

# EDUCATION THAT WORKS

## PROGRAM OF STUDIES

2021-2022



# PROGRAM OF STUDIES 2021-2022

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## Statement of Nondiscrimination

Under federal antidiscrimination laws, the CTECS, as a recipient of federal funds, must include a statement of nondiscrimination in all publications, handbooks, announcements, bulletins, and application forms that it makes available to employees, students, parents, applicants, sources of referral of applicants, and all unions and professional organizations. The CTECS statement must include an equal access statement. This must be done in order to ensure compliance with federal requirements. The CTECS's approved statement reads as follows:

The CTECS is committed to a policy of affirmative action/equal opportunity for all qualified persons and equal access to the Boy Scouts of America and other designated youth groups. The CTECS does not discriminate in any employment practice, education program, or educational activity (**including vocational opportunities and admissions**) on the basis of age, ancestry, color, criminal record (in state employment and licensing), gender identity or expression, genetic information, intellectual disability, learning disability, marital status, mental disability (past or present), national origin, physical disability (including blindness), race, religious creed, retaliation for previously opposed discrimination or coercion, sex (including pregnancy or sexual harassment), sexual orientation, veteran status or workplace hazards to reproductive systems, unless there is a bona fide occupational qualification excluding persons in any of the aforementioned protected classes.

Inquiries regarding the Connecticut Technical Educational and Career System's nondiscrimination policies should be directed to:

Levy Gillespie  
Equal Employment Opportunity Director/Americans with Disabilities Coordinator (ADA)  
Connecticut State Department of Education  
450 Columbus Boulevard, Suite 607  
Hartford, CT 06103  
860-807-2071

[Levy.gillespie@ct.gov](mailto:Levy.gillespie@ct.gov)

(Coordinator for matters related to Affirmative Action/Equal Opportunity Employment and nondiscrimination policies and practices.)

Christine Spak  
Education Consultant  
Connecticut Technical Educational and Career System  
39 Woodland Street  
Hartford, CT 06105  
860-807-2212

[christine.spak@cttech.org](mailto:christine.spak@cttech.org)

(Coordinator for matters related to Title IX of the Educational Amendments of 1972 and Section 504 of the Rehabilitation Act of 1973.)

U.S. Department of Education  
Office for Civil Rights  
5 Post Office Square, Suite 900  
Boston, MA 02109-3921  
(617) 289-0111

Fax number (617) 289-0150

TTY/TDD (877) 521-2172

(Matters related to race, color, national origin, age, sex and/or disability)

## **WELCOME**

The Connecticut Technical Education and Career System (CTECS) provides a unique, focused and rigorous educational program for each student who chooses to attend. This booklet provides students, parents and members of the community with information regarding specific courses which have been carefully crafted into a comprehensive educational program or “program of studies.”

## **INTEGRATED CURRICULUM – THE FUTURE**

At Connecticut Technical High Schools, new and exciting educational experiences are happening. Talented and creative academic and technical teachers are working together to develop applied and integrated lessons. Academic and technology projects are requiring students to engage in real-life problem-solving, increasing the variety of texts read, developing their oral communication skills and writing skills. Research is proving that students learn better and retain concepts longer when they are educated using an applied and integrated curriculum. The development of this unique and rigorous curriculum prepares graduates for immediate employment, or entry into apprenticeship programs, admission to two-year and four-year colleges, and lifelong learning.

Ninth-grade students are given the opportunity to explore all the technical programs offered at the school. The core career and technical programs chosen by students at the end of the exploratory experience provide the framework for their technical and academic coursework in Grades 10 through 12. To design and implement an appropriate educational and career plan, it is important that students and parents carefully review the contents of this booklet and also work closely with the school’s professional staff.

Please contact any Connecticut Technical High School principal if you have questions regarding the Program of Studies or if you need additional information. A list of all Connecticut Technical High Schools and contacts is provided on page 120.

## MISSION STATEMENT

*The mission of the Connecticut Technical Education and Career System is to provide a world-class, unique and rigorous high school learning environment for high school students and adult learners that:*

- *Ensures both student academic success and technology mastery, as well as promotes enthusiasm for lifelong learning;*
- *Prepares students for post-secondary education, including apprenticeships and immediate productive employment;*
- *Engages regional, state, national and international employers and industries in a vibrant collaboration to respond to current, emerging and changing global workforce needs and expectations; and*
- *Pursues and participates in global partnerships that provide Connecticut Technical Education and Career System students with international exposure and experience.*

## CAREER TECHNICAL EDUCATION PROGRAMS

Situated across the state, Connecticut State Department of Education operates 17 diploma-granting technical high schools, one (1) technical education center, and two (2) aviation maintenance audit programs serving approximately 11,500 full-time secondary and adult education students with comprehensive education and training. The Connecticut Technical Education and Career System offers instruction in 31 occupational career and technical programs for secondary students, four (4) occupational trade and apprenticeship programs for adult education students.

## SECONDARY PROGRAMS

All Connecticut Technical Education and Career System programs, CTECS, (grades 9-12) require students to meet the same comprehensive academic competencies demanded of all Connecticut students, in order to earn high-school diploma. Every CTECS student must simultaneously complete a rigorous trade technology course of study in order to earn trade technology endorsements upon graduation. The technical programs under each career cluster have a post-exploratory three-and-a-half-year program of study that incorporates all academic and technical coursework, resulting in the mastery of both theoretical content knowledge and technical performance skills. The CTECS career technical education programs are aligned to the (NASDCTEC)'s Common Core Career Technical Clusters. The CTECS career technical education programs are:

- Agriculture, Food and Natural Resources
- Architecture and Construction
- Arts, Audio/Visual Technology and Communications
- Health Technology
- Hospitality and Tourism
- Human Services
- Information Technology
- Law, Public Safety, Corrections & Security Cluster
- Manufacturing
- Marketing, Sales and Service
- Science Technology, Engineering and Mathematics (STEM)
- Transportation, Distribution and Logistics



# GRADUATION AND PROMOTION GUIDELINES

Connecticut Technical Education and Career System (CTECS) students must meet requirements in the following areas in order to earn a CTECS high school diploma: attendance, credits, courses, a senior summative assessment, a \*\*CTE Senior Portfolio and Basic Skills requirements.

## FOR STUDENTS GRADUATING IN 2020, 2021 and 2022:

### Credit Requirements for Graduation:

Twenty-nine credits (29) are required for graduation and must include courses from the following content areas:

#### Career Technical Education (CTE) Program

CTE Exploratory Program – Grade 9*	3 credits
CTE Program – Grade 10	3 credits
CTE Program – Grade 11	3 credits
CTE Program – Grade 12	3 credits

#### Academics

English	4 credits
Social Studies (includes Civics)	3 credits
Mathematics	3 credits
Science	3 credits

#### Other Requirements

Physical Education	1 credit
Health Education*	1 credit
Electives	2 credits

\*\*A student must submit and meet criteria for a portfolio in their senior year. A senior portfolio is a requirement for graduation.

## FOR STUDENTS GRADUATING IN 2023 AND AFTER:

### Credit Requirements for Graduation:

Thirty-one credits (31) are required for graduation and must include courses from the following content areas:

#### Career Technical Education (CTE) Program

CTE Exploratory Program – Grade 9*	3 credits
CTE Program – Grade 10	3 credits
CTE Program – Grade 11	3 credits
CTE Program – Grade 12	3 credits

#### Academics

Humanities	9 credits
English (4 credits)	
Social Studies (includes Civics) (3 credits)	
Arts, Music, other electives in English or Social Studies (2 credits)	

Science, Technology, Engineering, Mathematics	9 credits
Mathematics (minimum of 3 credits)	
Science (minimum of 3 credits)	
CTE Program (3 credits) (These credits also count toward CTE requirements above)	

Other Requirements

Physical Education and Wellness	1 credit
Health and Safety Education*	1 credit
World Language	1 credit
Mastery-Based Diploma Assessment/Senior Portfolio	1 credit

\*A student who transfers mid-year 9<sup>th</sup> grade or enters in 10<sup>th</sup> grade may be eligible for exemption from all or a portion of the Exploratory Program and Health Education credit requirement.

**Promotion Requirements**

- To achieve 10<sup>th</sup> grade status a student must earn 7.0 credits.
- To achieve 11<sup>th</sup> grade status a student must earn 14.5 credits and receive a 60 or higher in the CTE program. A student cannot be promoted to the next grade level with a failure in the CTE program.
- To achieve 12<sup>th</sup> grade status a student must earn 22.5 credits and receive a 60 or higher in the CTE program. A student cannot be promoted to the next grade level with a failure in the CTE program.
- 12<sup>th</sup> grade students must earn a minimum of 6.5 credits including 3 credits in the CTE program - Grade 12, must participate in a senior summative assessment in the CTE program and meet Basic Skills for Graduation requirements and submit and pass a CTE portfolio.

Successful completion of the CTECS CTE and academic courses is necessary each year to ensure that a student has the credits required for graduation. If students do not meet the minimum credit requirement as they move from grade to grade, they will have difficulty completing the CTECS program. In addition, a student must meet established course prerequisites e.g., successful completion of Algebra I is a requirement for Algebra II.

If a student does not meet the minimum requirements for promotion, the student will need to make up the deficiency through:

- Summer school, where available.
- CTECS approved correspondence and online credit recovery courses.
- Repeat the grade, space permitting, after administrative review.
- Exit and enroll in their local district.
- See exception below regarding Math.

*Please Note Exception:* Across the district a Mastery-Based Learning Model for Mathematics is being implemented and “phased-in.” Part of this model gives students opportunities to “master” the content of a course and this may require them to need more than one year to achieve this mastery. In cases when students do not complete a math course for credit under the Mastery-Based Learning Model, s/he will not be “penalized” if this is the course preventing the student from promotion from one grade to the next. Schools may collaborate with the Math Consultant to make a decision that is not only fair to students, but in their best interest. Credit recovery is not an option for students enrolled in a Mastery-Based Learning Math

course. If a student attends an outside facility to learn the needed math, the student still needs to pass all of our district's assessments.

#### On-line coursework for credit

CTECS may grant credit toward meeting graduation requirements upon the successful completion of on-line coursework based upon the following guidelines:

1. The workload required by the on-line course is equivalent to that of a similar course taught in a traditional classroom setting;
2. The content is rigorous and aligned with curriculum guidelines approved by the State Board of Education, where appropriate;
3. The course engages students and has interactive components, which may include, but are not limited to, required interactions between students and their teachers, participation in on-line demonstrations, discussion boards or virtual labs;
4. The program of instruction for such on-line coursework is planned, ongoing and systematic; and
5. The courses are (a) taught by teachers who are certified in the state or another state and have received training on teaching in an on-line environment, or (b) offered by institutions of higher education that are accredited by the Board of Regents for Higher Education or Office of Higher Education or regionally accredited.

# BASIC SKILLS REQUIREMENTS FOR GRADUATION

## DISTRICT PERFORMANCE STANDARDS

### LANGUAGE ARTS

#### Performance Standard

Students will demonstrate the ability to independently read, comprehend, and respond critically to complex literary and informational texts.

#### Options

Students have multiple opportunities over the course of their sophomore, junior and senior year to demonstrate their performance relative to the Language Arts performance standard. Students satisfy the district performance standards for the basic skills in language arts if they have:

1. Achieved a score of 430 or higher on the Evidence-Based Reading and Writing section of the Preliminary Scholastic Assessment 10 (PSAT 10); or
2. Achieved a score of 460 or higher on the Evidence-Based Reading and Writing section of the Preliminary Scholastic Assessment/National Merit Scholarship Qualifying Test (PSAT/NMSQT); or
3. Achieved a score of 480 or higher on the Evidence-Based Reading and Writing section of the Scholastic Assessment Test (SAT); or
4. Passed English 11, English 12 or full credit English elective course with a 70 or higher; or
5. Passed the *Letters of Literature* (LAL) assessment with a score of 11+.

### MATHEMATICS

#### Performance Standard

Students shall demonstrate the ability to solve multiple mathematical problems that require demonstration of basic math operations including fractions, decimals and percentages and the use of algebraic equations; and explain in writing how they arrived at each answer.

#### Options

Students have multiple opportunities over the course of their sophomore, junior and senior year to complete the mathematics performance standard. Students satisfy the district performance standards for basic skills in mathematics if they have:

1. Achieved a score of 430 or higher on the mathematics section of the Preliminary Scholastic Assessment/National Merit Scholarship Qualifying Test (PSAT/NMSQT); or
2. Achieved a score of 430 or higher on the mathematics section of the Scholastic Assessment Test (SAT), or
3. Earned a third or fourth full credit of math with a final grade of 70 or above; or
4. Passed all four parts of the basic skills assessment in mathematics with a 70 or higher in 11<sup>th</sup> or 12<sup>th</sup> grade.

### SCIENCE

#### Performance Standard

Students shall demonstrate the ability to use scientific inquiry skills to explore world life problems using the content of biology, physics, chemistry and earth science; evaluate the information for validity and reliability; and use that information to support a position on a contemporary scientific issue.

**Options**

Students have multiple opportunities over the course of their sophomore, junior and senior year to complete the performance standard. Students satisfy the district performance standards for basic skills in science if they have:

1. Achieved a score of proficiency on the NGSS Science Assessment (students graduating in 2020 and beyond).
2. Passed any science course in grades 11 or 12 with a 70 or higher; or
3. Earned a grade of 70 or higher on a science basic skills assessment in 12<sup>th</sup> grade.

**CAREER AND TECHNICAL EDUCATION (CTE)****Performance Standard**

Students shall demonstrate the set of skills and competencies required to enter the career and technical field, be accepted in apprenticeships, or pursue post-secondary technical studies as evidenced by their CTE portfolio.

**Options**

Students have multiple opportunities over the course of their junior and senior year to complete a CTE portfolio outlined in the Student Success Plan. The CTE portfolio includes a skills checklist, resume, academic and CTE accomplishments, certifications, credentials, awards, written responses and reflections.

## **EXPLORATORY PROGRAM**

The Connecticut Technical Education and Career System (CTECS) ensures each ninth-grade student participates in the career and technical exploratory program. The exploratory program introduces each student to the goals and objectives for career and technical programs; provides an objective measure of student performance and a measure of potential for success for each student in all career and technical programs.

The ninth-grade exploratory process serves as an assessment of the student's technical aptitudes. The exploratory program is divided into three phases: Phase I gives students career information on each career and technical program offered; Phase II gives each student a hands-on experience in three trade technology areas; and, Phase III gives students a permanent placement to begin the study of a career and technical program that the student will concentrate on for the next three years.

# CAREER AND TECHNICAL CLUSTERS

Career and Technical Programs offered by the Connecticut Technical High Schools are grouped into twelve career clusters as follows:

- Agriculture, Food and Natural Resources Cluster
- Architecture and Construction Cluster
- Arts, Audio/Visual Technology and Communications Cluster
- Health Technology Cluster
- Hospitality and Tourism Cluster
- Human Services Cluster
- Information Technology Cluster
- Law, Public Safety, Corrections & Security Cluster
- Manufacturing Cluster
- Marketing, Sales and Service Cluster
- Science Technology, Engineering and Mathematics (STEM) Cluster
- Transportation, Distribution and Logistics Cluster

Each career and technical program within each cluster has a specific three-and-a-half-year program of study that outlines all academic and technical coursework required for students enrolled. The career programs taught within each cluster are as follows:

## **I. Agriculture, Food and Natural Resources Cluster**

The Agriculture, Food and Natural Resources Cluster provides students with theoretical knowledge and skills for careers in water and air pollution control, recycling waste disposal, public health issues, as well as perform a variety of tasks from helping to develop, maintain and manage the forest and natural environment. CTECS graduates may complete competency credential or certification eligibility for entry-level employment in a variety of healthcare and bioscience settings or continue their studies at post-secondary institutions. CTECS students concentrate their studies and earn a career and technical certificate in the following program:

- Bioscience and Environmental Technology
- Veterinary Science

## **II. Architecture and Construction Cluster**

Architecture and Construction cluster provides students with the theoretical knowledge and skills for entry-level employment in the residential, commercial and industrial construction areas or in postsecondary institutions. CTECS students concentrate their studies and receive a career and technical certificate in one (1) of the following programs:

- Sustainable Architecture
- Carpentry
- Electrical
- Heating Ventilation and Air Conditioning (HVAC)
- Masonry
- Plumbing and Heating
- Plumbing, Heating and Cooling

### **III. Arts, Audio/Video Technology and Communications Cluster**

The Arts, Audio/Video and Technology and Communications cluster prepares students to apply technical knowledge and skills, including planning, organizing, evaluating, creating and performing in Arts and Media. Students will apply technical knowledge and skills to enter the fields of media, music and theatre production technology. Graduates will be able to pursue postsecondary studies in media, music and theatre production areas. Students concentrate their studies and earn a career and technical certificate in any one (1) of the following programs:

- Digital Media
- Sound Production Technology

### **IV. Health Technology Cluster**

The Health Technology cluster provides students with theoretical knowledge and clinical skills for careers in planning, managing and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development. Graduates may complete a competency credential or certification eligibility or entry-level employment in a variety of healthcare and bioscience settings or continue their eligibility for entry-level employment in a variety of healthcare and bioscience settings or continue their studies at a post-secondary institution. Students concentrate their studies and earn a career and technical certificate in the following programs:

- Biotechnology
- Health Technology

### **V. Hospitality and Tourism Cluster**

The Hospitality and Tourism cluster provides students with theoretical knowledge and skills for entry-level employment in the management, marketing and operation of restaurants, bakeries or lodging and travel-related services. Graduates find employment in a wide variety of service occupations or continue their studies at post-secondary institutions. Students concentrate their studies and receive a career and technical certification in one (1) of the following programs:

- Culinary Arts
- Guest Services Management
- Tourism, Hospitality and Guest Services Management

### **VI. Human Services Cluster**

The Human Services cluster prepares students for employment in career pathways that relate to families and human needs such as family and community services, personal care and consumer services. Graduates of these programs are employed in the management, marketing and operation of hair salons, barber shops and spas. Students concentrate their studies and receive career and technical certifications in one (1) of the following programs:

- Hairdressing & Cosmetology

### **VII. Information Technology Cluster**

The Information Technology cluster prepares students to apply technical knowledge and skills designing, developing, managing and supporting hardware, software, multimedia and systems integration services.



Also included in this cluster are programs providing training in electronics technology and graphic technology. Graduates enter a wide variety of high-technology positions or continue their studies at postsecondary institutions. Students concentrate their studies and earn a career and technical certificate in one (1) of the following programs:

- Electronics Technology
- Graphics Technology
- Information Technology

#### **VIII. Law, Public Safety, Corrections & Security Cluster**

Law, Public Safety, Corrections & Security cluster provides students with the theoretical knowledge and skills for entry-level employment in the areas of criminal investigative techniques, crime scene investigation, advanced forensic techniques, fire science, scene management, scene safety and emergency medicine. Students also have the opportunity to continue their studies at postsecondary institutions. Students concentrate their studies and earn a career and technical certificate in one (1) of the following programs:

- Criminal Justice and Protective Services

#### **IX. Manufacturing Cluster**

The Manufacturing cluster provides students with the theoretical knowledge and skills for careers in planning, managing and performing the processing of materials into intermediate or final products, and related professional and technical support activities. Students also have the opportunity to continue their studies at postsecondary institutions. Students concentrate their studies and earn a career and technical certificate in one (1) of the following programs:

- Automated Manufacturing Technology
- Mechanical Design and Engineering Technology
- Mechatronics
- Precision Machining Technology
- Welding and Metal Fabrication

#### **X. Marketing, Sales and Service Cluster**

The Marketing, Sales and Service cluster provides students with the theoretical knowledge and skills for career in planning, managing and performing marketing activities to reach organizational objectives such as brand management, professional sales, merchandising, marketing communications and market research. Students also have the opportunity to continue their studies at postsecondary institutions. Students concentrate their studies and earn a career and technical certificate in one (1) of the following programs:

- Marketing, Management and Entrepreneurship

#### **XI. Science Technology, Engineering and Mathematics (STEM)**

The Science Technology, Engineering and Mathematics (STEM) cluster provides students with the theoretical knowledge and skills for career planning, managing and providing scientific research and professional/technical services, including research and postsecondary institutions. Students concentrate their studies and earn a career and technical certificate in the following program:

- Pre-Electrical Engineering and Applied Electronics Technology

## **XII. Transportation, Distribution and Logistics Cluster**

The Transportation, Distribution and Logistics cluster provides students with the theoretical knowledge and skills for careers in the planning, management and movement of people, materials and goods by road, pipeline, air, rail and water and related professional/technical support services. Students will apply technical knowledge and skills in diagnostics, repair and maintenance of automotive and heavy-duty engines and equipment. Students also have the opportunity to continue their studies at postsecondary institutions. Students concentrate their studies and earn a career and technical certificate in one (1) of the following programs:

- Automotive Collision Repair and Refinishing
- Automotive Technology
- Diesel and Heavy-Duty Equipment Repair

## COLLEGE CAREER PATHWAYS

The College Career Pathways (CCP) program encourages and prepares Connecticut Technical Education and Career System (CTECS) students to pursue an associate or baccalaureate degree in their chosen career and technical education area. Students formally enroll in a community college and register for academic and technical courses. Students have the opportunity to earn college credit in a non-duplicative sequence of coursework. *Please contact your school guidance department for information on eligibility and course offerings.*

In addition, CTECS has partnerships with The Culinary Institute of America, IYRS School of Technology and Trades, Lincoln Culinary Institute, Lincoln Technical Institute, the New England Culinary Institute, University of Northwestern Ohio and the New England Institute of Technology, and the Universal Technical Institute. Students have the opportunity to earn career and college credit and/or opportunities for advanced standing by successfully completing their high school technical program. For more information, contact the high school's guidance department.

Note: The programs are not offered in every school location.

## ADVANCED PLACEMENT COURSES (AP)

Advanced Placement Courses (AP) allow students to take college level courses while still in high school. These courses present students with the opportunity to earn college credit, gain experience with college level work and stand out in the college admissions process. Current AP courses offered in the CTECS include:

- AP Statistics
- AP English Language and Composition
- AP English Literature and Composition
- AP Psychology
- AP Environmental Science
- AP Computer Science Principles (Information Technology Trade Program)
- AP Computer Science A (Information Technology Trade Program)
- AP Human Geography

**NOTE: AP Classes are not offered in every school location. Check with the school counselor for more information. See the Academic Course selection for courses and descriptions.**

## UNIVERSITY OF CONNECTICUT EARLY COLLEGE EXPERIENCE (ECE)

UConn Early College Experience (ECE) provides students the opportunity to take university courses while still in high school. These challenging courses allow students to preview college work, build confidence in their readiness for college and earn college credits that provide both an academic and a financial head start on a college degree.

ECE instructors, who are certified as adjunct professors by UConn faculty, create a classroom environment fostering independent learning, creativity and critical thinking – all pivotal for success in college. To support rigorous learning, University of Connecticut library resources are made available to all ECE students.

ECE students must successfully complete the courses with a grade of C or better in order to receive university credit. University credits are highly transferable to other universities. Students are charged a nominal per credit fee. The fee is waived for students who qualify for free and reduced lunch. For additional information visit: [www.ece.uconn.edu](http://www.ece.uconn.edu).

## **UCONN EARLY COLLEGE EXPERIENCE PROGRAM COURSES**

- Introduction to Academic Writing-UCONN
- Biology-UCONN
- Biotechnology- UCONN
- Chemistry- UCONN
- Economics- UCONN
- General Physics-UCONN
- Health and Education in Urban Communities - UCONN
- Introduction to Human Rights- UCONN
- Seminar in Academic Writing-UCONN
- Seminar in Writing through Literature-UCONN
- Seminar in American Studies-UCONN
- Medical Terminology- UCONN
- United States History to 1877-UCONN
- United States History Since 1877-UCONN

Note: ECE courses are not offered in every school location. Check with the school counselor for more information. See the Academic Course selection for courses and descriptions.

# CAREER AND TECHNICAL PROGRAMS

## 2021-2022



*Please note: Not all Career and Technical courses are available at each school.*



2021-2022

Secondary  
Career Technical Education Programs

	ANSONIA	O'BRIEN THS	BRIDGEPORT	BULLARD-HAVENS THS	BRISTOL	DANBURY	DANIELSON	ELLIS THS	GROTON	GRASSO THS	HAMDEN	WHITNEY THS	HARTFORD	CT AERO TECH AVIATION	HARTFORD	PRINCE THS	MANCHESTER	CHENEY THS	MERIDEN	WILCOX THS	MIDDLETOWN	VINAL THS	MILFORD	PLATT THS	NEW BRITAIN	GOODWIN THS	NORWICH	NORWICH THS	STAMFORD	WRIGHT THS	STRAFORD	STRAFORD AVIATION	TORRINGTON	WOLCOTT THS	WATERBURY	KAYNOR THS	WILLAMANTIC	WINDHAM THS	TOTAL CAREER CLUSTER/PATHWAYS				
12 Career Clusters	7	7	3	7	6	8	7	0	9	6	7	7	6	6	8	6	0	7	7	6	120																						
Number of Career Clusters	10	13	3	11	11	12	11	0	14	11	13	11	13	11	12	9	0	12	12	8	199																						
Number of Career Pathways																					2											1											
<b>AGRICULTURE, FOOD &amp; NATURAL RESOURCES CLUSTER – 2 CAREER PATHWAYS</b>																																											
Bioscience & Environmental Technology								✓					✓																											2			
Veterinary Science																				✓																					1		
<b>ARCHITECTURE &amp; CONSTRUCTION CLUSTER – 7 CAREER PATHWAYS</b>																																											
Carpentry		✓	✓		✓	✓		✓			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	16	
Electrical		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	17
Heating, Ventilation & Air Conditioning (HVAC)		✓		✓	✓											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	10	
Masonry			✓			✓							✓																												3		
Plumbing & Heating			✓		✓	✓	✓	✓	✓	✓	✓	✓	✓			✓							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	12	
Plumbing, Heating & Cooling																																									1		
Sustainable Architecture			✓			✓																	✓																		3		
<b>ARTS, AUDIO/VISUAL TECHNOLOGY &amp; COMMUNICATIONS CLUSTER – 2 CAREER PATHWAYS</b>																																											
Digital Media								✓								✓												✓													3		
Sound Production Technology													✓																													1	
<b>HEALTH TECHNOLOGY CLUSTER – 2 CAREER PATHWAYS</b>																																											
Biotechnology																											✓														1		
Health Technology		✓	✓		✓			✓		✓		✓		✓		✓										✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11
<b>HOSPITALITY &amp; TOURISM CLUSTER – 3 CAREER PATHWAYS</b>																																											
Culinary Arts		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	17
Tourism, Hospitality & Guest Services Management																												✓														1	
Guest Services Management								✓																																	1		
<b>HUMAN SERVICES CLUSTER – 1 CAREER PATHWAYS</b>																																											
Hairdressing		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14	
<b>INFORMATION TECHNOLOGY CLUSTER – 3 CAREER PATHWAYS</b>																																											
Electronics Technology						✓														✓																					4		
Graphics Technology			✓		✓			✓		✓		✓		✓		✓											✓															7	
Information Technology		✓	✓				✓	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	13	
<b>LAW, PUBLIC SAFETY, CORRECTIONS &amp; SECURITY CLUSTER – 1 CAREER PATHWAY</b>																																											
Criminal Justice and Protective Services			✓																			✓																			2		
<b>MANUFACTURING CLUSTER – 5 CAREER PATHWAYS</b>																																											
Automated Manufacturing Technology													✓																												1		
Mechanical Design & Engineering Technology		✓			✓		✓	✓									✓							✓	✓																9		
Mechatronics																								✓	✓																2		
Precision Machining Technology		✓	✓		✓	✓		✓									✓	✓	✓	✓	✓	✓	✓	✓	✓																13		
Welding & Metal Fabrication								✓									✓																								2		
<b>MARKETING, SALES &amp; SERVICE CLUSTER – 1 CAREER PATHWAYS</b>																																											
Marketing, Management & Entrepreneurship																												✓													1		
<b>SCIENCE TECHNOLOGY, ENGINEERING &amp; MATHEMATICS (STEM) CLUSTER – 1 CAREER PATHWAY</b>																																											
Pre-Electrical Engineering & Applied Electronics Technology																											✓														1		
<b>TRANSPORTATION, DISTRIBUTION &amp; LOGISTICS CLUSTER – 3 CAREER PATHWAYS</b>																																											
Automotive Collision Repair & Refinishing						✓	✓						✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	8	
Automotive Technology		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	18	
Diesel & Heavy-Duty Equipment Repair																	✓					✓																			2		



2021-2022

*Post-Secondary  
Career Technical Education Programs*

	ANSONIA O'BRIEN THS	BRIDGEPORT BULLARD-HAVENS THS	BRISTOL BRISTOL TEC	DANBURY ABBOTT THS	DANIELSON ELLIS THS	GROTON GRASSO THS	HAMDEN WHITNEY THS	HARTFORD CT AERO TECH AVIATION	HARTFORD PRINCE THS	MANCHESTER CHENEY THS	MERIDEN WILCOX THS	MIDDLETOWN VINAL THS	MILFORD PLATT THS	NEW BRITAIN GOODWIN THS	NORWICH NORWICH THS	STAMFORD WRIGHT THS	STRAITFORD STRAITFORD AVIATION	TORRINGTON WOLCOTT THS	WATERBURY KAYNOR THS	WILLMANTIC WINDHAM THS	TOTAL CAREER CLUSTER/PATHWAYS
4 Career Clusters Number of Career Clusters	0	0	4	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	6
7 Career Pathways Number of Career Pathways	0	0	6	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	8
<b>ARCHITECTURE &amp; CONSTRUCTION CLUSTER – 1 CAREER PATHWAYS</b>																					
Heating, Ventilation & Air Conditioning (HVAC)			✓																		1
<b>HOSPITALITY &amp; TOURISM CLUSTER – 1 CAREER PATHWAY</b>																					
Culinary Arts			✓																		1
<b>MANUFACTURING CLUSTER – 3 CAREER PATHWAYS</b>																					
Mechatronics			✓																		1
Precision Machining Technology			✓																		1
Welding & Metal Fabrication			✓																		1
<b>TRANSPORTATION, DISTRIBUTION &amp; LOGISTICS CLUSTER – 2 CAREER PATHWAYS</b>																					
Automotive Technology			✓																		1
Aviation Maintenance Technician*								✓									✓				2

\*CT Aero Tech and Stratford School for Aviation Maintenance are extension campuses of Bristol Technical Education Center

# AGRICULTURE, FOOD AND NATURAL RESOURCES CLUSTER

## BIOSCIENCE AND ENVIRONMENTAL TECHNOLOGY COURSE SEQUENCE

*12 credits required for graduation*

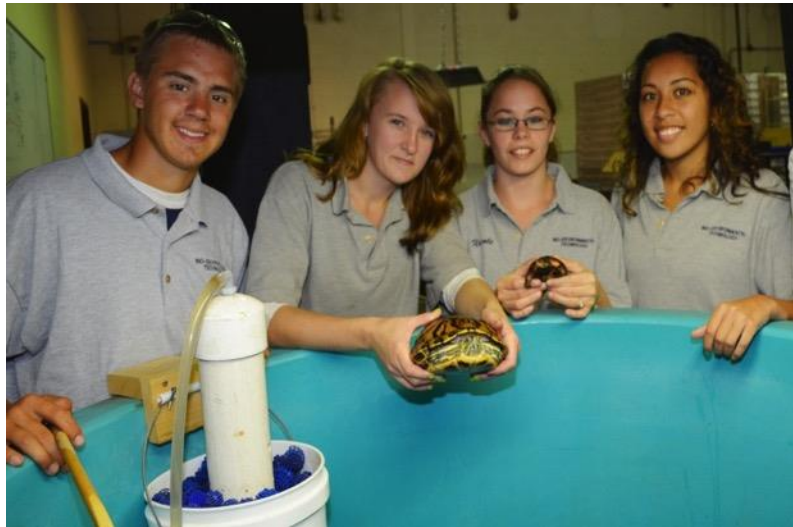
The environment is directly impacted by human interaction. The Bio-Science program is specifically designed to observe, test and solve environmental issues that affect our living space. Through project-based learning, students study all habitats and plant and animal life that inhabits each.

This multifaceted program connects to all levels of the environment including fresh and wastewater management, plant propagation and greenhouse management, fresh and saltwater aquatics, small animal care, forestry and landscape design.

Students participate in internships as docents for The Mystic Aquarium and Work Based Learning (WBL) for local fresh and wastewater operations.

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Bioscience and Environmental Technology	Measurement and Analysis	Managing the Environment	Individual Topics in Bioscience

### BIOSCIENCE AND ENVIRONMENTAL TECHNOLOGY COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Bioscience and Environmental Technology (BT110) (3 credits)**

All Grade 9 students participate in the Exploratory Program. As students enter the field of Bioscience and Environmental Technology, they will be introduced to college opportunities and career pathways, forestry, beach and marine analysis and identification of plants. Students are instructed in laboratory and field competencies which can be built upon in the later years of the technology and in their science classes. Field trips to local shoreline communities are an important component of the Exploratory Program. The Common Core for Language Arts and Mathematics as well as science skills are integrated.



**Measurement and Analysis (BT210) (3 credits)**

In Grade 10, students master laboratory and field competencies through project-based learning. In each project, students learn to analyze data collected in the lab or field using scientific methodology. Course content includes topics such as water treatment/filtration, forestry, wetland conservation, microbiology, classification of living organisms and stream analysis. Emphasis is placed on protocol procedures and teamwork to emphasize college preparedness and to mirror workplace requirements. Students are instructed in science-related safety. The Common Core for Language Arts and Mathematics as well as science skills are integrated.

**Managing the Environment (BT310) (3 credits)**

In Grade 11, students will be investigating real-world environmental problems and work to solve these problems using hands-on, team-based applications. In addition to production projects, students will experience habitat management, aquaculture, biotechnology data driven mapping, meteorology, global warming and evolutionary biology. Emphasis is placed on presentation, report writing and teamwork. Students are instructed in science (lab)-related and shop safety. Work-Based Learning (WBL) is available to eligible students. The Common Core for Language Arts and Mathematics as well as science skills are integrated.

**Individual Topics in Bioscience (BT410) (3 credits)**

In Grade 12, students are given an opportunity to reflect on previous experiences (grades 9-11) and develop a senior project. The topic, chosen by each student, is presented to a panel and composes a portion of their final grade. All projects include the student's accumulative skills of design, observation, data collection and analysis reporting. Written and oral data reports as well as the meeting of deadlines are part of the senior year course requirements. Seniors participate in a mentoring program for the 9<sup>th</sup> grade students whereas they assist in lab procedures and data collection. Various certifications are earned during grade 12 including OSHA and HAZMAT. Seniors are expected to work independently and participate in Work-Based Learning if they are eligible. A performance-based test is administered to all seniors prior to graduation.

Students successfully completing this course of study will be able to pursue a two-year or a four-year degree at colleges or universities in the area of environmental technology or other related sciences. Students can obtain immediate employment in environmental related industries such as aquaculture or habitat management, maintenance and water treatment.

## VETERINARY SCIENCE COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Veterinary Science	Veterinary Science II	Veterinary Science III	Veterinary Science IV

### VETERINARY SCIENCE COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Veterinary Science (VS110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of Veterinary Science will be introduced to the basic safety and sanitation, as well as basic identification, husbandry and handling of canines and felines. They will also learn basic anatomy and medical terminology. Students will work with live animals to perform basic restraint and grooming techniques. Technology-related mathematics, reading, writing, vocabulary, and science are integrated throughout the curriculum.

#### **Veterinary Science II (VS210) (3 credits)**

In Grade 10, the veterinary science program is designed to provide students with practical knowledge in working with small animals in a clinic, laboratory, or similar setting. Building on the knowledge obtained in 9<sup>th</sup> grade, students will learn advanced identification, husbandry, handling/restraint, and nutrition of dogs, cats, and rodents. Student will also learn about the welfare, rights and ethics that protect animals. They will continue their Anatomy and Physiology learning with the identification and uses of the musculoskeletal system. Students will work with live animals to perform advance handling/restraint techniques, basic clinical procedures, and grooming. Technology-related mathematics, reading, writing, vocabulary, and science are integrated throughout the curriculum.

#### **Veterinary Science III (VS310) (3 credits)**

In Grade 11, the veterinary science program is designed to provide students with practical knowledge in working with large animals. Students will learn identification, husbandry, handling/ restraint, and nutrition of horses, ruminant, pigs, and other large animals. Students will also learn about the computerized filing systems used in veterinary practices. They will continue their Anatomy and Physiology learning with the identification and uses of the respiratory and cardiac systems. Students will work with live animals to perform advance handling/restraint techniques, basic clinical procedures, and grooming. Students reaching

an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, blueprint reading, and science are integrated throughout the curriculum.

**Veterinary Science IV (VS410) (3 credits)**

In Grade 12, the veterinary science program is designed to provide students with practical knowledge in working with miscellaneous large animals and exotic pets. Students will learn identification, husbandry, handling/ restraint, and nutrition of reptiles, birds, and indigenous wildlife. Students will also learn about animal pharmacology, advanced clinical and laboratory procedures. They will continue their Anatomy and Physiology learning with the identification and uses of the lymphatic and digestive systems. Students will work with live animals to perform advance handling/restraint techniques, basic clinical/laboratory procedures, and grooming. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Each student will take the Senior Summative Assessment, which is a computerized interactive test. Technology-related mathematics, reading, writing, vocabulary, blueprint reading, and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year veterinary technology degree or a four-year pre-veterinary medicine degree. Students can obtain immediate employment in the veterinary science field. Employment opportunities in veterinary science include groomer, kennel attendant, farmhand, animal control officer, laboratory animal caretaker, veterinary assistant (1-year certificate), veterinary technician (2- or 4-year degree), and veterinarian (doctorate).

# ARCHITECTURE AND CONSTRUCTION CLUSTER

## SUSTAINABLE ARCHITECTURE COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Sustainable Building Technology	Sustainable Residential Construction and Advanced Drafting Principles	Sustainable Residential Design and Mechanical Systems	Commercial Construction Design and Business Practices

### SUSTAINABLE ARCHITECTURE COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Sustainable Building Technology (SA110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of sustainable building technologies will be instructed in program safety and the proper use and care of drafting tools and equipment. Students are introduced to basic drafting skills, including standard drawing conventions and principles, which allow them to communicate graphically. Students begin with small sketching assignments, progress to orthographic and pictorial drawings, and end with floor plan and elevation development. Students will also be introduced to sustainable building. They will learn the meaning of sustainable, why it is important in today's building industry and the various evaluation instruments that are used to create a sustainable building such as LEED, Green Globes, and Energy Star. Technology-related mathematics, reading, writing, vocabulary, history and science are integrated throughout the curriculum.

#### **Sustainable Residential Construction and Advanced Drafting Principles (SA210) (3 credits)**

In Grade 10, students will learn about sustainable residential construction methods and materials. They will understand how a residential building is constructed and become familiar with the various building materials that are used in its construction while making it energy efficient and low-impact on the environment. Students continue to develop their drafting skills by developing construction documents and presentation drawings. Students will also be introduced to basic design standards and building codes. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Technology-related mathematics, reading, writing, vocabulary, history and science are integrated throughout the course.

**Sustainable Residential Design and Mechanical Systems (SA310)**

In Grade 11, students receive instruction and demonstrate skills in designing a residential building that is sustainable. This will include study of the various high-performance building standards, site analysis, study of the various mechanical systems that are incorporated into a structure, and energy audits. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will perform in-school architectural design projects for customers. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, history and science are integrated throughout the curriculum.

**Commercial Construction Design and Business Practices (SA410) (3 credits)**

In Grade 12, students receive instruction and demonstrate skills in cabinet design, engineered lumber, foundation types, site plans, roof designs, ceiling designs, section drawings, masonry, electrical fixtures, electrical loading and circuits, septic, well and city water and electrical and plumbing codes. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will perform in-school architectural design projects for customers. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Students also work toward achieving the Autodesk Building Performance Analysis (BPA) Certificate. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Students can choose to further their education at numerous colleges and universities across the country in order to obtain a two-year or four-year degree in the areas of architectural, structural, or civil engineering. A five-year program within a school of architecture leads to licensure as an architect. Immediate employment opportunities include engineering technician; computer-aided architectural design/drafter, or illustrator.

## CARPENTRY COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Carpentry	Cabinetry/Millwork	Carpentry – Residential Construction	Carpentry – Residential and Commercial Construction

### CARPENTRY COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Carpentry (CA110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of carpentry will be introduced to the basics of safety and sanitation, as well as use and care of hand tools, power tools and stationary equipment. Fabrication methods are initiated with an introduction to wood types, quality and applications. Students start with small woodworking projects, which lead up to more complex assignments. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

#### **Cabinetry/Millwork (CA210) (3 credits)**

In Grade 10, the carpentry program is designed to provide students with practical information in the art of cabinetmaking. This course builds on the knowledge acquired in Grade 9 and provides students with the introductory-level skills necessary in the cabinetry industry using both theory and practice involving the production of practical projects. Safety, advanced power tools and stationary machinery are taught and reinforced continually throughout the course sequence. Upon completion of this course, students must demonstrate the application of sound safety practices, the ability to identify and use hand tools appropriately, the use of basic operations on stationary equipment and the ability to identify common fasteners and construction materials. They are also required to demonstrate their cabinetmaking skills, common trade ethics and workplace readiness and perform clean-up and debris removal. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

**Carpentry-Residential Construction (CA310) (3 credits)**

The Grade 11 program is designed to introduce students to residential construction. Students are instructed in all areas of safety including ladder, scaffolding, trenching and the use of safety harnesses. Students are introduced to the State of Connecticut Building Code and learn the theoretical knowledge needed to lay out rafters, stairs and walls. Students will demonstrate knowledge of blueprint reading, including foundations, concrete, floor plans, specification schedules and electrical, plumbing and mechanical symbols. Students will perform residential construction projects for customers. The students will show entry-level skills in all facets of residential construction. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

**Carpentry-Residential and Commercial Construction (CA410) (3 credits)**

In Grade 12, the course sequence is designed to build on the skills learned in Grades 9, 10 and 11. Students will continue with residential dwelling construction and light commercial construction skills will be introduced. Rigging and hauling safety, in addition to safety mastered in the previous years, is stressed. Students will demonstrate knowledge of exterior trim and siding types, energy conservation in residential construction and design of stairs and rafter building. They will comprehend knowledge of building codes and planning and zoning regulations. Students will be taught how to estimate both materials and construction costs, as well as demonstrate and articulate positive customer relations. Students will continue to participate in outside production projects on residential construction and demonstrate basic knowledge in applying drywall materials and stair-building skills. They will demonstrate advanced knowledge in designing and erecting wall partitions, applying roofing materials, and installing common siding and interior finish. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Each student will take the Senior Summative Assessment, (Workforce Ready) which is a computerized interactive test. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year construction technology degree or a four-year engineering degree. Students can obtain immediate employment in the carpentry field. Employment opportunities in residential and commercial construction include: framing, remodeling; cabinetry and millwork; custom woodworking; CNC (Computer Numerical Control) operator; drywall hanger/finisher; concrete formwork; yacht woodworking; roofers; siding installers; flooring installers; furniture maker refinishers; general construction worker; Weatherization/BPI Certification; facilities maintenance construction labors; and lumber supply employment.

## ELECTRICAL COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Electrical	Residential Wiring	Residential and Basic Commercial Wiring	Residential, Commercial and Industrial Wiring

## ELECTRICAL COURSE DESCRIPTIONS



### **Exploratory and Introduction to Electrical (EL110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the electrical field will be introduced to the basics of safety and sanitation, as well as use and care of hand tools, power tools and stationary equipment. The students install basic low-voltage electrical systems and will be introduced to basic residential wiring. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

### **Residential Wiring (EL210) (3 credits)**

The Grade 10 electrical course sequence provides a program through which students learn the theoretical information regarding various conductors and properties, types of insulation, termination principles, Ohm's Law calculations, run of types of wire and cable and selection of boxes and fittings. Students will demonstrate the ability to use the National Electrical Code (NEC) and other applicable building codes and standards and apply code-related requirements using entry-level skills. The students will calculate residential loads, feeder and branch circuit loads and conduit using the NEC. The students will demonstrate skills required to complete residential wiring installations, including assembling and climbing scaffolding and all types of ladders. Students will demonstrate entry-level skills in meter usage and install a turn of fittings and devices, lighting fixtures, recessed fixtures, ground fault circuit interrupters, electrical metallic tubing and overhead and underground services. Students continue to receive instruction in safety requirements and demonstrate sound safety practices throughout the duration of the course sequence. Students will advance in their participation in inside and outside production work as it relates to the current curriculum and their skill level. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

### **Residential and Basic Commercial Wiring (EL310) (3 credits)**

In Grade 11, students will demonstrate theoretical competency in various types of low-voltage systems. They will be able to use the utility company and National Electrical Code (NEC) requirements for the installation of residential services, lighting requirements, appliance circuits, heating systems and Heating



Ventilation and Air Conditioning (HVAC) equipment. Students will demonstrate ability to use the National Electrical Code, as well as other applicable codes, and apply them in production projects. Outside residential electrical production jobs for customers will be part of the students' training, along with curriculum-related electrical maintenance work in the school building. Basic commercial wiring will be introduced in the junior year using various types of raceways and wiring methods. Students will advance in their participation of inside and outside production work as it relates to the current curriculum and their skill level. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

**Residential, Commercial and Industrial Wiring (EL410) (3 credits)**

In Grade 12, students will continue with residential wiring at an advanced level, commercial wiring at an entry level and be introduced to industrial wiring. Students will demonstrate knowledge in basic types of motors, magnetic starters, control stations, capacitors, transformers and calculations of wire resistance and capacitance. Students will demonstrate their ability to use the National Electrical Code (NEC) and apply it using apprentice entry-level skills. They will demonstrate competency in the installation of motor control systems, which consist of magnetic three-pole starters with forward, reverse and control circuit wiring using various types of control switches and devices. They will be introduced to Category 5 (CAT #5) and fiber optic wiring, transformer installations and wiring for special occupancies. Students complete a senior project showing evidence of their ability to operate an electrical contracting business. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will continue to advance in their participation in inside and outside electrical projects for customers as it relates to the current curriculum and their skill level. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Each student will take the Senior Summative Assessment, (Workforce Ready) which is a computerized interactive test. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year or a four-year degree in electrical engineering or other related fields. Students can obtain immediate employment in the electrical field including: residential, commercial or industrial wiring apprenticeship; low voltage; cable TV; telephone; voice video and data wiring; computer Local Area Network (LAN) systems; fiber optics; surveillance/security systems; electrical sales representative; control room operator; electrical lineman; transportation signal installer; green technology areas; lighting specialty companies; and wholesale supply representative.

## HEATING, VENTILATION AND AIR CONDITIONING (HVAC) COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Heating, Ventilation and Air Conditioning	Basic Refrigeration/Sheet Metal	Introduction to Heating and Cooling	Advanced Heating and Cooling

### HEATING, VENTILATION AND AIR CONDITIONING (HVAC) COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Heating, Ventilation and Air Conditioning (HV110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of Heating, Ventilation and Air Conditioning (HVAC) will be introduced to the basics of safety and sanitation, as well as the use and care of hand tools, power tools, electrical, storage cylinders and stationary equipment. They are provided with information on entry-level employment opportunities in the HVAC trade. The students will demonstrate their skill in basic copper tubing practices like cut, swage, bend, flare and solder. Students will be introduced to the safe use of sheet metal tools and will construct basic sheet metal fittings commonly needed to install HVAC duct systems. Technology-related reading, writing, vocabulary, mathematics, blueprint reading and science are integrated throughout the curriculum.

#### **Basic Refrigeration/Sheet Metal (HV210) (3 credits)**

In Grade 10, the HVAC program is designed to provide students with an understanding of theoretical information covering the sciences of matter, heat, fluids and pressure. Theory information also includes the components of a basic refrigeration system and how they operate to move heat from where it is not wanted to where it is desirable. The students will demonstrate electrical fundamentals including electrical circuits, Ohm's law and meter use. Laboratory skills practiced include servicing and testing refrigeration equipment and basic electrical circuits including identifying electrical motors. Skills needed for installation of HVAC systems including piping materials, threading of black pipe and duct installation are also practiced. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Technology-related reading, writing, vocabulary, mathematics, blueprint reading and science are integrated throughout the curriculum.

**Introduction to Heating and Cooling (HV310) (3 credits)**

In Grade 11, students will demonstrate theoretical competency in HVAC electrical controls, refrigeration systems, such as air conditioning and refrigeration, both domestic and commercial. The students will have an understanding of Environmental Protection Agency (EPA) certification requirements with refrigeration systems and will be able to calculate building heating and cooling loads. Skills practiced in lab and on in-school and outside work projects for customers include installation and service of refrigeration and heating systems and startup and checkout procedures. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related reading, writing, vocabulary, mathematics, blueprint reading and science are integrated throughout the curriculum.

**Advanced Heating and Cooling (HV410) (3 credits)**

In Grade 12, students will explain and identify heating fuels (natural gas, propane and heating oil); how they burn and how to safely control the burn; and EPA certification requirements in order to pass certification exams. Instruction in different types of air conditioning systems, heat pumps, unitary, central station and split systems is provided in dividing needs and troubleshooting service. Students will demonstrate their ability to use code books and apply code requirements at apprentice entry-level. Skills practiced in lab and on in-school and outside production work for customers include installation of the different systems and testing operation and airflow. The proper handling of refrigerants, including recovery, recycling and reclaiming, are studied and practiced. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Each student will take the North American Technician Excellence (NATE) in HVAC, which is a competency-based test. Technology-related reading, writing, vocabulary, mathematics, blueprint reading and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year or a four-year engineering degree at a college or university. Students can obtain immediate employment in the heating, ventilation and air conditioning field, which includes: residential and commercial heating, ventilation and air conditioning apprenticeship in installation and service; refrigeration mechanic; sheet metal apprentice; sheet metal design; gas system technician; oil burner technician; heating, ventilation and air conditioning sales representative; wholesale supply representative, and appliance repair technician.

## MASONRY COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Masonry	General Masonry	Residential Masonry	Residential/Commercial Masonry

### MASONRY COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Masonry (MS110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of masonry will be introduced to the basics of safety and sanitation, as well the use and care of hand tools, power tools and stationary equipment. The students will identify basic tools and materials used in the masonry trade and are introduced to opportunities and expectations in the masonry field. They will demonstrate and practice mixing mortar, laying masonry units true-to-line and jointing masonry walls. Course safety is reinforced continually throughout the course sequence. Technology-related reading, writing, vocabulary, mathematics, blueprint reading and science are integrated throughout the curriculum.

#### **General Masonry (MS210) (3 credits)**

In Grade 10, this program is designed to provide students with theoretical information covering safety, including power tool use, lifting procedures and Material Safety Data Sheets. Students will set up a work area, mix mortar to trade content and consistency, construct masonry lead and pattern bond true to the line. Students will perform both inside and outside production work as it relates to the current curriculum. Technology-related reading, writing, vocabulary, mathematics, blueprint reading and science are integrated throughout the curriculum.

#### **Residential Masonry (MS310) (3 credits)**

In Grade 11, students will demonstrate theoretical competency in general estimating of masonry materials, concrete footings, paving applications, masonry steps, flue chimney building codes and various concrete applications. Students will be able to identify structural components associated with masonry using commercial prints. Students will demonstrate the installation of pavers, masonry steps and concrete flatwork, build a one-flue chimney and erect pipe staging. Students will perform in-school and outside masonry production projects for customers. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related reading, writing, vocabulary, mathematics, blueprint reading and science are integrated throughout the curriculum.

**Residential/Commercial Masonry (MS410) (3 credits)**

In Grade 12, students will continue with safety their primary focus on the job site, including equipment knowledge, such as ladder, scaffolding and harnessing. Students will demonstrate competency in building codes, arch and fireplace construction, fireplace history and the function of a fireplace. Students will demonstrate the installation of outdoor barbecues, masonry arches and basic fireplaces and building masonry projects from working drawings. Students will demonstrate the ability to complete a job application and interview and have entry-level job readiness and trade skills. Students will perform both in-school and outside masonry projects for customers as it relates to the current curriculum and their skill level. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Each student will take the Senior Summative Assessment, (Workforce Ready) which is a computerized interactive test. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year or a four-year engineering degree. Students can obtain immediate employment in the masonry field. Employment opportunities include: concrete installations; brick and block installation; concrete forms installation; construction laborer; fireplace installations; stone, brick and block walls; stone and brick patio installation; retaining wall installations; and tile installations (wall and floor).

## PLUMBING AND HEATING COURSE SEQUENCE

12 credits necessary for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Plumbing and Heating	Residential Plumbing	Residential and Commercial Plumbing	Heating/Residential and Commercial Plumbing

### PLUMBING AND HEATING COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Plumbing and Heating (PH110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of plumbing and heating will be introduced to the basics of safety and sanitation, as well as the use and care of hand tools, power tools and stationary equipment. The students will use basic math computations and measurements necessary to calculate necessary plumbing materials and piping. Students will be introduced to the plumbing and mechanical codes and demonstrate basic-level skills in soldering, using basic solvents and steel piping techniques. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

#### **Residential Plumbing (PH210) (3 credits)**

The Grade 10 Plumbing and Heating program is designed to provide students with information regarding safety, beginning with Safety Data Sheets (SDS) electrical safety and the safe use of power and hand tools. Students will examine the installation of drain, waste and venting, the use of copper tubing and steel piping and the installation of hangers and supports. Pipe sizing, residential fixtures and appliances and the proper use of fittings are also covered. Students will demonstrate the installation of drain, waste and vent (DWV) pipes using copper, steel, cast-iron, plastic, pipe and fittings. Students will perform both in-school and outside plumbing and heating projects for customers as it relates to the current curriculum and their skill level. They will also be able to install residential plumbing fixtures, thread pipe and explain basic drain cleaning. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Each 10th grade student enrolled in the Plumbing and Heating will complete the Plumbing, Heating Cooling Contractors (PHCC level 101) Plumbing Assessment.

**Residential and Commercial Plumbing (PH310) (3 credits)**

In Grade 11, students will demonstrate theoretical competency in International and Mechanical Plumbing Codes. Students will be able to size drain, waste and vent (DWV), storm and sewage pumps, water distribution systems and venting gas appliances. Students will demonstrate the ability to install and repair DWV, water systems and residential and commercial fixtures and appliances. They will demonstrate the ability to complete a job application and interview. Students will perform in-school and outside plumbing projects for customers as it relates to the current curriculum and their skill level. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum. Each 11th grade student enrolled in the Plumbing and Heating program will complete the Plumbing, Heating Cooling Contractors (PHCC level 201) Plumbing Assessment.

**Heating/Residential and Commercial Plumbing (PH410) (3 credits)**

In Grade 12, instruction expands into the heating field. Students will continue with safety and be introduced to Environmental Protection Agency (EPA) requirements, ground water pollution and carbon monoxide (CO), nitrogen oxide (NoX), mercury and lead dangers. Students will demonstrate theoretical competency in related sciences (heat-expansion-volume-combustion) and math (heat loss calculations). Students will also be able to complete a take-off from prints including symbols and isometrics, interpret the heating mechanical code and produce an estimate for a customer. Students will demonstrate the ability to install gas and oil boilers and heating equipment. They will be able to complete a set-up of a boiler, perform an efficiency test and make necessary adjustments. Students will advance in their participation in both in-school and outside plumbing projects for customers as it relates to the current curriculum and their skill level. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum. Each 12th grade student enrolled in the Plumbing and Heating program will complete the Plumbing, Heating and Cooling Contractors (PHCC level 301) Plumbing Assessment.

Students successfully completing this course of study will be able to pursue a two-year or a four-year engineering degree. Students can obtain immediate employment in the plumbing and heating field. Employment includes: residential and commercial plumbing and heating apprenticeship; sprinkler-fitters apprenticeship; pipe-fitters apprenticeship; steamfitters apprenticeship; gasfitters apprenticeship; estimators; plumbing and heating service technician; plumbing and heating maintenance; plumbing and heating sales representative; and wholesale supply representative.

## PLUMBING, HEATING AND COOLING COURSE SEQUENCE

12 credits required for graduation

(This course is only offered at our Wolcott Technical High School located in Torrington)

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Plumbing, Heating and Cooling	Residential Systems – Heating/Cooling	Residential Systems – Plumbing and Piping	Advanced Systems – Plumbing, Heating and Cooling

### PLUMBING, HEATING AND COOLING COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Plumbing, Heating and Cooling (PC110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the plumbing, heating and cooling field will be introduced to the basics of safety and sanitation, as well as the use and care of hand tools, power tools and stationary equipment. The students will be able to identify pipe, valves and fittings. Students will be able to demonstrate the basic assembly skills required for various materials used in the mechanical field, such as copper, steel pipe, plastic pipe and cast iron, and assemble basic sheet metal fittings. The students will be introduced to basic residential mechanical systems and demonstrate an understanding of the apprenticeship system. Shop safety will be introduced and reinforced at all times. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

#### **Residential Systems – Heating/Cooling (PC210) (3 credits)**

In Grade 10, the plumbing, heating and cooling program is designed to provide students theoretical information covering the calculations of heat loss and gain in a residential building to determine required heating/cooling system capacities. The student will be able to identify warm air and hydronic heating and cooling systems found in residential structures and the advantages and disadvantages of each type. Each basic system is investigated using either oil or gas as the primary fuel for heating, and a direct expansion type of cooling system. Basic service, repair and maintenance of these systems are covered. The students will demonstrate knowledge of combustion of fuels, efficiencies, operating costs and some of the environmental concerns of burning fossil fuel. The students will demonstrate knowledge of installations using the latest edition of the International Mechanic Code. They will investigate control and power wiring of basic heating and cooling systems. Students will participate in in-school and outside plumbing projects for customers as it relates to the current curriculum and their skill level. The students will demonstrate knowledge of Occupational Safety and Health Administration (OSHA) requirements for job sites, ladder safety and use of ground fault circuit interrupters. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum. Each 10th grade student enrolled in the Plumbing, Heating and Cooling will complete the Plumbing, Heating Cooling Contractors (PHCC level 101) Plumbing Assessment.



**Residential Systems – Plumbing and Piping (PC310) (3 credits)**

In Grade 11, students will demonstrate their knowledge of the latest edition of the International Plumbing Code and apply the code to real-world installations. They will demonstrate knowledge of basic residential systems such as drain, waste, vent and water distribution, and knowledge of back-flow and cross connections and installation of various pumps and pumping systems. Students will be able to demonstrate the installation, repair and maintenance of various residential fixtures and appliances, including the installation of water heating equipment, safety devices and insulation. Students will also demonstrate knowledge of water chemistry and treatment. The students will perform both in-school and outside plumbing projects for customers as it relates to the current curriculum and their skill level. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum. Each 11th grade student enrolled in the Plumbing, Heating and Cooling program will complete the Plumbing, Heating Cooling Contractors (PHCC level 201) Plumbing Assessment.

**Advanced Systems – Plumbing, Heating and Cooling (PC410) (3 credits)**

In Grade 12, students will continue investigating more advanced plumbing, heating and cooling systems and installations. Students will demonstrate knowledge of various types of heating systems including hydro-air systems, ground coupled heat pumps, radiant, water-cooled systems towers and steam heating systems. Students will demonstrate competency in service and repair and maintenance of these systems. Students will demonstrate competency in use of the International Plumbing and Mechanical (IPMC) and the International Fuel Gas Code (IFGC) by designing a plumbing, heating and cooling system for a small house, which includes creating a proposal using a set of plans and industry-standard labor factors, and justify a labor rate for their project. The students will advance in their participation in in-school and outside plumbing projects for customers. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, blueprint reading and science are integrated throughout the curriculum. Each student enrolled in the Plumbing, Heating and Cooling program will take the North American Technician Excellence (NATE) exam, as well as the Plumbing, Heating Cooling Contractors (PHCC level 301) Plumbing Assessment.

Students successfully completing this course of study will be able to pursue a two year or a four-year engineering degree. Students can obtain immediate employment in the plumbing, heating and cooling field. Employment opportunities include: residential and commercial heating and air conditioning apprenticeship in installation and service apprenticeship; refrigeration mechanic; sheet metal apprentice; sheet metal design; gas system technician; oil burner technician; sales representative; wholesale supply representative; appliance repair technician; residential and commercial plumbing and heating apprenticeship; sprinkler-fitters apprenticeship; pipe-fitters apprenticeship; steamfitters apprenticeship; gasfitters apprenticeship; estimators; plumbing and heating service technician; plumbing and heating maintenance; plumbing and heating sales representative; and wholesale supply representative.

# ARTS, AUDIO/VISUAL TECHNOLOGY AND COMMUNICATIONS CLUSTER

## DIGITAL MEDIA COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Digital Media	Digital Media II	Digital Media III	Digital Media IV

### DIGITAL MEDIA COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Digital Media (VP110) (3 credits)**

All Grade 9 students go through the Exploratory Program, which consists of a two-day session for all freshmen and a four-day session for those who choose Digital Media as one of their top four choices.

Students deciding to enter the field of media production are introduced to basic concepts, including pre-production (conceptualization, planning, writing, crew selection and preparation of equipment), production (principles of teamwork, the importance of deadlines, basics of shot composition, lighting and audio principles and proper use of video and audio equipment), and post-production (basic video and audio editing, transitions and graphics).

Students will develop field and studio production team projects utilizing basic video equipment and learn to use Adobe Premiere Pro and other Adobe suite programs to post-produce their project. Students will also be introduced to media communication theory and history. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

#### **Digital Media II (VP210) (3 credits)**

In Grade 10, students build upon their first-year foundation to practice more advanced aspects of media production. Students will continue to learn and practice the components of field and studio production.

In field production, students will expand their knowledge of pre-production (with continued emphasis on narrative development and more sophisticated planning); production (skill development with camera, lighting, and audio equipment); and post-production (emphasizing developing greater skill in using Adobe Creative Suite for editing, including graphics, audio and special effects).

In studio production, students will rotate through the diverse roles of a studio production team, with a focus on camera setup and usage, audio mixing and equipment usage, lighting techniques, video switching and studio management. Students will work as teams to produce recorded and live production work. They will continue to receive instruction in safety requirements and demonstrate sound safety practices. Technology-related math, reading, writing, vocabulary and science are integrated throughout the curriculum.

**Digital Media III (VP310) (3 credits)**

In Grade 11, students will develop more advanced skill sets in field and studio production work. Students learn advanced editing techniques using Adobe Premiere Pro and will be introduced to Avid Media Compose. Students will also gain a basic understanding of the use of Adobe After Effects to develop relevant special effects for a wide range of production projects. Students who show an aptitude and interest in creating and incorporating 3D animation elements into media projects will gain a basic understanding in AutoDesk products such as Maya and 3D Studio.

Students will work on a variety of field production projects learning to use more advanced video camera technology. Students will also continue the development of their knowledge of studio operations. The design and creation of DVDs and developing more advanced audio tracks using music libraries and Adobe Creative Suite will be emphasized. Technology-related math, reading, writing, vocabulary and science are integrated throughout the curriculum.

**Digital Media IV (VP410) (3 credits)**

In Grade 12, students continue to advance their skill sets in Digital Media concentrating on a capstone project that reflects the highest level of their abilities. From pitching their project ideas through writing, production and post-production, students are expected to create a major work that illustrates their creativity, quality and professionalism. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills. They will also continue to receive instruction in safety requirements and demonstrate sound safety practices. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Each student will take the Senior Summative Assessment. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year degree in digital media or communications at state colleges or go on to a four-year degree.

## SOUND PRODUCTION TECHNOLOGY COURSE SEQUENCE

12 credits required for graduation

(This program is only offered at Prince Technical High School, Hartford.)

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Sound Production Technology	Basic Sound Production Technology	Intermediate Sound Production Technology	Advanced Sound Production Technology

### SOUND PRODUCTION TECHNOLOGY COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Sound Production Technology (MP110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of sound production technology are introduced to basic concepts of music generation and music editing software. Instruction is provided in Pro Tools<sup>®</sup> audio editing software and students demonstrate beginner skills in these programs. Students will be exposed to the basics of editing, as well as MIDI interfacing protocols. Students receive instruction in recording ethics requirements and the laws that govern sound production technology industry. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

#### **Basic Sound Production Technology (MP210) (3 credits)**

In Grade 10, students demonstrate basic level skills in Pro Tools<sup>®</sup> audio editing software and are exposed to basic studio recording techniques. Students are then introduced to other live recording fundamentals and techniques. Students continue to receive instruction in recording ethics requirements and the laws that govern sound production technology industry. Technology-related math, reading, writing, vocabulary and science are integrated throughout the curriculum.

#### **Intermediate Sound Production Technology (MP310) (3 credits)**

In Grade 11, students demonstrate audio recording techniques. Students are then introduced to other live recording fundamentals and techniques. Students continue to receive instruction in recording ethics requirements, ear training and the laws that govern sound production technology industry. Technology-related math, reading, writing, vocabulary and science are integrated throughout the curriculum.

**Advanced Sound Production Technology (MP410) (3 credits)**

In Grade 12, students demonstrate advanced level skills in Pro Tools© audio editing software and are exposed to advanced level studio recording techniques. Students are then introduced to more live recording fundamentals and techniques. Students continue to receive instruction in recording ethics requirements, ear training and the laws that govern the sound production technology industry as well as preparing to take the Pro Tools© certification exam. Technology-related math, reading, writing, vocabulary and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year sound production technology degree at state colleges and universities or go on to a four-year music degree. Students can obtain immediate employment in the sound production technology areas. Jobs include: recording engineer; sound reinforcement specialist; and sound production technician. Students graduating from sound production technology also find success in the military in the communications and public relations fields.

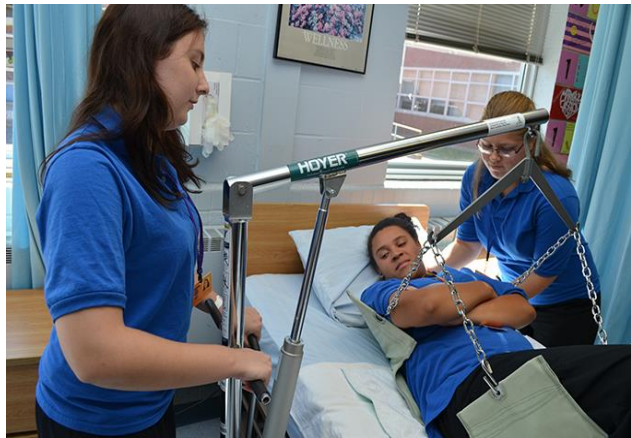
# HEALTH TECHNOLOGY CLUSTER

## HEALTH TECHNOLOGY COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Health Technology	Exploration of Health Care Career Clusters	Nursing Assistant Certification	Medical Assistant and Advanced Career Exploration

### HEALTH TECHNOLOGY COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Health Technology (HT110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of Health Technology will be introduced to the basics of safety as well as infection control practices including personal and patient hygiene. The Health Technology program provides a broad-based exposure to a variety of health occupations. Instruction involves hands-on training in providing personal care for patients combined with theoretical instruction in the fundamental subjects of the health care industry. This includes nutrition, growth and development, medical-legal issues, human behavior, medical terminology, health care safety, introduction to public health and professional communication. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

#### **Exploration of Health Care Career Clusters (HT210) (3 Credits)**

In Grade 10, students are introduced to the five Health Science Career Clusters: Therapeutic Services, Diagnostic Services, Health Information, Support Services and Biotechnology Research and Development. Instruction is provided in the areas of anatomy and physiology, fundamental health care skills, professional communication skills for health care, the relationship of human behavior throughout the life span and basic medical terminology. Qualities and attributes necessary to work in health care settings are emphasized including 21<sup>st</sup> century health care skills: critical thinking, problem solving and social/culture competencies. Theory and hands-on learning will focus on safety and infection control. Field trips to health care facilities to observe the Health Science Career Clusters will also be included as appropriate. Technology-related mathematics, reading, writing, vocabulary and science are integrated as well. Instruction in Cardiopulmonary Resuscitation (CPR) and First Aid leading to certification will be provided. Certification in OSHA-10 General Industry will also be provided to students.

### **Nursing Assistant Certification (HT310) (3 credits)**

In Grade 11, the students receive instruction that involves hands-on training and theory lessons in the fundamental subjects of the health care industry with the goal of providing quality health care to long-term patients. These subjects include safety standards, infection control, professionalism, medical-ethical issues, oral and written communication, medical terminology, medical math, human behavior, nutrition, anatomy and physiology and common diseases. Nursing assistant skills are applied through clinical experience at various long-term care facilities. The skills that students will be learning and applying at long-term care facilities includes but are not limited to bathing, dressing, feeding, toileting, ambulating patients, vital signs and making beds. Upon completion of the theoretical and clinical hours required of the nursing assistant student, the students are eligible to take the State of Connecticut Registry Examination to become a Certified Nursing Assistant. The State examination consists of two parts that evaluate the knowledge as well as the skills required to provide quality patient care. The first part of the test is written and assesses content knowledge: the second part is a practical demonstration. Both parts of the State test must be successfully completed in order to gain certification. Students are provided the opportunity for certification through the Alzheimer Association to obtain certification in Basic ADL. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

### **Medical Assistant and Advanced Career Investigation (HT410) (3 Credits)**

In Grade 12, students are introduced to the clinical and administrative Medical Assistant career areas in order to prepare for entry-level positions in a medical office or clinic. They will then have the option of focusing on other careers within the Health Science Career cluster through job shadowing. The influence of research and medical advances in the prevention and control of health problems through a medical assistant preparation provides training in medical office practices required for an entry-level position in a medical office. Working with electronic health records will be included as part of the administrative medical assistant component. The clinical medical assistant training prepares the student for employment opportunities in a variety of clinical settings such as a physician practice or outpatient clinics. Students are provided the opportunity for certification through the Alzheimer Association to obtain certification in Advanced ADL. Front Office and Clinical Care certification is provided through Sim Chart for the Medical Office. The Health Science Careers shadowing is the portion of the senior year that exposes a student to particular health careers and allows students to gain valuable knowledge about that career. This information and experience are extremely beneficial in making informed decisions regarding post-secondary education and career mobility. As a senior Health Technology student, they will continue to be introduced to the basics of safety, sanitation and personal hygiene. Students will demonstrate the ability to complete a job application, produce a resume and cover letter and participate successfully in an interview and to perform entry-level job readiness skills. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum. Instruction in Cardiopulmonary Resuscitation (CPR) for health care providers and First Aid are taught thus leading to certification. Certification in Alzheimer's care (CARES) will be provided as well.

**Students have the opportunity to earn college credit while enrolled in the program through UCONN and the community colleges.** Students successfully completing this course of study will be able to pursue a two- or four-year degree at colleges and universities or other private post-graduate private institutions in the health care field. These programs provide for training as a Licensed Practical Nurse (LPN), Registered Nurse (RN) or other health-related fields, i.e. radiology or physical therapy, occupational therapy, social work, psychology, dental assistant/hygienist to list a few career paths. Students not wishing to pursue higher education opportunities are able to obtain immediate employment in the health care field. Jobs include, but are not limited to, employment as certified nursing assistants in long-term care or hospitals or medical assistants in medical offices or clinics.

## BIOTECHNOLOGY COURSE SEQUENCE

(This course is only offered at Norwich Technical High School)

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Biotechnology	Basic Techniques and Skills in Biotechnology	Advanced Techniques and Skills in Biotechnology	Independent Research Projects

### COURSE DESCRIPTION:

Students will explore the fundamental principles of biotechnology, career pathways and biotechnology business applications (medical, pharmaceutical and agricultural, as well as green energy). Topics of study include: DNA, RNA and protein technologies; microbiology; genetic diagnostics; health care and pharmaceuticals; food processing (GMOs); fermentation technology; energy and environmental management; plant tissue culturing; forensic science; cloning; stem cells; and bioethics. Laboratory activities reinforce concepts and principles presented. Students will also become proficient in nontechnical skills required for careers in biotechnology including formulating hypotheses, experimental design, interpreting data, discussing and communicating scientific results and record keeping.

UCONN ECE (Early College Experience) credits are made available to all students enrolled in the Biotechnology program. Upon graduation, students could earn six ECE credits in Chemistry and ECE Biotechnology: (scientific, legal and ethical aspects of Biotechnology). In addition, an articulation agreement has been created with Capital Community College to earn credit prior to graduation.



### **GRADE 9: Exploratory and Introduction to Biotechnology (BI110) (3 credits)**

All Grade 9 students go through the Exploratory program. Please see page 8 for more details. In grade 9, biotechnology students will be introduced to laboratory safety and basic techniques in biotechnology. Activities used to support learning will be modeled based on the day-to-day operations of a research laboratory. Students will obtain foundational knowledge in chemistry and biology to support the laboratory skills they acquire, including the topics of solutions, biological macromolecules (DNA, RNA, protein), basic cellular processes and introductory microbiology. Students will also develop their communication skills. Field trips to industrial and academic laboratories and guest speakers will be used to introduce students to different career pathways. Laboratory safety, bioethics and personal ethics will be woven throughout the curriculum. The Common Core for language arts and mathematics as well as science skills are integrated.



**GRADE 10: Basic Techniques and Skills in Biotechnology (BI210) (3 credits)**

In Grade 10, students will expand upon their foundational knowledge of basic techniques in biotechnology in a year-long research project. In this project, students will conduct research addressing real-world challenges in areas such as antibiotic discovery, biofuels and food science. Students will further develop their communication skills through oral and written presentations and will design and implement a personal career development plan. Field trips to industrial and academic laboratories and guest speakers will continue to be used to explore career pathways. Laboratory safety, bioethics and personal ethics will be woven throughout the curriculum. Emphasis is placed on protocols, procedures and teamwork to encourage college preparedness and mirror workplace requirements. The Common Core for language arts and mathematics as well as science skills are integrated.

**GRADE 11: Advanced Techniques and Skills in Biotechnology (BI310) (3 credits)**

In Grade 11, students will continue their class research project from the previous year in the shop laboratory and through Work-Based Learning and internships. In this project, they will learn and apply advanced concepts in molecular biology, biochemistry and chemistry. Students will learn to perform searches of scientific literature, read scientific journal articles and present their results using the common formats of scientific posters and abstracts. Students will spend the last part of the year planning their senior research projects. Field trips to industrial and academic laboratories and guest speakers will continue to be used to explore career pathways. Laboratory safety, bioethics and personal ethics will be woven throughout the curriculum. The Common Core for language arts and mathematics as well as science skills are integrated.

**GRADE 12: Independent Research Projects (BI410) (3 credits)**

In Grade 12, students will design, manage and perform an independent research project of their choosing through work in the shop laboratory, Work-Based Learning and internships. Students will be responsible for generating hypotheses, designing and planning experiments, collecting and evaluating data, drawing conclusions and making major decisions regarding their projects. Students will also further develop their communication skills through learning to write a grant proposal and their final paper, presenting their results and mentoring 9<sup>th</sup> grade students. Laboratory safety, bioethics and personal ethics will be woven throughout the curriculum. The Common Core for language arts and mathematics as well as science skills are integrated.

Students successfully completing this course of study will be able to pursue a two- or four-year degree at colleges and universities or other private postgraduate institutions in the field of Biotechnology. The Biotechnology program is designed as a pathway to postgraduate programs, however, careers are available to our graduates which include, but are not limited to, lab assistant, veterinary assistant, animal technician, greenhouse management, field technician, retail management and research associate. Upon completing a two- or four-year program, career possibilities include all areas of research, data collection, environmental studies, manufacturing and pharmacology.

# HOSPITALITY AND TOURISM CLUSTER

## CULINARY ARTS COURSE SEQUENCE

12 credits toward graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Culinary Arts	Basic Food Service	Operating a Restaurant	Advanced Restaurant Operations

### CULINARY ARTS COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Culinary Arts (CU110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of culinary arts will be introduced to the basics of safety, sanitation and personal hygiene, as well as equipment identification and use. Students will assist in the daily production of the National School Lunch (NSL). All students will make hot foods and learn basic garnishing and portion control. Cold sandwiches and basic desserts will be taught during the freshman year. Students will learn about kitchen utensils, small equipment, knife skills and basic hot and cold food preparations. In addition, they learn about weights and measures and simple recipe conversions. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

#### **Basic Food Service (CU210) (3 credits)**

In Grade 10, students learn the basics of food preparation using the school lunch as their main food lab. All students will rotate through different stations preparing, organizing and producing various food items to be served in the school's cafeteria. Basic theory will include a range of equipment identification, fruit and vegetable identification, basic cooking methods, storage and receiving of products, as well as a la carte and convenience foods. All students will be taught the proper procedure for serving institutional foods. Students will continue to receive instruction in nutrition, safety, sanitation and personal hygiene. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

**Operating a Restaurant (CU310) (3 credits)**

In Grade 11, students are introduced to “front of the house” and “back of the house” restaurant operation through the daily operation of the school restaurant open to faculty and the public. In the dining room they learn customer service and formal dining room service skills which include setting tables, taking reservations, working the cash register while providing a la carte and buffet service menus. In the kitchen students learn and practice; soups, stocks and sauce-making, fruit and vegetable identification and cookery, dairy, eggs and cheese identification and cookery, salad and salad dressings, nutritional menu development and starches and grain cookery. The curriculum also includes meat, poultry and seafood identification, fabrication and cookery. Students will also develop basic baking skills through the production of fruit Danish, yeast and quick breads, layer cakes, pies and kitchen plated desserts. Students will demonstrate the highest standard of food safety training by completing ServSafe Certification through the National Restaurant Association. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

**Advanced Restaurant Operations (CU410) (3 credits)**

In Grade 12, students continue to operate the school dining room restaurant. They have constant opportunities to advance their culinary skills and knowledge while creating seasonal, ethnic, global and local menus. Students will have an opportunity to visit a local farm, taking the classroom into the community while developing an understanding for sustainable foods. They will learn the art of garde manger in buffet and cold food service. Students continue to develop their supervisory skills in Restaurant Management. Baking and pastries continue to be part of daily restaurant production. Students rotate throughout all stations of the dining room and kitchen until proficiency is obtained. Students will demonstrate the ability to complete a job application and interview. All students will participate in the Senior Culinary Arts Project (SCAP) where students are required to research and develop a theme global menu with recipes and costing. Students will then produce their individual menus in the restaurant where family members and faculty will have the opportunity to sample a student’s culinary skills. The project is completed with an oral presentation where the students reflect on the yearlong senior project while practicing their oral communication skills needed for job interview. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics reading, writing, vocabulary and science are integrated throughout the curriculum.

Successful students completing this program will be able to pursue a postsecondary two-year or four-year degree in Culinary Arts, Hospitality or Foodservice Management. Upon graduation, students are eligible for immediate employment in an accelerated entry-level culinary position in any Foodservice Establishment, Restaurants, Casinos, Commercial Kitchens, Catering Facilities, Retail or Commercial Bakeries, Corporate Dining or an Institutional Foodservice Company.

## TOURISM, HOSPITALITY AND GUEST SERVICES MANAGEMENT COURSE SEQUENCE

*12 credits required for graduation*

*(This program is only offered at J.M. Wright Technical High School, Stamford)*

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Hospitality	Guest Services Management	Advanced Guest Services Management	Professional Hospitality

### TOURISM, HOSPITALITY AND GUEST SERVICES MANAGEMENT COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Hospitality (HM110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of tourism, hospitality and guest services management will be introduced to many career opportunities in the field. All students will be introduced to soft skills necessary to succeed in the hospitality industry. Students will explore the major areas in the field, including lodging, food and beverage, and travel and tourism. Technology-related mathematics, reading, business writing and vocabulary are integrated throughout the curriculum. Grade 9 students will also be introduced to the customer service industry through facility tours. Students learn about travel and tourism, food service, guest services as well as local leisure services.

#### **Guest Services Management (HM210) (3 credits)**

Students in Grade 10 will begin an in-depth study of Guest Services Management which includes accommodations, food and beverage, transportation and local area attractions. Students begin to develop basic guest service skills through role playing of meeting and greeting guests, telephone operations and handling guest complaints. Business communication skills are an important aspect of grade 10. Students will focus on business writing and oral communication skills. Sophomore students will complete an in-depth study of front office operations and explore the guest cycle starting with reservations continuing through check-out. Students continue to develop guest service skills through site tours and job shadowing. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum. Students receive a professional certification in Hospitality and Tourism Management Professional (CHTMP) through the American Hotel and Lodging Association, Year 1. This is the first of a two-part certification. Students must complete a 100-hour on-site workplace component to receive this certification. Students do extensive preparation for job interviews by doing live job interviews and preparing a resume and cover letter as well as do mock interviews with industry professionals.

**Advanced Guest Services Management (HM310) (3 credits)**

Students in Grade 11 will focus on food and beverage service including dining room and banquet service. Students start to prepare for Skills USA competition and the food and beverage performance assessment. Guest service and business etiquette in the workplace is a primary focus of grade 11. Juniors continue to develop their portfolio which includes completion of job applications and cover letters. Soft skill development, including critical thinking, communication skills and problem solving are developed in grade 11. Juniors also continue with training through Virtual Business Restaurant and Virtual Business Personal Finance online simulations. Students will demonstrate the highest standard of food safety training by completing ServSafe Certification through the National Restaurant Association. Students do extensive preparation for job interviews by doing live job interviews. Students also prepare a resume and cover letter as well as do mock interviews with industry professionals. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

**Professional Hospitality (HM410) (3 credits)**

In Grade 12, students continue to develop guest services and soft skills in anticipation of entering the hospitality industry. Seniors complete their resume as part of their portfolio. Mastering interview skills is a critical aspect of preparation to entering the work force. Team building, leadership skills and equality in the workplace are explored in relation to guest services management. Sales and marketing including event planning, developing business relationships and internal and external sales are key components to master in the senior year. Students continue to participate in job shadowing activities at various approved sites. Seniors are also provided an opportunity to interview for various positions with local hospitality businesses. Students culminate the year with a Senior Project which prepares them for work opportunities in the Hospitality industry. Students receive a professional certification in Hospitality and Tourism Management Professional (CHTMP) through the American Hotel and Lodging Association. Students must complete a 100-hour on-site workplace component to receive this certification. Students become CPR and First Aid certified. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

Students can choose to further their education at numerous colleges and universities across the country in order to obtain a two-year or four-year degree in travel, tourism and hospitality management-related fields. Immediate employment opportunities include casinos; hotels and resorts; restaurants and banquet facilities; as well as the many customer service establishments.

## GUEST SERVICES MANAGEMENT COURSE SEQUENCE

6 credits required for graduation

(This program is only offered at Grasso Technical High School, Groton)

Grade 11	Grade 12
3 credits	3 credits
Introduction to Guest Services Management	Advanced Guest Services Management

### TOURISM, HOSPITALITY AND GUEST SERVICES MANAGEMENT COURSE DESCRIPTIONS



#### **Introduction to Guest Services Management (HM310) (3 credits)**

All Grade 11 students will begin an in-depth study of Guest Services Management which includes accommodations, food and beverage, transportation and local area attractions. Students begin to develop basic guest service skills through role playing of meeting and greeting guests, telephone operations and handling guest complaints. Business communication skills are an important aspect to this field. Students will focus on business writing and oral communication skills. Students will complete an in-depth study of front office operations and explore the guest cycle starting with reservations continuing through check-out. Students continue to develop guest service skills through site tours and job shadowing. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum. Students receive a professional certification in Hospitality and Tourism Management Professional (CHTMP) through the American Hotel and Lodging Association, Year 1. This is the first of a two-part certification. Students must complete a 100-hour on-site workplace component to receive this certification. Students do extensive preparation for job interviews by doing live job interviews and preparing a resume and cover letter as well as do mock interviews with industry professionals.

#### **Advanced Guest Services Management (HM410) (3 credits)**

In Grade 12, students continue to develop guest services and soft skills in anticipation of entering the Guest Services industry. Seniors complete their resume as part of their portfolio. Mastering interview skills is a critical aspect of preparation to entering the work force. Team building, leadership skills and equality in the workplace are explored in relation to guest service management. Sales and marketing including event planning, developing business relationships and internal and external sales are key components to master in the senior year. Students continue to participate in job shadowing activities at various approved sites. Seniors are also provided an opportunity to interview for various positions with local Guest Service businesses including the two casinos in southeastern Connecticut. Students culminate the year with a Senior Project, which prepares them for work opportunities in the Guest Services industry. Students receive a

professional certification in Hospitality and Tourism Management Professional (CHTMP) through the American Hotel and Lodging Association. Students must complete a 100-hour on-site workplace component to receive this certification. Students become CPR and First Aid certified. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, and science are integrated throughout the curriculum.

Students can choose to further their education at numerous colleges and universities across the country in order to obtain a two-year or four-year degree in travel, tourism and hospitality management-related fields. Immediate employment opportunities include casinos; hotels and resorts; restaurants and banquet facilities; as well as the many customer service establishments.

# HUMAN SERVICES CLUSTER

## HAIRDRESSING & COSMETOLOGY COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Hairdressing & Cosmetology 9 - Hairdressing & Cosmetology I	Hairdressing & Cosmetology 10 - Hairdressing & Cosmetology II	Hairdressing & Cosmetology 11 - Hairdressing & Cosmetology III	Hairdressing & Cosmetology 12 - Hairdressing & Cosmetology IV

## HAIRDRESSING & COSMETOLOGY COURSE DESCRIPTIONS



### **Hairdressing & Cosmetology 9 – Hairdressing & Cosmetology I (HC110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 or more detail. Students deciding to enter the field of hairdressing & cosmetology will be introduced to the basics of safety and sanitation and personal hygiene, as well as equipment identification and use. Students are introduced to professional image, sterilization and sanitation methods, draping, product knowledge, hair design and styling, nail structure, skin care and permanent waving. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

### **Hairdressing & Cosmetology 10 - Hairdressing & Cosmetology II (HC210) (3 credits)**

*Prerequisite: Hairdressing & Cosmetology I*

In Grade 10, students are introduced to: professional image; sterilization and sanitation; draping techniques; shampooing; rinsing; conditioning; haircutting; hair designing; permanent waving; hair coloring; chemical hair relaxing and soft curl perm; artificial hair techniques; nails; skin care; hair removal (temporary); electric current and light therapy techniques; styling enhancers; and salon business and management. Attention is focused on learning the basics, especially with haircutting (sectioning, club cut, basic layer and angle cut), mock applications of hair coloring, chemical hair relaxing and soft curl perm. Tenth-grade students participate in in-school (student) customer work only. Students continue to receive instruction in safety, sanitation and personal hygiene and demonstrate sound safety practices. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.



**Hairdressing & Cosmetology 11 – Hairdressing & Cosmetology III (HC310) (3 credits)**

In Grade 11, topics introduced in Grade 10 are covered in greater detail. Students will start to provide hairdressing and cosmetology services to outside customers within the school salon. The primary focus is on the development of the student's hands-on skills. Students continue to receive instruction in safety, sanitation and personal hygiene and demonstrate sound safety practices. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

**Hairdressing & Cosmetology 12 – Hairdressing & Cosmetology IV (HC410) (3 credits)**

In Grade 12, students continue to refine their skills in all areas. Students spend more time working with customers in the school salon and completing theory and clinical hour requirements for licensures (200 theory hours and 1,300 clinical hours). In addition, instruction focuses on preparation for the licensure examination. Students continue to receive instruction in safety, sanitation and personal hygiene and demonstrate sound safety practices. Students will demonstrate the ability to complete a job application and interview, and to perform entry-level job readiness and trade skills. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

Students can choose to further their education at numerous colleges and universities across the country in order to obtain a two-year or four-year degree. Upon graduation from this program, students will be prepared and qualified to work in salons or spas as a state of Connecticut licensed cosmetologist. State licensure exams are offered prior to graduation. Other types of employment include retail cosmetology sales in a variety of settings.

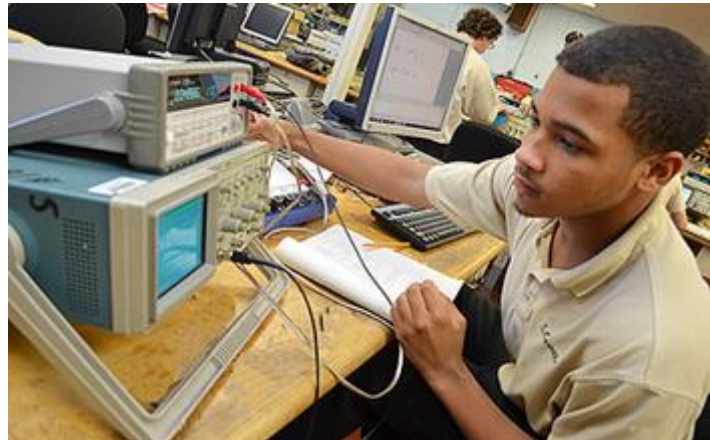
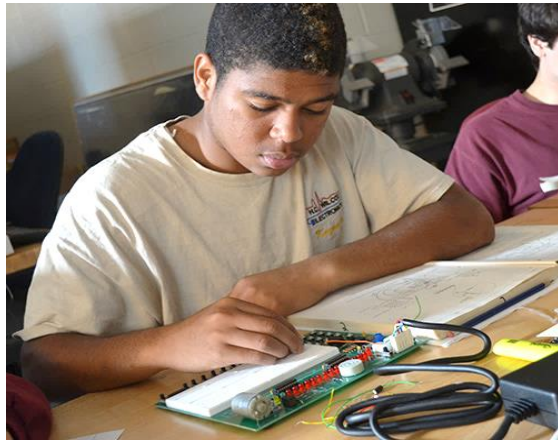
# INFORMATION TECHNOLOGY CLUSTER

## ELECTRONICS TECHNOLOGY COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Electronics Technology	Direct Current /Alternating Current (DC/AC) Circuits	Analog Electronics	Digital Electronics

### ELECTRONICS TECHNOLOGY COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Electronics Technology (ET110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of electronics are instructed in trade-specific safety. Students begin their training covering the following topics: proper use of hand tools and common electronic equipment; soldering; parts identification and schematic symbols; Ohm’s law and very basic direct current (DC) circuits; project assembly; and introduction to computers and software. Technology-related mathematics in the Math Lab, reading in the Language Arts Lab, writing, vocabulary, electronics schematic reading and science are integrated throughout the curriculum.

#### **Direct Current/Alternating Current (DC/AC) Circuits (ET210) (3 credits)**

In Grade 10, students delve into a wide range of topics in the realm of basic electronics theory. Specific topics include series and parallel circuits; direct current (DC) circuits; alternating current (AC) circuits; magnetism and electromagnetism; capacitors, inductors and transformers; instruments and measurements and computer applications. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Technology-related mathematics, reading, writing, vocabulary, electronics schematic reading and science are integrated throughout the curriculum.

#### **Analog Electronics (ET310) (3 credits)**

In Grade 11, students advance from learning individual components and test circuits to combining each of these into larger circuits. Specific topics include semiconductors; operational amplifiers; oscillators and power supplies; advanced audio circuits and introduction to video electronics; troubleshooting techniques and computer applications; and introduction to integrated circuits. Students will perform in-school electronics projects for customers. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, electronics schematic reading and science are integrated throughout the curriculum.

**Digital Electronics (ET410) (3 credits)**

In Grade 12, students begin their final year with the study of digital electronics. They design digital circuits to perform to certain criteria. Emphasis is placed on innovative and creative approaches to problem resolution in their designs. Specific topics include digital electronics, including logic gates; counters, shift registers and memory devices; combinational and sequential logic circuits; industrial microprocessors; basic computer theory; troubleshooting and repair and LAN fundamentals. Special projects are designed to meet the needs of local employers and the interests of the students. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will perform in-school electronics projects for customers. Students will demonstrate the ability to complete a job application and interview, and to perform entry-level job readiness and trade skills as evidenced by their portfolio. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Each student will take the Senior Summative Assessment, which is a performance-based test. Technology-related mathematics, reading, writing, vocabulary, electronics schematic reading and science are integrated throughout the curriculum.

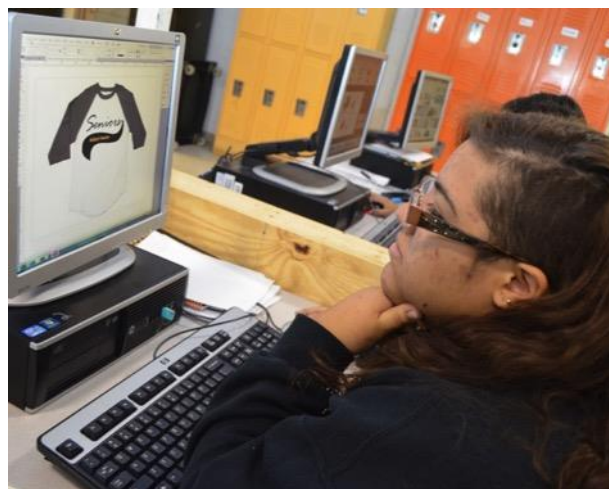
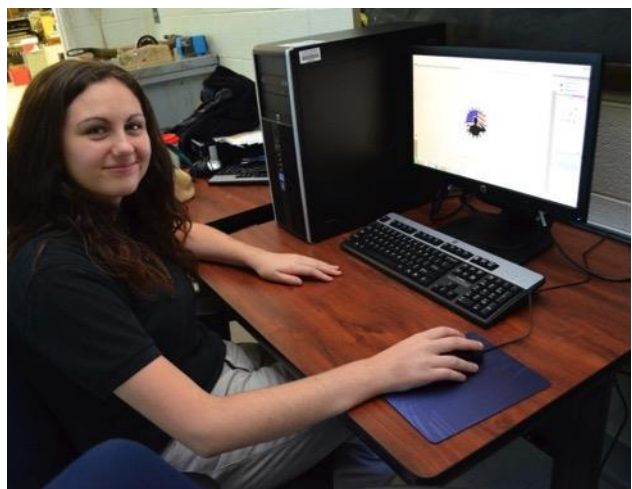
Students successfully completing this course of study will be able to pursue a two-year engineering technology degree at state colleges and universities or go on to a four-year electrical engineering degree. Students can obtain immediate employment in the electronics field. Jobs include engineering assistant; sales; alarm system technician; quality control; and many others. Students graduating from Electronics Technology also find great success in the military in fields such as communications, information systems and avionics, to name but a few.

## GRAPHICS TECHNOLOGY COURSE SEQUENCE

12 course credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Graphics Technology	Graphic Communication Fundamentals	Graphic Communication Production	Graphic Communication Advanced Processes

### GRAPHICS TECHNOLOGY COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Graphics Technology (GT110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of graphics technology are instructed in trade-specific safety. Students will participate in inside production work that is related to the curriculum. Students are introduced to the basic concepts of product layout, various methods of reproduction and the offset printing process. Students will be introduced to the legal restrictions of the printing industry. Students receive instruction in safety requirements and demonstrate sound safety practices. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

#### **Graphic Communication Fundamentals (GT210) (3 credits)**

In Grade 10, students receive instruction and demonstrate skills in the offset printing process; fundamentals of type; typesetting; page layout; proofreading; line photography; image assembly; plate making; press and bindery. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students may participate in in-school graphics projects for customers as related to the curriculum. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

#### **Graphic Communication Production (GT310) (3 credits)**

In Grade 11, students receive instruction and demonstrate skills in intermediate typesetting, the design of multicolor documents, multicolor pre-press, multicolor press operation, press part identification, press operation, bindery, basic paper type and grades and electronic imaging. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will participate in in-school graphics projects for customers. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

**Graphic Communication Advanced Processes (GT410) (3 credits)**

In Grade 12, students receive instruction and demonstrate skills in how to estimate jobs; advanced typesetting; color theory; the characteristics of paper grades; advanced press operation; and advanced bindery operation. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will participate in in-school graphics project for customers. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Each student will take the Senior Summative Assessment, which is a performance-based test. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year graphics design degree at state colleges and universities or go on to a four-year degree in graphics design. Students can obtain immediate employment in the graphics field. Jobs include layout assistant; prepress production; advertising; and quality control. Students graduating from Graphics Technology also find success in the military in fields such as communications and public affairs.

## INFORMATION TECHNOLOGY COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Information Systems Technology	Intermediate Software Applications	Web Design and Introduction to Networking	Advanced Programming and Technical Skills

### INFORMATION TECHNOLOGY COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Information Technology (IT110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of information systems technology are introduced to basic concepts of computer hardware and software. Instruction is provided in Microsoft Office (Word, Excel, Access and PowerPoint) and students demonstrate beginner skills in these programs. Students will be introduced to the basics of safety, as well as equipment identification and use. The introduction to computer hardware includes knowledge of computer components and computer accessories. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

#### **Intermediate Software Applications (IT210) (3 credits)**

In Grade 10, students demonstrate intermediate-level skills in Microsoft Office (Word, Excel, Access and PowerPoint) by taking Microsoft Office Specialist certification examinations. Basic computer programming, networking and hardware communications, operating systems and school-to-work/job readiness skills are also introduced. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Technology-related math, reading, writing, vocabulary and science are integrated throughout the curriculum.

#### **Web Design and Introduction to Networking (IT310) (3 credits)**

In Grade 11, students demonstrate more advanced skills in web design and desktop publishing. Programming skills are refined and developed, and HTML, Java and Java Script programming are introduced. Advanced accounting skills are taught and developed. A working knowledge of computer hardware is reintroduced. Intermediate networking skills are reinforced and students are able to set up small

networks and test them. Troubleshooting skills are taught and refined. School-to-work and job readiness skills are continued. Students are introduced to 6 career pathways and select one pathway for independent study in grades 11 & 12. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related math, reading, writing, vocabulary and science are integrated throughout the curriculum.

### **Advanced Programming and Technical Skills (IT410) (3 credits)**

In Grade 12, students continue to advance their programming and technical skills. Programming languages skills include C++, Visual Basic and Advanced Java. A senior project is completed using advanced skills. Students specializing in hardware are prepared for A+ and networking certification examinations. Students are also prepared for and encouraged to seek E-commerce programming and Microsoft certifications. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Each student will take the Senior Summative Assessment, which is a performance-based test. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year computer technology degree at state colleges and universities or go on to a four-year computer engineering degree. Students can obtain immediate employment in the information systems technology area. Jobs include helpdesk assistant; sales; systems technician; and database maintenance; to name a few. Students graduating from Information Systems Technology also find great success in the military in fields like communications, information management and information systems technician, to name but a few.

### **AP Computer Science Principles**

This course is equivalent to an introductory college-level course in Computer Science. Learn the principles that underlie the science of computing and develop the thinking skills that computer scientists use. Students will work on your own and as part of a team to creatively address real-world issues using the tools and processes of computation.

### **AP Computer Science A**

This course is equivalent to an introductory college-level course in Computer Science. Get familiar with the concepts and tools of computer science as you learn a subset of the Java programming language. Students will do hands-on work to design, write, and test computer programs that solve problems or accomplish tasks.

# LAW, PUBLIC SAFETY, CORRECTIONS AND SECURITY CLUSTER

## CRIMINAL JUSTICE AND PROTECTIVE SERVICES

12 credits required for graduation

Criminal Justice is a field that will enable students to develop an understanding of the techniques and principals that help improve safety and security of lives and communities. Throughout this program, students can earn certifications that will prepare them for a number of jobs in the trade. Upon completion of the program, students will be able to obtain an entry-level position in such fields as (but not limited to) police, fire, EMS, dispatch, corrections, and the armed forces. Many of these certifications are required for promotional opportunities within the trade and many are eligible for college credit should the students pursue further education. In their junior year, students will be eligible to test for State emergency medicine licensure. Students will also learn leadership skills as they operate an emergency operation center and provide support to federal resources deployed around the Country in times of disaster. According to recent data, this is the fourth fastest growing trade and these students will be at the forefront. Individuals involved in the Criminal Justice and Protective Services Fields aid in enhancing the lives of everyone by solving problems and ensuring the safety of the community. The demand for individuals trained in the career pathways within the Criminal Justice and Protective Services will continue to be strong.

(This program is only offered at Vinal Technical High School in Middletown and Bullard-Havens Technical High School in Bridgeport)

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory Introduction to the Trade Foundations in CJ Scene Basics Communication Skills	Disaster Operations Basics of CSI Communication Skills Fire Safety/Scene Safety	Emergency Medical Responder Intermediate CSI Criminal Investigations Advanced Communications	Terrorism Specialized Operations Advanced CSI Emergency Operations Capstone
Certifications: CPR Stop the Bleed	Certifications: ICS NIMS NRF HAZMAT	Certifications: EMR	Certifications: Crisis negotiation Various.

### CRIMINAL JUSTICE AND PROTECTIVE SERVICES DESCRIPTIONS



#### Exploratory and Introduction to the Trade (CJ110) (3 credits)

After the exploratory rotation, CJPS students are immediately started on their life-safety certifications such as CPR and Stop the Bleed. The first year is then dedicated to the foundations of criminal justice and safety. Students will learn about blood-borne pathogens, the basics of scene safety, and special considerations when working with people in crisis. Students learn the foundations of the legal ladder from Constitutional law to local State law and develop an understanding of court cases that have shaped our current system and elements that must be met in order for a crime to be charged. The students present mock cases in real courtrooms around the state as well as learn proper documentation and communication skills.



**Disaster Response, Fire Science, and Scene Safety (CJ210) (3 credits)**

In Grade 10, students learn how disaster response training affects every level of the trade. The students earn numerous federal certifications in incident command and incident management. They will begin an exploratory period in the CJPS's emergency operations center applying their new knowledge in leadership positions. Students will learn about fire science and become experts in scene safety and scene operations, even earning certification in hazardous materials response. The students will have numerous opportunities to learn directly from the local fire departments about equipment, operations and scene management. Throughout the year, students are exposed to basic crime scene investigation and documentation in preparation for criminal investigations in Grade 11.

**Emergency Medical Responder and Criminal Investigations (CJ310) (3 credits)**

In Grade 11, students take their emergency operations center knowledge and apply it to real-world disasters. In this role, students will interact with federal responders deployed around the country and provide real-time assistance. The main focus for Grade 11 students will be to learn criminal investigative techniques and apply these to intermediate crime scene investigation skills learned in hands-on mock crime scenarios. Students will continue with documentation and communication skills development leading up to the major lesson of CJ310, emergency response medicine. Students will receive extensive training in emergency medicine and learn how to treat a variety of injuries and medical emergencies from a broken leg to a stroke. Students will have the opportunity to test for State licensure at the end of the school year.

**Specialized Operations and Senior Capstone (CJ410) (3 credits)**

In Grade 12, students will learn about terrorism and how it affects the trade. Students will earn certification related to this and meet several specialized units within the trade that focus on this aspect. Students will learn about other trade-specific specialized operations that are possible career opportunities such as dignitary protection, crisis intervention, and narcotics. They will learn advanced forensic techniques and apply them to their capstone project; a full emergency response to an incident which they will run from the initial response, through the crime investigation, and even present an arrest warrant for approval by a real judge in the Connecticut Judicial System. They will continue with their emergency operations center leadership experience guiding the lower classmen on fundamentals and best practices.

Students successfully completing this program can pursue entry level positions within the trade with a resume of certifications and experience similar to those in the trade for several years. Those students who wish to continue their education will have valuable skills, experience and even college credits. Students deciding to join the military will be eligible to enter at a higher level and have skills necessary to their advancement. CJPS students will spend their four years learning how to be the future of the trade and when they graduate, they will be.

# MANUFACTURING CLUSTER

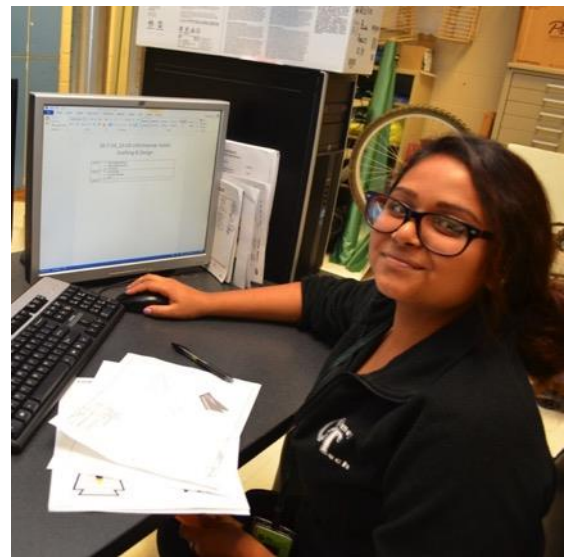
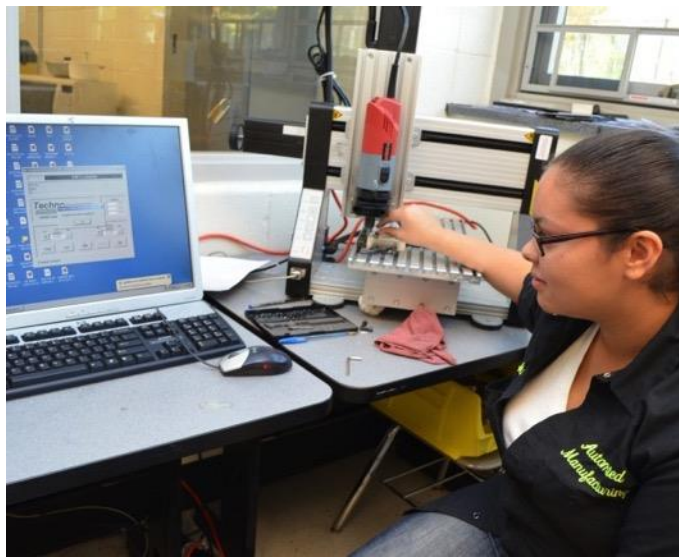
## AUTOMATED MANUFACTURING TECHNOLOGY COURSE SEQUENCE

12 credits required for graduation

(This course is only offered at A.I. Prince Technical High School, Hartford)

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Automated Precision Machining Technology	Computer-Aided Design, Drafting, MasterCAM and Manufacturing Processes	Design Engineering, Machining and Computerized Numerical Control (CNC)	Production Planning and CNC Machine Operation

### AUTOMATED MANUFACTURING TECHNOLOGY COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Automated Manufacturing Technology (AM110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the automated manufacturing technology field will study the paperless manufacturing environment. Students will begin to study and use Mechanical Design and Engineering Technology and modeling software, MasterCAM computer-aided manufacturing software and computer-numerical control (CNC) programming software to design and create projects. Instruction begins with safety and includes use and care of hand tools, power tools, stationary equipment, principles of design and the design process. Manufacturing methods are initiated with an introduction to CNC machinery and material types, along with their basic applications. Students start with small CNC metalworking projects, which lead to projects that are more complex. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

#### **Computer-Aided Design, Drafting, MasterCAM and Manufacturing Processes (AM210) (3 credits)**

In Grade 10, students are instructed in the fundamentals of good design and utilize 3-D modeling software to create mechanical parts and assemblies. Students will demonstrate skills and knowledge in machine safety; measuring tools; speeds and feeds; lathe operation; mill operation; various types of cutting tools and other machine operations. Students are introduced to the basics of MasterCAM including G-codes, M-codes and conversational programming. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

**Design Engineering, Machining and Computerized Numerical Control (CNC) (AM310) (3 credits)**

In Grade 11, students continue to refine skills introduced in Grade 10 and study advanced design principles, tolerances and fits. Students receive advanced instruction and training in the use of measuring tools, material types, advanced Computer Numerical Control (CNC) lathe operation, advanced CNC mill operation, layout and inspection and troubleshooting CNC code. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will perform in-school drafting and manufacturing projects for customers as related to the curriculum. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

**Production Planning and CNC Machine Operation (AM410) (3 credits)**

In Grade 12, students receive instruction and demonstrate skills in more advanced areas of Precision Machining Technology, such as lay-out and turning irregular shapes, turning eccentric, lap and honing, complex CNC programming, cutter sharpening and specialized vertical mill attachments. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will continue to perform in-school drafting and manufacturing projects for customers. Students will demonstrate the ability to complete a job application and interview and have entry-level job readiness and trade skills. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Students in grade 12 will be assessed against industry-recognized national standards. The National Institute for Metalworking Skills (NIMS) is the nation's only American National Standards Institute accredited developer for the precision manufacturing industry. NIMS competency-based assessments are used to demonstrate mastery of program goals in CNC machining and earn students industry-recognized credentials. All students will also have the opportunity to achieve the Certified SolidWorks Associate (CSWA) credential. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year or a four-year degree in the area of manufacturing or mechanical engineering or other related fields. Students can obtain immediate employment as a Computer Numerical Control (CNC) operator or programmer; engineering technician; or a computer-aided designer or illustrator.

## MECHANICAL DESIGN AND ENGINEERING TECHNOLOGY COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Mechanical Design and Engineering Technology	Intermediate Mechanical Design and Engineering Technology	Advanced Mechanical Design and Engineering Technology	Mechanical Design and Engineering Technology Applications

### MECHANICAL DESIGN AND ENGINEERING TECHNOLOGY COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Mechanical Design and Engineering Technology (CD110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of mechanical design and engineering technology will be exposed to the basics of safety, as well as the use and care of drafting tools and equipment. Students are introduced to elements of the design process, industry standards, geometric terms and standards, freehand sketching and dimensioning, basic lettering, alphabet of lines, AutoCAD© basics and standard conventions of drawing principles. Students begin with small sketching assignments and progress to geometric assignments. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

#### **Intermediate Mechanical Design and Engineering Technology (CD210) (3 credits)**

In Grade 10, students receive instruction and demonstrate skills in basic geometric terms and construction, sketching, orthographic views and pictorial drawing, alphabet of lines, auxiliary views, section views, basic dimensioning procedures, threads and fasteners, and detail drawings. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

#### **Advanced Mechanical Design and Engineering Technology (CD310) (3 credits)**

In Grade 11, students receive instruction and demonstrate skills in tolerance and dimensioning procedures; intermediate orthographic projection; the application of threads and fasteners; information necessary to complete a set of working drawings; the design process; and current manufacturing processes. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will perform in-school drafting and design projects for customers. Students reaching an acceptable level of

proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

**Mechanical Design and Engineering Technology Applications (CD410) (3 credits)**

In Grade 12, students receive instruction and demonstrate skills in advanced geometric tolerance and dimensioning, two-dimensional computer aided drafting (AutoCAD©), 3-D computer aided drafting (Autodesk Inventor© and SolidWorks©), intersection drawings and development drawings. Students continue to receive instructions in safety requirements and demonstrate sound safety practices. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills. Students will perform in-school drafting and design projects for customers. Each student will take the SkillsUSA® - Skills Connect assessment, which is a performance-based test. All students will have the opportunity to achieve the Certified SolidWorks Associate (CSWA) credential. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year or a four-year degree in the areas of manufacturing or mechanical engineering or other related fields. Students can obtain immediate employment as a computer-aided drafter, designer, or illustrator or as an engineering technician in applicable industries.

## MECHATRONICS COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Mechatronics	Basics of Electrical and Electronic Circuitry, Motors, Generators, Motor Controls and Power Supplies	Semiconductor Devices, Pneumatics, Robotics and Programmable Logic Controllers, Hydraulics and National Electrical Code	Digital Electronics, Robotics, Appliance Repair, Refrigeration, Programmed Logic Controllers and Variable Speed Drives

## MECHATRONICS TECHNOLOGY COURSE DESCRIPTIONS



### **Exploratory and Introduction to Mechatronics (EM110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the Mechatronics field will be introduced to the basics of safety as well as equipment identification and use. Students are introduced to mechanisms and a wide variety of electromechanical principles and practices. Safety, hand tool and digital multi-meter use are demonstrated and practiced. Career opportunities are explored. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

### **Basics of Electrical and Electronic Circuitry, Motors, Generators, Motor Controls and Power Supplies (EM210) (3 credits)**

In Grade 10, students learn circuit interpretation, design and construction through the use of computer assisted training and simulators. Principles of direct current (DC), alternating current (AC), magnetism, semiconductors and electronic devices are taught and practiced. Students demonstrate the ability to use test equipment to measure electrical and mechanical variables. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

### **Semiconductor Devices, Pneumatics, Robotics and Programmable Logic Controllers, Hydraulics and National Electrical Code (EM310) (3 credits)**

In Grade 11, students are instructed and demonstrate skills in construction and diagnostic repair of direct current (DC) motors, alternating current (AC) motors, motor controls, hydraulic and pneumatic devices and equipment. Motor control design use and troubleshooting are taught and practiced with simulators and motor controls. Electronic circuitry is instructed and practiced. The National Electrical Code (NEC) is presented through basic projects and students demonstrate analytical skills needed to verify or troubleshoot

residential and commercial low- and high-voltage wiring, including commercial and residential alarm and automation systems. Students will perform in-school electromechanical projects for customers. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

**Digital Electronics, Robotics, Programmed Logic Controllers, Variable Speed Drives and Industrial Machine Maintenance Practices (EM410) (3 credits)**

In Grade 12, robotics, programmable logic controllers (PLC) and variable speed drives are taught. Motor controls, hydraulics, pneumatics and electrical theories are applied to the field of major appliance repair. Students are trained in preparation for their Environmental Protection Agency (EPA) Section 608 refrigeration certification, Level 1. Digital electronics are instructed and practiced. Service documentation is developed and tested. Students are instructed in preventative maintenance schedules, and proper maintenance procedures are practiced. Troubleshooting, part nomenclature, interpretation and application of schematics and proper service techniques are refined. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will demonstrate the ability to complete a job application and interview and have entry-level job readiness and trade skills. Students will perform in-school electromechanical projects for customers. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Each student will take the SkillsUSA® - Skills Connect assessment, which is a performance-based test. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year or a four-year degree in the areas of mechanical, electrical or electronic engineering. Students electing to immediately enter the workforce typically acquire positions as production development technicians in manufacturing facilities and robotics technicians in assembly applications. Additionally, repair technicians for all phases of high- and low-voltage electricity, hydraulic and pneumatic mechanical controls.

## PRECISION MACHINING TECHNOLOGY COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Precision Machining Technology	Intermediate Machining Technology Practices and Principles	Precision Machining and Introduction to Computer Numerical Control (CNC)	(CNC) and Advanced Machine Operation

### PRECISION MACHINING TECHNOLOGY COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Precision Machining Technology (MT110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the Precision Machining Technology field will be introduced to the basics of safety, as well as the use and care of hand tools, power tools and stationary equipment. Manufacturing methods are initiated with an introduction to machinery and material types, along with their basic applications. Students start with small metalworking projects, which lead to projects that are more complicated. Technology-related mathematics, reading, writing, vocabulary, machine trade print reading and science are integrated throughout the curriculum.

#### **Intermediate Precision Machining Technology Practices and Principles (MT210) (3 credits)**

In Grade 10, students are instructed in and demonstrate skills and knowledge in machine safety, measuring tools, speeds and feeds, lathe operation, mill operation, pedestal grinder, various types of cutting tools and drill press operation. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Technology-related mathematics, reading, writing, vocabulary, machine trade print reading and science are integrated throughout the curriculum.

#### **Precision Machining and Introduction to Computer Numerical Control (CNC) (MT310) (3 credits)**

In Grade 11, students continue to refine skills introduced in Grade 10. Students receive advanced instruction and training in the use of measuring tools, material types, advanced lathe operation, advanced mill operation, layout and inspection. Introduction to MasterCAM®, computerized numerical control (CNC) machining and programming also begins in grade 11. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will perform in-school manufacturing projects. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, machine trade print reading and science are integrated throughout the curriculum.



**CNC and Advanced Machine Operation (MT410) (3 credits)**

In Grade 12, students receive instruction and demonstrate skills in more advanced areas of manufacturing technology, such as lay-out and turning irregular shapes, turning eccentric, CNC programming, specialized vertical mill attachments. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will continue to perform in-school machining projects. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills.

Students' at all four grade levels will be assessed against industry-recognized national standards. The National Institute for Metalworking Skills (NIMS) is the nations' only American National Standards Institute accredited developer for the precision manufacturing industry. NIMS competency-based assessments are used to demonstrate mastery of program goals and earn students industry-recognized credentials. Students reaching an acceptable level of proficiency may be eligible for Work -Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, machine trade print reading and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year or a four-year degree in the area of manufacturing or mechanical engineering, or other related fields. Graduates electing to enter the workforce typically acquire positions as CNC operators or programmers, mold-makers or engineering technicians.

## WELDING AND METAL FABRICATION COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Welding and Metal Fabrication	Basics of Welding, Metal Cutting and Preparation	Metal Fabrication and Advanced Welding Techniques	Ferrous and Non-Ferrous Material Welding, Pipe Welding and Welding Certification

## WELDING AND METAL FABRICATION COURSE DESCRIPTIONS



### **Exploratory and Introduction to Welding and Metal Fabrication (WD110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of Welding and Metal Fabrication will be introduced to the basics of safety and sanitation, as well as equipment identification and use. Students learn about the variety of careers available in the welding and metal fabrication industry, hand tools and shop equipment. Different modes of welding are demonstrated and practiced. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

### **Basics of Welding, Metal Cutting and Preparation (WD210) (3 credits)**

In Grade 10, arc welding is demonstrated and practiced. Students prepare sections for joints, fillets and grooves and then test-weld. Proper use of machine cutting tools is demonstrated and then practiced by students. Oxy-fuel cutting and joining processes are taught and practiced, and quality is examined and diagnosed. Gas Metal Arc Welding (GMAW) applications, parameters, gases, wire types and sizes are studied demonstrated and practiced. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

**Metal Fabrication and Advanced Welding Techniques (WD310) (3 credits)**

In Grade 11, industry weld symbols are defined and applied to blueprint interpretation. Metal identification, properties and applications are taught and practiced. Destructive and nondestructive welding inspection are demonstrated and practiced. Pipe welding is introduced and demonstrated. Flux Core Arc Welding (FCAW), Submerged Arc Welding (SAW), Plasma Arc Welding (PAW) and Gas Tungsten Arc Welding (GTAW) are introduced with discussion and exercises on procedures and applications. Students begin preparation for certification assessments. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will perform in-school welding projects for customers. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

**Ferrous and Non-Ferrous Material Welding, Pipe Welding and Welding Certification (WD410) (3 credits)**

In Grade 12, on-site flat, horizontal, vertical and overhead application welding skills are demonstrated and practiced by students. Characteristics of stainless steel and aluminum are taught and specific welding techniques are demonstrated and practiced. Advanced pipe and tube welding are demonstrated and practiced. Students prepare and practice for national welding certification tests. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will demonstrate the ability to complete a job application, a practice interview and have entry-level job readiness and trade skills. Students will perform in-school welding projects for customers. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). All students are required to complete AWS certification requirements as a summative assessment. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year or a four-year degree in mechanical engineering. Students electing to immediately enter the workforce typically acquire positions as welders in the aviation and aerospace industries, large construction companies and independent welding and fabrication shops.

# MARKETING, SALES AND SERVICE CLUSTER

## MARKETING, MANAGEMENT AND ENTREPRENEURSHIP COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Marketing	Sales and Promotion	Marketing, Management and Entrepreneurship	Marketing

### MARKETING, MANAGEMENT AND ENTREPRENEURSHIP COURSE DESCRIPTION



#### **Exploratory and Introduction to Marketing (RE110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the fields of Marketing Management and Entrepreneurship will be prepared for a career in marketing which spans an array of activities required to develop, promote and distribute goods and services to consumers. In Grade 9, the students will be given an overview of retail management operations including print advertising, retail sales transactions, visual merchandising/store design, business communications and marketing applications. Technology-related mathematics, reading, writing, vocabulary and science skills are integrated throughout the curriculum.

#### **Sales and Promotion (RE210) (3 credits)**

In Grade 10, students will focus on the principles of sales and promotion. Instruction will cover topics such as buying, product/service distribution, customer service selling, stock records and negotiating terms and conditions with buyers. Technology-related mathematics, reading, writing, vocabulary and science are integrated as required.

#### **Marketing, Management and Entrepreneurship (RE310) (3 credits)**

In Grade 11, students will be managing a school-based enterprise, the Emporium gift shop which is open to the public. Students will be expected to perform all the management functions of operating a gift shop including business management, purchasing, merchandising, advertising/display, accounting and organizational oversight. Students analyze the elements of the marketing mix, their interrelationships, and how they are used in the marketing process. Grade 11 students utilize the concepts of entrepreneurial trends, business planning, sports and entertainment marketing, market planning, market research and product planning. Students conduct marketing research, conduct a Strengths, Weaknesses, Opportunities, Threats (SWOT) analysis and develop a complete marketing plan. In addition, students complete the marketing

sections of a business plan for a business of their choice. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary and science are integrated in this curriculum.

**Marketing (RE410) (3 credits)**

Grade 12 students will receive instruction in business ownership and logistics, financial reporting and record keeping, QuickBooks business accounting software, the functions of management, the pricing function and break-even analysis. Students develop their management style as they apply the FISH! Management and leadership program which employs strategies to build cultures of service, trust, accountability and innovation. Students analyze the management and finance status of a business and apply those concepts within the school-based enterprise, the Emporium. Students complete the management, operational, organizational and financial sections of a business plan for a business of their choice. The students will also have an opportunity to explore an area they wish to concentrate on through the Work-Based Learning (WBL) program. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary and science are integrated as required.

Grade 10 through 12 Marketing, Management and Entrepreneurship students are members of D.E.C.A., an international organization that prepares emerging leaders and entrepreneurs in marketing, finances, hospitality and management. D.E.C.A.'s Competitive Events Program provides opportunities for achievement and recognition for students on the state and national levels. The school-based enterprise, The Emporium at Norwich Tech, is gold level certified through D.E.C.A. each year. Grade 11 and 12 students participate in the school-based enterprise evaluation and recertification process. Students in grade 9 through 12 have the opportunity to apply curriculum directly as they operate the school-based enterprise, which functions as a hands-on marketing learning lab. Students can choose to further their education at numerous colleges and universities across the country in order to obtain a four-year degree in marketing, business management, finance or hospitality management. According to the Bureau of Labor Statistics, employment in marketing and sales will continue at a high level, vast opportunities are available in all industry areas.

# SCIENCE TECHNOLOGY, ENGINEERING & MATHEMATICS (STEM) CLUSTER

## PRE-ELECTRICAL ENGINEERING AND APPLIED ELECTRONICS TECHNOLOGY

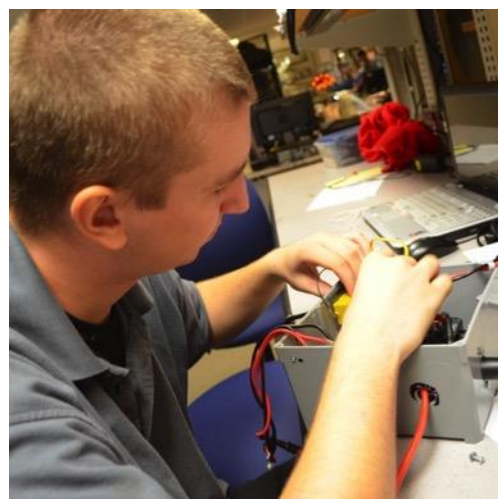
### COURSE SEQUENCE

*12 credits required for graduation*

*(This program is only offered at Norwich Technical High School)*

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Pre-Electrical Engineering and Applied Electronics Technology	Direct Current/Alternating Current (DC/AC) Circuits and Analog Electronics - 10	Pre-Electrical Engineering & Applied Electronics Technology – 11	Pre-Electrical Engineering & Applied Electronics Technology - 12

### PRE-ELECTRICAL ENGINEERING AND APPLIED ELECTRONICS TECHNOLOGY COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Pre-Electrical Engineering and Applied Electronics Technology – (PR110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. In Grade 9, all students will be introduced to basic electrical theory, Ohms Law concepts, engineering concepts, basic series circuits and laws, basic parallel circuits and laws, robotics, smart house technology, digital multi-meter measurements - voltage and current, basic stamp theory, color code interpretation and basic Excel for circuit analysis. The students will also work through a generic engineering problem. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

#### **Direct Current/Alternating Current (DC/AC) Circuits and Analog Electronics – 10 (PR210) (3 credits)**

In Grade 10, all students will receive instruction in series-parallel direct current (DC) circuits, basic alternating current (AC) theory and measurements, oscilloscopes, resistance and AC, concept of reactance, capacitance and AC, inductance and AC, transformers and phase shift, resonance and basic filters. The students will also receive instruction in basic diode theory, DC power supplies, transistor theory, basic operational-amplifier concepts and applications, silicon-controlled rectifier theory and 555 timer fundamentals. The students will also work on projects dealing with amplifier construction, color organ construction and 555 timers and SMART House Technology. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

**Pre-Electrical Engineering & Applied Electronics Technology – 11 (PR310) (3 credits)**

In Grade 11, the students will receive instruction in SMART House Technology theory (energy conservation), as well as the following areas: basic stamp programming; stamp robotics; and basic analog electronics. Topics will also include orientation to linear power supplies; diode circuits; transistor theory; transistor amplifier configurations; operational amplifier configurations and operational amplifier circuits. These students will also be preparing for Connecticut Alarm & Systems Integrators Association (CASIA) certification. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). In addition, students will receive instruction in series-parallel direct current (DC) circuits advanced and design, bridge circuits, delta to wye conversions, multi-source circuit analysis, alternating current (AC) theory and trigonometry, advanced oscilloscope use, troubleshooting/fault analysis, capacitance in series/parallel (DC and AC), reactance, capacitance and resistance (AC), phase angle calculations. The students will also receive instruction inductance in series/parallel (DC and AC), inductance and resistance (AC), advanced diode theory, advanced linear power supplies, power supply design, transistor theory, switching and amplification, advanced op-amp theory and circuits, amplifier design, 555 timer circuits, oscillators and basic radio frequency theory. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

**Pre-Electrical Engineering & Applied Electronics Technology – 12 (PR410) (3 credits)**

In Grade 12, the students will receive instruction in vex robotics, basic stamp programming and stamp robotics. Students will receive instruction in basic digital electronics theory, combinational logic, combinational design, sequential logic, sequential logic design, specifications/interfaces, interface designs and analog, state machine theory, state machine design. The students will also have to complete a design project. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year Engineering Technology degree or a four-year Electrical Engineering degree. Immediate employment is available in the commercial and residential audio-visual installation and design field. Jobs include engineering assistant, sales, alarm system technician, quality control and many others.

# TRANSPORTATION, DISTRIBUTION & LOGISTICS CLUSTER

## AUTOMOTIVE COLLISION REPAIR AND REFINISHING COURSE SEQUENCE

12 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Automotive Collision Repair and Refinishing	Basic Collision Repair	Collision Component Repair	Advanced Collision Repair

### AUTOMOTIVE COLLISION REPAIR AND REFINISHING COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Automotive Collision Repair and Refinishing (CR110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of Automotive Collision Repair and Refinishing will be introduced to the basics of safety, as well as equipment identification and use. Students are introduced to a variety of collision repair and refinishing practices, such as metal cutting, straightening and welding. Bolt-on replacement panel installation and panel alignment is introduced and practiced. Students are instructed in hand tools and their use, abrasives and their applications and fastener identification. Students are introduced to refinishing techniques and are guided through planned activities and projects to determine skill and ability. Students learn of the extensive variety of careers available within the collision, repair and refinishing industry. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

#### **Basic Collision Repair (CR210) (3 credits)**

In Grade 10, students examine the many types of contemporary vehicle construction. Repair strategies are formulated based on vehicle construction to provide safe, quality, permanent repairs. Students are instructed in and practice repair procedures for minor damage on actual vehicle parts. Fastener applications are examined. Cutting, welding and shaping of various metals are taught and practiced along with panel straightening. Appropriate use of body filler application, shaping and finishing is taught and demonstrated. Students practice body filler application and finishing on actual vehicle parts. Compressed air systems and the components are investigated. The many processes of painting and refinishing are introduced and demonstrated with primers, base coats and finish coats. Masking is introduced and practiced. Students continue to be introduced to the basics of safety, as well as equipment identification and use. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.



**Collision Component Repair (CR310) (3 credits)**

In Grade 11, instruction in painting and refinishing is expanded. Complete vehicle refinishing is introduced and practiced with advanced masking. Students apply multistage coatings. Plastic component repair and advanced abrasives are covered. Fixed and movable glass replacement is taught and practiced as is computer estimating. The students will perform in-school auto repair work for customers as it relates to the curriculum. Students continue to be introduced to the basics of safety, as well as equipment identification and use. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

**Advanced Collision Repair (CR410) (3 credits)**

In Grade 12, perimeter, box and unibody frame measurement and damage determination and repair are taught, demonstrated and practiced. Frame measuring and measuring systems are introduced and practiced. Students diagnose and repair steering and suspension systems. Weld-on and bonded panel installation is demonstrated and practiced. Collision shop business management and customer service are introduced and discussed. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. The students will perform in-school auto repair for customers as it relates to the curriculum. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Each senior will take several Automotive Service Excellence (ASE) Student Certification exams, an industry recognized assessment. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Students' at all four grade levels will be exposed to training materials and assessments from I-CAR (the Inter-Industry Conference on Auto Collision Repair). I-CAR is the industry recognized association that delivers continuing education to collision repair professionals in the field. Students will earn real I-CAR credentials that will demonstrate the skills they have acquired in their Collision Repair program at a Connecticut technical high school.

Students successfully completing this course of study will be able to pursue a two-year or a four-year degree in the area of automotive or mechanical engineering or other related fields. Students electing to immediately enter the workforce typically acquire positions as collision repair technicians in independent collision repair facilities or new/used vehicle dealerships. Damage estimating and vehicle appraisal are fields in which many graduates find employment. Additional employment in manufacturing or production facilities requiring painted or coated finished products is also a viable employment option.

## AUTOMOTIVE TECHNOLOGY

12 course credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Automotive Technology	Principles and Applications of Automotive Systems	Diagnosis and Service of Automotive Systems	Advanced Diagnostics and Repair of Automotive Systems and Emissions Control Systems

### AUTOMOTIVE TECHNOLOGY COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Automotive Technology (AU110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the Automotive Technology field will in Grade 9 be introduced to the basics of safety, equipment identification and use, engine operation, construction and components, vehicle maintenance, and shop operation. This course allows students to experience a variety of automotive practices through demonstrations and instruction. Students learn of the varied careers available within the automotive industry. Engine design and construction are discussed and studied. Students will receive experience with engine mechanical repairs and diagnosis. All eight areas of Automotive Service Excellence (ASE) Master Technician Service certification are covered in the four-year course of study. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

#### **Principles and Applications of Automotive Systems (AU210) (3 credits)**

In Grade 10, students start with a refresher on shop safety and hand-tool use. Major areas covered include engine mechanical systems, vehicle electrical and electronic systems and brake systems. Students receive instruction in operation and then practice diagnosis and repair with general electrical, battery, starting and charging systems. The hydraulic system, Drum and Disc Brakes systems design, power assist units, and Anti-lock Brakes systems (ABS) and traction control systems are covered. Specific applications and repairs are discussed, explored and practiced. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

**Diagnosis and Service of Automotive Systems (AU310) (3 credits)**

In Grade 11, students diagnose and repair electrical components, lighting systems, instrumentation, wiper systems, chassis wiring and vehicle accessories. Students will also diagnose and repair suspension and steering systems. Two- and four-wheel alignment is taught with wheel and tire service and diagnosis. Expanded diagnostics and repair training in engine performance based on fuel, ignition and computerized engine management systems are performed. Students will perform in-school automotive projects for customers. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

**Advanced Diagnostics and Repair of Automotive Systems and Emissions Control Systems (AU410) (3 credits)**

In Grade 12, students continue to build upon knowledge with in-depth training in engine management systems affecting vehicle emissions and performance. Air conditioning service, diagnosis and repair is introduced and practiced. Principles of the HVAC distribution systems are covered. Students are introduced to diagnostic and repair procedures for automatic transmissions and transaxles, as well as manual drivetrains, clutches and drive axles. Shop operation and customer satisfaction are introduced and discussed. Students continue to receive instruction in safety requirements and demonstrate sound safety practices. Students will perform in-school automotive projects for customers. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Each senior will take several Automotive Service Excellence (ASE) Student Certification exams, an industry recognized credential. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Students' at all four grade levels will be exposed to automotive curriculum which is completely aligned with standards issued by the ASE Foundation, the industry recognized certification association for professional automotive technicians.

Students successfully completing this course of study will be able to pursue a two-year or a four-year degree in the area of automotive or mechanical engineering, or other related fields. Students electing to immediately enter the workforce typically acquire positions as repair technicians in independent repair facilities or new/used vehicle dealerships. Additionally, employment as a service advisor, service writer or automotive parts counterperson is common.

## DIESEL AND HEAVY-DUTY EQUIPMENT REPAIR COURSE SEQUENCE

12 course credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Diesel and Heavy-Duty Equipment Repair	Principles and Applications of Diesel Systems	Diagnosis and Service of Diesel Systems	Advanced Diagnostics and Repair of Diesel Systems, Emissions Control Systems and Engine Management Systems

### DIESEL AND HEAVY-DUTY EQUIPMENT REPAIR COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Diesel and Heavy-Duty Equipment Repair (DI110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 8 for more detail. Students deciding to enter the field of Diesel and Heavy-Duty Equipment Repair will be introduced to the basics of safety, as well as equipment identification and use. This course allows students to experience a variety of diesel and heavy equipment practices. Students learn of the varied careers available within the diesel and heavy equipment repair industry. Students are instructed in use of hand and power tools and practice their use. Students are instructed in diesel engine operation and engine components. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

#### **Principles and Applications of Diesel Systems (DI210) (3 credits)**

In Grade 10, students are instructed in the major systems of on-road and off-road heavy equipment. Systems studied and practice tasks are aligned with the Automotive Service Excellence (ASE) certification areas. Areas taught are diesel engines systems and overhaul; drive train; brakes; electrical/electronic systems; and preventative maintenance inspection (PMI). Students receive instruction in safety requirements and demonstrate sound safety practices. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

**Diagnosis and Service of Diesel Systems (DI310) (3 credits)**

In Grade 11, practical applications, design, service and repair of transmission, differentials, rear axle and brakes systems are examined and practiced. In-depth training and practice of Preventive Maintenance Inspection (PMI) is accomplished. Advanced steering system training and tire and wheel diagnosis and service are taught. The students service and repair electrical and electronic controls and systems, as well as hydraulic and air brake systems. Students learn shop organization and management. The students will perform in-school diesel projects for customers as it relates to the curriculum. Students receive instruction in safety requirements and demonstrate sound safety practices. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

**Advanced Diagnostics and Repair of Diesel Systems, Emissions Control Systems and Engine Management Systems (DI410) (3 credits)**

In Grade 12, students diagnose and repair engine and emissions control systems. Instruction is given in Welding and Oxy/acetylene welding and cutting. Supplemental Electronic systems and cold weather starting are covered. Advanced engine repair techniques are introduced. Advanced suspension system repair procedures are explored and practiced. Students repair hydraulic systems. Air conditioning and refrigeration are studied including the diagnosis of common air conditioning and refrigeration problems. Commercial Driver's License (CDL) basics are covered. The students will perform in-school diesel projects for customers as it relates to the curriculum. Students receive instruction in safety requirements and demonstrate sound safety practices. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Each senior will take several Automotive Service Excellence (ASE) Student Certification exams, an industry recognized credential. Technology-related mathematics, reading, writing, vocabulary, blueprint reading and science are integrated throughout the curriculum.

Students successfully completing this course of study will be able to pursue a two-year or a four-year degree in the area of automotive or mechanical engineering, or other related fields. Students electing to immediately enter the workforce typically acquire positions as repair technicians in new or used vehicle and equipment dealerships. Construction and farm equipment repair and industrial maintenance positions are readily available.

# ACADEMIC COURSES

## 2021-2022



*Please note: Not all academic courses are available at each school. Please contact your respective Guidance office.*

# THE ARTS

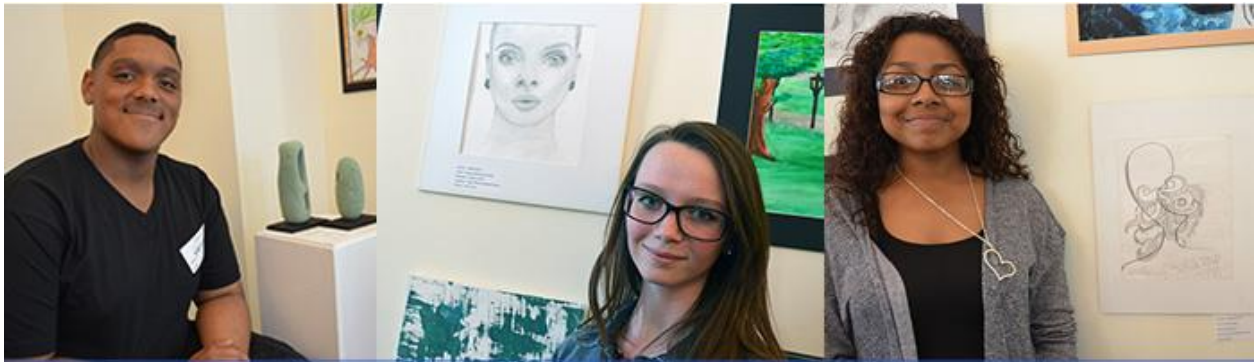
## VISUAL ARTS

### Scope

In accordance with the CTECS Visual Arts program philosophy, the arts program is responsive to our learners in the CTECS schools. The program supports the CTECS mission, teaches visual literacy and 21st century skills. The courses offered below are designed to enable students to build upon foundation skills in visual arts before continuing to more in-depth study in the arts, as well as provide students access to visual arts classes at all grade levels.

*Course selections are customized per location.  
Courses that may be repeated for credit are indicated.*

### VISUAL ARTS COURSE DESCRIPTIONS



#### **Foundations of Art All Grades (FA614, FA615) ( $\frac{1}{2}$ credit, 1 credit)**

In this course, students will have an opportunity to create and respond to visual arts, focusing on drawing, design, color, painting and sculpture. This course will introduce students to a variety of techniques and mediums that they will apply while creating original artwork. A variety of design elements, such as line, space, form, color, value and texture, as well as a variety of design principles, including balance, unity, contrast, emphasis, movement, rhythm and pattern, will be studied. Students will have an opportunity to appreciate and interpret works of art in terms of history, aesthetics and culture. Students also will begin developing a portfolio of original artwork.

#### **Advanced Art Grades 10, 11, 12 (FA631) ( $\frac{1}{2}$ credit)**

*Prerequisite: Foundations of Art*

Advanced Art involves two-dimensional and three-dimensional works that encompass art history, art criticism, aesthetics and production and lead to the creation of portfolio-quality works.

#### **2-Dimensional Design Grades 10, 11, 12 (FA610, FA611) (1 credit, $\frac{1}{2}$ credit)**

*Prerequisite: Foundations of Art*

The 2-Dimensional Design course focuses on the elements and principles of design as they are applied in 2-dimensional artwork. Various mediums including painting, drawing, collage, mixed media and digital media are used at the instructor's discretion to teach these concepts. Students will demonstrate and understand basic composition and use of space within a 2-dimensional artwork. They will have the opportunity to explore design concepts in a historical and contemporary context, and to apply these concepts to everyday life. This class may be repeated for credit.

**3-Dimensional Design Grades 10, 11, 12** (FA620, FA621) (1 credit, ½ credit)

*Prerequisite: Foundations of Art*

3-Dimensional Design - Sculpture is presented as a techniques and tools class. Students will become proficient using the methods and components of 3-Dimensional art. Students will not only develop their ability to express themselves in a visual form using a variety of media and techniques, but will also engage in written reflection of their own art and the artwork of others. This class may be repeated for credit.

**Painting Grades 10, 11, 12** (FA655, FA656) (1 credit, ½ credit)

*Prerequisite: Foundations of Art*

This course focuses on a variety of painting techniques using various media such as watercolor, gouache, tempera, acrylics, pastels, ink wash, collage and mixed media. Color theory will be emphasized, along with composition, art history and art appreciation. Students will be able to make connections between their finished work and that of various artists and art movements in history. Sketchbooks are required for idea development and for both visual and verbal responses to artwork. This class may be repeated for credit.

**Drawing Grades 10, 11, 12** (FA634) (½ credit)

*Prerequisite: Foundations of Art*

Drawing is presented as a techniques and tools class. Students will demonstrate and understand basic drawing using visual measurement, shading, composition, perspective, drawing techniques, sustained drawings and written reflection. They have an opportunity to use various drawing media. This class may be repeated for credit.

**Studio Art Grades 11, 12** (FA659, FA660) (1 credit, ½ credit)

*Prerequisite: Foundations of Art*

Studio Art-Illustration is presented as an introductory techniques and tools class. Students will become proficient using methods and techniques of drawing, painting and design in creating works of illustrative art. Along with developing a portfolio of artwork, students will be refining their ability to engage in written reflection of their own art and the artwork of others. This class may be repeated for credit.

**Drawing I – UCONN** (FA710) (1 credit)

*Prerequisite: Foundations of Art or Drawing*

This college-level course provides a continuation of drawing skill development, emphasizes increased individual exploration of art mediums and encompasses the development of a focused body of work. The course will focus on fundamental principles of drawing based on observation. Students will be responsible to complete weekly sketchbook assignments and participate in individual and class critiques. Students will work with a variety of professional media and explore innovative and traditional techniques. Students who enroll in the UCONN Early College Experience (ECE) program and successfully complete this course are eligible to earn three (3) UCONN college credits for the Drawing I course.

**Trade-Art Grades 11, 12** (FA665, FA667) (1 credit, ½ credit)

Trade Art is presented as a studio art class that addresses aspects of their trade. It is a course outlying the connections between the visual arts and the CTECS technologies. Students will make art media that enhances connections between aesthetics and their chosen trade. This class may be repeated for credit.



## ALTERNATIVE ART SEQUENCE

Some buildings may choose to offer Art in a sequence of courses: Art I for first year Art students, Art II for second year Art students, Art III for third year Art students, and Art IV for fourth year Art students. The Alternative Art Sequence provides a combination of any of the listed medium. The Art instructor will be able to modify and tailor the medium in the course to meet student interest.

### Art Course Sequence

Art I	Art II	Art III	Art IV
First year Art students	Second year Art students	Third year Art student	Fourth year Art students
Foundations of Art	PR-Foundations of Art Drawing 2-D Design 3-D Design Painting Studio Art	PR-Foundations of Art Drawing 2-D Design 3-D Design Painting Studio Art Trade Art Advanced Art (Requires prior instructor approval)	PR-Foundations of Art Drawing 2-D Design 3-D Design Painting Studio Art Trade Art Advanced Art Drawing I – UCONN (Requires prior instructor approval)

\* PR indicates a prerequisite course

#### Art I (FA623, FA624) (1 credit, ½ credit)

##### Foundations of Art

For first year Art students. In Art I, students will have an opportunity to create and respond to visual arts, focusing on drawing, design, color, painting and sculpture. This course will introduce students to a variety of techniques and mediums that they will apply while creating original artwork. A variety of design elements, such as line, space, form, color, value and texture, as well as a variety of design principles, including balance, unity, contrast, emphasis, movement, rhythm and pattern, will be studied. Students will have an opportunity to appreciate and interpret works of art in terms of history, aesthetics and culture. Students also will begin developing a portfolio of original artwork.

#### Art II (FA625, FA626) (1 credit, ½ credit)

##### Prerequisite: Foundations of Art

For second year Art students. Art II is a combination of any of the listed medium. The Art instructor will be able to modify and tailor the medium in the course to meet student interest. See individual course descriptions above.

#### Art III (FA627, FA628) (1 credit, ½ credit)

##### Prerequisite: Foundations of Art

For third year Art students. Art III is a combination of any of the listed medium. The Art instructor will be able to modify and tailor the medium in the course to meet student interest. See individual course descriptions above.

#### Art IV (FA629, FA630) (1 credit, ½ credit)

##### Prerequisite: Foundations of Art

For fourth year Art students. Art IV is a combination of any of the listed medium. The Art instructor will be able to modify and tailor the medium in the course to meet student interest. See individual course descriptions above.

## MUSIC



Music Education is crucial to personal success as we move forward in the 21<sup>st</sup> Century. In preparing to enter today's ever-changing workplace, students are asked to demonstrate skills in communication, technology, and teamwork. Music Education is a tremendous vehicle to develop these highly desired skills. Music is a rich and fundamental subject with a compelling history and vibrant culture. Music is a common language that reaches across boundaries to bring cultures together and creates a global understanding. Music allows high school students to explore the vast expanse of feeling and emotion beyond the limitations of words. These experiences inspire them to become lifelong learners who appreciate and value music. Music courses meet the electives credit requirements for graduation.

*Course selections are customized per location*

*Courses that maybe repeated for credit are indicated*

- Concert Band
- Concert Choir
- Music Applications
- Introduction to Guitar
- Advanced Guitar
- Introduction to Drumline
- Advanced Drumline
- Music Appreciation
- Piano
- Drum Line/Piano
- Voice Class
- Advanced Music Independent Study
- Music Therapy I
- Music Therapy II
- Electronic Music I
- Electronic Music II

## MUSIC COURSE DESCRIPTIONS

### **Concert Band** (MU600-MU611) (*1 credit, ½ credit, ¼ credit*)

*Prerequisite: A minimum of 1 year of concert band experience in middle or high school or audition with the music instructor to assess ability.*

This course is open to students who wish to play traditional concert band instruments. Prior experience with your instrument is required. Focus will be on ensemble skills, reading musical notation and other musical concepts. Participation in any school concert is a class requirement. Each school may have a limited number of instruments available to rent. This class may be offered to students in 9th, 10th, 11th and 12th grades. This class may be repeated for credit. It is recommended that each school adapt full group rehearsal periods weekly.

### **Concert Choir** (MU616-MU627) (*1 credit, ½ credit, ¼ credit*)

Open to anyone with a desire to sing a varied repertoire of choral music. Emphasis will be placed on singing alone and with others, as well as the development of musical reading skills and ensemble skills. No experience necessary. This class may be offered to students in 9th, 10th, 11<sup>th</sup> and 12th grades. Participation in any school concert is a class requirement. This class may be repeated for credit. It is recommended that each school adapt full group rehearsal periods weekly.

### **Music Applications** (MU670, MU672) (*½ credit, ¼ credit*)

This class offers an introduction to CTECS music course topics such as Piano, Chorus, Guitar, Drumline and Music Appreciation. Complimentary music skills will be developed in the practice of these areas, developing novice to intermediate music skills according to national core arts standards. This class may be offered to students in the 9th grade.

### **Introduction to Guitar** (MU646) (*½ credit*)

Open to all students who wish to learn to play the acoustic guitar. Emphasis will be placed on performing a variety of music alone and with others, as well as the development of musical reading skills and ensemble skills. If a student wishes to enroll but does not own a guitar, a limited number of school instruments are available.

### **Advanced Guitar** (MU649) (*½ credit*)

*Prerequisite: Introduction to Guitar and Instructor Approval*

Open to students who successfully completed Introduction to Guitar and would like to continue more advanced study. Students will learn higher level repertoire and techniques with greater emphasis on public performance. Participation in any school concert is a class requirement. This class may be repeated for credit.

### **Introduction to Drumline** (MU660, MU661) (*½ credit, ¼ credit*)

Open to all students who wish to learn percussion instruments. Emphasis will be placed on performing a variety of music alone and with others, as well as the development of musical reading skills and ensemble skills. This class may NOT be repeated for credit.

### **Advanced Drumline** (MU760) (*½ credit*)

*Prerequisite: Introduction and Instructor Approval*

Open to students who successfully completed Introduction to Drumline and would like to continue more advanced study. Students will learn higher level repertoire and techniques, with greater emphasis on public performance. Participation in any school concert is a class requirement. This class may be repeated for credit.

**Music Appreciation** (MU665, MU666) (*½ credit, ¼ credit*)

This course is designed to help students appreciate music by learning how music is created, how music has developed over the course of history and the role music plays in culture. Through listening, discussing, analyzing and writing about music, students will gain a deeper understanding of this art form. The class may feature many different music genres including, but not limited to popular American forms, Western European and World music.

**Piano** (MU680, MU681) (*½ credit, ¼ credit*)

Piano offers basic piano instruction to students. Classes will focus on keyboarding skills including hand position, posture and location of notes in both right and left hands. Students will develop music literacy through theory lessons as part of the course of study. Students will perform a variety of repertoire alone and with others. This class may be repeated for credit.

**Drumline/Piano** (MU684) (*½ credit*)

*Prerequisite: Introduction and Instructor Approval*

Open to students who successfully completed Introduction to Drumline and Piano and would like to continue more advanced study. Students will learn higher level repertoire and techniques with greater emphasis on public performance. Participation in any school concert is a class requirement. This class may be repeated for credit.

**Voice Class** (MU634, MU635) (*½ credit, ¼ credit*)

This class offers vocal music instruction for students interested in learning to sing. Classes will focus on healthy vocal production, musical literacy, use of solfege and study of varied repertoire selected depending upon the needs of the students. This class may be offered to students in 9th, 10th, 11th and 12th grades. There is no prerequisite for this class and the class may be repeated for credit.

**Advanced Music Independent Study** (MU690, MU691) (*1 credit, ¼ credit*) *11<sup>th</sup> or 12<sup>th</sup> grade option*

*Prerequisite: Instructor Approval*

Topics may include music theory, music technology, composition and performance. In addition, students will have the opportunity to mentor freshmen music students with their musical studies. In essence, this course will help students gain a perspective of how to be a musician and/or music teacher. Also, students will gain knowledge of how to continue their music studies past high school.

**Music Therapy I** (MU761) (*¼ credit*)

Open to students in their junior year of Health Technology. Topics to include the brain and music, how music can relieve pain, patients and music, music as a tool for movement, music and relaxation techniques.

**Music Therapy II** (MU762) (*¼ credit*)

Open to students in their senior year of Health Technology. Students will learn basic guitar/keyboard/drumming skills to bring an awareness of music and music therapy to their future work.

**Electronic Music I** (MU763) (*¼ credit*)

Students will learn the history of electronic music and instruments with listening examples that highlight the important people, technology and techniques associated with the style.

**Electronic Music II** (MU764) (*¼ credit*)

Students will learn to create and compose electronic music with the use of technology and instruments.

# ENGLISH/LANGUAGE ARTS

## ENGLISH/LANGUAGE ARTS COURSE SEQUENCE

4 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12*
1 credit	1 credit	1 credit	1 credit
English 9 or Honors English 9	English 10 or Honors English 10	English 11 or Honors English 11	Senior Seminar or Honors Senior Seminar or UConn ECE English Course or Community College 3 Credit English Course



### Scope

#### The English Language Arts Program of Studies

The vision for literacy in the Connecticut Technical Education and Career System is to cultivate literate and productive students who are college, career and life ready. The mission at CTECS is to develop relevant, lifelong reading and writing habits in our students that will enhance their learning pathway and prepare them for success in a global community. The English/Language Arts program in grades 9-12 promotes critical thinking, reading, writing, listening, speaking, viewing and researching skills that students use to analyze, evaluate and synthesize text. The curriculum actively engages students in reading and reflecting on a wide range of texts with opportunities to develop thinking and writing skills.

Through whole class, small group, and independent reading and reflection, students in high school English/Language Arts classes develop an understanding of language and its use to convey meaning and provide insight about the world around them. Literacy is a complex skill that must be explicitly taught and practiced across all disciplines, both academic and trade. The CTECS English/Language Arts Curriculum also supports the development of skills recommended by the CT Core ELA Standards, 21st Century Learning Standards and Career Technical Education (CTE) Career Ready Practices.

*Course selections are customized per location.*

*Courses that are NCAA approved are indicated.*

*Courses that may be repeated for credit are indicated.*

## ENGLISH/LANGUAGE ARTS COURSE DESCRIPTIONS

### **English 9 (EN110), Honors English 9\* (EN111) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

The English 9 curriculum is CT Core State Standards aligned and emphasizes reading and writing across genres. Students will explore four conceptually based units of study to develop their analytic and critical thinking skills. By the end of the course, students should be able to effectively engage with and respond to multi-modal text by interpreting, connecting with, critically evaluating diverse works and supporting their positions with relevant textual evidence and elaborate explanations. An emphasis on argumentation will require students to evaluate academic sources, synthesize information and properly cite these sources using MLA standards.

### **English 10 (EN210), Honors English 10\* (EN211) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

The English 10 curriculum is CT Core State Standards aligned and emphasizes reading and writing across genres. Students will explore four conceptually based units of study to develop their analytic and critical thinking skills. By the end of the course, students should be able to effectively engage with and respond to multi-modal text by interpreting, connecting with, critically evaluating diverse works and supporting their positions with relevant textual evidence and elaborate explanations with increasing sophistication. The course will require students to evaluate academic sources, synthesize information and properly cite these sources using MLA standards.

### **English 11 (EN310), Honors English 11\* (EN311) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

The English 11 curriculum is CT Core State Standards aligned and emphasizes reading and writing across genres. Students will explore four conceptually based units of study to develop their analytic and critical thinking skills. By the end of the course, students should be able to effectively engage with and respond to multi-modal text by interpreting, connecting with, critically evaluating diverse works and supporting their positions with relevant textual evidence and elaborate explanations with increasing sophistication. Students will also acquire the habits of reading independently and closely, which are essential to their future success in college, career, and life. The course will require students to evaluate academic sources, synthesize information and properly cite these sources using MLA standards.

## ENGLISH SENIOR SEMINARS

Senior Seminars provide 12<sup>th</sup> grade students with an in-depth experience with a topic of their choosing in the field of English Language Arts. Schools may offer up to six of the following courses for students to choose from in making their Senior Seminar selection. Seniors who are enrolled in a UConn ECE English course or a College-Career Pathways Community College English course do not have to take a Senior Seminar.

### **Creative and Nonfiction Writing (EN450) (1 credit)**

*(NCAA Approved Course)*

This seminar will provide a multi-genre introduction to the craft of creative writing. In the setting of a writing workshop classroom, students will examine literary conventions as well as the writing techniques and tools essential to effective writing, editing and communication. Students will read and write across genres. Communication skills will be a key component of the course, as sharing work and responding to the work of other students is essential to the workshop process. Students will complete the course compiling a portfolio with a minimum of four major pieces of finished writing including an argumentative essay, informative expository essay, personal narrative/college essay and a creative project.

**Honors Creative and Nonfiction Writing (EN451) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

Honors Creative and Nonfiction Writing is an accelerated course for motivated readers and writers who have clearly demonstrated strong language arts ability. Students who select this class must be able to employ accurate grammatical conventions, logical organization and a sophisticated vocabulary in their writing. The focus of the course is to help students write effectively in different forms (narrative, descriptive, expository, analytical and argumentative), for different purposes and audiences. Students will improve and incorporate rhetorical strategies into their own writing. The course will require students to evaluate academic sources, synthesize information and properly cite these sources using MLA standards.

**Literature of Our Lifetime (EN452) (1 credit)**

*(NCAA Approved Course)*

This seminar will explore universal themes central to our lifetime. Using contemporary works, students will explore the themes of modern society, cultural conflict, marginalized identities, the influence of technology, and others relevant to current student interest. Critical thinking, essay writing, researching and speaking skills will be emphasized.

**Honors Literature of Our Lifetime (EN453) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

This accelerated seminar for advanced learners focuses on universal themes central to our lifetime. Students will examine the intense reaction of modern writers to the perceived contradictions and restrictions of traditional thinking and writing. Students will analyze the experimental nature of form and the writers' pessimistic view of reality. Ultimately, students will develop empathy for isolated individuals and understand them as products of their circumstances.

**Mythology, Science Fiction, and Fantasy Literature (EN454) (1 credit)**

*(NCAA Approved Course)*

This seminar will explore the themes central to the creative literary subgenres of myth, legend, science fiction, fantasy and gothic. Students will read various classics and modern works. Critical thinking, essay writing, researching and speaking skills will be emphasized.

**Honors Mythology, Science Fiction, and Fantasy Literature (EN455) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

Honors Mythology, Science Fiction and Fantasy Literature is an accelerated course for motivated readers and writers who have clearly demonstrated strong language arts ability. Students will read various pieces of literature that explore the realms of mythology, science fiction and fantasy; these will include classics and modern works. Students will question the characteristics of the genre and address concerns, themes and motifs that arise from reading the texts. The course will ultimately answer the question, "How are mythology, science fiction and fantasy writing distinctive?" The literature will allow students to understand the appeal of this genre and to become better problem solvers by stretching the mind to new possibilities. By the end of the course, students will be encouraged to create a publishable work of mythology, science fiction, fantasy or gothic. Critical thinking, essay writing, researching and speaking skills will be emphasized.

**Reading Literature through the Ages (EN456) (1 credit)**

*(NCAA Approved Course)*

This seminar takes students on a millennial-long journey of literature to provide a survey of classic canonical texts through the ages. Through writings of the ancient Greeks, stories from the Bible, works from Shakespeare, poetry from the Romantic period and texts from the Victorian time period; students will explore the cultural impact that each work and writer made in their time period and why each work also stands the test of time to be considered "classic literature." Close reading, critical thinking, essay writing, researching and speaking skills will be emphasized.

**Honors Reading Literature through the Ages (EN457) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

This accelerated seminar for advanced learners focuses on universal themes throughout history. Students will examine and investigate historical writings' place in today's classrooms. Through study of literature across the ages, students will explore the cultural impact that each work and writer made in their time period and whether each work is able to stand the test of time and be considered classic literature. Close reading, critical thinking, essay writing, researching and speaking skills will be emphasized.

**Advanced Composition, News and Media (EN458) (1 credit)**

*(NCAA Approved Course)*

This seminar introduces students to the fundamentals of advertising, marketing, journalism, and the 24-hour news cycle. Students will learn about the tools and media used to communicate with the public; the role of newspapers, magazines, movies, radio, internet, social media and television; how advertisements do more than entertain and sell more than just products; and the importance of persuasive communication in a rapidly evolving media environment. Student will write original stories and reports and learn how to use digital tools for storytelling and reporting. Students will also engage in critical, cultural and historical analysis of a wide variety of media including advertisements and news stories. Close reading, critical thinking, essay writing, researching and speaking skills will be emphasized.

**Honors Advanced Composition, News and Media (EN459) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

Honors Advanced Composition, News and Media advances student knowledge of advertising, marketing, journalism, and the 24-hour news cycle. Students will analyze and evaluate tools and media used to communicate with the public; the role of newspapers, magazines, movies, radio, internet, social media and television; how advertisements do more than entertain and sell more than just products; and the importance of persuasive communication in a rapidly evolving media environment. Student will write original stories and reports and learn how to use digital tools for storytelling and reporting. Students will also engage in critical, cultural and historical analysis of a wide variety of media including advertisements and news stories. Students will produce and curate original stories and reports and use digital tools to create a school-based production. Close reading, critical thinking, essay writing, researching and speaking skills will be emphasized.

**Comparative Literature, Film and Media (EN440) (1 credit)**

*(NCAA Approved Course)*

This seminar introduces students to the critical study of theater and film to deepen their understanding of the cinematic and performative experience. Students will analyze various texts including plays, screenplays, non-fiction texts and films to explore the genres of comedy and tragedy. Students will study Aristotle's trajectory of tragedy and use that as a baseline to explore both classic and contemporary tragic heroes. Various forms of comedy including parodies, slapstick and satirical comedy will also be studied. Students will research the language of cinema in order to view films more effectively including elements of cinematography, sound, staging, editing and film directing. Close reading, critical thinking, essay writing, researching and speaking skills will be emphasized.

**Honors Comparative Literature, Film and Media (EN441) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

This accelerated seminar for advanced learners introduces students to the critical study of theater and film to deepen their understanding of the cinematic and performative experience. Students will analyze and evaluate the cinematic and theatrical elements in various texts including plays, screenplays, non-fiction texts, and films to explore the genres of film and media. Students will study Aristotle's trajectory of tragedy and use that as a baseline to explore both classic and contemporary tragic heroes. Students will apply Shakespeare's Comedy Model to the study of various forms of comedy. Students will research and



compare various texts with film adaptations to determine how directors influence the evolution of the tragedy and comedy models. Close reading, critical thinking, essay writing, researching and speaking skills will be emphasized.

**Intro to Academic Writing – UCONN (EN601) (1 credit)**

*Prerequisite: Meet two out of the three criteria for Honors Course Selection.*

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

This college-level course is designed to prepare students not yet qualified to take Seminar in Academic Writing and Seminar in Writing through Literature but who would benefit from a preparatory course that carries college credit. The course focuses on the development of reading and writing skills essential to college work. The course includes revision of formal assignments and instruction on grammar, mechanics and style. Students who enroll in the UCONN Early College Experience (ECE) program and successfully complete this course are eligible to earn four (4) UCONN college credits for the Basic Writing course, ENGL1004. This course meets graduation requirements for CTECS English.

**Seminar in Academic Writing – UCONN (EN608) (1 credit)**

*Prerequisite: Meet two out of the three criteria for Honors Course Selection.*

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

This college-level course for advanced learners provides instruction in academic writing through interdisciplinary readings. Assignments emphasize interpretation, argumentation and reflection as well as revision of formal assignments and instruction on grammar, mechanics and style. To be successful in this course, students need to be independent, self-motivated and ready to take on the challenge of participating in seminar-style discussions as well as read and write at a college level.

Students who enroll in the UCONN Early College Experience (ECE) program and successfully complete this course are eligible to earn four (4) UCONN college credits for the Seminar in Academic Writing course. This course meets graduation requirements for Grade 12 English.

**Seminar in Writing through Literature – UCONN (EN609) (1 credit)**

*Prerequisite: Meet two out of the three criteria for Honors Course Selection.*

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

This college-level course for advanced learners provides instruction in academic writing through literary reading. Assignments emphasize interpretation, argumentation and reflection as well as revision of formal assignments and instruction on grammar, mechanics and style. To be successful in this course, students need to be independent, self-motivated and ready to participate in seminar-style discussions as well as read and write at a college level.

Students who enroll in the UCONN Early College Experience (ECE) program and successfully complete this course are eligible to earn four (4) UCONN college credits for Seminar in Writing through Literature course (ENGL1011). This course meets graduation requirements for Grade 12 English.

**AP English Language and Composition (EN413) (1 credit)**

*(NCAA Approved Course)*

This course is equivalent to an introductory college-level course in English. Learn about the elements of argument and composition as you develop your critical-reading and writing skills. Students will read and analyze nonfiction works from various periods and write essays with different aims: for example, to explain an idea, argue a point, or persuade your reader of something.

**AP English Literature and Composition** (EN605) (*1 credit*)

*(NCAA Approved Course)*

This course is equivalent to an introductory college-level course in English. Learn how to understand and evaluate works of fiction, poetry, and drama from various periods and cultures. Students will read literary works and write essays to explain and support your analysis of them.

## HEALTH EDUCATION

Students complete one of the following sequences:

Grade 9	Grade 10	Grade 11	Grade 12
¼ credit	¼ credit	¼ credit	¼ credit
Health Education I (HE110)	Health Education II (HE210)	Health Education III (HE310)	Health Education IV (HE410)

### HEALTH EDUCATION COURSE DESCRIPTIONS



#### **Health Education** (1 credit total required for graduation)

CTECS Health Education courses are designed to support and guide students' personal and academic achievement through development of skills needed to:

- Live a healthy and balanced lifestyle;
- Access, evaluate and use information from various sources to achieve overall health and well-being;
- Comprehend concepts related to health and fitness and implement realistic plans for lifelong healthy and balanced living; and
- Make plans and take actions that lead to healthy and balanced living for themselves and for the world around them.

The CTECS Health Education curriculum is a standards-based program that assist CTECS students in understanding that health is a lifelong responsibility by analyzing individual risk factors and health decisions that promote health and prevent disease.

Each CTECS Health Education course is designed to provide CTECS students with the basis for continued methods of developing knowledge, concepts, skills, behaviors, and attitudes related to health and well-being. All CTECS Health Education courses include medically accurate, developmentally and culturally appropriate content in a planned, sequential, comprehensive health education curriculum aligned to the Connecticut State Department of Education's Healthy and Balanced Living Curriculum Framework that includes: Nutrition, Injury Prevention, Wellness, Substance Abuse Prevention, Disease Prevention, Mental Health, Fitness and Sexual Health Education. The CTECS Health Education curriculum includes Connecticut General Statutes (CGS) required content of Alcohol, Tobacco and Other Drugs (10-19a), Acquired Immune Deficiency Syndrome (10-19b) and sexual health education (10-16f).

# MATHEMATICS

## MATHEMATICS COURSE SEQUENCE

3 credits required for graduation – Below are some typical pathways

3 Credit Pathway	4 Credit Pathway	4 Credit College Prep Pathway	4 Credit Honors Pathway
Pre-Algebra Algebra I Geometry or one of the following <u>Electives</u> : <ul style="list-style-type: none"> <li>• Mathematical Application I</li> <li>• Personal Finance and Algebra</li> </ul>	Algebra I Algebra II Geometry <u>And one of the following Electives:</u> <ul style="list-style-type: none"> <li>• Mathematical Application I</li> <li>• Personal Finance and Algebra</li> </ul>	Algebra I Algebra II Geometry One of the following <u>Electives</u> : <ul style="list-style-type: none"> <li>• Advanced Algebra</li> <li>• Trigonometry</li> <li>• Statistics</li> </ul>	Honors Algebra I Honors Algebra II Honors Geometry One of the following <u>Electives</u> : <ul style="list-style-type: none"> <li>• Honors Pre-calculus</li> <li>• Honors Calculus</li> <li>• Honors Trigonometry</li> <li>• Honors Statistics</li> </ul>

## MATHEMATICS COURSE DESCRIPTIONS



### **Pre-Algebra (MA110) (1 credit)**

*(Enrollment in the course is determined by pre-assessment data and a recommendation from the teacher)*

This course is designed for students who do not have a strong foundation in arithmetic and pre-algebra skills and understandings. Arithmetic skills of addition, subtraction, multiplication and division using whole numbers, fractions, decimals and integers are developed and applied in a wide variety of problem-solving situations. Applications of these skills will include, but not be limited to, geometry settings and data analysis. Additional arithmetic skills of using percent and percent calculations, as well as understanding and applying exponents, is included in the curriculum. Students will also understand and apply pre-algebra topics including understanding variables, solving simple linear equations and gaining an understanding of the co-ordinate plane.

### **Algebra I (MA111) (1 credit)**

*(NCAA Approved Course)*

Based on a real-world application of algebra, students will develop an understanding of the symbolic language of mathematics. Algebraic skills and concepts are developed and applied in a wide variety of problem-solving situations. The application of mathematical concepts to trade experiences reinforces the course curriculum. Students will learn to simplify algebraic expressions, solve algebraic sentences and to communicate their procedures as well as defend their results. The study and application of linear functions will be emphasized (graphing and writing linear equations). Algebra I is aligned to the Common Core State Standard. The structure of the course and district assessments will prepare students for the high stakes assessments. The use of a graphing calculator is incorporated.

**Honors Algebra I (MA112) (1 credit)**

*(NCAA Approved Course) See Section XV for Honors/Advanced Level Criteria*

This is an accelerated course that focuses on an in-depth understanding of algebra. The course contains an in-depth study of functions, both linear and non-linear. Topics include solving, graphing and interpreting linear models (including systems of equations), simplifying expressions containing exponents, performing operations with polynomials, basic trigonometry and topics from discrete mathematics. The structure of the course and district assessments will prepare students for high stakes assessments. Statistics, probability and geometry are integrated throughout this course. The use of a graphing calculator is incorporated.

**Geometry (MA211) (1 credit)**

*Prerequisite: Algebra I*

*(NCAA Approved Course)*

Based on the real-life application of geometry, a student will investigate concepts in geometry such as congruence and similarity and apply that knowledge when conducting proofs and constructions. Coordinate geometry is also used, which integrates a lot of algebra skill learning from the previous year. Critical thinking and problem-solving is emphasized as well as developing the skills to communicate mathematical ideas. Geometry is aligned to the Common Core State Standard. The structure of the course and district assessments will prepare students for high stakes assessments. The use of instructional technology is incorporated.

**Honors Geometry (MA212) (1 credit)**

*Prerequisite: Honors Algebra I*

*(NCAA Approved Course) See Section XV for Honors/Advanced Level Criteria*

This is an accelerated course that focuses on an in-depth understanding of the relationships of congruence and similarity, the structures used to analyze them and the language used to communicate these ideas. Constructing proofs, use of coordinate geometry and the study of conic sections are included. This course requires a greater degree of independence and competence in critical thinking and communicating mathematically. Geometry is aligned to the Common Core State Standard. The structure of the course and district assessments will prepare students for high stakes assessments. The use of instructional technology is incorporated.

**Algebra II (MA113) (1 credit)**

*Prerequisite: Successful completion of Algebra I. Students who earn credit in Honors Algebra I cannot take Algebra II for credit because there is too much overlap in the curricula.*

*(NCAA Approved Course)*

In Algebra II, the student's knowledge of algebra is reinforced and extended. Knowledge of functions is expanded to quadratics and polynomials. Topics include algebraic vocabulary, variations, solving systems of equations, understanding non-linear function and graphs, with as many applications as possible. The course sets the stage for a higher-level study of mathematics (Advanced Algebra). Students are expected to communicate their procedures as well as defend their results. The application of mathematical concepts to trade experiences reinforces the curriculum. The use of a graphing calculator is encouraged.

**Advanced Algebra (MA312) (1 credit)**

*Prerequisite: Successful completion of Algebra II or Honors Algebra I*

*(NCAA Approved Course)*

In Advanced Algebra, the student's knowledge of algebra is reinforced and extended. Knowledge of functions is extended to include exponential and logarithmic, rational and radical and piecewise. A unit on data analysis and statistics is also included. The purpose of this course is to prepare students for the transition to college-level math and solidify their knowledge and skills in preparation to be successful in a pre-calculus course. Students are expected to communicate their procedures, as well as defend their results.

The application of mathematical concepts to trade experiences reinforces the curriculum. The use of a graphing calculator is encouraged.

**Honors Algebra II (MA114) (1 credit)**

*Prerequisite: Successful completions of Honors Algebra I (or teacher recommendation)  
(NCAA Approved Course) See Section XV for Honors/Advanced Level Criteria*

This is an accelerated course that focuses on an in-depth understanding of algebra. The course continues an in-depth study of functions, which is extended to quadratics, exponential, rational and trigonometric functions. Topics include algebraic vocabulary, variations and graphs, complex numbers, sequences, probability and trigonometry, with as many applications as possible. The course sets the stage for a higher-level study of mathematics. This course requires a greater degree of independence and competence in critical thinking and communicating mathematically. The application of mathematical concepts to trade experiences reinforces the curriculum. The use of a graphing calculator is encouraged.

**Honors Pre-calculus (MA313) (1 credit)**

*Prerequisite: Successful completion of Honors Algebra II (or teacher recommendation)  
(NCAA Approved Course) See Section XV for Honors/Advanced Level Criteria*

This course will enable students to develop an in-depth understanding of graphs of relations, algebraic and trigonometric functions. Special focus is placed on the use of models to solve real-life problems. The course is taught as a preparation for the study of calculus. In addition, students convert real-world data into numerical or algebraic models. Students also use these models to analyze and predict behavior of data and effectively communicate those results. This demanding course requires a great deal of independence and competence in critical thinking and communicating mathematically. The use of a graphing calculator is highly integrated into instruction and learning.

**Honors Calculus (MA414) (1 credit)**

*Prerequisite: Successful completion of Honors Pre-calculus  
(NCAA Approved Course) See Section XV for Honors/Advanced Level Criteria*

This course includes the study of real numbers and the creation and use of graphs, relations, functions, trigonometric functions, limits, derivatives and integrals. These concepts will be used to model, solve problems and convert real-world data sets into limits, derivatives and integrals as graphical, numerical and algebraic models. This demanding course requires a great deal of independence and competence in critical thinking and communicating mathematically. The use of a graphing calculator is incorporated.

**Mathematical Applications I (MA620) (1 credit)**

*Prerequisite: Successful completion of Algebra I.*

The purpose of this course is to explore new areas of mathematics and reinforce them through the application of algebraic and geometry concepts. Areas of study include topics such as discrete math (graph theory, simulations and optimizations), simple statistics and data analysis, application of the Pythagorean Theorem and linear programming. The application of mathematical concepts to trade experiences reinforces this curriculum.

**Statistics (MA612) (1 credit)**

*Prerequisite: Successful completion of Algebra II  
(NCAA Approved Course)*

This course will use the standard approaches to statistical analysis, exploratory data analysis, elementary probability, sampling distributions and estimation. The application of mathematical concepts to trade experiences reinforces the curriculum. The use of a graphing calculator is incorporated.

**AP Statistics (MA614) (1 credit)**

*(NCAA Approved Course)*

This course is equivalent to an introductory college-level course in Statistics. Learn about the major concepts and tools used for collecting, analyzing, and drawing conclusions from data. Students will explore statistics through discussion and activities, and you will design surveys and experiments.

**Honors Statistics (MA613) (1 credit)**

*Pre-requisite: Successful completion of Honors Algebra II*

*(NCAA Approved Course) See Section XV for Honors/Advanced Level Criteria*

This course will use standard approaches to understand descriptive and inferential statistics including regression and correlation, as well as distributions of data. Probability and random variables are also included in the course expectations.

**Trigonometry (MA611) (1 credit)**

*Pre-requisite: Successful completion of Algebra II*

*(NCAA Approved Course)*

Applied Trigonometry is designed for students wishing to take a fourth or fifth credit in math. Students who successfully complete Algebra II and want a fourth year can select this course as senior math. Some students may wish to take Applied Trigonometry concurrently with Advanced Algebra, Pre-calculus or Statistics. This course is designed primarily as an application of trigonometry and the study of the unit circle. A thorough examination will be conducted of the sine, cosine and tangent functions, including their inverses, with respect to a variety of application specific to the trades. Both the right triangle and oblique triangle cases will be considered in detail. Traditional methods of instruction and the examination of the unit circle in conjunction with the use of graphing calculator will be employed. Topics in analytical trigonometry will also be touched upon and certain students may delve deeper into the study of analytical trigonometry.

**Honors Trigonometry (MA610) (1 credit)**

*Pre-requisite: Successful completion of Honors Algebra II*

*(NCAA Approved Course) See Section XV for Honors/Advanced Level Criteria*

Honors Trigonometry is designed for students wishing to take a fourth or fifth credit in math. This is a very traditional trigonometry course and includes the following topics: trigonometry functions, right triangle trigonometry, circular functions and radian measure, trigonometric identities, inverse circular functions, applications of trigonometry and vectors as well as polar and parametric equations. Topics in analytical trigonometry will also be touched upon and certain students may delve deeper into the study of analytical trigonometry.

**Personal Finance with Algebra (MA635) (1 credit) Intended to be a fourth or fifth credit course.**

*Prerequisite: Successful completion of Algebra I*

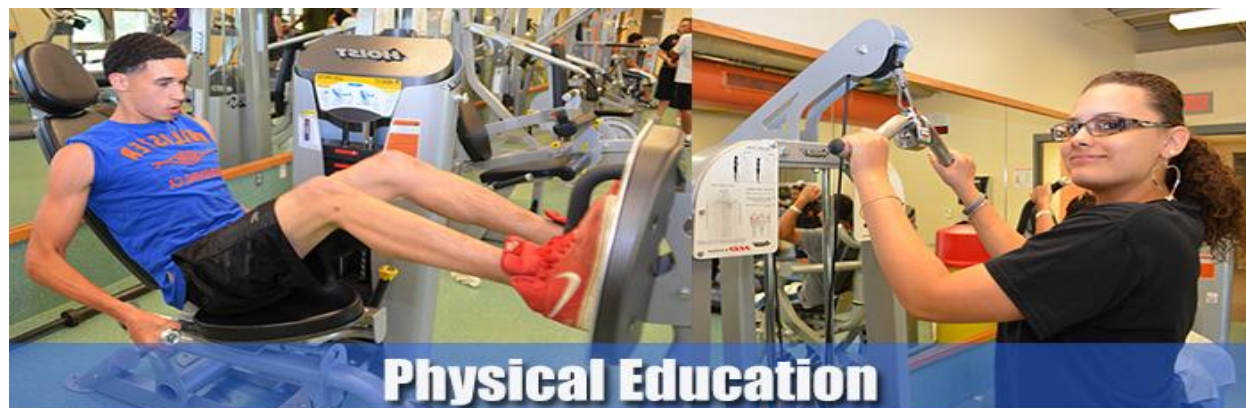
Personal Finance and Algebra is a review of rates, ratios and proportions and applying these concepts to financial situations. Algebra is also applied to everyday financial decisions such as personal finance, planning for college, managing a household and checking/credit cards.

## PHYSICAL EDUCATION

All CTECS students are required to take Physical Education each school year and complete one of the following sequences:

Grade 9	Grade 10	Grade 11	Grade 12
Physical Education I (PE120) ¼ credit	Physical Education II (PE220) ¼ credit	Physical Education III (PE320) ¼ credit	Physical Education IV (PE420) ¼ credit
<b>OR</b>			
Physical Education I (PE121) ½ credit	Physical Education II (PE221) ½ credit	Physical Education Elective (replaces PE320) ¼ credit	Physical Education Elective (replaces PE420) ¼ credit

### PHYSICAL EDUCATION COURSE DESCRIPTION



#### **Physical Education** (1 credit total required for graduation)

A required course for graduation, Physical Education provides the emphasis on health-related fitness and developing the skills and habits necessary for a lifetime of activities. This course includes the major content areas in a planned, sequential, comprehensive physical education curriculum as stated in the Connecticut State Department of Education's Healthy and Balanced Living Curriculum Framework: physical fitness, team sports and lifetime activities.

Students are provided with opportunities to achieve and maintain a health-enhancing level of fitness and to increase their knowledge of fitness concepts. This series has been designed to foster in students' skill development in order to explore a variety of lifetime activities and team sport for enjoyment; and to develop leadership skills through collaboration and effective communication.

#### **PHYSICAL EDUCATION I** (PE120, PE121) (¼ or ½ credit)

Physical Education I promotes physical fitness through total body movement and adventure programming. Students will be afforded opportunities for individual physical development in the areas of strength, flexibility, coordination, endurance, balance, agility, range of motion and power. Students will gain knowledge in proper exercise techniques and practices, cooperation, good nutritional habits, basic muscle anatomy and elementary cardiovascular physiology.

#### **PHYSICAL EDUCATION II** (PE220, PE221) (¼ or ½ credit)

Students will enhance physical fitness skills obtained in Physical Education I to participate in the Connecticut Physical Fitness Assessment. Additionally, students will demonstrate basic competence of locomotor, non-locomotor and manipulative skills through the exploration of lifetime activities and team sports.



**PHYSICAL EDUCATION III** (PE320, PE321) (*1/4 credit*)

Students will refine physical fitness skills obtained in a Physical Education I and II to develop a personal fitness program. Students will use advanced locomotor, non-locomotor and manipulative skills and strategies through participation in lifetime activities and team sports.

**PHYSICAL EDUCATION IV** (PE420, PE421) (*1/4 credits*)

Students will hone physical fitness skills obtained in Physical Education I, II, III to improve and or maintain their personal physical fitness program. Students will apply advanced locomotor, non-locomotor and manipulative skills and strategies with more complex movement skills in lifetime activities and team sports.

Elective courses and descriptions are listed beginning on page 111.

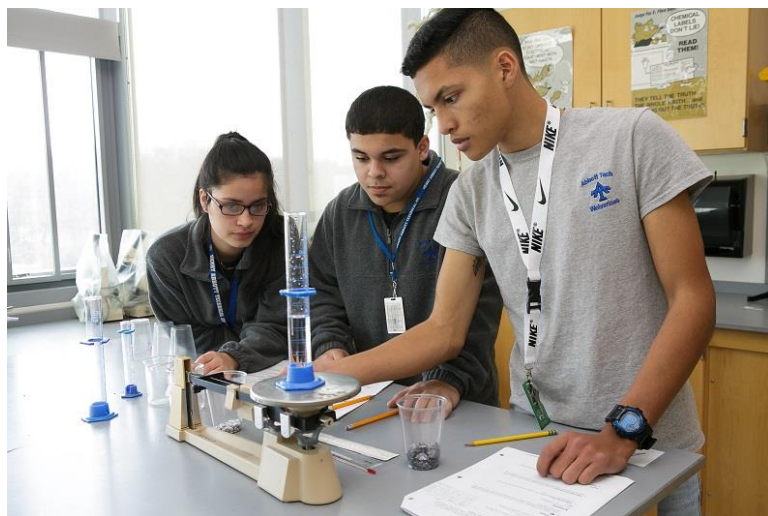
# SCIENCE

## SCIENCE COURSE SEQUENCE

3 credits are required for graduation

Grade 9	Grade 10	Grade 11*	Grade 12*
1 credit	1 credit	1 credit	1 credit
General Science with Lab Honors General Science 9 with Lab	Biology I Honors Biology I	Chemistry Honors Chemistry Advanced Topics in General Science	Chemistry Honors Chemistry Physics Honors Physics General Physics – UCONN Biology - UCONN Ethics and Science Astronomy Environmental Science Forensics Human Anatomy and Physiology

## SCIENCE COURSE DESCRIPTIONS



### **General Science 9 with Lab (SC115) (NCAA Approved Course) NGSS Assessment (1 credit)**

General Science 9 with Lab develops the student’s scientific inquiry by integrating the sciences, with a focus on preparing the student. This course builds on the concepts and principles of chemistry, environmental topics and physics. The application of scientific concepts to trade experiences reinforces the curriculum. This course covers areas of chemical reactions, energy transfers in life processes and biochemistry. Students will form hypotheses, design experiments, use technology, analyze data and draw conclusions. Course content reflects the Connecticut Next Generation Science (NGSS) Assessment.

### **Honors General Science 9 with Lab (SC116) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

The honors section is a more rigorous application of the General Science 9 with Lab. Topics are covered more in depth and include additional hands-on laboratory work. Individual student research topics in Physical Science are emphasized in this course.

**Biology I (SC635) (1 credit)**

*(NCAA Approved Course)*

Following the Connecticut Science Framework 3 and 4, Biology I/Foundations of Life Science 10 with Lab continues the students' scientific inquiry training as preparation for the NGSS Assessment. The course, which builds upon the knowledge of biological concepts, includes cell chemistry, biotechnology, genetics, evolution and biodiversity. As in grade 9, students will continue forming hypotheses, designing experiments, analyzing data and drawing conclusions while expanding their understanding of the content standards.

**Honors Biology I (SC636) (1 credit)**

*Prerequisite: Successful completion of Algebra I and a grade of 95 or a grade of 85 in Honors General Science 9*

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

The honors section is a more rigorous application of the Biology I/Foundations of Life Science 10 with Lab. Topics are covered more in depth and include additional hands-on laboratory work. Individual student research topics in Life Science are emphasized in this course.

**Biology II (SC637) (1 credit)**

*Prerequisite: Biology I or Foundations of Life Science in Grade 10*

*(NCAA Approved Course)*

This lab course will focus on biological concepts. Topics include the scientific method of inquiry, as well as the following: basic biochemistry; the study of cell structure and function; cell physiology; cell reproduction and development; Mendelian genetics; population genetics; ecology; and the classification, structure and function of organisms. The application of scientific concepts to trade experiences reinforces the course curriculum. A variety of laboratories provide the student with opportunities to form hypotheses, design experiments, use technology, analyze data and draw conclusions.

**Chemistry (SC610) (1 credit)**

*(NCAA Approved Course)*

This lab course builds on knowledge developed in the previous integrated science courses. Students will be introduced to chemistry topics such as: atomic structure, chemical bonding, energy changes, stoichiometry, periodicity, properties of gases, solutions, acid-base theory, electrochemistry and organic and biochemistry. Students will investigate the properties, composition and structure of matter and the laws that govern the combination of elements and reaction of substances. The application of scientific concepts to trade experiences reinforces the curriculum. Students will apply their knowledge of chemistry to various problem-solving activities with the use of science-specific technologies and standard laboratory tools.

**Honors Chemistry (SC615) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

Honors Chemistry is a laboratory and mathematically oriented science course. Basic classical concepts are emphasized in this college preparatory course. Topics studied will include measurement, atomic and molecular structure and theory, periodic law, chemical bonding, formulas, equations and stoichiometry, gases, liquids, solids and solutions, chemical reactions (acid-base and red-ox), nuclear and organic chemistry.

**Advanced Topics in General Science (SC310) (1 credit)**

*(NCAA Approved Course)*

Advanced Topics in General Science allows students to continue to explore aspects of Chemistry, Physics, and Earth and Space Sciences and to apply data collection, analysis, and interpretation skills related to those scientific concepts. Based on the Next Generation Science Standards, the course is made up of three related disciplines: Earth and Space Science; Physical Sciences; and Engineering, Technology, and Applications

of Science. This framework articulates the standards as well as the science and engineering performances, disciplinary core ideas, and crosscutting concepts. The curriculum describes the specific performances that will be assessed on the Next Generation Science Assessment. Students are expected to complete several inquiry-based projects over the course of the year.

**Physics (SC625) (1 credit)**

*(NCAA Approved Course)*

Using a laboratory approach, students will investigate Newton's laws, classical mechanics, universal gravitation, astronomy, electricity and electrical forces and the electromagnetic wave spectrum (EMS). The application of scientific concepts to trade experiences reinforces the curriculum. Through participation in laboratory experiences, students will develop an understanding of connections between physics and the workings of simple and complex technological devices.

**Honors Physics (SC626) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

A more comprehensive lab course, students will gain an in-depth knowledge and appreciation of the physical world, using both the qualitative and quantitative study of the principles of physics. The application of scientific concepts to trade experiences reinforces the curriculum. Honors Physics stresses the use of mathematics to illuminate the physical situation and problem solving. The prerequisite for taking this course is successful completion of Algebra II or, upon permission of instructor, concurrently taking Algebra II.

**Astronomy (SC661) (1 credit)**

This course is an introduction to the study of the solar system, the stars, galaxies, nebulae and newly discovered celestial bodies. This course is designed to raise the level of student awareness to celestial objects including the history, properties, interrelationships and origins of the universe. Research, online programs and independent study is an integral component of this program. Laboratory activities are included.

**Environmental Science (SC660) (1 credit)**

*(NCAA Approved Course)*

Environmental Science surveys key topic areas including the application of scientific process to environmental analysis; ecology; energy flow; ecological structures; earth systems; and atmospheric, land and water science. Emphasis is placed on human interaction with the geosphere, hydrosphere, atmosphere and biosphere. Topics also include the management of natural resources and analysis of private and governmental decisions involving the environment.

**AP Environmental Science (SC672) (1 credit)**

*(NCAA Approved Course)*

This course is equivalent to an introductory college-level course in Science. Explore and investigate the interrelationships of the natural world and analyze environmental problems, both natural and human-made. Students will take part in laboratory investigations and field work.

**Forensics (SC620) (1 credit)**

*(NCAA Approved Course)*

This course is designed to challenge students with topics such as fingerprinting; DNA analysis; blood typing and spattering; trajectories (for ballistics as well as blood spattering); comparative anatomy; chemical analysis of drugs, poisons and trace evidence; and the dynamics of physics. Students will learn about the careers involved with Forensic Science and will play mock roles as experts in the field to solve crimes. They will learn teamwork in solving the mock crimes and have a chance to change their roles as the year progresses. The students will be provided training in the analysis of data and chemical/biological evidence.

**Human Anatomy and Physiology (SC640) (1 credit)**

*(NCAA Approved Course)*

This course is an introduction to the structure and function of the human body. It provides students with a solid foundation in human anatomy and physiology. This course includes a study of diseases, conditions and an emphasis on how various organ systems maintain homeostasis. The study of human biology incorporates a variety of learning activities such as problem-solving, hands-on-activities, experiments and projects to learn the content. The use of core and advanced biology equipment includes microscopes, human models and prepared slides of the various body sectors.

**General Physics – UCONN ECE (SC655) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

This college-level course for advanced learners explores the basic facts and principles of physics. The laboratory offers fundamental training in precise measurements. To be successful in this course, students need to be independent, self-motivated and ready to take on the challenge of participating in seminar-style discussions. Students who enroll in the UCONN Early College Experience (ECE) program and successfully complete this course are eligible to earn four (4) UCONN college credits for the General Physics course, PHYS1201Q.

**Principals of Biology – UCONN ECE (SC657) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

This college-level course for advanced learners rigorously explores the study of living things with a lab-based agenda. To be successful in this course, students need to be independent, self-motivated and ready to participate in the challenging discussions, laboratory activities and on-line learning. Students who enroll in the UCONN Early College Experience (ECE) program and successfully complete this course are eligible to earn four (4) UCONN college credits for the Principals of Biology.

**Ethics and Science – (SC638) (1 credit)**

*(NCAA Approved Course)*

Scientific ethics relates to all areas of science and explores ethical questions related to them. Ethical analysis helps people make decisions about their behavior and about policy questions that governments, organizations, and communities must face when they consider how best to use new scientific knowledge and innovations. The course “Ethics and Science” provides a real-world context for introducing and underscoring the “need to know” science concepts. Case studies help students see the relevance of the science content they are learning and motivate them to apply their science understanding to issues of social relevance. This course may also inspire students to gain a deeper understanding of the scientific facts so they can make well-reasoned ethical arguments.

# SOCIAL STUDIES

## SOCIAL STUDIES SEQUENCE

(3 credits required for graduation including 1 credit in Civics/American Government)

Grade 9	Grade 10	Grade 11	Grade 12
1 credit World History Honors World History	1 credit Civics/ American Government*  Honors Civics/American Government*	1 credit Modern U. S. History* Honors Modern U. S. History* U.S. History since 1877 UCONN American Studies-UCONN*	1 credit Electives American Studies-UCONN AP Human Geography AP Psychology AP U.S. History II Contemporary Issues Economics Economics and Law Economics-UCONN Holocaust, Genocide and Human Rights Intro. To Human Rights- UCONN Honors Economics Honors Economics and Law Law Psychology Social Studies Topics Honors Social Studies Topics Sociology Topics in Modern U.S. History U.S. History since 1877 UCONN
		½ credit Electives	½ credit Electives
		Sociology Social Studies Topics Three American Wars	Contemporary Issues Law Psychology Sociology Social Studies Topics Three American Wars
1 credit Elective			
African American/Black and Puerto Rican/Latino Studies (pilot year 2021-2022)			

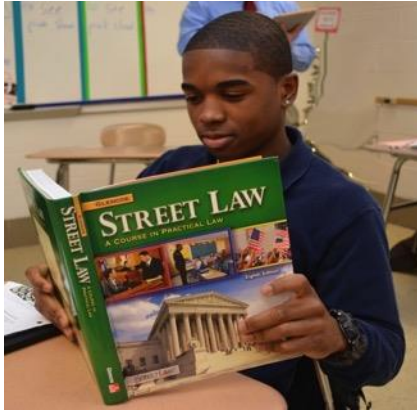
\*U.S. History must be included in a student’s course sequence.

*Course selections are customized per location.*

*Courses that are NCAA approved are indicated.*

*Courses that may be repeated for credit are indicated.*

## SOCIAL STUDIES COURSE DESCRIPTIONS



### **Grade 9**

#### **World History (SS642) (1 credit)** (NCAA Approved Course)

World History examines our past, explains our present, and imagines our future. It is a story about us. The course examines the questions: Where did everything come from? How did we get to where we are now? Where do humans fit in? Where are things heading? The course uses the World History Project/OER online curriculum. The course is an interdisciplinary course including history, science and humanities. Students will view and analyze videos, animations and articles. Students will participate in cooperative classroom activities. Students will learn to use their intuition, make connections, and examine the authority, evidence, and logic of claims across disciplines and scales. Students will learn to engage with new ideas and information and to using evidence and original texts to construct, write, and deliver effective arguments. Throughout the year, STEM connections are made to the student's career technical program. Students will develop critical thinking skills and perspectives to better understand the world around them. World History prepares students to take the Scholastic Achievement Test (SAT) by teaching key college and career-ready skills.

#### **Honors World History (SS643) (1 credit)** (NCAA Approved Course) *See section XV for Honors/Advanced Level Selection Criteria*

World History is an accelerated course for the motivated student who has a strong interest in social studies and is a proficient reader with strong writing and analytical skills. The course is designed to expose the student to the global thresholds that have had the most impact in shaping the modern world. As such, the course seeks to focus on developments that have had the biggest global impact. The course uses the World History Project/OER online curriculum. 9th graders will study how changes in human understanding of art, religion, society, geography, science and government shaped the world we live in today. Throughout the year, STEM connections are made to the student's career technical program. Students will develop historical thinking through active inquiry and research using multiple sources. Students will analyze multiple perspectives and interpretations and will engage in informative and argumentative tasks. Honors World History prepares students to take the Scholastic Aptitude Test (SAT) by teaching key college and career-ready skills.

### **Grade 10**

#### **Civics/American Government (SS210) (1 credit)** (NCAA Approved Course)

Civics/American Government is a required course for graduation. The focus of this course is to prepare students to participate in exercising their political responsibilities as thoughtful and informed citizens. Civics provides a basis for understanding the rights and responsibilities for being an American citizen and a framework for competent and responsible participation. Emphasis is placed on the historical development

of government and political systems and the importance of the rule of law; the United States Constitution; Federal, State and local government structure; and rights and responsibilities of citizenship. Students will actively investigate local, state and national issues, read and participate in discussions, and develop informed opinions using a variety of writing forms. This course prepares students to take the Scholastic Aptitude Test (SAT) by teaching key skills throughout the curriculum.

**Honors Civics/American Government (SS211) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

Honors Civics/American Government is an accelerated course for the motivated student who has a strong interest in social studies and is a proficient reader and writer. Civics is a required course for graduation. The focus of this course is to prepare students to participate in exercising their political responsibilities as thoughtful and informed citizens. Civics provides a basis for understanding the rights and responsibilities for being an American citizen and a framework for competent and responsible participation. Emphasis is placed on the historical development of government and political systems and the importance of the rule of law; the United States Constitution; Federal, State and local government structure; and rights and responsibilities of citizenship. Students will actively investigate local, state and national issues, read and participate in discussions, and develop informed opinions using a variety of writing forms. This course prepares students to take the Scholastic Aptitude Test (SAT) by teaching key skills throughout the curriculum.

**Grade 11/12**

**Modern U.S. History (SS310) (1 credit)**

*(NCAA Approved Course)*

Modern United States History builds upon the historical foundations learned in Civics/American Government. Using a chrono-thematic approach, students study people, events, and movements through time in United States History with a focus on inquiry into the changes in American identity, the economy, foreign affairs, and science, lifestyle and technology. The curriculum allows multiple opportunities for students to develop an understanding of how an issue develops over time. An emphasis is placed on analyzing and evaluating a variety of documents, sources, and perspectives. Throughout the year, connections are made to the student's trade and technical program. Students will develop historical thinking through active inquiry and research using multiple sources. Students will analyze multiple perspectives and interpretations and write to inform and persuade the reader.

**Honors Modern U.S. History (SS311) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

Honors Modern United States History is an accelerated course for the motivated student who has a strong interest in social studies and is a proficient reader and writer. The course builds upon the historical foundations learned in Civics/American Government. Using a chrono-thematic approach, students study people, events, and movements through time in United States History with a focus on inquiry into the changes in American identity, the economy, foreign affairs, and science, lifestyle and technology. The curriculum allows multiple opportunities for students to develop an understanding of how an issue develops over time. An emphasis is placed on analyzing and evaluating a variety of documents, sources, and perspectives. Throughout the year, connections are made to the student's trade and technical program. Students will develop historical thinking through active inquiry and research using multiple sources. Students will analyze multiple perspectives and interpretations and write to inform and persuade the reader.

**Seminar in American Studies – UCONN (SS716) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

This college-level course for advanced learners explores the question what is an American? The course is a multi-disciplinary inquiry into the diversity of American societies and culture. To be successful in this course, students need to be independent, self-motivated and ready to take on the challenge of participating in seminar-style discussions.



Students who enroll in the UCONN Early College Experience (ECE) program and successfully complete this course are eligible to earn three (3) UCONN college credits for the Seminar in American Studies course, (AMST1201). See page 11 for more information. This course meets graduation requirements for Social Studies in U.S. History.

**United States History to 1877 - UCONN (SS718) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

This college-level course for advanced learners' surveys political, economic, social and cultural developments in American History through the Civil War and Reconstruction. The course has two principal aims: To give students a good basic grounding in the foundations of society in the United States and to introduce students to the discipline of history and the process of thinking historically. Some of the themes that will be explored will include the exploration, conquest and settlement of the land; the impact of the environment on culture and vice-versa; the formation of national identity; and the question of American "exceptionalism." This class draws upon a variety of texts and will develop critical thinking skills, reading and writing skills. To be successful in this course, students need to be independent, self-motivated and ready to take on the challenge of participating in seminar-style discussions.

Students who enroll in the UCONN Early College Experience (ECE) program and successfully complete this course are eligible to earn three (3) UCONN college credits for United States History to 1877 course (HIST1501). See page 11 for more information. This course meets graduation requirements for Social Studies.

**United States History since 1877 - UCONN (SS719) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

This college-level course for advanced learners' surveys political, economic, social and cultural developments in American History from 1877 to the present. Students will consider political, economic, cultural and social histories while paying particular attention to gender, race, sexuality, class, region, nation and shifting global contexts. This class draws upon a variety of texts and will develop critical thinking skills, reading and writing skills. To be successful in this course, students need to be independent, self-motivated and ready to take on the challenge of participating in seminar-style discussions.

Students who enroll in the UCONN Early College Experience (ECE) program and successfully complete this course are eligible to earn three (3) UCONN credits for United States History since 1877 course (HIST1502). See page 12 for more information. This course meets graduation requirements for Social Studies.

**Contemporary Issues (SS620, SS665) (1 credit, ½ credit)**

*(NCAA Approved Course)*

In Contemporary Issues, students examine current issues on the local, national and global level using a variety of print and electronic news sources. The course encourages students to make connections to their trade and technical program. Classes focus on decision-making and critical thinking activities such as mini-debates and class discussions. Students will use the process of inquiry to identify issues, form questions, investigate resources and draw conclusions on important contemporary issues. Discussions, role plays, demonstrations and presentations will be used to develop student understanding and awareness.

**Economics (SS625, SS660) (1 credit, ½ credit)**

*(NCAA Approved Course)*

In Economics, students will study about choices that people make to satisfy their needs and desires. The course will provide them with fundamental economic ideas, concepts and skills necessary to reason logically about key economic issues that affect their lives as workers, consumers, producers and citizens. The course focuses on economic choice making due to limited human, natural and capital resources.

Throughout the year, connections are made to the student's trade and technical program. Students learn about the American economy and the differing views on important economic issues. Essential consumer skills will be introduced including budgeting, savings and investment, credit and insurance. Students will identify economic problems, alternatives, benefits and costs, collect and organize economic evidence and compare benefits with costs.

**Economics - UCONN ECE (SS661) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

This college-level course for advanced learners provides a general introduction to micro- and macroeconomics. Economic concepts to be taught include opportunity costs, demand and supply, incentives, comparative advantage, inflation and employment policies, balance of international payments, and economic growth. To be successful in this course, students need to be independent, self-motivated and ready to take on the challenge of participating in seminar-style discussions.

Students who enroll in the UCONN Early College Experience (ECE) program and successfully complete this course are eligible to earn three (3) UCONN college credits for the Essentials of Economics course, (ECON1000). See page 13 for more information.

**Honors Economics (SS630) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

Honors Economics is an accelerated course that focuses on key micro- and macroeconomic concepts as well as key economic philosophies and their application to specific issues and topics. Current issues of economic policy and practice and the role of public policy in economic decision-making are studied. An understanding of the operation of a free market economy and the influence of contemporary forces upon it constitute the major purposes of the study. This course requires high-level reading, writing and analytical skills.

**Economics and Law (SS626) (1 credit)**

*(NCAA Approved Course)*

In this course one semester focuses on Economics and the other semester focuses on Law, students will study about choices that people make to satisfy their needs and desires. The course will provide them with fundamental economic ideas, concepts and skills necessary to reason logically about key economic issues that affect their lives as workers, consumers, producers and citizens. In Law, students are introduced to the American legal system and the impact of law on the daily life of the individual. Students learn about their legal rights and responsibilities, various kinds of laws and lawmaking bodies as well as fundamental civil and criminal procedures. The course provides a study of criminal law, juvenile justice, torts, consumer and housing and family law.

**Honors Economics and Law (SS627) (1 credit)**

*(NCAA Approved Course)*

In this accelerated course for advanced learners, one semester focuses on Economics and the other semester focuses on Law, students will study about choices that people make to satisfy their needs and desires. The course will provide them with fundamental economic ideas, concepts and skills necessary to reason logically about key economic issues that affect their lives as workers, consumers, producers and citizens. In Law, students are introduced to the American legal system and the impact of law on the daily life of the individual. Students learn about their legal rights and responsibilities, various kinds of laws and lawmaking bodies as well as fundamental civil and criminal procedures. The course provides a study of criminal law, juvenile justice, torts, consumer and housing and family law.

**Holocaust, Genocide, and Human Rights (SS710) (1 credit)**

*(NCAA Approved Course)*

This course is an in-depth study of the Holocaust as well as genocide and terrorism in the 20th century to the present. The course will focus on the historical, social, political, intellectual, cultural and economic

causes and consequences of the Holocaust as well as current examples of genocide and terrorism. Students will use the process of inquiry to identify issues, form questions, investigate resources and draw conclusions.

**Introduction to Human Rights- UCONN ECE (SS723) (1 credit)**

*(NCAA Approved Course) See section XV for Honors/Advanced Level Selection Criteria*

This college-level course for advanced learners provides an introduction to the interdisciplinary study of human rights through the lens of law, justice, ethics, and morality. Students will study and consider the history of human rights and the creation of international human rights law. Students will then reflect on the evolution of how human rights is considered today in different cultures and focus in on specific, current human rights issues. By the end of the semester, students will have developed an understanding of human rights as international law and as a movement formed around a set of values shared by individuals and communities across the globe. They will also be familiar and have grappled with critiques and responses to the human rights framework and have learned policy and advocacy strategies to secure human rights for all people.

Students who enroll in the UCONN Early College Experience (ECE) program and successfully complete this course are eligible to earn three (3) UCONN college credits for the Introduction to Human Rights course, (HRTS1007). See page 11 for more information.

**Law (SS610, SS670) (1 credit, ½ credit)**

*(NCAA Approved Course)*

In Law, students are introduced to the American legal system and the impact of law on the daily life of the individual. Students learn about their legal rights and responsibilities, various kinds of laws and lawmaking bodies as well as fundamental civil and criminal procedures. The course provides a study of criminal law, juvenile justice, torts, consumer and housing and family law. Discussions, role plays, demonstrations and debates will be used to develop student understanding of the complexity of the legal system and individual rights and liberties.

**Psychology (SS645, SS675) (1 credit or ½ credit)**

*(NCAA Approved Course)*

Psychology is the scientific study of behavior and mental processes that can involve both animal and human behavior. In Psychology, students are introduced to the historical development of psychology and the scientific study of behavior and mental processes. Students will learn about personality development, learning theory, biological bases of behavior, heredity versus environment, memory, abnormal psychology and current mental health issues. Students will take part in discussions, experiments, group projects, demonstrations and presentations designed to better understand how people think, feel and do.

**Sociology (SS655, SS680) (1 credit or ½ credit)**

*(NCAA Approved Course)*

Sociology introduces students to the study of human behavior from an individual and group perspective. Students will examine the role of the individual as a member of primary and secondary groups, and the pressures that these groups exert. They will investigate the culture and values of school, home and work. Throughout the year, connections are made to the student's trade and technical program. Students will review research, take part in discussions, engage in group projects, demonstrations and exercises – all designed to develop student understanding and awareness of group dynamics.

**Social Studies Topics (SS650, SS651, SS652) (1 credit, ½ credit, ¼ credit)**

*(NCAA Approved Course)*

This course provides students an opportunity to study selected social science topics from the following areas: economics, law, psychology, sociology and/or contemporary issues. Students will use a variety of print and non-print sources and will analyze a variety of issues throughout the year. Students will develop critical thinking skills and perspectives to better understand the world around them.

**Honors Social Studies Topics (SS653) (1 credit)**

*(NCAA Approved Course)*

Social Studies Topics is an accelerated course for the motivated student who has a strong interest in social studies and is a proficient reader and writer. This course provides students an opportunity to study selected social science topics from the following areas: economics, law, psychology, sociology and/or contemporary issues. Students will use a variety of print and non-print sources and will analyze a variety of issues throughout the year. Students will create and conduct presentations for classmates and take a lead role in classroom discussions. Students will develop critical thinking skills and perspectives to better understand the world around them.

**Three American Wars (SS686) (½ credit)**

This course concentrates on three significant wars such as the Revolutionary War, Mexican American War and the Civil War or the Korean War, Vietnam War and Iraq War. The course focuses on the historical, social, political, intellectual, cultural and economic causes and consequences of these wars in American History.

**Topics in Modern U.S. History (SS720) (1 credit)**

*(NCAA Approved Course)*

This course focuses on key people, events and technology during specific historical periods in American History such as slavery, freedom and the struggle for empire; revolution and the new nation; expansion and reform; development of the industrial United States; emergence of modern America and contemporary United States. Students will compare and contrast time periods as well as evaluate foreign and domestic policy decisions. Students will demonstrate knowledge and understanding of specific events by completing individual projects choosing from a variety of formats.

**AP Human Geography (SS721) (1 credit)**

*(NCAA Approved Course)*

This course is equivalent to an introductory college-level course in human geography. The course introduces students to the systematic study of patterns and processes that have shaped human understanding, use, and alteration of Earth's surface. Students study the distribution, processes, and effects of the human population on our planet. Students employ spatial concepts and landscape analysis to examine socioeconomic organization and its environmental consequences. They also learn about the methods and tools geographers use in their research and applications. Students learn how to use and interpret maps, data sets, geographic models, GIS, aerial photographs and satellite images.

**AP U.S. Government and Politics (SS606) (1 credit)**

*(NCAA Approved Course)*

AP U.S. Government and Politics provides a college-level, nonpartisan introduction to key political concepts, ideas, institutions, policies, interactions, roles, and behaviors that characterize the constitutional system and political culture of the United States. Students will study U.S. foundational documents, Supreme Court decisions, and other texts and visuals to gain an understanding of the relationships and interactions among political institutions, processes, and behavior. They will also engage in disciplinary practices that require them to read and interpret data, make comparisons and applications, and develop evidence-based arguments. In addition, they will complete a political science research or applied civics project. This course fulfills the state mandated Civics Requirement.

**AP Psychology (SS676) (1 credit)**

*(NCAA Approved Course)*

AP Psychology is an introductory college-level psychology course. Students will cultivate their understanding of the systematic and scientific study of human behavior and mental processes through inquiry-based investigations as they explore concepts like the biological bases of behavior, sensation and perception, learning and cognition, motivation, developmental psychology, testing and individual differences, treatment of abnormal behavior, and social psychology.

**Pilot 2021-2022****African American/Black and Puerto Rican/Latino Studies (SS668) (1 credit)**

This is a one credit, year-long elective course pursuant to Connecticut Public Act No. 19-12. This course will provide students with the opportunity to consider the scope of African American/Black and Puerto Rican/Latino contributions to U.S. history, society, economy, and culture. It utilizes Connecticut's Social Studies Framework themes and inquiry-based approach to deliver a content rich and personalized learning experience. The course is an opportunity for students to explore accomplishments, struggles, intersections, perspectives, and collaborations of African American/Black and Puerto Rican/Latino people in the U.S. Students will examine how historical movements, legislation, and wars affected the citizenship rights of these groups and how they, both separately and together, worked to build U.S. cultural and economic wealth and create more just societies in local, national, and international contexts.

## COURSE DESCRIPTIONS

### SUPPLEMENTAL PROGRAMS



**I. English Language Development \*Level I and II** (ED610, ED612) (*½ credit, ¾ credit*), (ED620, ED622) (*½ credit, ¾ credit*)

Students who have been identified as English Learners (ELs) are provided interventions to improve their English proficiency. Participation in this program provides a structured focus in the areas of listening, reading, speaking and writing skills. This course expands students' essential English communication skills and cultural knowledge and introduces the language of the classroom studies. Students will develop oral classroom skills and reading strategies, expand their vocabulary and use more complex sentence patterns. Students will also learn how to use some school and community resources. \*EL students identified Level 1-3 on LAS Links must be afforded 1 credit of ED.

**II. Literacy Lab** (EN542, EN511, EN512) (*¾ credit, ½ credit, ¼ credit*) (EN543, EN521, EN522) (*¾ credit, ½ credit, ¼ credit*) (EN531, EN530) (*½ credit, ¼ credit*), (EN541, EN540) (*½ credit, ¼ credit*).

The purpose of Literacy Lab is to improve students' reading and writing skills. The course interventions are centered around intensive teacher instruction on decoding, comprehension, vocabulary, and fluency skills. In addition, students will practice using complex texts and materials from other courses of study when working on transferring skills into practice in connected text. Individual and small group instruction is provided in the lab. This class may be repeated for credit.

Students receive credit value aligned with the number of meeting times per week. Labs are graded and computed into the student's grade point average.

**III. Support Services Program**

A Planning and Placement Team (PPT) or 504 meeting will be convened to determine what special education and/or related aids and services are needed in the CTECS environment. Upon enrollment, CTECS will ensure that needed services are provided so that each student receives a Free and Appropriate Public Education. Support Services work to provide needed accommodations and services within the general education setting and career and technical areas through the use of collaborative and co-teaching models in line with educating students in the least restrictive environment.

#### **IV. Work-Based Learning Program**

The purpose of the Work-Based Learning (WBL) Program is to expand and enhance the student's learning through career experiences which are aligned with the student's course of study and are designed to facilitate the student's transition from school to career. The program is available to qualified students in each of the career and technical programs who have demonstrated readiness to benefit from placement in the program.

#### **The objectives of the Work-Based Learning Program are to:**

- Expand and enhance each student's learning through carefully planned, unique career experiences in an actual work setting.
- Help the student make the transition from school to career.
- Teach the student about the environment of work.
- Increase the student's awareness of and appreciation for the relevance of academic subjects as they apply to his or her occupational choice.
- Provide the student with opportunities for potential career placement in his or her occupational choice.
- Project a positive image for students through involvement in business and industry.

#### **Student Qualifications**

Student participation in the WBL program is available to students who are at least 16 years old and who are in their junior or senior year. The student must:

- Maintain a 70 average in his or her academic courses with no failures.
- Maintain a 70 average or better in his or her career and technical courses.
- Be in compliance with the school attendance policy.
- Have demonstrated proficiency in his or her respective career and technical programs.

#### **Hours of Employment**

Juniors – Student release time is limited to 14 hours per week, or 25 hours per 9-day cycle.

Seniors – Student release time is limited to 21 hours per week, or 38 hours per 9-day cycle. At the midpoint of the second trimester there is no restriction on senior hours as long as shop theory, trade-related electives, and graduation requirements are met. The ability to participate in WBL continues while the student is in the academic cycle. As such the student can legally work during early release, after school, and weekends/holidays with all the WBL benefits and protection.

#### **Employer Responsibilities**

Employers are required to compensate the students at a rate no less than the Connecticut minimum wage and provide workers' compensation and liability insurance.

## ELECTIVE COURSES

2021-2022



*Please note: Not all elective courses are available at each school.*



## **APPROVED ELECTIVE COURSE OFFERINGS 2021-2022**

*(The following are approved elective courses which may NOT be offered at all sites. Please contact the respective school Guidance Department for their elective offerings.)*

### **Computer Education**

- Computer Applications I (TC619, TC624)
- Computer Applications II (TC620, TC628)
- Computer Applications III (TC625)
- Computer Applications IV (TC626)

### **Student Development**

- Student Leadership (SD123, SD124, SD130)
- Enrichment Topics 9 (SD150, SD151, SD152)
- Enrichment Topics 10 (SD153, SD154, SD155)
- Enrichment Topics 11 (SD156, SD157)
- Enrichment Topics 12 (SD158, SD159)

## ELECTIVE COURSE DESCRIPTIONS 2021-2022

*(The following are approved elective courses which may NOT be offered at all sites. Please contact the respective school Guidance Department for their elective offerings.)*

### COMPUTER EDUCATION

#### **Computer Applications I: Microsoft Word I** (TC619, TC624) (*½ credit, ¼ credit*) \*

This course is an introduction to all the basic features of using Microsoft Word including creating and editing documents, formatting text and documents and illustrating documents with graphics. Students will be able to create letters, tables, memos, reports incorporating tables, use graphics and merge documents.

#### **Computer Applications II: Microsoft Excel I** (TC620, TC628) (*½ credit, ¼ credit*) \*

This course is an introduction to all the basic features of using Microsoft Excel including creating and editing new worksheets within a workbook using formulas and functions, formatting worksheets and inserting charts. Students will be able to create invoices, develop budgets and interpret data for making business decisions.

#### **Computer Applications III: Word, Excel, PowerPoint** (TC625) (*½ credit*) \*

The Computer Applications III course provides opportunities for students to develop competency and demonstrate technological proficiency in areas related to computer literacy standards. This course satisfies the requirements for the articulated agreement with the College Career Pathways program. Students will demonstrate the ability to work with a variety of software applications with an emphasis on Microsoft Word, Microsoft Excel and Microsoft PowerPoint.

#### **Computer Applications IV: Advanced Word, Advanced Excel, Advanced PowerPoint, Publisher** (TC626) (*½ credit*) \*

The Computer Applications IV course provides opportunities for students to develop competency and demonstrate technological proficiency in computer literacy standards. Students will demonstrate the ability to work with a variety of software applications. Students are expected to demonstrate mastery of Word, Excel and PowerPoint and utilize Microsoft Publisher to design projects and products that will be exemplified in the senior capstone portfolio. Enrollment in this class requires at least ½ credit in other Computer Applications courses.

*\*Student successfully completing these courses may qualify for college credit.  
Not available in all schools.*

### ENRICHMENT TOPICS

#### **Enrichment Topics** (SD150, SD151, SD152) (*¾ credit, ½ credit, ¼ credit*) (SD153, SD154, SD155) (*¾ credit, ½ credit, ¼ credit*) (SD156, SD157) (*½ credit, ¼ credit*), (SD158, SD159) (*½ credit, ¼ credit*)

In this course students will explore and develop both academic and career pathways. Students will engage in enrichment topics related to college, work, and society to acquire the 21<sup>st</sup> Century skills necessary to their success as a global citizen. Focused research and creative inquiry projects e.g., project-based learning, youth participatory action research, self-selected study, will develop students' critical thinking skills and strategies to research, analyze, interpret, evaluate and synthesize information across disciplines. College and career preparation topics will develop and enhance student capacity for success in post-graduation technical education, academic, and/or career pathways.

## PHYSICAL EDUCATION

*Please note: The following courses do not meet graduation requirements for Physical Education.*

### **Advanced Fitness and Wellness** (PE610, PE611) (*½ credit, ¼ credit*)

Students will engage in fitness related activities to improve one's overall health and wellness. Students will design and implement a personal fitness program designed to strengthen fitness deficits while improving and maintaining one's physical health and well-being.

### **Body Sculpting** (PE620) (*½ credit or ¼ credit*)

A combination of anaerobic and aerobic workouts for students: including learning the proper technique for lifting weights, TAE BO, Yoga, Pilates and various cardio activities.

### **Strength and Conditioning** (PE630, PE631) (*½ credit or ¼ credit*)

Strength and conditioning are designed for those students who want to develop overall body strength and muscular endurance. The program is designed to strengthen the major muscles of the human body, through lifts such as, bench press, squats, incline bench press. (Course offered only for Grades 11 and 12).

### **Fun, Food and Fitness** (PE640, PE641) (*½ credit or ¼ credit*)

This elective course will allow students to develop and refine skills to increase their overall physical fitness, eating habits and food choices through individualized activities.

### **Lifetime Activities** (PE650, PE651) (*½ credit or ¼ credit*)

Students will participate in individual and dual sport activities designed to improve one's overall physical health and well-being. Students will partake in a variety of activities designed to improve one's physical fitness while providing positive opportunities to engage in recreation.

## STUDENT DEVELOPMENT

### **Student Leadership** (SD123, SD124, SD130) (*1 credit, ½ credit, ¼ credit*)

This course provides students with varied experiences that promote self-discovery and instill confidence in making decisions that impact self and others. Activities include group work, personal reflection,

Student Leadership supports the Student Success Plan through positive social and emotional development, allowing students to engage and to connect to the school environment which encourages students to take risks necessary for academic performance.

## \*WORLD LANGUAGES

### **Spanish Program** (FL117) (**Spanish 1A** - *½ credit*), (FL118) (**Spanish 1B** - *½ credit*)

(F114) (**Spanish I** - *1 credit*)

(*NCAA Approved*)

The design of the Spanish credit program for the CTECS is aligned to college credit requirements for World Languages based on Common Core Standards and Spanish World Languages course standards. The CTECS Spanish program complies with state standards instruction. CTECS students are offered the opportunity to graduate from high school with an added set of skills by pursuing a foreign language. This pathway provides our students with an added repertoire of academic skills making them college and/or career ready, in order to prepare them for the world of work and enhance their opportunities to navigate the job market of the 21<sup>st</sup> Century.

The Spanish I language curriculum and instruction is based on the 5Cs (Communication, Cultures, Connections, Comparisons, and Communities) with the goal of building communicative proficiency and cultural understanding. The CTECS Spanish program follows a blended learning model which provides

language instruction during the students' trade-technology cycle affording them the opportunity of 180 days of *time-on-task* improving their Spanish language skills.

Blending a variety of media, levels of interactivity coupled with traditional pedagogy students are immersed in Spanish. Students are engaged through both digital on-line instruction and teacher-led instruction which provides meaningful interactions to meet the needs of diverse learning styles. Participating in community activities garners for students' genuine opportunities to practice and enhance communication in Spanish.

Beginning with the class of 2023, **the Spanish World Languages 1 credit graduation requirement will be offered either as .5 or 1 credit course options as determined by the school scheduling framework.**

## SECTION XV

### HONORS AND ADVANCED<sup>1</sup> ACADEMIC COURSE PLACEMENT CRITERIA

Honors and advanced placement courses provide students with challenging and rigorous learning experiences. For this reason, careful consideration is given to the placement of a student into an honors or advanced placement course. The following information outlines the criteria of placement into honors level courses in the four major academic programs: English, Math, Science and Social Studies.

#### ENGLISH

Students seeking admission into an English honors or advanced course should meet the following criteria:

**1. Current grade in English course:**

- a. If student is currently in an English honors course, s/he should have an earned 85% average at the time of scheduling.
- b. If student is currently in a core level English course, s/he should have an earned 90% at the time of scheduling.

**2. Teacher Recommendation:**

When recommending students, teachers should take into consideration the above bulleted items.

#### MATH

Students who are looking to attend highly competitive colleges should consider honors level math course work. Honors math courses differ from the core curriculum both in the number of topics assessed and the complexity or depth to which topics are expected to be learned. To that end, the number of topics in a typical honors level math course is twice as many as those in core courses. Additionally, the assessment item types in an honors math course are more complex and difficult.

Student performance determines placement in an honors level math course. Incoming 9<sup>th</sup> grade students are pre-assessed using the ALEKS program. If they show mastery in 100 or more topics, they can be considered for honors. The Course Descriptions outline the pre-requisites for Honors Level Math Classes.

Additionally, with the implementation of the Mastery-Based Learning Model for Mathematics, there is flexibility in the design. Simply put, students on every grade level can easily move from core to honors by showing effort and achievement as measured by performance on assessments within each course.

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<sup>1</sup> The term "advanced" as used in this description includes UCONN Early Experience courses, Community College Career Pathways Courses and College Board AP Courses. There may be additional requirements for UCONN, community college and AP courses as requested by the credit granting institutions.

Minimum for Graduation	Career Pathway	College-prep Pathway	More Competitive College-prep
3-Credit Pathway	4-Credit Pathway	4-Credit College Prep Pathway	4-Credit Honors Pathway
Pre-Algebra Algebra I Geometry or one of the following <u>Electives</u> : <ul style="list-style-type: none"> <li>Mathematical Application I</li> <li>Personal Finance and Algebra</li> </ul>	Algebra I Algebra II Geometry And one of the following <u>Electives</u> : <ul style="list-style-type: none"> <li>Mathematical Application I</li> <li>Personal Finance and Algebra</li> </ul>	Algebra I Algebra II Geometry One of the following <u>Electives</u> : <ul style="list-style-type: none"> <li>Advanced Algebra</li> <li>Trigonometry</li> <li>Statistics</li> </ul>	Honors Algebra I Honors Algebra II Honors Geometry One of the following <u>Electives</u> : <ul style="list-style-type: none"> <li>Honors Pre-calculus</li> <li>Honors Calculus</li> <li>Honors Trigonometry</li> <li>Honors Statistics</li> </ul>

## SCIENCE

**General Information- Honors and Advanced Placement Science:** The course materials in a science honors/advanced placement course is more rigorous in the following areas: research, math aptitude, lab performances, text selection; length of reading assignments; writing assignment prompts; assessment types. The term “advanced” as used in this description includes UCONN Early Experience courses, Community College Career Pathways Courses and College Board AP Courses. There may be additional requirements for UCONN, community college and AP courses as requested by the credit granting institutions.

**Grade 9 Honors General Science:** Students entering Grade 9 Honors General Science should have experience in Algebra 1, or (where applicable) performed high level in an ALEKS pretest in Algebra 1 and received an 85 or higher in grade 8 science. Grade 8 students arriving to us may have little academic experience in science. The mathematical component and advanced science terminologies in an honors program may be challenging. Thus, performance in math is the criteria used when determining placement into Honors General Science.

**Grade 10 Honors Biology 1 (or Honors Life Science):** Successful completion of Algebra 1 and a grade of A or B in Honors General Science 9.

**Grade 11 or Grade 12 Honors Physics:** Successful completion of Algebra 2 with a grade of 85 or higher and a grade of 85 or higher in the science course taken in the previous year.

**Grade 11 or 12 Honors Chemistry:** Successful completion of Algebra 2 with a grade of 85 or higher and a grade of 85 or higher in the science course taken in the previous year.

## SOCIAL STUDIES

The course materials in a social studies honors/advanced placement course are more rigorous in the following areas: text selection; length of reading assignments; writing assignment prompts; assessment types. The term “advanced” as used in this description includes UCONN Early Experience courses, Community College Career Pathways Courses and College Board AP Courses. There may be additional requirements for UCONN, community college and AP courses as requested by the credit granting institutions. Students in an honors/advanced placement course will be expected to do the following:

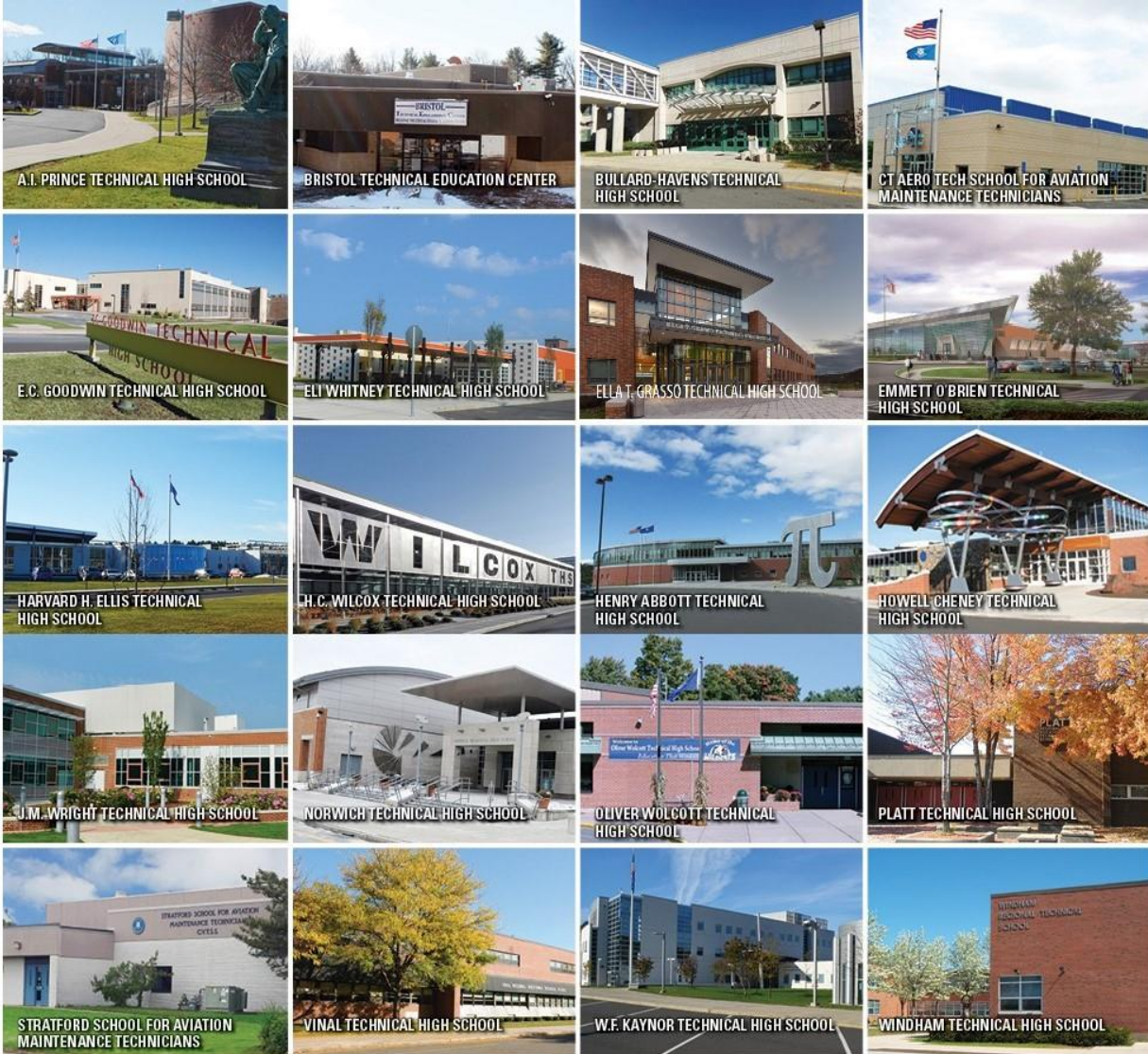
- Comprehend complex grade-level texts independently.
- Contribute thoughtful grade-level commentary to classroom discussion.
- Write to grade-level expectations with attention to organization, detailed content, precise analysis and writing conventions.
- Understand the fundamentals of the research process and execute research with minimal support from teacher.
- Create and conduct presentations for classmates and take a lead role in classroom discussions.

Students seeking admission into a social studies honors/advanced placement course should meet at least 2 of the 3 following criteria:

- 1. Reading on Grade Level:** Students seeking to take a social studies honors/advanced placement course should be reading on the same grade level as the course they are seeking entry into as demonstrated by the STAR Reading Diagnostic Test. (Example: Students seeking entry to American Civics Honors (10<sup>th</sup>), should be reading on a 10<sup>th</sup> grade reading level at the time of scheduling the course.)
- 2. Current grade in social studies course:**
  - a. If student is currently in a social studies honors course, s/he should have an earned 85% or higher at the time of scheduling.
  - b. If student is currently in a core level social studies course, s/he should have an earned 90% or higher at the time of scheduling.
- 3. Teacher Recommendation:** When recommending students, teachers should take into consideration the above bulleted items.

# SCHOOLS AND CONTACTS

## 2021-2022



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<b><u>ABBOTT TECH</u></b> 21 Hayestown Avenue Danbury 06811	(203) 797-4460	<a href="mailto:abbott.principal@cttech.org">abbott.principal@cttech.org</a>	Kevin Durkin
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<b><u>BULLARD-HAVENS TECH</u></b> 500 Palisade Avenue Bridgeport 06610	(203) 579-6333	<a href="mailto:bullard.principal@cttech.org">bullard.principal@cttech.org</a>	Susan Foss
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<b><u>GOODWIN TECH</u></b> 735 Slater Road New Britain 06053	(860) 827-7736	<a href="mailto:goodwin.principal@cttech.org">goodwin.principal@cttech.org</a>	Dr. Anabelle Diaz-Santiago
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<b><u>WHITNEY TECH</u></b> 100 Fairview Avenue Hamden 06514	(203) 397-4031	<a href="mailto:whitney.principal@cttech.org">whitney.principal@cttech.org</a>	Don Concascia Interim Principal
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