundation course in the PLTW Engineering Program. In IED students are introduced to the engineering profession and 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 will progress from completing structured activities to solving open ended projects and problems that require them to develop planning, documentation, communication, and other professional skills. Through both individual and collaborative team activities, projects, and problems, students will solve problems as they practice common engineering design and development protocols such as project management and peer review.

Students will develop skill in technical representation and documentation of design solutions according to accepted technical standards, and they will use current 3D design and modeling software to represent and communicate solutions. In addition, the development of computational methods that are commonly used in engineering problem solving, including statistical analysis and mathematical modeling, are emphasized. Ethical issues related to professional practice and product development are also presented.

**The following is a summary of the NGSS and Common Core aligned units of study:**

* Unit 1 Design Process
* Unit 2 Technical Sketching and Drawing
* Unit 3 Measurement and Statistics
* Unit 4 Modeling Skills
* Unit 5 Geometry of Design
* Unit 6 Reverse Engineering
* Unit 7 Documentation
* Unit 8 Advanced Computer Modeling
* Unit 9 Design Team
* Unit 10 Design Challenges

**Computer Integrated Manufacturing Systems (10 credits)**

*Prerequisite(s): STEM Academy Acceptance; Introduction to Engineering and Design*

Description: Computer Integrated Manufacturing (CIM) is the study of manufacturing planning, integration, and implementation of automation. The course explores manufacturing history, individual processes, systems, and careers. In addition to technical concepts, the course incorporates finance, ethics, and engineering design. This reflects an integrated approach that leading manufacturers have adopted to improve safety, quality, and efficiency. Utilizing the activity-project-problem-based (APPB) teaching and learning pedagogy, students will analyze, design, and build manufacturing systems. While implementing these designs, students will continually hone their interpersonal skills, creative abilities, and understanding of the design process. Students apply knowledge gained throughout the course in a final open-ended problem to build a manufacturing system.

Computer Integrated Manufacturing is a high school level course that is appropriate for students interested in manufacturing and automation.  The course applies and concurrently develops secondary-level knowledge and skills in mathematics, science, and technology.

**Principles of Engineering (Honors) (10 credits)**

*Prerequisite: Introduction to Engineering and Design*

Principles of Engineering (POE) is a foundation course of the high school engineering pathway. This survey course exposes students to some of the major concepts that they will encounter in a postsecondary engineering course of study. Through problems that engage and challenge, students explore a broad range of engineering topics, including mechanisms, the strength of materials and structures, automation, and kinematics. The course applies and concurrently develops secondary level knowledge and skills in mathematics, science, and technology.

Students have the opportunity to develop skills and understanding of course concepts through activity, project, and problem-based (APB) learning. By solving rigorous and relevant design problems using engineering and science concepts within a collaborative learning environment, APB learning challenges students to continually hone their interpersonal skills, creative abilities, and problem-solving skills. Students will also learn how to document their work and communicate their solutions to their peers and members of the professional community. It also allows students to develop strategies to enable and direct their own learning, which is the ultimate goal of education.

**POE Unit Summary:**

Unit 1…………Energy and Power

Unit 2…………Materials and Structures

Unit 3…………Control Systems

Unit 4…………Statistics and Kinematics

**Engineering Design and Development (Honors) (10 Credits)**

*Prerequisite:* *Principles of Engineering*

Engineering Design and Development (EDD) is the capstone course in the PLTW high school engineering program. It is an open-ended engineering research course in which students work in teams to design and develop an original solution to a well-defined and justified open-ended problem by applying an engineering design process.

Students will perform research to select, define, and justify a problem. After carefully defining the design requirements and creating multiple solution approaches, teams of students select an approach, create, and test their solution prototype. Student teams will present and defend their original solution to an outside panel. While progressing through the engineering design process, students will work closely with experts and will continually hone their organizational, communication and interpersonal skills, their creative and problem-solving abilities, and their understanding of the design process.

**EDD Unit Summary:**

* Component 0…………Project Management
* Component 1…………Research
* Component 2…………Design
* Component 3…………Prototype and Test
* Component 4…………Evaluation of Project and Process
* Component 5…………Reflection and Presenting the Design Process
* Component 6…………Going Beyond EDD

## Computing Sciences Track

**Explorations in CS: Computing Ideas (5 credits)**

*Prerequisite: None*

The Computing Ideas course is an exploratory computer science course introducing the basics of programming with Karel the Dog. It introduces the basics of designing a web page, and how information and images are represented with computers. Students will learn to code using blocks to drag and drop, but they can switch between blocks and text as desired. Students will create a portfolio on the web of projects they build throughout the course.

With a unique focus on creativity, problem solving and project based learning, Computing Ideas gives students the opportunity to explore several important topics of computing using their own ideas and creativity and develop an interest in computer science that will foster further endeavors in the field. Students write and run programs in the browser using the CodeHS editor. Students will be able to write both text based and block based programs in Karel. They will also create webpages using HTML and CSS.

**Introduction to Computer Science w/ Python (Honors) (10 credits)**

*Prerequisite(s): Successful completion of an Algebra I course*

The introduction to Computer Science in Python curriculum teaches the foundations of computer science and basic programming, with an emphasis on helping students develop logical thinking and problem solving skills. In this course, students will learn to design and evaluate solutions and to apply computer science to solve problems through the development of algorithms and programs. They will incorporate abstraction into programs and use data to discover new knowledge. Once students complete the Introduction to Computer Science in Python course, they will have learned material equivalent to a semester college introductory course in Computer Science and be able to program using Python 3. Additional real life projects are incorporated into each marking cycle. 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.

**AP Computer Science A (10 credits)**

*Prerequisite: Successful completion of an Introductory Computer Science course*

AP Computer Science A is a fast-paced, AP level course for students who have completed an Introduction to CS course. In taking this course, students will be able to apply knowledge of concepts covered in the Intro course to the more advanced setting of the AP Java course.

**NJIT’s CS 100: Roadmap to Computing (5 credits; 3 NJIT credits)**

*Prerequisite: Successful completion of an Introductory Computer Science course*

This dual enrollment course (w/NJIT) provides an introduction to programming and problem-solving skills using Python, a very high-level language. Topics include basic strategies for problem solving, constructs that control the flow of execution of a program and the use of high-level data types such as lists, strings and dictionaries in problem representation. The course also presents an overview of selected topics in computing, such as the Internet and software engineering. Computing is a profession that requires lifelong learning, which is pursued through activities and using types of materials that are similar to those employed by students. In this course, each student will track their own use of learning strategies and materials in preparation for a knowledge intensive profession.

**APP Development in Swift/Fundamentals with Xcode (5 credits)**

*Prerequisite: Successful completion of an Introductory Computer Science course*

This course helps students build fundamentals in iOS app development skills with Swift. They’ll master the core concepts and practices that Swift programmers use daily and build a basic fluency in Xcode’s source and UI editors. Students will be able to create iOS apps that adhere to standard practices, including use of stock UI elements and layout techniques, and common navigation interfaces. They’ll continue to their app design journey by brainstorming, planning, prototyping, and evaluating an app of their own. Guided App Projects help students build an app in Xcode with step-by-step instructions while allowing students try out parts of code with without having to build an entire app from the beginning to accelerate their coding Swift skills. Xcode Playgrounds helps students learn key programming concepts as they write Swift code in playgrounds—an interactive coding environment that lets them experiment with code and see the results immediately.

**Unit 1:** Getting Started with App Development. Students find out about the basics of data, operators, and control flow in Swift, as well as documentation, debugging, Xcode, building and running an app, and Interface Builder. They then apply this knowledge to the guided project, Light, in which they create a simple flashlight app.

**Unit 2:** Introduction to UIKit. Students explore Swift strings, functions, structures, collections, and loops. They also learn about UIKit—the system views and controls that make up a user interface—and how to display data using Auto Layout and stack views. They put this knowledge to practice in the guided project, Apple Pie, where they build a word-guessing game app.

**Unit 3:** Navigation and Workflows. Students discover how to build simple workflows and navigation hierarchies using navigation controllers, tab bar controllers, and segues. They also examine two powerful tools in Swift, optionals and enumerations. They put this knowledge into practice with the guided project, Personality Quiz, a personalized survey that reveals a fun response to the user.

**Unit 4:** Tables and Persistence. Students find out about scroll views, table views, and building complex input screens. They also explore how to save data, share data to other apps, and work with images in the user’s photo library. They use their new skills in the guided project, List, a task-tracking app that allows the user to add, edit, and delete items in a familiar table-based interface. Students can customize the app to keep track of any type of information, such as a collection, tasks, or playlists.

**Unit 5:** Working with the Web. Students learn about animations, concurrency, and working with the web. They apply what they’ve learned in the guided project, Restaurant, a customizable menu app that displays the available dishes from a restaurant and allows the user to submit an order. This app uses a web service that allows students to set up the menu with their own menu items and photos.

**Unit 6:** Prototyping and Project Planning. Students learn how to design, prototype, and architect a project of their own design. Given enough time, they should be able to build this project independently.

**Financial Literacy: Industry/Workplace Readiness (2.5 credits)**

*Prerequisite(s): STEM Academy Acceptance*

Success in the workplace is dependent upon more than just academic knowledge or technical and occupational skills. Employers need critical thinkers, problem solvers, and leaders to tackle the challenges of today’s workplace.

Employees with successful career paths learn to communicate effectively, engage appropriately with others, and be self-reliant. Effective career readiness and employability strategies are those that develop the whole learner and include personal and social capabilities; critical thinking and problem-solving skills; and academic and occupational knowledge.  The Academy’s Industry readiness courses are experiential opportunities in which students participate in an ongoing, sequenced workplace learning curriculum informed by current and future industry standards. This includes career goals, mentoring, guest speakers, workplace visits and internships. Additionally, students will acquire the skills necessary to develop financial, economic, business, entrepreneurial, critical thinking and writing skills to deal with personal finance and to underscore the course’s focus on career skills, personal financial literacy, career awareness, exploration, and preparation.

**SAT Prep Course (2.5 credits)**

*Prerequisite(s): Algebra I, English 9 and 10 are suggested*

SAT Prep is designed to help prepare students for the SAT test. In addition to reviewing the basic verbal and mathematical skills assessed on the SAT test, students learn test-taking strategies specific to the exam.  Although all sections of the SAT will be covered. Material includes samples with explanations, grading rubrics for peer and self-assessment, practice tests with complete multiple-choice assessments, essays prompts, and study resources. Independent practice is followed by guided collaborative review. Upon successful completion, students will possess the tools necessary to complete the SAT to the best of their ability.  8 Weeks of ELA Instruction and 8 Weeks of Mathematics Instruction.

# College and Career Readiness Partnerships

**Project Acceleration-Seton Hall University**

Since 1978, Project Acceleration, a concurrent enrollment program within the College of Arts and Sciences at Seton Hall University, has allowed high school students in New Jersey and New York to get a head start on their university careers. Over the course of their high school career, students can earn up to 22 credits from Seton Hall University for approved courses taken in their secondary schools.

Subjects include mathematics, computer science, biology, chemistry, physics, economics, psychology, political science, sociology, history, communication, English, French, German, Spanish, Italian, Latin, Greek, Japanese, music, art, and education. The college credits earned through Project Acceleration are accepted at more than 200 colleges and universities. There are currently 70 high schools offering Project Acceleration courses and approximately 3000 students participate each year.

**NJIT Real World Connections**

*Open to students in grades 9-12*

NJIT Real World Connections as a network of networks, the multidisciplinary Real world connections program is changing how classrooms operate and redefining how students learn, running a free real world open university year-round, transforming the way business work with education, impacting K-12 education, health care and social services in NJ and partnering with the world to empower our students. Real World Connections classes work as a very social “learning organization” co-designed by students, university and industry. These classes adapt to students’ demands. Students learn from weekly feedback and respond rapidly and dynamically to real world clients’ expectations so education becomes more relevant, exciting and rewarding. In addition to industry-sponsored projects, Real World Connections offers hands-on training in project management, leadership, entrepreneurship, research and development, software tools, programming, engineering, social, presentation and communication skills. The training is integrated with a mentorship focus by industry, university and peers.

**NJ SEEDS College Preparatory Program**

The SEEDS College Preparatory Program prepares academically motivated, financially-limited students for admission to selective four-year colleges. The Program includes weekend and summer honors classes, cultural enrichment and assistance with the college admissions and financial aid process.

College Preparatory Program students participate in classes throughout the school year and each summer of high school. Students have class once per week during the school year and for six weeks each summer (a significant portion of the summer program is spent on a college campus). A one-week orientation for the program is held the summer after 8th grade. SEEDS assist the College Preparatory Program students throughout the college admission process. SEEDS organize college visits, helps students identify appropriate first- and second-choice schools, gather transcripts and letters of recommendation, and prepare the necessary financial aid forms. SEEDS aim to place every CPP student at a selective four-year college where they will receive financial aid.

**Hudson County Community College**

Students in the Culinary Pathway have the opportunity to take a course at the Jersey City campus for dual credit.

**Montclair State University – Summer Journalism Workshop for High School Students**

This program by the School of Communication and Media (SCM) is an all-expense-paid journalism and college preparation program for low-income, high school students. Students will engage in various forms of communication media and will learn reporting skills across multiple platforms. This program will target high-performing North Jersey high school journalists and is designed to prepare students for college and potential fields of study within journalism and communications.

By encouraging high-performing students from diverse backgrounds to pursue careers in journalism, this program aims to foster deeper relationships and expanded civic engagement with neighboring towns, including Newark, Paterson, the Oranges, and Montclair.

**Princeton University – Summer Journalism Program**

The Princeton Summer Journalism Program (PSJP) is one of the only programs of its kind offering a free, innovative journalism and college prep institute for high achieving high school juniors from low-income backgrounds. Over ten days every summer, up to 40 students from across the country explore current events and world affairs through workshops and lectures led by Princeton professors, professional journalists, and alumni on campus. The summer program culminates in the publication of the Princeton Summer Journal, the student-produced newspaper. During their senior year, students are matched with a personal college adviser, who will work with them on their college admissions process.

**Kean University – Scholars Academy Program**

Kean University’s Scholar Academy offers qualified high school students the opportunity to earn college credits and participate in pre-college mentorships, internships and other enrichment activities that support their academic journey toward college. Throughout the academic year, Academy students engage in workshops, classes and counseling sessions on Kean’s Union campus while attending their respective

high school. Each student will receive an individualized education plan based on their chosen academic pathway and begin to enroll in classes at Kean as they progress in their high school career. By the time they graduate high school, students may earn up to 12-15 college credits in their selected major and be well on their way to a successful college career.

**Kean University**

**Math 0901 Basic Algebra**

Basic Algebra; a non-college credit bearing 3 credit hour course for students that do not place into college level math based on their placement test score. Topics include: Operations with Real Numbers, Simplifying Algebraic Expressions, Linear Equations, Graphing Equations of Lines, Applications and Word Problems, Operations with Polynomials, Factoring Polynomials, Solving Quadratic Equations, Operations with Square Roots.

**Math 1000 Algebra for College Students**

Rational expressions, radical and exponential expressions. Quadratic, rational and radical equations and inequalities. Systems of equations. Properties of functions and their graphs. Polynomial functions and inverse functions. Binomial theorem. General Education Requirement Prerequisite: MATH 0901 or by Placement Result

**English 1025 Introduction to College Composition**

Introduction to academic expository writing and the writing, reading, and critical thinking processes used across the college curriculum. Students' performance in the course will determine their placement for College Composition. Writing Intensive Course.

**English 1030 English Composition**

Development of flexible processes for composing writing to meet academic purposes across the curriculum. This course is equivalent to English 1031/1032 and 1033/1034. The version of College Composition students must take will be determined by results of a placement essay. Prerequisite(s): Determined by placement results.

**Essex County College**

**English Composition 101**

Writing of the multi-paragraph composition is taught, with concentration on the elements of theme, structure, and style. Principles of rhetoric are recognized and discussed through logical analysis of expository and argumentative essays. The course will culminate in the composition of a documented paper. Students will be introduced to library skills and be able to access and process information using a range of media. In each unit, students will go through the following stages to ensure satisfactory completion of all assignments: planning, forming the rough draft, editing, revising, and rewriting.

**English Composition 102**

This course is a continuation of ENG 101 with emphasis on the longer composition and the process of documentation. Techniques of research are taught, culminating in the production of an original, extensive, multiple source, fully documented, literary research paper. Informational literacy is stressed through advanced library skills as well as hands-on experience utilizing computers in researching and developing projects. Interpretive skills are developed through the introduction of literature.

**History 101**

This course is the first half of a two-semester sequence. It examines aspects of the major social, political, economic, religious, and intellectual developments of world civilization from earliest times to the seventh century. Emphasis is placed on the ideas and institutions that have shaped the culture of world civilization.

**History 102**

World Civilization II is the second half of a two-semester sequence. It examines aspects of the major social, political, economic, and intellectual developments of world civilization from the 17th century to the present. Emphasis is placed on the ideas and institutions that have shaped the society and culture of the modern world.

**Elementary Spanish 101**

This course is the first half of a two-semester sequence. Students will gain competence in the use of a foreign language while analyzing works in the field of art, music, or theater; literature and philosophy and/or religious studies. Listening comprehension, speaking, reading and writing are developed within the limits of basic vocabulary, idioms and grammar.

**Elementary Spanish 102**

This course is the second half of a two-semester sequence. Students will gain competence in the use of a foreign language while analyzing works in the field of art, music, or theater; literature and philosophy and/or religious studies. Developing knowledge of vocabulary and grammar expands to include multiple tenses and use of verbs. The four language skills of listening comprehension, speaking, reading and writing continue to be developed.

**Art 101**

This course is a study of world historical contributions in painting, sculpture, architecture and the minor arts of all cultures from prehistoric times up to circa 1400.

**Hudson County Community College**

**CAI 115 Food Sanitation and Culinary Principles**

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, conduct, and employment opportunities 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. This course prepares students for a nationally recognized ServSafe certification exam provided by the National Restaurant Association Educational Foundation (NRAEF).

**Seton Hall University**

**BITM2701: Management Information Systems**

The course content is divided into three components: 1. Instruction on using spreadsheets (Excel) to build models. Students will learn many features of Excel that can be used to analyze business problems. 2. Learning how to use databases (Access) to retrieve information. 3. An introduction to the common body of knowledge in information systems, including discussion of the Web and its impact on business.

**Fairleigh Dickinson University**

**AO-E125 Introduction to Digital Media**

Techniques in camera, story, and editing are stressed. Narrative and Documentary productions are assigned, as the class pursues both an understanding of basic production and storytelling concepts.

**AO–E126 Digital Media**

This course focuses on pre-production, production, working as a team and at reaching an understanding of all the crafts and crew positions that go into production. Script breakdowns, scheduling, and advanced production techniques such as sound mixing, booming, lighting and camera work, as well as beginning editing skills are the focus of this class.

**AO-E127 Filmmaking**

A continuation of our filmmaking sequence. Student stories and productions are pursued. The focus of this course is on individual project design and management, stressing new and advanced production techniques.

**CGD 1192 - Digital Photography**

Students in this course will learn the fundamentals of electronic imaging to input photographic materials and manipulate them in a digital environment for creative use and commercial application.

**CGD 1843 - Design for the Web**

Students in this course will be introduced to design issues specific for the web. The course includes an overview of how the internet functions, basic website interactivity and navigation, image adjustment and compression, as well **AO** as basics of multimedia on the web.

**NJIT’s Architecture and Design Pathway in partnership with the Orange Public Schools**

**Grade 9 Exploratory Course: 21st Century Modes of Design Communication**

In this course, we will introduce the fundamentals of visual communication within the context of fashion systems and practices. Class time will include research, observation, design ideation, visual expression of ideas, and analog and digital design presentation methods. Upon successful completion of this course, students will be able to creatively communicate and present their design concepts.

**Grade 10 Exploratory Course: 21st Century Computer-Aided Design**

The student will learn and demonstrate the proper use of computer-aided design software as a design tool in fields such as Engineering, Architecture, and Multimedia. Emphasis will be on computer-aided design fundamentals such as creating, editing and printing of 2D and 3D models.

1. STEM Innovation Academy students earn a minimum of 163.5 credits to meet graduation requirements. [↑](#footnote-ref-1)
2. PreCalculus is also offered as a summer accelerated option allowing students on the accelerated pathway to advance to AP Calculus in their 11th grade year. [↑](#footnote-ref-2)
3. Can be taken concurrently with Algebra I [↑](#footnote-ref-3)
4. Can be taken concurrently with Algebra I [↑](#footnote-ref-4)
5. Chemistry may be taken concurrently [↑](#footnote-ref-5)
6. Introductory Course: Grade 9: Exploring Media & Film [↑](#footnote-ref-6)
7. Introductory Course: Grade 9: Introduction to Graphic Arts [↑](#footnote-ref-7)
8. Introductory Course: Grade 9: Introduction to Health Care in Society [↑](#footnote-ref-8)
9. Introductory Course: Grade 9: Computing Ideas [↑](#footnote-ref-9)
10. Introductory Course: Grade 9: Naval Science I [↑](#footnote-ref-10)
11. To include World History, US I, and US II [↑](#footnote-ref-11)
12. To include Algebra I and Geometry and a third year that builds upon both [↑](#footnote-ref-12)
13. To include Biology [↑](#footnote-ref-13)