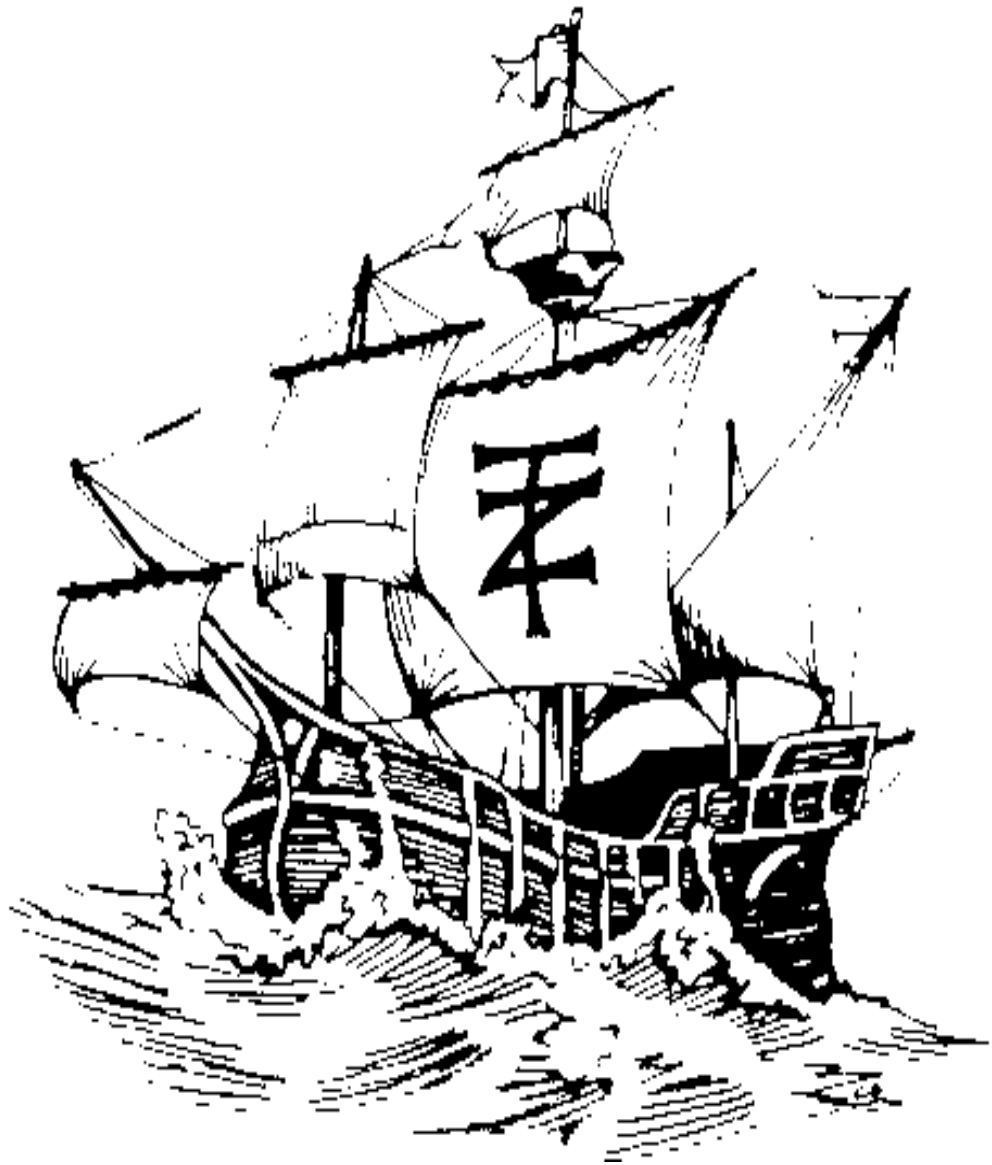


# TAPPAN ZEE HIGH SCHOOL



## CURRICULUM GUIDE 2017-2018



# **Tappan Zee High School**

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Dear Students:

Starting with the end in mind, this Curriculum Guide is intended to help you map a plan from your current steps in your educational journey to where you want to be at the end of your high school career. This guide lists all courses offered at Tappan Zee High School, the pre-requisites for each, and a general description of these courses. We run hundreds of courses each year, including many that can help you accrue college credit while still in high school. Keep in mind that the best plan for you and your family may be starkly different from another student's best plan, and that is a good thing; it celebrates the unique qualities that make you *you!*

In your planning, please remember the tremendous resources available to you through our teaching and counseling teams. While you are reviewing this guide and determining possible next steps, I encourage you to be creative, ambitious, and balanced. You know yourself better than anyone. Set your goals high, and commit to achieving each one. Seek opportunities that will challenge you to work hard, learn much, and dream big.

We look forward to our continued work together along your high school path.

Sincerely,

*Jennifer L. Amos*

Jennifer L. Amos, Ph.D.  
Principal

**South Orangetown Central School District**

SOUTH ORANGETOWN CENTRAL SCHOOL DISTRICT  
Van Wyck Road, Blauvelt, New York 10913-1299  
(845) 680-1000

Board of Education  
Mr. Guy DeVincenzo,  
President  
Mr. Dan Lamadrid  
Vice President  
Mr. Leon Jacobs  
Mr. Ken Malpeli  
Mrs. Rosemary Pitruzzella

Superintendent of Schools	Dr. Robert R. Pritchard
School Business Administrator	Ms. Sandra Winkler
Assistant Superintendent for Curriculum and Instruction	Dr. Brian Culot
Director of Human Resources	Mr. Jeremy Barker
Director of Special Education Services	Ms. Michele Fenster
Director of Technology	Mr. George Brady
Director of School Facilities	Mr. Dennis Rankin

TAPPAN ZEE HIGH SCHOOL  
15 Dutch Hill Road, Orangeburg, New York 10962-1799  
(845) 680-1600

Dr. Jennifer L. Amos Principal	Mr. Richard Weissberg Counseling Department Team Leader
Ms. Juliet Gevargis Assistant Principal	Mr. Randy Altman Counselor
Mr. Richard Neidhart Assistant Principal	Ms. Laura Ferrante Counselor
Mr. Christopher Rastelli Acting Director of Athletics	Ms. Jaime Holzer Counselor
	Ms. Kelly Keane Counselor

Accredited by Middle States Association of Colleges and Schools  
and the New York State Education Department

TAPPAN ZEE HIGH SCHOOL CURRICULUM GUIDE  
2017-2018

TABLE OF CONTENTS

**PLEASE NOTE:** Some courses proposed for 2017-2018 may not run due to insufficient enrollment or budgetary restrictions.

College and Career Information and Opportunities .....	Pg. 2
Frequently Asked Questions .....	Pg. 2, 3
1. What is the Early Admissions Program?	
2. What is a Transcript?	
3. How Can I Earn College Credit in High School?	
4. How Else Can I Earn High School Credit?	
5. Graduation Requirements	
6. What is a Weighted Average?	
7. Class Rank	
Virtual High School (VHS).....	Pg. 3
Art Program.....	Pg. 3
BOCES.....	Pg. 7
Business Program.....	Pg. 8
Career Exploration.....	Pg. 9
English Program.....	Pg. 9
English as a Second Language.....	Pg. 14
Modern Language Program.....	Pg. 15
Mathematics and Computer Science Program.....	Pg. 17
Music Program.....	Pg. 22
Physical Education Program.....	Pg. 24
Science Program.....	Pg. 24
Social Studies Program.....	Pg. 29
Technology Education Program.....	Pg. 35
Learning Center - Remediation Program.....	Pg. 37
College Level Courses at Tappan Zee High School.....	Pg. 38

## **COLLEGE AND CAREER INFORMATION AND OTHER OPPORTUNITIES**

### **College Room**

The College Room is located across from the Counseling Department. Each fall we host college representatives from all over the country who come to TZHS to share information about their institutions with our students. These small group meetings take place in the College Room. In September we post a schedule of which colleges are visiting and when. We also have a few computers available in the College Room so students can go online to and work on their college application process via Naviance, the Common Application or individual college web sites.

### **Community Service**

We encourage all students to make a commitment to their community. There are a wide variety of sites available so that you can match your interest and reap the benefits of serving your community. Students have the opportunity to receive career exposure, job training, personal development, and interaction in the world beyond school. Students may earn one elective credit for 100 hours of community service. See your counselor for more details.

## **FREQUENTLY ASKED QUESTIONS**

### **1. WHAT IS THE EARLY ADMISSIONS PROGRAM?**

The Early Admissions Program is an arrangement whereby a qualified student goes to Rockland Community College in lieu of their senior year at Tappan Zee High School. The student earns both college and high school credit. If you are interested in this program, please meet with your counselor to review the requirements. All applications to this program are due by June 1<sup>st</sup>.

### **2. WHAT IS A TRANSCRIPT?**

A transcript is a document which indicates every high school credit bearing course a student has taken as well as the final grade for each course. All Regents exam scores are also posted on the transcript. The cumulative average is also reflected on the transcript. The transcript is required for almost all college applications and is generally considered the most important facet of a college application. Additionally, when an employer, educational institution, the armed forces, scholarship agencies, or social service agencies request the record of a student, a transcript is forwarded.

### **3. HOW CAN I EARN A COLLEGE CREDIT?**

Students may earn college credit in high school in a variety of ways. Students who take Advanced Placement courses and score a level 3 or higher on the examination may earn college credit for that course. Please review information posted at [www.collegeboard.com/student](http://www.collegeboard.com/student). Every college has its own rules about accepting Advanced Placement test results for credit as well as the minimum score required on the test to earn it. We also have relationships with a number of universities where students may earn college credit and high school credit at the same time. A list of those courses and colleges is available on Page 38 of this Curriculum Guide.

### **4. HOW ELSE CAN I EARN HIGH SCHOOL CREDIT?**

Students may also earn high school credits by taking a driver's education course at designated centers, taking courses through Virtual High School, and participating in Applied Music.

### **5. GRADUATION REQUIREMENTS**

Students are required to pass their courses and must earn 23 ½ credits to graduate. Students must pass the Regents examination in English Language Arts, Mathematics, World History, U. S. History and Government, and Science, all with a grade of at least 65% for a Regents Diploma. While there are other Pathways by which a student can meet the Regents exam requirements, the vast majority of our graduates pass all five of these exams. Please contact your counselor if you have any questions.

Students with disabilities have additional options, and further information is available from the Counseling Department.

## **6. WHAT IS A WEIGHTED AVERAGE?**

A weighted average is an average in which certain courses count more than others. For example, some courses are worth 1/2 credit, while others are worth one full credit. Full credit courses count twice as much in a weighted average as 1/2 credit courses for obvious reasons. Also, some courses are weighted differently than others; this means that points are added to the final course grade when we compute the weighted average. Specifically, it works this way: Regents level courses are weighted by a factor of 1.03, Honors courses by a factor of 1.05, Advanced Placement and college level courses at 1.10. For example, a student who earned a final average of 90% in an Advanced Placement course would receive a weighting of 10% additional or a final grade of 99%. The 99% does not appear on the student's transcript next to the course but it is used when computing the student's average. When all of the weighting factors are applied to the student's individual course grades, the raised or weighted grades are averaged in the usual way, yielding what we call a weighted average. Your counselor can give you more information about the weighted average.

## **7. CLASS RANK**

We do not rank our students. The only exception to this policy is for the purpose of designating a Valedictorian and Salutatorian which go to the two students with the highest cumulative averages. There are occasions when a scholarship will require a precise class rank. When such cases arise we will provide a precise rank so as not to preclude a student from being a candidate for a scholarship. Students simply need to make an appointment with their counselor and bring the scholarship application to the appointment.

## **Virtual High School (VHS)**

Imagine classrooms without walls, where students are able to attend their classes 24 hours a day, seven days a week. Imagine students working cooperatively online with students from a wide variety of ethnicities, backgrounds, and geographical locations. VHS courses enable students to share their thoughts with students and educators around the world in an online learning environment. This learning environment calls for a great deal of student responsibility, motivation, and discipline and will be open to students in grades 9, 10, 11 and 12. Please see the Site Coordinator, who will register students for courses and serve as the liaison between students, parents, teachers and VHS for more details.

## **ART PROGRAM – Mr. Yu Bong Ko, Team Leader**

**NOTE:** All students are eligible to take the three introductory art courses: Studio in Art, 3-D Design I, and Graphic Arts and Media Design. Students may enroll in advanced art courses after completing the prerequisite introductory course. Consult the Art Department for guidance.

### **Studio in Art (9, 10, 11, 12)**

**Full Year, 1 credit**

**Prerequisite: None**

This foundational course gives students a variety of art-making experiences in a traditional art studio setting that meets the State art requirement for graduation. Students will be able to explore a wide range of methods and materials involved in drawing and painting, graphic design, printmaking and 3-D design. The elements of art and principles of design are emphasized, as students learn to use these concepts and tools as a means towards greater self-expression.

### **3-D Design I (9, 10, 11, 12)**

**Full Year, 1 credit**

**Prerequisite: None**

This foundational course meets the State art requirements for graduation and will focus on developing skills needed for hands-on experiences in 3-D media. Projects will include experiences in ceramics, sculpture and crafts. In addition to elements of art and principles of design, the history and significance of 3-D design in today's society will be emphasized.

**Graphic Arts and Media Design (9, 10, 11, 12)** **Full Year, 1 credit**

This course is structured to meet the State art requirement for graduation and is a foundation course. Utilizing the MAC computers, students will explore current practices in graphic arts and media design including social media using software applications such as Photoshop, Faces, Apple i-Life Suite and online resources to produce digital photographs, advertisements, cartoons, campaign posters, newsletters, brochures, and CD album covers. Other productions involve multimedia use of Garage Band and creative digital drawing/painting studio experiences on the computer.

**Explorations in Art (9, 10, 11, 12) Pending Approval** **Full Year, 1 credit**

**Prerequisite: None**

This foundational course designed to meet the State art requirements for graduation, provides students the opportunity to explore diverse methods and materials for making art, while establishing cross-cultural connections based on global themes.

**3-D Design II (10, 11, 12)** **Full Year, 1 credit**

**Prerequisite: 3-D Design I**

The objective of this course is to provide the students with an opportunity to develop more advanced skills in 3-D media. Emphasis will be placed on advanced techniques in ceramics, sculpture, jewelry making, and crafts. In addition to elements of art and principles of design, the history and significance of 3-D design in today's society will be emphasized.

**Drawing and Painting (9, 10, 11, 12)** **Full Year, 1 credit**

**Prerequisite: Studio in Art, Graphic Arts and Media Design or 3-D Design**

An in-coming 9<sup>th</sup> grader may take this course upon completion of the high school equivalent of Studio in Art at the middle school. This course is structured to enable the art student to develop his/her talents in two-dimensional representation. Emphasis will be placed on developing the student's drawing skills through a series of simple perceptual exercises and direct observation drawing projects, as well as on expanding the student's abilities to think creatively. Each student will be encouraged to explore various methods, use of materials, techniques and mixed media towards developing their own unique style as an avenue for enhanced personal expression. Completed artwork will be featured on display and should be suitable for inclusion in a personal portfolio.

**Advanced Drawing & Painting (10, 11, 12)** **Full Year, 1 credit**

**Prerequisite: Drawing and Painting/or permission of the Art Department**

This course is designed to assist students in furthering their drawing abilities in both direct observation and conceptual and imaginal styles. For the drawing component, a variety of drawing media, methods and techniques will be explored, and the topics are influenced by class interest. They may include: still life, figure drawing, proportion, anatomy, perspective and space, mark making, rendering, design and composition. In the painting component, students will have an in-depth experience using a variety of paint media and techniques while exploring a more personal approach to expressing form, content, meaning and context. For this, the formal study of composition and color theory will be integrated into the painting experience. As a fundamental skill for all forms of artistic expression, Advanced Drawing and Painting is recommended for all art majors. Additionally, this course is recommended for preparing students for AP Drawing or AP 2D Design in a subsequent year.

**Sculpture (11, 12)** **Full Year, 1 credit**

**Prerequisite: 3D-Design II**

This course is designed to allow the students to explore sculptural design and expression through both additive and subtractive processes. The students will be able to experiment with many three-dimensional approaches including, but not limited to figurative or nonfigurative sculpture that involve modeling, casting, metal work, ceramics, fiber arts, assemblages and found objects. Students are encouraged to explore a personal, central interest and are free to work with variety of media that address sculptural design issues.



### **Advanced Sculpture (11, 12)**

**Full Year, 1 credit**

#### **Prerequisite: Sculpture or permission of the Art Department**

Advanced sculpture develops skills in spatial relationships, utilizing different materials and safe studio practices. The application of these ideas is emphasized through collaborative work, the understanding of the language of sculpture and documentation of process. Students investigate the works of a diverse group of sculptors and also participate in regular critiques. Students are encouraged to continue to explore a personal, central interest and are free to work with a variety of media that address sculptural issues.

### **Advanced Placement Studio Art**

**Full Year, 1 credit**

**Description:** The AP program in Studio Art enables highly motivated students who are seriously interested in the study of art to perform at the college level while still in high school. AP work involves more commitment, time and accomplishment than the typical high school course. Expectations and the work load are in accord with entry-level college courses. The AP Studio Art Portfolio is a performance-based exam rather than a written exam. The projects are challenging and the classroom critiques will enable you to learn how to analyze and assess your own work as well as that of your peers so artistic growth can be cultivated. The College Board offers three portfolios: 2-D Design, 3-D Design, and Drawing. The AP portfolio should be viewed as the culminating experience in a student's high school visual arts training. You are required to complete one of the three portfolios offered. The portfolio will encompass a variety of themes, ideas, artistic issues mediums and materials, subject matter and approaches to making art. Independent thinking is highly valued. Permission of the art faculty is required.

#### **The Three Portfolios:**

- **Drawing Portfolio: Prerequisite: Advanced Drawing and Painting**  
In the Drawing Portfolio, your mastery of drawing can be demonstrated through a wide range of approaches and media. Light and shade, line quality, rendering of form, composition, surface manipulation, and the illusion of depth are drawing issues that can be addressed through a variety of means, which could include painting, printmaking, mixed media, etc. Abstract, observational, and inventive works may be submitted. The range of marks used to make drawings, the arrangement of the marks, and the materials used to make the marks are endless. Photography, digital imaging, videotapes, three-dimensional work, and photocopies of your work in other media may not be submitted.
- **2-D Design Portfolio: Prerequisite: Advanced Drawing and Painting, or Computer Graphics, or Photography**  
Design involves purposeful decision-making about using the elements and principles of art in an integrative way. In the 2-D Design Portfolio, you should demonstrate your understanding of design principles as applied to a two-dimensional surface. The principles of design (unity/variety, balance, emphasis, contrast, rhythm, repetition, proportion/scale, and figure/ground relationship) can be articulated through the visual elements (line, shape, color, value, texture, space). Any 2-D process or medium may be submitted, including, but not limited to graphic design, digital imaging, photography, collage, fabric design, weaving, illustration, painting, printmaking, etc. Videotapes, three-dimensional works, and photocopies of your work in other media may not be submitted.
- **3-D Design Portfolio: Prerequisite: Sculpture, or Advanced Sculpture**  
Design involves purposeful decision-making about using the elements and principles of art in an integrative way. In the 3-D Design Portfolio, you should demonstrate your understanding of design principles as they relate to depth and space. The principles of design (unity/variety, balance, emphasis, contrast, rhythm, repetition, proportion/scale, and figure/ground relationship) can be articulated through the visual elements (mass, volume, color/light, form, plane, line, texture). The issues can be explored through additive, subtractive, and/or fabrication processes. Examples of approaches include

figurative or nonfigurative sculpture, architectural models, metal work, ceramics, and three-dimensional fiber arts, among others.

**Advanced Placement Art History (10, 11, 12)**

**Full Year, 1 credit**

**Prerequisite: None**

The course is open to students who have a desire to understand the relationship of art to society while familiarizing themselves with the great masterpieces of art and architecture from around the world and through the ages. This college level course is especially recommended for students who have taken, or are currently taking AP or Honors World History, English or Foreign Languages. At the conclusion of the course students are encouraged to take the AP exam for college advanced placement or credit. In addition, multimedia computing and presentation equipment will be utilized to view and create art history projects. At least two field trips to art museums are planned during the year.

**Intro to Computer Graphics (9, 10, 11, 12)**

**One Semester, 1/2 credit**

**Prerequisite: None**

Utilizing the MAC computers, this course provides students with full opportunities to explore I-Life Suite '10, Adobe CS5 Suite and other web-based applications. Students will produce movies, comic books, games, animations, and web-page design, as well as rendering in Photoshop and Illustrator. Students will also work with digital cameras, drawing tablets and scanners. This course is ideal for students wishing to take advanced graphic arts course.

**Photography (10, 11, 12)**

**One Semester, 1/2 credit**

**Prerequisite: None**

Photography provides artists ways to capture things exactly as they see them and literally freeze time. In this course, students will take photographs of varied subject matters and demonstrate knowledge of the basic operation of a digital camera. Students will also learn and demonstrate use of Photoshop tools. Students will be introduced to photographers and the history of photography. By the end of the course each student will be able to discern qualities of finished photographs and have created a body of work.

**Publishing (9, 10, 11, 12)**

**Full Year, 1 credit**

**Prerequisite: None**

This course is designed to give students an introduction to the field of publishing. The class will focus on creating an original publication from idea to completion. Students will utilize publishing software, such as Herff Jones eDesign, and Adobe Photoshop CS5 to experiment with graphic design, journalism, and photography. The main goal of the class is to publish the TZHS yearbook. This course can be taken multiple times.

**Television Production (9, 10, 11, 12)**

**Full Year, 1 credit**

**Prerequisite: None**

This course introduces students to various features of film and television production. Students will learn the basics of working with video, while exploring the entire production process to create original films and other video projects. The class will give students hands on experience in the fields of television production and broadcast journalism. Students will have the opportunity to actively engage in producing, directing, scriptwriting, camera work and editing. Working in production teams, the class will develop a variety of skills used to create an original television segment. Students will cover important events in the community, conduct interviews, manage a shooting studio, utilize technical equipment, and work with digital editing software. Students may take this course more than one time, delving more deeply in the content each year. This course can be taken multiple times.

**Television Production and Broadcasting (9, 10, 11, 12)****One Semester, 1/2 credit****Prerequisite: None**

This course introduces students to various features of film and television production. Students will learn the basics of working with video, while exploring the entire production process to create original films and other video projects. The class will give students hands on experience in the fields of television production and broadcast journalism. Students will have the opportunity to actively engage in producing, directing, scriptwriting, camera work and editing. Working in production teams, the class will develop a variety of skills used to create an original television segment. Students will cover important events in the community, conduct interviews, manage a shooting studio, utilize technical equipment, and work with digital editing software. Students may take this course more than one time, delving more deeply in the content each year. This course can be taken multiple times.

**BOCES**

A variety of vocational programs are available at the local BOCES Tech Center.

See your counselor for more information.

<b>AUTOMOTIVE TECHNOLOGY ACADEMY</b>	
Auto Collision & Welding Technology I	
Auto Collision & Welding Technology II	
NATEF/ASE Certified Auto Technology I	
NATEF/ASE Certified Auto Technology II	
Automotive Technology	
<b>COMMUNICATIONS ACADEMY</b>	
Digital Design & Marketing I (Graphic Design)	
TV/Video & Multimedia Production I	
TV/Video & Multimedia Production II	
<b>CONSTRUCTION TRADES TECHNOLOGY ACADEMY</b>	
Carpentry I	
Carpentry II	
Electricity & Telecommunications Wiring I	
Electricity & Telecommunications Wiring II	
Plumbing / HVAC I	
Plumbing / HVAC II	
Welding and Fabrication I	
Welding and Fabrication II	
<b>COSMETOLOGY</b>	
Cosmetology I	
Cosmetology II	
<b>CULINARY ARTS</b>	
ACF Certified Culinary Arts I	
ACF Certified Culinary Arts II	
<b>HEALTH CAREERS ACADEMY</b>	
Health Science Fundamentals I	
Health Science Fundamentals II	
Certified Nurse Assisting (CNA)	
Education & Direct Care	
<b>CRIMINAL JUSTICE &amp; FIRE SCIENCE</b>	
Criminal Justice I & Fire Science	
Criminal Justice II & Fire Science	
<b>STEM ACADEMY</b>	
Cyber Technology I	
<b>NEW VISIONS</b>	
Health Careers Exploration Program – off site (Requires Separate Application)	
<b>NEW VISIONS HEALTH HONORS CREDIT:</b>	
*English 12 (1 credit)	
Health Elective (2 credits)	
Participation in Government (1/2 credit)	
Economics (1/2 credit)	
*Six (6) college English credits can be earned through Dominican College	

## **BUSINESS PROGRAM – Mr. Mark Bergling, Team Leader**

### **Business Seminar:**

**Full Year, 1 credit**

### **Career Exploration General Education Work Experience Program**

#### **Full year course – credit varies based on hours (11, 12)**

This program affords students the opportunity to earn academic credit (and money) through a hands-on, real world experience, rather than in the traditional classroom setting. Students will meet one period per week to cover a variety of topics related to career development and looking towards the future. The supervised work experience component requires students to arrange for out-of-school work opportunities in order to fulfill hours towards earning credit.

Earn while you learn.

### **Career and Financial Management I (9, 10, 11, 12)**

**One Semester, 1/2 credit**

This course is **required** as part of every career and technical education (CTE) program including five-unit CTE programs used as a substitution for the additional two units of foreign language needed for a Regents diploma with advanced designation. The purpose of this course is to provide students with the opportunity to learn about the features of our economy, explore a variety of careers, learn the skills and competencies needed for success in the workplace and to become financially literate. Class participation = 15% of the student's grade.

### **Career and Financial Management II (9, 10, 11, 12)**

**One Semester, 1/2 credit**

This course encourages students to continue to develop a career plan, apply academic skills to solve real-world problems and become familiar with applications that are needed to become successful citizens, employers, employees in an ever-changing business environment and become financially literate. Class participation = 15% of the student's grade.

### **Accounting (10, 11, 12)**

**Full Year, 1 credit**

Accounting will play an important role in the lives of students who will become consumers, business owners, employees, or entrepreneurs. Therefore, lessons learned from accounting will enable students to manage "personal" and "economic" finances. This course is designed to provide students with a thorough understanding and mastery of the fundamental elements of double-entry accounting. Students will be able to: understand and use business accounting terminology with ease; identify how accounting serves as a basis for careers; understand how individuals make ethical business decisions; understand the structures of business proprietorships, partnerships and corporations; analyze business transactions; understand the accounting cycle; develop and use balance sheets, journals, ledgers and worksheets; develop and use an income statement; handle a checking account; understand the method of developing payroll, and complete a personal tax return. Instruction will include both manual and computerized accounting methods. Class participation = 15% of the student's grade. This course can replace one credit of Math.

### **Principles of Entertainment and Sports Marketing (10, 11, 12)**

**Full Year, 1 credit**

This course introduces students to the important role that marketing plays in the sports and entertainment fields. All major marketing principles, such as the marketing mix, marketing functions, consumer behavior, market research, market segmentation, selling, advertising/promotion, financing and management will be studied and applied to the rapidly growing and dynamic sports and entertainment industries. Students will investigate the resources necessary to establish and operate a sports/entertainment business through individual and group projects. Guest speakers, field trip to a major sports arena, analysis of sports merchandising, movies, commercials, advertisements, magazines and network/cable programming will broaden the classroom experience. In addition, students will be given hands-on experience operating Z-Mart (our school store) as well as becoming involved in DECA (Distributive Education Clubs of America) through chapter activities and conferences at the regional, state, and national levels. Class Participation = 15% of the student's grade.

**Advanced Marketing (11, 12)**

**Full Year, 1 credit**

**Prerequisite: Principles of Sports and Entertainment Marketing and Department Approval.**

Students will use their knowledge and experience to oversee the day-to-day operations of Z Mart. Students will rotate through various “jobs” during the year including: inventory control, advertising, promotion and others. Individual and group projects **will** be completed in and out of class. Students are expected to become active DECA members.

**The following semester courses are also available through the Virtual High School (VHS):**

- Business and Personal Law
- International Business: An Exploration
- Investing in the Stock Market
- Personal Finance

**For more information, please see page 3 of this Curriculum Guide**

**CAREER EXPLORATION – VIRTUAL HIGH SCHOOL**

**The following semester courses are also available through the Virtual High School (VHS):**

**Life Skills/Health**

- Career Awareness for the New Millennium
- Employability Skills
- Kindergarten Apprentice Teacher
- Parenting in the Twenty-First Century
- Perspectives in Health
- Preparing for College Admissions and Financial Aid
- Who Do I Want To Be When I Grow Up?

**For more information, please see page 3 of this Curriculum Guide**

**ENGLISH PROGRAM - Mark Stanford, Team Leader**

The English Department requires demonstrated competency for all ninth, tenth, eleventh, and twelfth grade students. As part of the high school graduation requirements, a student must complete at least four (4) credits of English (not including electives) and pass the English Regents.

**English 9**

**Full Year, 1 credit**

This course begins the four-year English sequence, which includes the New York State Common Core English Regents Exam at the end of the junior year. This course requires students to read, discuss, and write about literature. English 9 incorporates a humanities approach to each quarter's work. These projects are related to the novels studied each quarter, and the components of these activities will address the skills required to write research papers.

**Literature:** Literature will be connected to the following themes: Choices and Consequences; Power: Use and Abuse; Relationships; and Justice and Freedom. In addition to independent reading projects, students will read a wide selection of short stories and poems. At least three of the following works will be read and analyzed in class: To Kill a Mockingbird, Romeo and Juliet, Of Mice and Men, Devil at My Heels, and Oedipus the King.

**Composition:** A major objective of this course is the development of expository writing skills. Paragraphs and essays will be assigned frequently. By the end of the course, students will be expected to write well-structured persuasive/evidence-based essays. Other curriculum areas will include vocabulary development, grammar, listening and speaking. Class participation and homework = 20% of the student's grade.

### **English 9 Honors**

**Full Year, 1 credit**

In addition to the requirements of English 9, this class expects students to conduct mature, in-depth exploration and analysis of literature. Students will also develop analytical, persuasive argument-based writing skills. Directed research and problem solving throughout this course will be used to guide students through the learning process.

**Literature:** In addition to the texts for English 9, students will read and analyze Jane Eyre and The Odyssey. Students may also be required to read independent full-length works.

**Composition:** In addition to composition requirements for English 9, students in English 9 Honors will follow more independent writing prompts, conduct research on topics related to the literature covered in class, and compose properly formatted research papers regarding these topics. Class participation and homework = 20% of the student's grade.

### **English 10**

**Full Year, 1 credit**

English 10 is designed to give students a broad background in literature from multiple perspectives. The course, which will prepare students for the Common Core English Regents Exam, focuses on literary response, persuasive argument-based writing, and further development of communication skills.

**Literature:** Students will read novels, short stories, drama, poetry, and nonfiction. At least three of the following full length works will be read and analyzed: Julius Caesar, Fahrenheit 451, The Secret Life of Bees, The Color of Water, This Boy's Life, Lord of the Flies, Animal Farm, and A Separate Peace. Students will also self-select independent reading texts.

**Composition:** A major objective of this course is the continued development of expository writing skills, with particular emphasis on persuasive/argument-based writing. Paragraphs and essays will be assigned frequently, and a research project will be required. Other curricular areas will include vocabulary development, grammar, listening, and speaking. Class participation and homework = 20% of the student's grade.

### **English 10 Honors**

**Full Year, 1 credit**

This course is designed to give students a broad background in multicultural literature from multiple perspectives. The course focuses on four themes: Identity, Perspectives, Culture and Diversity, and Journeys. Students will be required to do extensive reading and writing. Since this course helps prepare students for the Common Core English Regents Exam, a major emphasis will be placed on the development of analytical, persuasive, argument-based writing skills as well as personal response. Students will learn to read critically and develop skills in literary analysis. Major literary works to be analyzed may include: The Stranger, A Doll's House, The Bluest Eye, Hamlet, Lord of the Flies, Frankenstein, Fahrenheit 451, Animal Farm, The Grass Dancer, and various works of poetry. Students will be required to keep journals and complete one major research project. Class participation and homework = 20% of the student's grade.

**Eligibility: Students who intend to take English 10 Honors should meet the following criteria: 92 first semester average from English 9/86 from English 9 Honors and/or recommendation from current English teacher.**

### **English 11**

**Full Year, 1 credit**

This course is designed to give students an understanding of the American Literary tradition. Major works to be studied may include: The Crucible, The Great Gatsby, The Color Purple, Death of a Salesman, Macbeth, The Scarlet Letter, The Catcher in the Rye, One Flew Over the Cuckoo's Nest, Their Eyes Were Watching God, The Adventures of Huckleberry Finn, The Last Lecture, and The Glass Castle. Poetry, short stories, and nonfiction selections are studied in conjunction with the major works of literature. Essays and journal entries focused on literary

analysis will be assigned regularly, along with a research paper. Students are required to take the Common Core English Regents Exam in June. Class participation and homework = 20% of the student's grade.

### **English 11 Honors**

**Full Year, 1 credit**

This course is designed to give students a broad background in the American literary tradition. Major works to be analyzed may include: The Crucible, The Scarlet Letter, Huckleberry Finn, The Awakening, The Great Gatsby, Death of a Salesman, The Catcher in the Rye, One Flew Over the Cuckoo's Nest, Their Eyes Were Watching God, The Color Purple, A Farewell to Arms, and Macbeth. Poetry, nonfiction, and short stories are studied in conjunction with the major works of literature. Essays and journal entries focused on literary analysis will be assigned regularly. In addition, a research paper will be required. Students registering for this course should have demonstrated strong ability in literary interpretation, writing skills, and independent research. Students will take the Common Core English Regents Exam in January and complete an honors-level final exam project in June. Class participation and homework = 20% of the student's grade.

**Eligibility: Students in English 10 who intend to take English 11 Honors should meet the following criteria: 92 first semester average from English 10R/86 from English 10 Honors and/or recommendation from current English teacher.**

### **English 12**

**Full Year, 1 credit**

English 12 will provide the student with opportunities to become a more effective writer and critical reader through the development of a writing portfolio. Literature will be primarily non-fiction focusing on the themes of "Challenges" and "Reflections." Reading selections include The Body, Night, A Streetcar Named Desire, Othello, and Into the Wild among others. Shorter works will also be studied. In addition, students will examine different aspects of culture (television shows, radio, movies, advertisements, newspapers, and magazines). While examining works from various eras, students will critically analyze the ways in which different genres convey similar themes. This class will begin with the college entrance essay and also include class discussions/debates, journal entries, response papers, research papers, presentations, and a writing portfolio project. Students enrolled in English 12 have the option of registering to earn college credit through SUNY New Paltz. Class participation and homework = 20% of the student's grade.

### **English 12 Honors**

**Full Year, 1 credit**

English 12 Honors is designed to give students a broad background in literature. The difference between this class and English 12 will be in the complexity of both the selected literature and the work assigned to and expected from the students. Major works to be analyzed may include: The Canterbury Tales, Into the Wild, Twelfth Night, The Kite Runner, The Body, Othello, The Tempest, A Streetcar Named Desire, Night and Long Day's Journey Into Night. Poetry and short literary pieces will also be assigned. In addition, students will examine different aspects of culture (television shows, radio, movies, advertisements, newspapers, and magazines). While examining works from various eras, students will critically analyze the ways in which different genres convey similar themes. This will involve class discussions/debates, research papers, journal entries, response papers, and presentations. The first quarter will include a unit of study on writing strategies for the college essay. Essays requiring in-depth literary analysis will be assigned regularly, and a writing portfolio project will be required. Students enrolled in English 12 also have the option of registering to earn college credit through SUNY New Paltz. Class participation and homework = 20% of the student's grade.

### **English 12/Senior Seminar**

**Full Year, 1 credit**

English 12 will provide the student with opportunities to become a more effective writer and critical reader through the development of a writing portfolio. Literature will be primarily non-fiction focusing on the themes of "Challenges" and "Reflections." Reading selections include The

Body, Night, A Streetcar Named Desire, Othello, and Into the Wild among others. Shorter works will also be studied. In addition, students will examine different aspects of culture (television shows, radio, movies, advertisements, newspapers, and magazines). While examining works from various eras, students will critically analyze the ways in which different genres convey similar themes. This class will begin with the college entrance essay and also include class discussions/debates, journal entries, response papers, research papers, presentations, persuasive/argument-based essays and a writing portfolio project. Students enrolled in English 12 have the option of registering to earn college credit through SUNY New Paltz. Class participation and homework = 20% of the student's grade.

The Senior Seminar portion of the course is offered in conjunction with Participation in Government III. In the spring, students will work with a member of the community or their teacher to develop projects that explore a career opportunity and/or personal interest. In addition, students will be required to write a research paper, keep a journal, and give a presentation reflecting on their program experiences.

### **English 12 Honors/Senior Seminar**

**Full Year, 1 credit**

English 12 Honors is designed to give students a broad background in literature. The difference between this class and English 12 will be in the complexity of both the selected literature and the work assigned to and expected from the students. Major works to be analyzed may include: The Canterbury Tales, Into the Wild, 1984, The Kite Runner, The Body, Othello, The Tempest, A Streetcar Named Desire, Night and Long Day's Journey Into Night. Poetry and short literary pieces will also be assigned. In addition, students will examine different aspects of culture (television shows, radio, movies, advertisements, newspapers, and magazines). While examining works from various eras, students will critically analyze the ways in which different genres convey similar themes. This will involve class discussions/debates, research papers, journal entries, response papers, and presentations. The first quarter will include a unit of study on writing strategies for the college essay. Persuasive, argument-based essays and essays requiring in-depth literary analysis will be assigned regularly, and a writing portfolio project will be required. Students enrolled in English 12 also have the option of registering to earn college credit through SUNY New Paltz. Class participation and homework = 20% of the student's grade.

The Senior Seminar portion of the course is offered in conjunction with Participation in Government III. In the spring, students will work with a member of the community or their teacher to develop projects that explore a career opportunity and/or personal interest. In addition, students will be required to write a research paper, keep a journal, and give a presentation reflecting on their program experiences.

**Eligibility: Students who intend to take English 12 Honors or English 12 Honors/Senior Seminar should meet the following criteria: 92 first semester average from English 11; 86 from English 11 Honors and/or recommendation from current English teacher.**

### **Grade 12 Advanced Placement: English Literature and Composition**

**Full Year, 1 credit**

Candidates for this course must have demonstrated high ability in both literature interpretation and essay writing skills. This course is of college-level difficulty. Students engage in intensive analytical study of many classic works of drama, fiction, and poetry, with frequent writing assignments. A research project is also required. Works are selected from among:

Drama: Enemy of the People, A Doll's House

Novels: Pride and Prejudice, Crime and Punishment, Wuthering Heights, Heart of Darkness, Catch-22, and The Things They Carried

The regularly assigned papers, both timed and untimed, will involve questions similar to those required on the Advanced Placement Exam. Additional emphasis will be placed on more extensive persuasive/argument-based writing assignments. Students enrolled in AP English



Literature and Composition also have the option of registering to earn college credit through SUNY New Paltz. Active class participation (20% of the course grade) is essential.

**Eligibility: Students who intend to take AP English Literature should meet the following criteria: current average of at least 90 from English 11 Honors and/or recommendation from current English teacher.**

**Creative Writing (10, 11, 12)**

**One Semester, 1/2 credit**

Creative Writing is a seminar intended for students who wish to deal intensively with their own writing. Writing exercises will be assigned, covering prose, and poetic forms. Various literary readings will be discussed in class in an effort to acquaint the writer with recent creative and artistic trends. Students will be required to submit their work to TONES, the high school literary magazine. Class participation = 25% of the student's grade. This course can be taken multiple times.

**Public Speaking (10, 11, 12)**

**One Semester, 1/2 credit**

The goal of Public Speaking is to make the student an effective speaker anytime, anywhere. It will teach the student how to deliver speeches that inform and persuade, and how to deliver speeches of introduction and welcome. Stage fright and nervousness will be addressed. Other areas that will be emphasized are: understanding the audience, using the voice effectively, studying non-verbal communication, and using visual aids. Students will be expected to use presentation tools.

**Journalism (9, 10, 11, 12)**

**Full Year, cycled 1/2 credit**

This elective is designed for students who have an interest in journalism. Each aspect of putting a newspaper together will be covered from coming up with ideas for articles to layout and publication. The course will involve writing a variety of articles and assisting in the publication of Tapress on a monthly or bi-monthly basis. Students will learn how to write editorials, features, news stories, sports articles, reviews, and conduct interviews. Other topics will include advertising, the ethical duties and responsibilities of a journalist, the difference between a high school newspaper and a privately owned commercial newspaper or magazine, and whether a journalist actually has the right to keep his/her sources confidential. Class participation will be worth a minimum of 20% of the student's grade. This course can be taken multiple times.

**Law and Literature (10, 11, 12)**

**Full Year, cycled 1/2 credit**

This course will teach students how to argue effectively both orally and in writing by examining legal issues through Supreme Court decisions, classic opening/closing arguments from landmark trials, plays, novels, short stories and actual case files (with the names omitted) that have been reproduced for use in this class. Students will learn how to analyze complex legal issues and prepare extensive legal arguments while considering audience, subject matter, and tone. These skills will be put to the test during mock trials and whenever the Student Court receives a case, an English and a Social Studies teacher will teach this course jointly. Students who successfully complete the course will receive 1/2 credit for English and 1/2 credit for Social Studies. Students must register for this course under both English and Social Studies.

**The following semester courses are also available through the Virtual High School (VHS):**

Blogs, Wikis and Web Tools  
Contemporary Irish Literature  
Cultural Identity Through Literature  
Folklore & Literature of Myth, Magic & Ritual  
Honor, Mystery and Science Fiction Literature  
Literacy Skills for the 21<sup>st</sup> Century  
Mythology: Stories from Around the World  
Shakespeare in Films  
Twentieth Century Women authors  
Writing and Telecommunications

**ENGLISH as a SECOND LANGUAGE PROGRAM – Ms. Jill Verrino (WOS), District Team Leader**

**English Language Learners, English Language Arts**

**Intermediate ELL ELA I & II (Sections for 9/10, and 11/12)** **Full Year, 1 credit**

This intermediate level course is designed to give English Language Learners a background in literature and non-fiction texts with the goal of preparing them for mainstream ELA and for the English Regents exam. The course exposes students to classic literature from various traditions, as well as a variety of non-fiction texts, and uses material appropriate for students whose English language skills could be described as emerging or transitioning. Grammar is presented in context and individualized remediation is developed based on assessment of students' written work. The course includes a mandatory cycled grammar lab.

**Beginning ELL English (9/10)** **Full Year, 1 credit**

This course introduces English Language Learners to the fundamentals of English with an emphasis on reading, writing, listening, and speaking. Vocabulary and grammar are presented in context, and practical English, such as that needed to navigate the school environment, is emphasized. Students in this course are also encouraged to take advantage of several computer programs available for independent study. This course uses material appropriate for students whose English language skills could be described as entering, and requires two periods of instruction daily.

**Advanced/Transitional ELL Lab (Sections for 9/10, and 11/12)** **Full Year, Pass/Fail**

This course supports students whose English language skills could be described as expanding or commanding. The course focuses on writing skills and provides individualized remediation in grammar based on ongoing assessment of student work.

**Beginning/Intermediate Reading/Writing Lab (9/10 and 11/12) (Not offered 2016 – 2017)**

**Full Year, Pass/Fail**

This course provides specific instruction in reading and writing for students identified as entering, emerging, or transitioning. The teacher works closely with the rest of the ESL team to tailor instruction to address skills identified as needing support.

**English Language Learners Integrated Content Support**

**ELL Personal Financing (9/10) (Not offered 2016 – 2017)** **Full Year, 1 credit**

This course will give students the survival skills and confidence to make tough financial decisions that they will face in life, for example, earning income, savings, investing, spending and credit, mortgages, determining insurance rates, and money management. These are just some of the topics to be covered.

**ELL Algebra 1A (9/10)**

See description on page 18.

**ELL World History and Geography 9R (9/10) (Not offered 2016 – 2017)**

See description on pages 34-35.

**ELL World History and Geography 10R (10/11)**

See description on pages 34-35.

**ELL Economics / Issues in American Society (9/10)**

See descriptions on pages 36-38.

## **MODERN LANGUAGE PROGRAM – Ms. Tricia Castelli, Team Leader**

The Foreign Language Program at TZHS is a four-year program open to all students of any grade level. Students who are fluent and native to a foreign language may be placed into the course level most appropriate to their linguistic ability upon recommendation of the instructor. The foreign languages offered at TZHS are French, Italian, and Spanish for Regents credit, and other languages as electives through VHS.

The basic objectives of instruction in these languages are:

- 1) The acquisition of the language skills in the use of the foreign language as a tool in communication:
  - a) to understand the foreign language when spoken by a native at normal tempo and on a topic within the student's range of experience,
  - b) to speak the foreign language on topics within the student's range of experience with sufficient clarity to be understood by a native.
  - c) to read with direct comprehension material in the foreign language within the student's range of experience
  - d) to write in the language on topics within the student's range of experience.
- 2) The understanding and appreciation of the foreign culture in terms of geographical, historical, political, and cultural features, including the values, customs, and mores of the people living in the foreign culture, their heritage and their unique contributions to western civilization.
- 3) The development of positive attitudes toward the foreign language and culture while drawing comparisons with our own.

The prerequisite for all foreign language courses is successful completion of the previous level. Advanced, advanced placement, and college credit programs also require a teacher recommendation and completion of the Regents sequence through level III.

### **First Year Language Courses – Regents Sequence**

#### **Spanish I**

**Full Year, 1 credit**

In the first year of language study, emphasis is placed on understanding and speaking through the development of communicative skills. The imitation of good pronunciation and intonation is stressed. In this early stage of language learning, structure is taught primarily in the framework of new vocabulary which is limited to the most essential words and phrases for effective communication of topics directly related to the student's own environment. Attention is devoted to developing an awareness of some fundamental values, beliefs, and practices in the foreign culture, especially as they pertain to the home and family, cultural preferences and customs, the educational system, holidays and festivals, leisure time activities, and other aspects of daily life. Class participation and homework are at least 20% of the student's grade.

### **Second Year Language Courses- Regents Sequence**

**Full Year, 1 credit**

#### **French, Italian and Spanish**

##### **Prerequisite: Level 1 or teacher recommendation**

In the second year of language study, the communicative skills attained in the first level course are further developed while greater emphasis is placed on developing reading proficiency. New vocabulary will be introduced and reinforced by means of conversations and discussion, based on short readings. Emphasis is placed on building vocabulary, recognition of word families and the development of more efficient reading skills by means of inference through context, association and cognates. Writing skills are developed through guided composition, dialogue, letters, and free response on topics of personal interest and culture. The structural and cultural content of the course includes expansion and enrichment of the material introduced in the first level course. Class participation and homework are at least 20% of the student's grade.

**Regents Level Third Year Language Course-Regents Sequence**  
**French, Italian and Spanish**

**Full Year, 1 credit**

**Prerequisite: Level 2 or teacher recommendation**

The third year language course will continue to stress the goals and objectives of the first two levels. Listening comprehension and speaking skills will be developed further along with selected thematic readings. Speaking is practiced in a variety of situations directly related to student's own environment and real-life situations. In addition, writing skills will be emphasized through letter writing as well as through directed and controlled composition. Structure and vocabulary are expanded to facilitate reading which will progress from relatively simple reading selections to un-edited texts of moderate difficulty. At the conclusion of this course, students will take the Regents Equivalency Exam. Class participation and homework are at least 20% of the student's grade.

**French IV (Intermediate French I and II)**

**Full Year, 1 credit**

**OPTION: 6 college credits**

**Prerequisite: French III and Regents Equivalency Exam**

This course is designed for those students who have completed the third year French course and would like to maintain and improve their foreign language skills. This course will focus on advanced conversation and composition, culture and civilization and an exposure to excerpts of selected literary works. Students may also take this course for college credit. Class participation and homework are at least 20% of the student's grade.

**French V (French Composition and Conversation)**

**Full Year, 1 credit**

**OPTION: 4 college credits**

**Prerequisite: French IV**

This course is designed for those students who have successfully completed the fourth year course and would like to maintain and improve their foreign language skills. This course will focus on advanced conversation and composition, culture and civilization, and a survey of French literature, history and art. Students may also take this course for college credit. Class participation and homework are at least 20% of student's grade.

**Italian IV (Intermediate Italian I and II)**

**Full Year, 1 credit**

**OPTION: 6 college credits**

**Prerequisite: Italian III and Regents Equivalency Exam**

This course is designed for those students who have successfully completed the third year Italian course and would like to maintain and improve their foreign language skills. This course will focus on advanced conversation and composition, culture and civilization and an exposure to Italian cinema, television and literature. Students may also take this course for college credit. Class participation and homework are at least 20% of the student's grade.

**Italian V (Italian Composition and Conversation)**

**Full Year, 1 credit**

**Option: 3 college credits as well as AP exam**

**Prerequisite: Italian IV**

This course is designed for those students who have successfully completed the fourth year course and would like to maintain and improve their foreign language skills. This course will focus on advanced conversation and composition, culture and civilization, and a survey of Italian literature, history and art. Students may also take this course for college credit. Students may sit for the AP Italian exam at the end of the course, if they choose to register for the exam. Class participation and homework are at least 20% of student's grade.

**Spanish IV**

**Full Year, 1 credit**

**Prerequisite: Spanish III and Regents Equivalency Exam**

This is a course designed for those students who have successfully completed the third year Spanish course and would like to maintain and improve their Spanish language skills without entering the Advanced Placement program. This course will focus on advanced conversation and composition, culture and civilization and exposure to cultural readings. Class participation and homework are at least 20% of the student's grade.

**Spanish V (Intermediate Spanish II)****Full Year, 1 credit****Option: 4 College credits and AP Spanish Language and Culture****Prerequisite: Spanish IV or teacher recommendation**

This course is for students who have successfully completed Spanish IV, and who would like to improve their Spanish skills and cultural awareness of the Spanish speaking world. This course focuses on advanced conversation and composition, culture and civilization, political and social trends in the Spanish-speaking world, and exposure to excerpts of selected literary works by authors such as Lorca, Marquez and Matute. Practical and contemporary language situations, and readings are used in a variety of contexts. Students may also take this course for college credit. Class participation and homework are at least 20% of the student's grade.

**Survey of Spanish Literature-Medieval Era through 20th Century****Full Year, 1 credit****Option: 4 College credits****Prerequisite: Passing Spanish III Regents Equivalency Exam and teacher recommendation or Spanish IV.**

This is the first year in a two-year sequence. In this course students will be engaged in the reading of universally accepted works of literature. This course is comparable in content to a college level survey course in literature. Literary works of representative authors will be selected from the required reading list and read for aesthetic value. Students will be guided toward the attainment of a high degree of proficiency in the basic language skills and literary analysis and criticism through extensive discussion of reading selections, oral reports, essays and compositions. Attention will also be given to cultural themes as reflected in the literary works under study. Class participation and homework are at least 20% of the student's grade for Survey of Spanish Literature.

**Advanced Placement Spanish Literature****Full Year, 1 credit****Prerequisite: Survey of Spanish Literature**

This course is a college level course designed for students who have successfully completed Survey of Spanish Literature. Students will be admitted to the course by recommendation of the instructor. The course content will consist of reading representative works of literature from the various genres with an emphasis on literary interpretation. Class discussion will focus on style, imagery, symbolism, literary techniques and other aesthetic qualities in the appreciation of literary works. Students will also consider the historical background and the moral, philosophical, and social ideas and issues involved in those works, which are selected for study. Attention will also be given to cultural themes as reflected in the literary works under study. At the conclusion of the course, students are expected to take the AP Spanish Literature and Culture examination. Class participation and homework are at least 20% of the student's grade for AP Spanish.

**The following semester courses are also available through the Virtual High School (VHS):**

- AP French Language
- Basic Mandarin: Chinese Language and Culture
- Chinese I
- Latin 1
- Portuguese 1
- Russian I
- Russian Language and Culture

**For more information, please see page 3 of this Curriculum Guide****MATHEMATICS AND COMPUTER SCIENCE PROGRAM –Ms. Jeanne Corcoran, Team Leader**

The Mathematics and Computer Science Department at Tappan Zee High School follows the recommendations set forth by the New York State Education Department and the National Council of Teachers of Mathematics by offering courses in Mathematics and Computer Science for all students. Regents examinations are the final examinations in each of the following courses: Algebra, Geometry, and Trigonometry.

**Algebra 1A****Full Year, 1 credit**

This course is the first half of the Common Core Algebra course, the first high school math course in a three year sequence required for a Regents diploma. This course will cover solving linear equations and inequalities, descriptive statistics, exploring functions (linear, quadratic, exponential, absolute value, piecewise). This course is designed for students who were not successful in Pre-Algebra in grade 8.

**Algebra 1B****Full Year, 1 credit****Prerequisite: Algebra 1A**

This course is the second half of Common Core Algebra course, the first high school math course in a three year sequence required for a Regents diploma. This course will cover systems of equations, operations with polynomials, factoring, and problem solving. This course is designed for students who were not successful in Pre-Algebra in grade 8. This course is expected to culminate with the New York State Common Core Algebra Regents Examination in June 2017

**Algebra****Full Year, 1 credit****Prerequisite: Pre-Algebra**

This is the first year of a three-year Regents sequence. The Regents will be given in June. This course will cover: Solving linear equations and inequalities, descriptive statistics, exploring functions (linear, quadratic, exponential, absolute value, piecewise), systems of equations, operations with polynomials, factoring, and problem solving. This course is expected to culminate with the New York State Common Core Algebra Regents Examination in June 2017.

**Geometry****Full Year, 1 credit****Prerequisite: Algebra**

This is the second year of a three year Regents sequence. The Regents will be given in June. This course will cover Euclidean geometry with deductive proof, transformational proofs, Analytic geometry, Constructions, Linear equations and inequalities, systems of equations. This course is expected to culminate with the New York State Common Core Geometry Regents Examination in June 2017.

**Geometry Honors****Full Year, 1 credit****Prerequisite: Algebra Honors or Departmental Approval**

This is the second year of a three-year Regents sequence. The Regents will be given in June. This course will cover Euclidean geometry with deductive proof, transformational proofs, Analytic geometry, Constructions, Linear equations and inequalities, systems of equations In addition to studying the regular Regents material in more depth, extra topics will be included and additional projects given. This course is expected to culminate with the New York State Common Core Geometry Regents Examination in June 2017.

**Applications in Geometry****Full Year, 1 credit****Prerequisite: Algebra**

This course will cover the topics of Euclidean Geometry from a “hands on” investigative approach. Students will be using Geometer SketchPad, Patty Paper Geometry; Mira’s, Geoboards, etc. This course will focus on applications of theorems and concepts. This course will focus on applications of geometric theorems and concepts. It will be a heavily applied Algebra course, without the traditional focus on Geometric Proof. This course will culminate with a local final exam.

**Algebra II Regents****Full Year, 1 credit****Prerequisite: Geometry, Algebra II NR**

This is the third year of a three-year Regents sequence. The New York State Common Core Algebra 2 Regents will be given in June. This course will cover Absolute value, quadratic and radical equations, Polynomial and trigonometric equations, exponential and logarithmic equations, advanced factoring, trig graphs, logarithmic and natural logarithmic graphs, law of sine and cosine, permutations and combinations, standard deviation and lines of best fit. This course

is expected to culminate with the New York State Common Core Algebra 2 Regents Examination in June 2017.

**Algebra II Regents Honors**

**Full Year, 1 credit**

**Prerequisite: Geometry Honors or Departmental Approval**

This is the third year of a three-year Regents sequence. The New York State Common Core Algebra 2 Regents will be given in June. This course will cover Absolute value, quadratic and radical equations, Polynomial and trigonometric equations, exponential and logarithmic equations, advanced factoring, trig graphs, logarithmic and natural logarithmic graphs, law of sine and cosine, permutations and combinations, standard deviation and lines of best fit. In addition to studying the regular Regents material in more depth, extra topics will be included and additional projects given. This course is expected to culminate with the New York State Common Core Algebra 2 Regents Examination in June 2017.

**Algebra II Non-regents**

**Full Year, 1 credit**

**Prerequisite: Applications in Geometry, Geometry or Departmental Approval**

This course is offered after the completion of Geometry and is intended as a preparatory class for the Common Core Algebra 2 course which is required for a Regents diploma with advanced designation. This course will cover models, linear relationships and functions, exponential and logarithmic functions, rational functions, quadratic relations, probability and statistics and sequences and series (if time allows).

**Pre-Calculus**

**Full Year, 1 credit**

**Prerequisite: Trigonometry or Algebra II Regents**

This course would follow after successful completion of 3 years of Regents math courses. This course covers real number systems, analytic geometry, sequences, series, and limits, including proof by mathematical induction, conics and transformations, parametric equations, functions, theory of polynomial equations including complex numbers, polar coordinates, exponential and logarithmic functions, matrices and determinants, partial fractions, introduction to differential calculus and applications. College credit will be available through SUNY New Paltz for this course.

**Pre-Calculus Honors**

**Full Year, 1 credit**

**Prerequisite: Algebra II Honors and/or Departmental Approval**

This course would follow after successful completion of 3 years of Regents math courses. This course covers real number systems, analytic geometry, sequences, series, and limits, including proof by mathematical induction, conics and transformations, parametric equations, functions, theory of polynomial equations including complex numbers, polar coordinates, exponential and logarithmic functions, matrices and determinants, partial fractions, introduction to differential calculus and applications. Approximately 20% of the course will cover the material in more depth or include additional topics or more in-depth proof. College credit will be available through SUNY New Paltz for this course.

**Math Analysis**

**Full Year, 1 credit**

**Prerequisite: Trigonometry, Algebra II**

This course provides a fourth year of mathematics for **seniors**. It provides an opportunity for students to develop and maintain college level math skills in their senior year. The topics include analytic geometry, conic sections, real number analysis including quadratic equations, inequalities and absolute value equations and polynomials. Students will use applications of trigonometry, systems of equations, the laws of exponents and logarithms. Additional topics include SAT review.

**Linear Algebra**

**One Semester, 1/2 credit**

**Pre-requisite: Pre-Calculus H or Departmental Approval**

Linear Algebra is a challenging college level course that introduces the students to a variety of topics: matrix operations, systems of linear equations, determinants, Euclidean vector spaces,

general vector spaces, inner product spaces, eigenvalues, eigenvectors, and linear transformations. An emphasis will be placed on exploring the practical aspects and uses of Linear Algebra in relation to the real world and careers. Students will experience a sample of the type of math that they will experience as a math major in college.

### **Calculus**

**Full Year, 1 credit**

#### **Prerequisite: Pre-Calculus and Departmental Approval**

Topics include limits, continuity, derivatives and applications, integrals and applications, differential equations and slope fields. Students will solve problems dealing with rectilinear motion, related rates, optimization, area, and volume using polynomial, trigonometric, exponential, and logarithmic functions. This course does not prepare the student for the Advanced Placement Calculus examination and culminates in a local final examination. This course is recommended for students who desire an introduction to college level Calculus.

### **Advanced Placement Calculus AB**

**Full Year, 1 credit**

#### **Prerequisite: Pre-calculus or Pre-Calculus Honors and Departmental Approval**

This is a rigorous and demanding college-level course in Calculus. All students enrolled are expected to take the AP Calculus AB examination in May. This course covers: limits, continuity, in-depth study of the derivative including techniques of differentiation and applications; the concept of the integral and applications of integration; the Fundamental Theorem of Calculus; differential equations, and slope fields. This course includes an additional 3 periods per cycle lab

### **Advanced Placement Calculus BC**

**Full Year, 1 credit**

#### **Prerequisite: Pre-Calculus Honors and Departmental Approval**

All students enrolled are expected to take the AP Calculus BC examination in May. This course covers: completely ordered field, vectors, limits including the epsilon-delta differentiation, differentials, parametric representation, continuity, fundamental theorems in analysis to include Rolle's Theorem and the Mean Value Theorem, applications to include velocity/acceleration problems, related rate problems, maxima/minima problems, etc., curve sketching, conics and transformation, integral concept, fundamental theorem of the calculus, area volume, work, trigonometric and inverse trigonometric functions, exponential and logarithmic functions, methods of integration, approximating integrals, more on polar coordinates, applications of course material, infinite series. This course includes an additional 3 periods per cycle lab. Students are expected to take the AP examination in May.

### **Computer Science: Intro to Gaming**

**Full year, 1 Credit**

#### **Prerequisite/Co-requisite: Algebra (No prior coding experience is necessary)**

This course will give students an introduction to coding and gaming through experiences with a variety of programs such as Scratch, Construct2 and Unity. Students will learn from hands on experience the process of coding for games and apps.

### **Advanced Placement Computer Science Principles**

**Full year, 1 credit**

#### **Prerequisite: Successfully completed Algebra. (No prior coding experience necessary)**

The Computer Science Principles course provides an introduction to the basic principles of computer science from the perspective of mobile computing, including programming in App Inventor, a graphical programming language for Android mobile devices. The lessons and materials used by students incorporate programming while also integrating all other AP CSP big ideas: creativity, abstraction, data and information, algorithms, the internet and global impact. The curriculum engages students and supports the development of problem solving skills honing in on the computational thinking practices. Students will learn to create socially useful computational artifacts using App Inventor as well as connect computing and learn about abstracting as they develop and analyze programs. Students will maintain a portfolio of their work, which will include several performance tasks in the areas of programming and the impact of computing technology.



**Computer Science: Visual Basic** **Fall Semester, ½ credit**

**Prerequisite: Algebra, Strongly Suggested: Computer Science Principles AP**

This introductory course will implement significant language features, programming practices and application programs using the graphical interface of Visual Studio and Visual Basic language.

Topics covered: developing programs, working with controls, data input controls, menus, dialog boxes, variables, operators, debugging, loops and timers. Sophomores, juniors and seniors may elect to earn 3 college credits at reduced tuition rates from STAC.

**Computer Science: Java** **Spring Semester, ½ credit**

**Prerequisite: Computer Science Visual Basic**

This course expands the programming practices explored in Computer Science Visual Basic.

Students will write programs using Java programming language using Eclipse, BlueJ or Greenfoot. Topics covered: variables, conditional control statements, loops, strings, methods, classes and arrays. Sophomores, juniors and seniors may elect to earn 3 college credits at reduced tuition rates from STAC.

**Advanced Placement Computer Science A (Java)** **Full Year, 1 credit**

**Prerequisite: Computer Science Visual Basic, Computer Science Java, Algebra II**

Advanced Placement Computer Science A is equivalent to a first semester, college level course in computer science. This course continues with key Java programming concepts including loop structures, strings, methods, classes, inheritance, constructors, encapsulation, polymorphism and instantiation. The course introduces students to computer science with fundamental topics that include problem solving, design strategies and methodologies, organization of data, algorithms and social implications of computing. The AP Computer Science A course includes a minimum of 20 hours of hands on structured lab experiences to engage students in individual or group problem solving.

**Explorations in Advanced Computer Programming** **Full Year, 1 credit**

**Prerequisite: Advanced Placement Computer Science A**

This course is designed for students seeking to expand their knowledge of computer science programming languages. Students will learn how to code using procedural languages such as Python and Scheme.

**Advanced Placement Statistics** **Full Year, 1 credit**

**Prerequisite: Algebra II Honors, Pre-Calculus (H) or department approval**

This course introduces students to major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students are exposed to four broad conceptual themes: exploring data through observing patterns and departures from patterns, planning a study, anticipating patterns in advance, producing models using probability and simulation, statistical inference, and confirming models. All students enrolled are expected to take the Advanced Placement Statistical Examination in May. It is recommended that those students enrolled in the Science Research Course take the AP Statistics course. College credit will be available through SUNY New Paltz for this course.

**Intro to Personal Financing (12)** **Fall Semester, 1/2 credit**

**Pre-requisite: Passed the Algebra Regents or teacher recommendation**

This one-semester course will present to students the essential knowledge and skills to make informed decisions about real world financial issues. Students will learn how: choices influence occupational options and future earning potential, to apply decision-making skills to evaluate career choices and set personal goals, to analyze their personal financial decisions, to evaluate the costs and benefits of their decisions, to recognize their rights and responsibilities as consumers, and to apply the knowledge learned in school to financial situations encountered later in life. The course content is designed to help the student make wise spending, saving, and credit decisions and to make effective use of income to achieve personal financial success.

### **Learning Center Math**

**Cycled, 0 credit**

A lab-based extra help class where students have time to work on any problems they might have in their regular math class.

**The following semester courses are also available through the Virtual High School (VHS):**

Mathematical Reasoning and Logic  
Mathematics of Electricity  
Number Theory

**For more information, please see page 3 of this Curriculum Guide**

### **MUSIC – Mr. Bill Hughes, Team Leader**

**NOTE:** If a student selects one of the following courses - Concert Choir, Concert Band, Concert Orchestra - 1 credit will be given. If a student selects two of these courses, 1 1/2 credits will be given. For all three courses, 2 credits will be given. Participation in concerts scheduled throughout the year is a requirement for course credit in all performing groups and is a major component of class participation, which counts for 70% of the grade in all performing groups.

#### **Chorale (9, 10, 11, 12)**

**Full Year, 1 credit**

Open to all students who wish to be members of a vocal performing group. No audition required. Introduces the basic elements of vocal technique and music reading. A wide variety of Level 1, 2 & 3 music is performed. Vocal lessons (sectionals) and performances both during and outside of the school day are required as a regular part of Chorale. Counts towards fulfillment of Regents Music/Art requirement.

Class participation = 70% of student's grade.

#### **Concert Choir (9, 10, 11, 12)**

**Full Year, 1 credit**

**Prerequisite: By audition only**

For advanced singers who are musically and vocally ready to perform Level 5 and Level 6 choral literature. Vocal lessons (sectionals) and performances both during and outside of the school day are required as a regular part of Concert Choir, including a performance at Radio City Music Hall in December. Fulfills the Regents Music/Art requirement. Class participation = 70% of the student's grade.

#### **Interactive Music (9, 10, 11, 12)**

**Full Year, 1 credit**

Open to all students who may or may not have had previous musical experience. A fundamental course in music, covering concepts of melody, rhythm, scales, chords, key signatures and diatonic harmony through the exploration of piano, guitar and music technology. Students will have the opportunity to study piano, guitar and the latest music software to develop their musical knowledge and understanding. Listening and sight-reading skills are emphasized. This course lays the foundation for all further work in music. Credit in Interactive Music plus 2 credits in performing music constitutes a 3-year Regents sequence in Music. Class participation = 70% of the student's grade. Students will participate in two to three mandatory field trips to the Metropolitan Opera as part of the course requirements.

#### **Advanced Placement Music Theory (10, 11, 12)**

**Full Year, 1 credit**

**Prerequisite: Music Theory 1 or permission of instructor.**

A college-level course, covering advanced concepts in music theory and ear training. Prepares students for the AP Music Theory Exam. Further work in original composition. Completion of AP Theory is recommended for all students who contemplate serious study of music in college. This course and Theory 1, plus 3 credits in performing music, constitutes a 5-year Regents sequence in Music. Class participation = 20% of student's grade. **Students are expected to take the AP examination in May.**

**Choral Conducting (11, 12)****Full Year, 1 credit****Prerequisite: AP Music Theory and permission of instructor.**

Meets concurrently with Chorale. A beginning course in conducting techniques, including beat patterns, cues, cut-offs, etc. Each student will serve as an Assistant Conductor for the vocal ensemble, and will be expected to conduct one or two pieces. Conducting lessons are a required part of this course. Class participation = 70% of the student's grade.

**The Singing Actor (9, 10, 11, 12)****Full Year, cycled, 1/2 credit**

Through an exploration of musical theatre repertoire and acting games, students will develop their individual acting and singing skills. Students will learn how to assess their acting "type," compile a practical audition book for the major types of musicals and will have the opportunity to learn and perform solos and ensembles in class to refine their performances skills. Students will be afforded multiple masterclass settings to speak and learn from professionals with experience in the various jobs available in musical theatre and will have the opportunity to attend a Broadway musical. Class participation and preparation of multiple monologues, musical theatre solos and scenes will constitute 90% of the student's grade.

**Concert Band (9, 10, 11, 12)****Full Year, 1 credit**

This course is open to all students who play band instruments. The Concert Band performs a varied assortment of symphonic and popular band literature throughout the school year. Instrumental lessons are required as a regular part of the Concert Band. Fulfills the Regents Music/Art requirements. Performances and class participation = 75% of the student's grade.

**Symphonic Wind Ensemble  
By audition only****Full Year, 1 credit**

Open to advanced instrumentalists in grades 9 through 12. This ensemble will explore complex musical concepts and techniques through the rehearsal and performance of NYSSMA level five and level six music pieces for wind ensemble and band. Music from all different time periods and genres, including new works for band will be studied. It will be expected that each member of this group will also prepare and participate in the NYSSMA solo ensemble festival. Performances and class participation = 75% of the student's grade.

**Symphonic Orchestra  
By audition only****Full Year, 1 credit**

Open to advanced instrumentalists (strings, woodwinds/brass, and percussion) in grades 9 through 12. This ensemble will explore advanced musical concepts and techniques based on NYSSMA level 5 and 6 repertoire. Music from all different time periods and genres will be studied in depth. It will be expected that each member of this group will also prepare and participate in the NYSSMA solo ensemble festival. Fulfills the Regents music/art requirement. Performance and class participation = 70% of the student's grade.

**Concert Orchestra (9, 10, 11, 12)****Full Year, 1 credit**

A symphony orchestra open to all students who play string, woodwind, brass and percussion instruments. Openings for winds, brass, and percussion are limited, and will be decided by audition if necessary. A wide variety of music from show tunes to symphonies is performed throughout the year. Instrumental lessons are required as a regular part of the Concert Orchestra. This fulfills the Regents Music/Art requirement. Performance and class participation = 70% of the student's grade.

**Applied Music (9, 10, 11, 12)****Full Year, 1 credit**

Students taking private music lessons may qualify to earn credit under the New York State Applied Music Program. Students who wish to enroll in this program must see Mr. Rossi in early September. The enrollment process must be completed by October 1 in order to receive credit. The Applied Music Program is not open to students in their first year of private lessons.

## **Physical Education and Health – Ms. Sue Maher, Team Leader**

### **PHYSICAL EDUCATION PROGRAM (Required)**

**1/2 credit per year**

The Physical Education program follows the recommendations of the New York State Education Department as well as the guidelines proposed by the Surgeon General and the NAPE. Students participate in two 20-week semesters per year. The program is comprised of an elective system, based on each period students choose by grade level from a curriculum that includes fitness, team sports and Project Adventure, lifetime activities. During a student's four years at Tappan Zee he/she must complete eight semesters of Physical Education. Special provisions are available to those students whose active participation is limited due to medical reasons. Students will be assessed with a numerical grade, using the physical education grading rubric.

### **Health Education (Required)**

**Cycled or Semester, 1/2 credit**

Health Education is a required course for graduation that fosters self-awareness improvement of one's physical, emotional, maturational and sociological self. The course curriculum topics include: nutrition, mental health, environmental health, family life and planning, disease prevention, abuses of tobacco, alcohol, drugs. Placement priority in the course will go to seniors.

## **SCIENCE PROGRAM – Mr. Brian Newburger, Team Leader**

The Science Department at Tappan Zee High School follows the recommendations set forth by the New York State Education Department as well as guidelines proposed by the American Association for the Advancement of Science and the National Science Teachers Association. The core of the Science Program is comprised of Regents courses in The Living Environment, Chemistry, Physics, and Earth Science. Other science courses are offered in an attempt to meet the needs and interests of all students. Advanced Placement courses are available to juniors and seniors who have demonstrated a special interest and aptitude in the sciences. Students who successfully complete Advanced Placement courses may receive, in addition to high school credit, one or more college credits at most of the major colleges and universities across the country. Courses marked as college level give students the option to enroll for credit, for a fee, through a SUNY school while taking the class at TZHS. To meet graduation requirements, the student must complete the following:

1. Complete three years (3 credits) of high school level science courses. One of those 3 credits must be in either Living Environment or Honors Living Environment.
2. Complete a minimum of one Regents science course and meet the lab requirement of 1200 minutes of documented lab time.
3. Take and pass at least one Regent's science examination. If, however, a student takes and passes two or more Regents science exams, he/she may be eligible for an Advanced Regents diploma.

Regents core-based courses are: Regents Earth Science, Regents Living Environment, Honors Living Environment, Regents Chemistry, Honors Chemistry, Regents Physics, AP Physics 1. Standards-based courses are: Bio-Ethics, Astronomy, Forensics, Environmental, Oceanography, General Science, Active Physics, AP Physics C, AP Biology, AP Environmental and AP Chemistry.

The Science Department strongly recommends that all students take the four Regents science courses (Earth Science, Living Environment, Physics, and Chemistry) prior to graduating. Additionally, students taking the AP courses should have a strong work ethic, interest in the subject, and willingness to put in a lot of time into the subject. Labs in our Regents and A.P. courses involve a double period every other day and provide hands-on experience with laboratory techniques and experiments.

Non-regents science courses count towards graduation but receive no extra weighting in calculating grade point averages. Regents level courses are weighted by a factor of 1.03, Honors courses by a factor of 1.05, and Advanced Placement and college level courses are weighted at 1.10.

**Regents Living Environment (9) Regents level with lab Full Year, 1 credit**

The Living Environment is a course that has been designed to comply with the New York State Learning Standards for Math, Science and Technology. Topics covered include biochemistry, plant and animal anatomy and physiology, reproduction and development, evolution, ecology, classification, genetics, cell biology and molecular genetics. Focus is placed on understanding important relationships, processes, mechanisms and application of concepts. Scientific inquiry is incorporated to develop explanations of natural phenomena. There are three laboratory sessions per six-day cycle. Students who have completed the course qualify for and take the Regents examination, which serves as the final examination. It should be noted that students must complete 1200 minutes of laboratory experience with satisfactory written reports for each laboratory investigation. Various lab activities will enable the student to demonstrate the achievement of required laboratory skills. All students must complete 1200 minutes of documented lab time to be eligible to take the Regents exam.

**Living Environment Honors (9) Honors level with lab Full Year, 1 credit**

**Prerequisite: Algebra Honors and Regents Earth Science or teacher approval**

This rigorous course is designed for the advanced biology student. In addition to the materials covered in Living Environment, this course explores cellular respiration, photosynthesis, cellular reproduction, genetics, biodiversity including a survey of the six kingdoms, human impact on the environment, structure and physiology of vascular plants, human anatomy, and human physiology. This course focuses on analytical problem solving, inquiry based laboratory experiences and critical thinking throughout the curriculum. Students must be willing to devote approximately 1 hour per night of studying in order to excel. This course has three laboratory sessions per six-day cycle. Students will also be prepared for the SAT II in Biology at the end of this course of study. All students must complete 1200 minutes of documented lab time to be eligible to take the Regents exam.

**Advanced Placement Biology (10, 11, 12) AP/College level, with lab Full Year, 1 credit**

**Co-requisite: Algebra II, Regents or Honor Chemistry**

**Prerequisite: Regents or Honors Living Environment and Regents Chemistry as well as 85% or higher on all previous science regents classes and exams.**

AP Biology is designed to be the equivalent of the general biology course taken during the first year of college. Students enrolled are expected to take the AP Biology exam in May. The major content areas of this course are: biological chemistry, cytology of prokaryotes and eukaryotes, including mitosis and meiosis; energy transfer, including glycolysis, fermentation and aerobic respiration; molecular genetics; heredity and Mendelian genetics; population genetics; evolution; ecology; taxonomy, including a survey of the six kingdoms; structure and physiology of vascular plants; human anatomy, physiology, development and behavior. There are 3 lab sessions per six-day cycle. Students must complete and submit required laboratory reports.

**Regents Earth Science/Physical Setting (10, 11, 12) Regents level w/lab Full Year, 1 credit**

**Prerequisite: Living Environment**

The curriculum reflects the New York State Learning Standards for Mathematics, Science and Technology. Topics covered include mapping skills, rocks and minerals, plate tectonics, erosion, Earth's geological history, meteorology, climate and astronomy. The course will emphasize a student-centered problem solving approach to stated learning objectives and laboratory assignments using scientific inquiry to develop explanations of natural phenomena. Each class meets once every day of the six-day cycle and labs meet every other day. All students must complete 1200 minutes of documented lab time to be eligible to take the regents exam.

**Regents Chemistry/The Physical Setting (10, 11, 12) Regents level w/lab Full Year, 1 credit**

**Prerequisite: Regents Living Environment**

**Co-requisite: Math - Geometry or Algebra II**

Regents Chemistry is based on course content and laboratory investigations (3 per 6 day cycle) as prescribed by the Regents Chemistry Syllabus. Lectures and laboratory assignments include the following units of study: atomic structure, electron configuration, the Periodic Law and the Periodic Table, chemical bonding, chemical composition, writing chemical formulas and equations, gas laws, molecular composition of gases, liquids and solids, the solution process, ionization, acids and bases, stoichiometry, chemical kinetics, chemical equilibrium, electrochemistry, organic chemistry and nuclear chemistry. All students must complete 1200 minutes of documented lab time to be eligible to take the regents exam.

**Chemistry Honors - Honors level with lab**

**Full Year, 1 credit**

**Prerequisite: Honors Geometry and Honors Living Environment or teacher approval**

This course is designed for the advanced Chemistry student. This course focuses on more independent and analytical problem solving with an increased number and more rigorous labs than in Regents Chemistry. Various topics are covered in much more detail, such as the ideal gas equation, Graham's law, Hess's law, aspects of aqueous reactions, oxidation-reduction reactions, hybridization, acid-base equilibrium and thermodynamics. Students will be prepared to take the SAT II in Chemistry and will, therefore, not rely on the Regents Chemistry Reference Table. At the end of this course students will be ready to move on to AP Chemistry. All students must complete 1200 minutes of documented lab time to be eligible to take the regents exam.

**Advanced Placement Chemistry (11, 12) AP/College level w/ lab**

**Full Year, 1 credit**

**Prerequisite: Regents or Honors Living Environment, and Regents or Honors Chemistry as well as Mastery (85 or better) in all previous Science Regents classes and exams. Co-requisite: Pre-Calculus or higher**

It is strongly recommended that students complete Regents Physics, or take it concurrently with AP Chemistry. AP Chemistry is designed to be the equivalent of the general chemistry course usually taken during the first year of college. Students attain a depth of understanding of fundamentals and a reasonable competence in dealing with chemical problems. The course will contribute to the development of the students' abilities to think clearly and express themselves orally, and in writing, with clarity and logic. Course content includes more advanced study of topics in Regents Chemistry. Students are expected to take the AP Examination in May. There are 3 labs per six-day cycle. Students are expected to take the AP examination in May.

**Regents Physics/The Physical Setting (10, 11,12) Regents level w/lab**

**Full Year, 1 credit**

**Prerequisite: Algebra I**

**Co-requisite: Geometry**

The study of acoustics, optics, electricity, magnetism, waves, motion, machine theory, forces and classical and quantum mechanics. The course uses basic algebra and involves experiments, projects and formulas that explain the basic laws of the physical world. The course will reinforce and help students see the real-life application of the Math learned in integrated algebra. It uses simple algebra designed for students in grades 10,11,or 12. Physics will give students an essential foundation for real understanding in later study of chemistry and earth science as well as the fields of engineering, architecture, mathematics, electronics and computer science. All students must complete 1200 minutes of documented lab time to be eligible to take the regents exam.

**AP Physics 1 (10, 11,12)**

**AP/College level, with Regents exam w/ lab**

**Full Year, 1 credit**

**Prerequisite: Geometry as well as Mastery (85 or better) in all previous Regents classes and exams.**

**Corequisite: Algebra II**

AP Physics 1 is taught at an accelerated level, preparing students for both the Regents Physics and AP Physics 1 examinations all in one year of study. It includes the study of motion, forces,

rotation, acoustics, electricity, magnetism, oscillations, waves, geometric optics, and modern physics (including quantum mechanics). The course uses algebra and trigonometry is designed to be taken while taking Algebra II/ Trigonometry or higher. It involves experiments, projects, and formulas that explain the basic laws of the physical world. The course will reinforce and help students see the real life applications of mathematics as it is used in the real world applications especially to technology. It is designed for advanced Math students in grades 10, 11, or 12. Physics will also give students an essential foundation for real understanding in later advanced study of physics, chemistry, earth science, engineering, architecture, mathematics, technology, electronics, and computer science. Twenty-five percent of instructional time is devoted to hands-on laboratory work with an emphasis on inquiry-based investigations. Investigations will require students to ask questions, make observations and predictions, design experiments, analyze data, and construct arguments in a collaborative setting, where they direct and monitor their progress. It ends in a final college-level exam for all students in May and a Regents exam in June. Students are expected to take the AP examination in May. Optional college credit (Physics 101/102) from SUNY New Paltz is available for a fee.

**Advanced Placement Physics C (Theoretical Mechanics and Electricity & Magnetism) (12)** **Full Year, 1 credit**  
**AP/College level with lab**

**Prerequisite: Regents Physics or AP Physics 1 with a course grade of 85 or more**

**Co-requisite: Any Calculus course offered at TZHS**

This is second year Physics course which prepares students for both the Advanced Placement Mechanics C and Electricity & Magnetism C examinations, in which students use more advanced mathematics, including calculus, to solve problems involving motion, force, energy, momentum, oscillations, rotation, torque and gravity. This course is designed to be the equivalent of the two semesters of college Physics for students interested in majoring in engineering, physics or mathematics. It is typically worth between 6 -10 college credits (3 - 5 credits per semester). There are 3 double lab periods per six-day cycle. Two separate, 90-minute A.P. Physics examinations are given in May and students receive two independent A.P. scores; one in Mechanics C and one in Electricity & Magnetism C.

**Active Physics (11, 12) General Science level** **Full year, 1 credit**

**Prerequisite: Two years of High School science, Algebra 1**

A hands-on science course centered on experiments, projects, problems, and activities involving forces, motion, energy, sound, light, electricity, magnetism, heat and technology. Physics problems in this course involve formulas that use basic algebra that will actively seek to reinforce the problem solving skills taught in Algebra 1. Active Physics counts as general science credit toward graduation and meets once each day (no double-lab periods). Students who wish to take the Regents examination for Regents credit should instead take Regents Physics.

**Advanced Placement Environmental Sciences (11, 12)** **Full year 1 credit**  
**AP/College level w/ lab**

**Prerequisite: Regents Earth Science, Regents or Honors Living Environment, EITHER Regents or Honors Chemistry OR Regents Physics/AP Physics, Algebra Honors or Geometry Honors. All with a course grade of 85 or more or teacher approval.**

The AP Environmental Sciences course is designed to be the equivalent of a one-semester introductory college course in environmental sciences. Unlike most other AP science courses Environmental Sciences brings together all of the other disciplines, thus the need for the pre/co-requisites. It is designed to emphasize the collection and analysis of data involving scientific principles and therefore there is a laboratory component which will meet 3 times every 6 day cycle. The course will encompass the following themes in an inquiry, hands-on approach: Science is a process, Energy conversions underlie all ecological processes, the Earth itself is one interconnected system, Humans alter natural systems, and Environmental problems have a cultural and social context. Every student is expected to take the AP exam in May.

**Bioethics (11, 12) General Science credit Semester or Cycle, 1/2 credit**

**Prerequisite: Regents Living Environment (11, 12)**

This course will explore advances in the "new biology" and its ethical implications. The "gene future" has the potential to impact enormously on medicine, agriculture, industry, law, and the environment. Students will investigate the promises and perils of DNA fingerprinting, cloning, genetic engineering, and creation of transgenic plants and animals. The following questions will be addressed: **1.**What are the chances of unknowingly doing harm to the biosphere? **2.** What present controversies exist over the dangers of moving molecular biology from the laboratory to hospitals, farms, and families? **3.** How can knowledge about the "new biology" be disseminated to assure informed decisions by citizens on issues that can greatly influence their lives and the lives of all creatures great and small?

**Forensic Science (11, 12) General Science credit Semester or Cycle, 1/2 credit**

**Prerequisite: Two Regents science classes (11, 12)**

Forensic Science literally means debating the evidence of a crime. Course content deals with procedures used at a crime scene and in a police science laboratory. Students apply scientific skills and concepts using investigative techniques and methodologies. Topics of study include fingerprinting, DNA analysis, and blood analysis, forensic anthropology (study of bones), toxicology, fiber analysis, arson, qualitative and quantitative analysis, crime searches methods and causes of death. The practical application of scientific study will be explored through field trip experiences and guest speakers (Medical Examiner's Offices, Rockland County Bureau of Criminal Investigation, Crime Scene Search Unit, and New York State Bureau of Criminal Investigation).

**Astronomy (12) General Science credit One Semester, 1/2 credit**

**Prerequisite: Two Regents Science classes (12)**

This course will explore the universe in which we live. Students will investigate galaxies, constellations, and stars including the sun and the planets that make up our solar system. The United States' space program will also be investigated from the Mercury missions up to the present day International Space Station. Scientific inquiry will be stressed, with hands-on activities guiding students through modern day problems such as the materials needed for a modern day space station and how the Hubbell space telescope shows us the Universe. Viewing of the night sky will be planned to correspond with activities performed in class. Assessments will be based on essays, papers, projects and participation on class assignments.

**Environmental Science (11, 12) General Science credit One Semester, 1/2 credit**

**Prerequisite: Two Regents Science classes. Juniors and Seniors only**

This course will focus on understanding the interrelationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving or preventing them. Topics covered will be ecosystems, populations, resources, and pollution. Scientific inquiry will be stressed, with hands-on activities guiding students throughout the course. Assessments will be based on experiments, activities, essays, formal written exams, and participation on class assignments.

**General Science (10, 11, 12) General Science credit Full Year, 1 credit**

**Prerequisites: Regents Living Environment or Teacher Approval**

Class discussions use various themes to provide a framework of understanding science for students. These themes are found in every discipline of science. The themes that students will focus on are: Energy, Systems, Structures, and Changes over Time, and Cycles. Each course will cover each of these themes relevant to the science discipline.



**Oceanography (11, 12) College or General Science credit                      One semester; 1/2 credit**  
**Prerequisites: Passing Regents Living Environment and Regents Earth Science classes and exams**

This advanced earth science course will explore numerous aspects pertaining to the field of oceanography and how they interact with one another. Topics covered include the chemistry of ocean water, the physics of wave patterns and tides, seafloor geology and topography, and marine biology. Research techniques, both modern and historical, will also be studied. We will also discuss the impact that climate change is having on our oceans around the world. Scientific inquiry will be stressed. Assessments will be through class discussions, activities, essays, formal written exams, and projects. Successful completion of this advanced course and the college level projects incorporated in it will make students eligible to receive three college credits through SUNY Oneonta.

**Science Research Course (9, 10, 11, 12) General Science credit                      Cycled, 1/2 credit**

This course enables students to practice authentic and original scientific research in an independent manner by creating their own original science project in whatever they choose. This program affords students the opportunity to participate in the community of scientific research and scholarship as part of their high school experience by working outside the school with a mentor scientist in their field of research. Students may do independent research in any one area of interest of their choice: medicine, biology, chemistry, physics, computers, weather, astronomy, geology, engineering, technology, mathematics, psychology or the social sciences. Research students are required to use computers and the internet to search for articles and make PowerPoint presentations, to occasionally visit libraries to obtain scientific literature, to use e-mail to communicate with mentor scientists and the teacher of the course and maintain a portfolio of their research.

Assessment is accomplished through in-class activities and research projects and presentations. The final assessment consists of participation in the annual TZHS Science symposium. All students are encouraged to enter local, regional and national scientific competitions in their senior year.

**The following semester courses are also available through the Virtual High School (VHS) General Science credit, One semester, ½ credit**

Animal Behavior and Zoology  
Biotechnology  
DNA Technology  
Epidemics: Ecology or Evolution'  
Genes and Disease  
Great Inventions and Scientific Discoveries  
Integrated Mechanical Physics  
Meteorology: A Study of Atmospheric Interactions  
Nuclear Physics: Science, Technology and Society  
Pre-veterinary medicine  
The Human Body

**For more information, please see page 3 of this Curriculum Guide**

**SOCIAL STUDIES PROGRAM – Mr. Scott Silver, Team Leader**

The Social Studies program at Tappan Zee High School is designed to provide for the maximization of each student's potential. The program is divided into broad course areas, each of which will follow the general New York State guidelines for the high school social studies sequence. This sequence will consist of World History and Geography 9 & 10, U.S. History & Government, and 12th grade semesters of Economics and Participation in Government. Within these broad course areas, the program will be as follows:

**REGENTS PROGRAM:** Designed to prepare students in the acquisition of the knowledge and skills necessary to meet the requirements of the New York State Regents College Preparatory Program. All students are expected to complete a term paper to demonstrate their writing skills. Students must pass Regents exams in World History and Geography (Grade 10) and U.S. History/Government (Grade 11) in order to graduate.

**\*\*\*Some of the Advanced Placement Courses in the Social Studies Department require the completion of a Summer Project. Please either see the teacher(s) of the course, or check the Summer Project Section of the District Website.**

**Grade 9 World History and Geography (9)**

**Full Year, 1 credit**

This course is the first year of a two-year sequence terminating with a Regents exam. It includes an overview of the following topics:

- 1) Early Civilizations
- 2) Classical Era (1000BCE – 600CE)
- 3) Post Classical Era (600 – 1450)
- 4) Early Modern Times (1450-1750)

Themes such as Turning Points, Geography, Economic Systems, Golden Age, Belief Systems, and Political Systems will be explored in the curriculum.

**World History 9 Honors**

**Full Year, 1 credit**

The goal of this exploratory course is to introduce students to the rigorous curriculum they can expect to find in the Honors and AP courses at Tappan Zee High School. A major goal is for students to become independent thinkers and active learners, while developing the advanced skills of historical analysis and critical writing necessary for success in a challenging academic environment. While all ninth grade classes will cover the period of World History up to the Modern Age, in the honors course special attention will be paid to developing historical connections and an understanding of World History in its entirety.

One of the most important goals of the course is to provide students with reading skills and strategies that enable them to move beyond basic comprehension. Students will learn how to gather information to support conclusions as well as create them. A wide variety of resources will be utilized to meet this challenge including textbooks, primary sources, and secondary historical sources. In addition to critical and active reading, students will learn to construct cohesive and thoughtful historical arguments by focusing on comparative, document-based and change-over-time essays.

A key expectation of the course will be active student involvement on multiple levels. Study skills will focus on organization, test-preparation, and the formulation of questions to drive individual learning. Individual assignments will be vital to creating an academic environment in which every student is expected to participate in meaningful class discussions and group activities. In addition to fulfilling New York State requirements in Global History, this course satisfies the historical foundation requirements for the 10th grade Advanced Placement World History Curriculum.

**Grade 10 – World History and Geography (10)**

**Full Year, 1 credit**

This course is the second year of the two-year sequence begun in grade 9. It concludes with a Regents exam in World History and Geography. This course includes an overview of the following topics:

- 1) Enlightenment and Revolution (1750-1914)
- 2) Industrialism and a New Global Age (1750-1914)
- 3) World Wars and Revolutions (1914-Present)
- 4) The World Today (1914-Present)

Themes such as Turning Points, Economic Systems, Political Systems and Nationalism will be explored in the curriculum.

**Grade 10 - World History and Geography (10H)**

**Full Year, 1 credit**

This course is the second year of the two-year sequence begun in grade 9. It concludes with a Regents exam in World History and Geography. This course includes an overview of the following topics:

- 1) Enlightenment and Revolution (1750-1914)
- 2) Industrialism and a New Global Age (1750-1914)
- 3) World Wars and Revolutions (1914-Present)
- 4) The World Today (1914-Present)

Themes such as Turning Points, Economic Systems, Political Systems and Nationalism will be explored in the curriculum. The 10H course emphasizes examination and analysis of primary source documents, independent research, and a more in-depth look at the historical periods of study through writing across the curriculum.

**Advanced Placement World History**

**Full Year, 1 credit**

The purpose of the AP World History course is to develop greater understanding of the evolution of global processes and contacts, in interaction with different types of human societies. This understanding is advanced through a combination of selective factual knowledge and appropriate analytical skills. The course highlights the nature of changes in international frameworks and their causes and consequences, as well as comparisons among major societies. The course emphasizes relevant factual knowledge deployed in conjunction with leading interpretive issues and types of historical evidence. Focused primarily on the past thousand years of the global experience, the course builds an understanding of cultural, institutional, and technological precedents that, along with geography, set the human stage prior to 1000 C.E. Periodization, explicitly discussed, forms the organizing principle for dealing with change and continuity from that point to the present. Specific themes provide further organization to the course, along with the consistent attention to contacts among societies that form the core of world history as a field of study. Students are expected to take the AP World History examination in May for possible college credit.

**Grade 11 - United States History and Government R**

**Full Year, 1 credit**

The United States History and Government course is a survey of the American experience with emphasis on the Constitution, Industrial Revolution, and the 20th Century. This course culminates in the New York State Regents Exam in June. Class sessions will consist of lecture, discussion, supervised individual research, and cooperative learning activities done in groups. Current events are a major focus of both the research work and the Regents exam. Consequently, you are strongly encouraged to increase your attention to television news and newspapers.

**Grade 11 – United States History and Government H**

**Full Year, 1 credit**

The United States History and Government Honors course is a survey of the American experience with emphasis on the Constitution, Industrial Revolution, and the 20th Century. This course culminates in the New York State Regents Exam in June. Class sessions will consist of lecture, discussion, supervised individual research, and cooperative learning activities done in groups. Current events are a major focus of both the research work and the Regents exam. Consequently, you are strongly encouraged to increase your attention to television news and newspapers. The 11H course emphasizes examination and analysis of primary source documents, independent research, and a more in-depth look at the historical periods of study through writing across the curriculum.

**Advanced Placement U.S. History/Government (11,12)****Full Year, 1 credit**

This course, which emphasizes the analytical skill of the social scientist, examines major interpretations of American History. For example, the students seek to determine whether the New Deal was evolutionary or revolutionary. The course prepares the pupil for the College Entrance Examination Board final; a satisfactory grade on this test could enable the student to earn credit, from 3 to 6 points, at one of the more than 1,000 participating universities in our nation. Students must be willing to complete extensive college-level reading.

**Advanced Placement Psychology (12)****Full Year, 1 credit**

This course introduces students to the systemic and scientific study of the behavior and mental processes of human beings and other animals. Students are exposed to the psychological facts, principles, and phenomena associated with each of the major sub fields within psychology, and they also learn about the methods psychologists use in their science and practice. The aim of this course is to provide the student with a learning experience equivalent to that obtained in most college introductory psychology courses. Topics covered include the following: biological bases of behavior; sensation and perception; states of consciousness; learning; cognition, motivation and emotion; developmental psychology; personality; testing and individual differences; abnormal psychology; treatment of psychological disorders; and social psychology. Each student is expected to take the AP Psychology exam in May.

Class participation = 20% of the student's grade.

**Economics (Required - 12th Grade)****One Semester, 1/2 credit**

This is an introductory course in economic theory. Basic economic problems such as scarcity, choice, supply and demand, and utility are initially presented in order to relate theory to American capitalism. In particular, the dynamics of the market, personal finance, the factors of production (land, labor, and capital), and banking are explored in detail. The student will then employ this basic knowledge to study specific American economic problems such as: inflation, unemployment, energy, pollution and conservation, taxation and the national debt.

**Advanced Placement Economics****Full Year, 1 Credit****Includes enrollment in Issues in American Society**

The purpose of an AP course in Economics is to give students a thorough understanding of the principles of economics that apply to the functions of individual decision makers, both consumers and producers, within the larger economic system. It places primary emphasis on the nature and functions of product markets, and includes the study of factor markets and of the role of government in promoting greater efficiency and equity in the economy. The part II questions on the exams require students to apply mathematical concepts to economic theory and so a strong background in math is needed in order for students to successfully complete this class. Students are expected to take the AP Microeconomics exam in May for possible college credit.

**The Participation in Government** requirement can be met by any of the following courses:

Issues in American Society

Law and Literature

Participation in Government III - Senior Seminar

**Participation in Government III (12)****One Semester, 1/2 credit****Senior Seminar**

This course is an alternative method of satisfying the graduation requirements of the Regents Action Plan and is offered in conjunction with English 12R (Senior Seminar). Working with a member of the community or their teacher, students will develop projects to explore a career opportunity and/or personal interest. In addition, students will be required to give presentations, keep a journal and produce a research paper reflecting their program experiences.

**Citizen Leadership: Character in Action (11, 12)****One Semester, 1/2 credit**

The purpose of this course is to promote character driven respectful and responsible student leaders in school and the community. It will identify and explore attitudes and personal qualities that build a foundation for success in life and work. The character traits are embedded throughout the curriculum and focus daily on the development of active citizenship and student leadership skills.

The focus of the course will be three fold: creating an understanding of fundamental positive character traits; raising awareness of inequality and injustice in the world; and applying the role of civic participation to bring awareness to action. Ultimately, this will culminate with students completing service projects.

The course aligns with the South Orangetown CSD goals of delivering overt, systemic instruction related to character education and New York state grade 12 standards for Participation in Government and Civics particularly in the areas of basic civic values of American constitutional democracy and the roles, rights, and responsibilities of citizenship, including avenues of participation. Successful completion of the course will result in fulfillment of the New York state Participation in Government requirement.

**Criminal Justice (11, 12)****One Semester, 1/2 credit**

Criminal Justice is social studies elective for 12th grade students. This course is designed to enable students to develop concepts and attitudes which will give them a better understanding of our criminal justice system. This course integrates many social studies disciplines such as history, political science, sociology, psychology, and economics. It is also designed to give students an awareness of career possibilities in the criminal justice field. Police officers, attorneys, and other practitioners in the field bring their expertise to the classroom. In addition, field trips, case studies, audio-visual material, simulations, debates and reports are employed in the course. Concepts and theories are taught, but classroom meetings emphasize the practical, applicable and day-to-day experiences of persons in the criminal justice field. Current criminal justice news stories and issues are also emphasized in the course. Class participation = 25% of the student's grade. This course can be taken for college credit through St. Thomas Aquinas College.

**Law and Literature****One Semester, 1/2 credit**

This course is designed to help the student understand the government process as it relates primarily to the legal system. The course will be offered for 1/2 credit for English and 1/2 credit for Social Studies. Students in the course will explore legal issues through a variety of methods. For example: plays, novels, short stories, mock trials, Supreme Court cases and controversial issues will all be examined. The course will last one year. Students involved in the program also are accepting responsibility to help run the Student Court and participate in the State-wide Mock Trial competition. A Social Studies and an English teacher will teach this course jointly. Students who successfully complete the course will receive 1/2 credit for English and 1/2 credit for Social Studies. Students must register for this course under both Social Studies and English.

**Issues in American Society (12)****One Semester, 1/2 credit**

This course will investigate major political, social and economic issues. Students will be expected to research current topics of concern to American society using a variety of sources, including newspapers, magazines, journals, television, and the Internet, and present their findings in written and oral form, both individually and as part of a panel discussion. A major part of the grade for this course will depend on daily preparation and participation in class activities and discussions. The topics to be considered each semester will be selected jointly by the students and the instructor.

**Senior Colloquium: Mastering the College-level Research Paper** **One Semester, 1/2 credit**

This course provides basic training in research and presentational skills, as well as familiarizing students with the problems encountered in using and interpreting source material of various

kinds. Students will be introduced to the range of bibliographical, archival and other research resources available. They will also receive training in methods of gathering, processing and presenting historical data, to aid them in writing and presentations research papers. **Students will learn that writing history is about making decisions. As historians they will choose from a broad range of subjects, selecting those they think are most important. They will choose source materials carefully, assessing evidence that may support or contradict their arguments. And they will choose ways to write, balancing respect for their subjects with the needs of their audience. This course is open to juniors and seniors only.**

**History through Film (11, 12)**

**One Semester, 1/2 credit**

This class will broaden student's ability to think critically about popular movies – or to do what scholars call "reading" films. This class will be an exercise in media literacy. This class is not designed to teach just Global Studies or American history using film. Instead, our goal is to get students to think critically and analytically about history and about films through an analysis of Hollywood movies. While we will not focus directly on the history of Hollywood, we will examine the Hollywood production process and its history as a way to inform ourselves about the movies we examine. Student evaluations will include tests, quizzes, reading and writing assignments.

**Introduction to Psychology (11, 12)**

**One Semester, 1/2 credit**

Students will draw upon their knowledge of history and the social sciences to analyze, synthesize and apply the principles of psychology. Students will have the opportunity to pursue independent research interests and learn to use the methods that psychologists employ to test and evaluate their hypotheses. This course will focus on the importance of authentic assessment while still addressing the challenging academic nature inherent in the field of psychology.

**Advanced Placement European History (11,12 )**

**Full Year, 1 credit**

This course will provide juniors and seniors with an opportunity to examine European History in greater depth, while working on skills that are critical for success at the college level. By examining European history in greater detail, while specifically focusing on 1450 to the present, students will gain a greater contextual background contributing to their understanding of contemporary issues. The importance of European History during the modern era cannot be discounted when understanding key ideas, whether specific to the history of the Western World, or the European influence on the developing nations of our world today. Additionally, the AP format will continue to encourage students to sharpen their writing skills as they prepare for college

**The following semester courses are also available through the Virtual High School (VHS):**

American Foreign Policy	Pearl Harbor to the Atomic Bomb
American Multiculturalism	Philosophy I
AP Government and Politics: United States	Practical Law
Arts and Ideas: The Best of Western Culture	Sociology
Community Service – Learning	Sports and American Society
Constitutional Law	The Glory of Ancient Rome
Eastern & Western Thought	The Golden Age of Classical Greece
Gods of CNN: The Power of Modern Media	The Holocaust
Great Inventions and Scientific Discoveries	The Vietnam War
Lewis and Clark's Expedition	Who Do I Want To Be When I Grow Up?
Maritime History: Riders on the Storm	World Conflict, A United Nations Introduction
Peacemaking	World Religions
Personal Finance (Prerequisite-Algebra 2)	

**For more information please see page 3 of this Curriculum Guide**

## **TECHNOLOGY EDUCATION – Mr. Nicholas Desantis, Team Leader**

The Technology Education Department offers a five unit sequence leading to a Regents diploma. Taking this five unit sequence partially satisfies the foreign language requirement for an advanced Regents diploma.

### **Project Lead-The-Way Program (Pre-engineering Curriculum)**

The High School PLTW Program (Pathway to Design & Engineering) is a four year sequence of courses which, when combined with traditional mathematics and science courses in high school, introduces students to the scope, rigor and discipline of design and engineering prior to entering college. However, those not intending to pursue further formal education will benefit greatly from the knowledge and logical thought processes that result from taking some or all of the courses provided in the curriculum. Since you attend a PLTW-certified school, you can get a head start on your college career and add prestige to your admissions applications by receiving college credits from Rochester Institute of Technology (RIT) or University of Iowa and receive the appropriate grade weighting. These are transcribed credits and are eligible to be transferred to other universities

### **Project Lead-The-Way (PLTW) Courses:**

#### **INTRODUCTION TO ENGINEERING DESIGN (IED)**

**Full Year, 1 credit**

Do you enjoy thinking of new product ideas? Do you ever look at a product and think of ways that you could make it better? IED emphasizes creative problem-solving, designing, and technical drawing skills that are used in business and industry to develop new products. You will develop solutions to product design problems by researching, sketching, rendering designs on the computer, and finally building product models. This course will be taught in a laboratory setting providing access to tools and materials for individual, small group, and large group projects. You will use “State of the Art” 3D modeling software Autodesk Inventor (CAD) to design, problem solve, communicate, and visualize your ideas. This is an excellent course for anyone interested in Designing, Engineering, Architecture or any other related career fields. It serves as the pre-requisite for many of the technology courses the department has to offer. It also can replace one credit of science or math, but not both. IED is the keystone course in the new Pre-Engineering sequence (PLTW). \*\*\*Students will take the college level final exam for college credit and receive the appropriate grade weighting.

#### **PRINCIPLES OF ENGINEERING (POE)**

**Full Year, 1 credit**

**Prerequisite: Introduction to Engineering Design or Geometry Math (10-12 grade only)**

The purpose of the principles of engineering course is to expose students to the correlation between math, science, and technology, through the use of a broad survey of the technology process employed in the field of engineering and engineering technology. The course is an interactive, hands-on, laboratory-based set of case studies which will convey the concepts, principles, skills, techniques, and attitudes relative to the professional and social obligations of an engineer. Computers, robots, digital electronics and structures will be utilized in order to understand the theory presented. The classroom situation will be enhanced by visits from professionals in related engineering fields, as well as field trips to local industrial and educational institutions. This course can be used in a Technology or Pre-engineering sequence (PLTW) and can replace one credit of science or math, but not both. **\*\*Students will take the college level final exam for college credit and receive the appropriate grade weighting.**

#### **CIVIL ENGINEERING AND ARCHITECTURE (CEA)**

**Full Year, 1 credit**

**Prerequisite: Introduction to Engineering Design/ or Geometry Math (10-12grade only)**

CEA provides an overview of the fields of Civil Engineering and Architecture, while emphasizing the interrelationship and dependence of both fields on each other. Students will use detailed drawing and state of the art software to solve real world problems and communicate solutions to hands-on projects and activities. The major focus of the CEA course is a long term project that

involves the development of a local property site. As students learn about various aspects of civil engineering and architecture, they apply what they learn to the design and development of this property. In addition, students use Revit (3-D design software) to help them design solutions to solve real-world challenges. Students learn about documenting their project, solving problems, and communicating their solutions to their peers and members of the professional community of civil engineering and architecture. The course of study includes:

- the roles of civil engineers and architects
- project planning
- site planning
- building design
- project documentation and presentation
- 

This course can be used in a Technology or Pre-engineering sequence (PLTW) and can replace one credit of science or math, but not both. **\*\*Students will take the college level final exam for college credit and receive the appropriate grade weighting.**

### **AEROSPACE ENGINEERING (AE)**

**Full Year, 1 credit**

**Prerequisite: IED, POE, DE, CEA or Trigonometry Math (10-12grade only)**

This course propels students' learning in the fundamentals of atmospheric and space flight. As they explore the physics of flight, students bring the concepts to life by designing an airfoil, propulsion system, and rockets. They learn basic orbital mechanics using industry-standard software. They also explore robot systems through projects such as remotely operated vehicles. This course earns Regents credit, can be used in a Technology or Pre-engineering sequence (PLTW) and can replace one credit of science or math, but not both. **\*\*\*Students will take the college level final exam for college credit and receive the appropriate grade weighting.**

### **DIGITAL ELECTRONICS (DE)**

**Full Year, 1 credit**

**Prerequisite: Introduction to Engineering Design/Drawing or Geometry Math (11-12grade only)**

DE is a course of study in applied digital logic. Students will be introduced to digital circuits found in video games, watches, calculators, digital cameras, and thousands of other devices. Students will study the application of digital logic and how digital devices are used to control automated equipment. The use of digital circuitry is present in virtually all aspects of our lives and it's use is increasing rapidly. This course is similar to a first semester college course and is an important course of study for a student exploring a career in engineering or engineering technology. This course can be used in a Technology or Pre-engineering sequence (PLTW) and can replace one credit of science or math, but not both. **\*\*Students will take the college level final exam for college credit and receive the appropriate grade weighting.**

### **ENGINEERING DESIGN & DEVELOPMENT (EDD) (not offered 2017-18)** **Full Year, 1 credit**

**Prerequisite: 3 OR MORE PLTW COURSES (11, 12 grade only)**

The knowledge and skills students acquire throughout PLTW Engineering come together in EDD as they identify an issue and then research, design, and test a solution, ultimately presenting their solution to a panel of engineers. Students apply the professional skills they have developed to document a design process to standards, completing EDD ready to take on any post-secondary program or career. This course earns Regents credit, can be used in a Technology or Pre-engineering sequence (PLTW) and can replace one credit of science or math, but not both. **\*\*\*Students will take the college level final exam for college credit and receive the appropriate grade weighting.**



**Other Technology Education Courses:**

**DESIGN AND DRAWING FOR PRODUCTION (DPP)**

**Full Year, 1 credit**

Is a one-unit, full year course, which emphasizes creative problem solving, design, and technical drawing. The course reflects the approach used in business and industry to develop new products. Students will develop solutions to various product design problems and proposed solutions are researched, sketched, refined and rendered as technical drawings. Basic elements of design and the six basic areas of technical drawing are covered. 2-Dimensional and 3-Dimensional drawings will be the primary forms of communication. This course will be taught in a laboratory setting providing access to tools and materials for individual, small group, and large group projects. **DDP satisfies the one-unit cultural art/music graduation requirement.** This course can be used in a Technology, Art or Drawing sequence, and can replace one credit of science or math, but not both. DDP is an excellent course for anyone interested in Designing, Engineering, Architecture or any other related career fields.

**CABINETRY: From Design to Finished Product**

**One Semester, 1/2 credit**

Students will learn both basic and advanced joinery techniques utilized in cabinet making and gain an understanding of the structural integrity of a joint due to its design and the material it is made from. Students will then apply that knowledge into designing and actually building a project of their own choosing. Once projects (desk, end table, shelving unit, etc) are authorized by the teacher, students will use one of several CAD programs to create a scaled drawing of their project. Students will learn proper techniques and safety procedures to operate large power tools such as a table saw, radial arm saw, compound miter saw, drill press and a router to name a few.

**SMALL ENGINES: Concepts & Theory to Application**

**One Semester, 1/2 credit**

This is a classroom/hands-on style course designed to teach the concepts and theories behind any internal combustion engine although the engine we will be working on will be the Briggs & Stratton 6.5 HP CE9040 OHV engine. The classroom portion of this course will cover the following topics through the use of science and mathematics: Overall Engine Operations, Compression System, Fuel System, Governor System, Electrical System, Cooling and Lubrication System, Troubleshooting. The hands on portion of the course will consist of the total disassembly of the CE9040 OHV engine, defining and measuring all the components, then rebuilding it to all the OEM specifications. When you are done, it must work!

**The following semester courses are also available through the Virtual High School (VHS):**

- Technology/Tech Ed.
- Advanced Web Design
- Animation and Effects: Flash MX Basics
- Blogs, Wikis, and Web Tools
- Digital Literacy for a Digital Age
- Technology and Multimedia
- Web Design and Internet Research
- Web Design: Artistry and Functionality

**For more information, please see page 3 of this Curriculum Guide**

**REMEDATION PROGRAMS**

The Learning Center is a classroom wherein students work to improve skills, meet personal goals, and receive Academic Intervention Services (AIS), if applicable. In classes of no more than ten, students work independently alongside a general education teacher who communicates with their parents and content area teachers in an ongoing effort to monitor needs and progress. Depending upon student needs, peer tutors are also available, mini-lessons are delivered, student work is reviewed and skills are reinforced. The purpose of the Learning Center is to allow tailored reinforcement and support in a small group setting.

## COLLEGE COURSES OFFERED AT TAPPAN ZEE HIGH SCHOOL

<b>Tappan Zee High School Course Name</b>	<b>College</b>	<b>College Course Title</b>	<b># of Credits</b>
Intro to Criminal Justice	St. Thomas Aquinas College	Intro to Criminal Justice 101	3
BASIC I Computer Programming	St. Thomas Aquinas College	Computer Science Visual Basic Programming	3
JAVA Computer Programming	St. Thomas Aquinas College	Computer Science Java Programming	3
French IV	SUNY New Paltz	Intermediate French, Level I Intermediate French, Level II	6
French V	SUNY New Paltz	French Composition & Conversation	4
Italian IV	SUNY New Paltz	Intermediate Italian, Level 1 Intermediate Italian, Level 2	6
Italian V	SUNY New Paltz	Italian Composition & Conversation	3
Spanish V	SUNY New Paltz	Intermediate Spanish 2	4
Survey of Spanish Literature	SUNY New Paltz	Survey of Spanish Literature	4
Introduction to Engineering Design (IED)	Rochester Institute of Technology	Introduction to Engineering Design (IED)	3
Principles of Engineering (POE)	Rochester Institute of Technology	Principles of Engineering (POE)	3
Civil Engineering and Architecture (CEA)	Rochester Institute of Technology	Civil Engineering and Architecture (CEA)	3
Digital Electronics (DE)	Rochester Institute of Technology	Digital Electronics (DE)	3
Aerospace Engineering (AE)	University of Iowa	Aerospace Engineering (AE)	3
Engineering Design and Development (EDD)	Rochester Institute of Technology	Engineering Design and Development (EDD)	
English 12	SUNY New Paltz	Freshman Composition 1	3
English 12 Honors	SUNY New Paltz	Freshman Composition 1	3
AP English Literature	SUNY New Paltz	Freshman Composition 1	3
Pre-Calculus	SUNY New Paltz	Pre-Calculus	3
Pre-Calculus Honors	SUNY New Paltz	Pre-Calculus	3
AP Physics Mechanics	SUNY New Paltz	General Physics 1 General Physics 1 Lab	4
AP Physics B1	SUNY New Paltz	Fundamental Physics 1 Fundamental Physics 1 Lab	4
AP Physics C: Electricity & Magnetism	SUNY New Paltz	General Physics 2 General Physics 2 Lab	4
Oceanography	SUNY Oneonta	Introduction to Oceanography	3