



# CONTENTS

Welcome .....	1
Integrated Curriculum – The Future .....	1
Mission Statement of the Connecticut Technical High School System.....	2
CTHSS Career Technical Education Program.....	2
Secondary Programs .....	3
CTHSS Graduation and Promotion Guidelines .....	4
Basic Skills Requirements for Graduation.....	4
Exploratory Program.....	8

## COURSE SELECTIONS

### Career and Technical Clusters

Agriculture, Food and Natural Resources Cluster.....	9
Architecture and Construction Cluster .....	9
Arts, Audio/Visual Technology and Communication Cluster .....	10
Health Science Cluster .....	10
Hospitality and Tourism Cluster .....	10
Human Services Cluster .....	10
Information Technology Cluster .....	10
Manufacturing Cluster.....	11
Marketing, Sales and Service Cluster .....	11
Science Technology, Engineering & Mathematics (STEM) Cluster .....	11
Transportation, Distribution & Logistics Cluster.....	11
College Career Pathways .....	12
Career and Technical Programs.....	13
Career and Technical Courses Locations (Chart).....	14
I. Agriculture, Food and Natural Resources Cluster	
Bioscience and Environmental Technology.....	16
II. Architecture and Construction Cluster	
Sustainable Architecture.....	18
Carpentry .....	20
Electrical.....	22
Facilities Management .....	24
Heating, Ventilation and Air Conditioning (HVAC) .....	26
Masonry.....	28
Plumbing and Heating.....	30
Plumbing, Heating and Cooling .....	32
III. Arts, Audio/Visual Technology and Communications Cluster	
Digital Media.....	34
Sound Production Technology .....	36

IV.	Health Technology Cluster	
	Health Technology .....	38
	Biotechnology .....	40
V.	Hospitality and Tourism Cluster	
	Baking .....	42
	Culinary Arts .....	44
	Tourism, Hospitality and Guest Service Management .....	46
VI.	Human Services Cluster	
	Early Care and Education .....	48
	Hairdressing & Cosmetology .....	50
VII.	Information Technology Cluster	
	Electronics Technology .....	52
	Graphics Technology .....	54
	Information Systems Technology .....	56
VIII.	Manufacturing Cluster	
	Automated Manufacturing Technology .....	58
	Mechanical Design & Engineering Technology .....	60
	Mechatronics .....	62
	Precision Machining Technology .....	64
	Welding and Metal Fabrication .....	66
IX.	Marketing, Sales and Service Cluster	
	Fashion Merchandising and Entrepreneurship .....	68
	Marketing, Management and Entrepreneurship .....	69
X.	Science Technology, Engineering and Mathematics (STEM) Cluster	
	Pre-Electrical Engineering and Applied Electronics Technology .....	71
XI.	Transportation Distribution and Logistics Cluster	
	Automotive Collision Repair and Refinishing .....	73
	Automotive Technology .....	75
	Diesel and Heavy-Duty Equipment Repair .....	77
XII.	Academic Courses	
	The Arts .....	80
	<b>Music .....</b>	<b>83</b>
	English/Language Arts .....	86
	Health Education .....	90
	Mathematics .....	91
	Physical Education .....	95
	Science .....	97
	Social Studies .....	100

XIII.	Course Descriptions Supplemental Programs	
	English Language Development Level I and II.....	106
	<b>Language Arts Literacy Lab</b> .....	<b>106</b>
	<b>Support Services</b> .....	107
	Work-Based Learning .....	107
XIV.	Elective Course Offerings .....	108
	Elective Course Descriptions .....	110
XV.	Honors and Advanced Academic Placement Criteria .....	112
XVI.	Schools and Contacts.....	115

## DECLARATION OF NONDISCRIMINATION

It is the policy of the Connecticut Technical High School System that no person shall be excluded from participation in, denied the benefits of, or otherwise discriminated against under any program, including employment, because of race, color, religious creed, sex, age, national origin, ancestry, marital status, sexual orientation, gender identity or expression, disability (including, but not limited to, mental retardation, past or present history of mental disorder, physical disability or learning disability), genetic information, or any other basis prohibited by Connecticut state and/or federal nondiscrimination laws. The Connecticut Technical High School System does not unlawfully discriminate in employment and licensing against qualified persons with a prior criminal conviction. Inquiries regarding the Connecticut Technical High School System's nondiscrimination policies and practices should be directed to Bea Tinty at CTHSS, 25 Industrial Park Road, Middletown, CT 06457; telephone number (860) 807-2220 for Title IX coordinator & 504 coordinator for each school, and/or, regarding race, color, national origin, age, sex and/or disability, to the U. S. Department of Education, Office for Civil Rights, 33 Arch Street, Suite 900, Boston, Massachusetts 02110-1491; telephone number (617) 289-0111; fax number (617) 289-0150; TTY/TDD (877) 521-2172. The Connecticut Technical High School System is an equal opportunity/affirmative action employer.

## **WELCOME**

The Connecticut Technical High School System (CTHSS) 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 at Connecticut Technical High Schools 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 of Connecticut Technical High Schools 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 116.

## MISSION STATEMENT

*The mission of the Connecticut Technical High School 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 High School 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 **11,200** full-time secondary and adult education students with comprehensive education and training. The Connecticut Technical High School System offers instruction in **32** occupational career and technical programs for secondary students, **five (5)** occupational trade and apprenticeship programs for adult education students.

## SECONDARY PROGRAMS

All Connecticut Technical High School System programs, CTHSS, (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 CTHSS 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 CTHSS career technical education programs are aligned to the (NASDCTEc)'s Common Career Technical Clusters. The CTHSS career technical education programs are:

- Agriculture, Food and Natural Resources
- Architecture and Construction
- Arts, Audio/Visual Technology and Communications
- Health Science
- Hospitality and Tourism
- Human Services
- Information Technology
- Manufacturing
- Marketing
- Science, Technology, Engineering and Mathematics (STEM)
- Transportation, Distribution and Logistics

# GRADUATION AND PROMOTION GUIDELINES

## BASIC SKILLS FOR GRADUATION

Connecticut Technical High School System (CTHSS) students must meet requirements in the following areas in order to earn a CTHSS high school diploma: attendance, credits, courses, a senior summative assessment and Basic Skills requirements.

### 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

Exploratory Program – Grade 9*	3 credits
Career Technical – Grade 10	3 credits
Career Technical – Grade 11	3 credits
Career Technical – 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 who transfers mid-year 9<sup>th</sup> grade or enters in 10<sup>th</sup> grade is waived 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.

Successful completion of the CTHSS career technical education, 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 CTHSS 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.
- CTHSS 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.

*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.

# BASIC SKILLS REQUIREMENTS FOR GRADUATION

## DISTRICT PERFORMANCE STANDARDS

### LANGUAGE ARTS

#### **Performance Standard**

Students will demonstrate the ability to read a piece of literature and respond critically in writing; read and interpret information; and write using standard English conventions.

#### **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 460 or higher on the Evidence-Based Reading and Writing section of the Preliminary Scholastic Assessment/National Merit Scholarship Qualifying Test (PSAT/NMSQT); or**
2. Achieved a score of 480 or higher on the Evidence-Based Reading and Writing section of the Scholastic Assessment Test (SAT); or
3. Passed English 11, English 12 or full credit English elective course with a 70 or higher; or
4. Passed the basic skills assessment in English with a 70 or higher in 11<sup>th</sup> or 12<sup>th</sup> grade.

### MATHEMATICS

#### **Performance Standard**

Students shall demonstrate the ability to solve multiple step 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 460 or higher on the mathematics section of the Preliminary Scholastic Assessment/National Merit Scholarship Qualifying Test (PSAT/NMSQT); or**
2. Achieved a score of 530 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 in either band three (Proficient), four (Goal) or five (Advanced) of the Connecticut Academic Performance Test (CAPT) in **10<sup>th</sup> Grade**; or
2. Passed any science elective 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 High School System (CTHSS) 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 she/he 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 eleven career clusters as follows:

- Agriculture, Food and Natural Resources Cluster
- Architecture and Construction Cluster
- Arts, Audio/Visual Technology and Communications Cluster
- Health Science Cluster
- Hospitality and Tourism Cluster
- Human Services Cluster
- Information Technology 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. CTHSS 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. CTHSS students concentrate their studies and earn a career and technical certificate in the following program:

- Bioscience and Environmental Technology

## **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. CTHSS students concentrate their studies and receive a career and technical certificate in one (1) of the following programs:

- Sustainable Architecture
- Carpentry
- Electrical
- Facilities Management
- 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 Science Cluster**

The Health Science 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:

- Baking
- Culinary Arts
- 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 providing early care and education in daycares, nursery or pre-school settings and 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:

- Early Care and Education
- 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 Systems Technology

### **VIII. 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

### **IX. 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:

- Fashion Merchandising and Entrepreneurship
- Marketing, Management and Entrepreneurship

### **X. 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

### **XI. 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 High School System (CTHSS) 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, CTHSS has partnerships with The Culinary Institute of America, 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.

## 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

- Basic Writing-UConn
- Essentials of Economics- UConn
- General Physics-UConn (SC655)
- Seminar in Academic Writing-UConn
- Seminar in Writing through Literature-UConn
- Seminar in American Studies-UConn
- Principals of Macroeconomics-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

2017-2018



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



2017-2018

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	STAMFORD STRAFORD AVIATION	TORRINGTON WOLCOTT THS	WATERBURY KAYNOR THS	WILLIAMANTIC WINDHAM THS	TOTAL CAREER CLUSTER/PATHWAYS
<b>11</b> Career Clusters Number of Career Clusters	6	7	5	7	5	7	8	0	9	6	7	6	6	6	7	6	0	7	8	6	119
<b>32</b> Career Pathways Number of Career Pathways	10	14	6	12	10	11	11	0	14	11	13	11	14	12	11	11	0	12	13	9	205
<b>AGRICULTURE, FOOD &amp; NATURAL RESOURCES CLUSTER – 1 CAREER PATHWAY</b>																					
Bioscience & Environmental Technology						✓			✓												2
<b>ARCHITECTURE &amp; CONSTRUCTION CLUSTER – 8 CAREER PATHWAYS</b>																					
Carpentry	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	17
Electrical	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	17
Facilities Management																✓					1
Heating, Ventilation & Air Conditioning (HVAC)	✓		✓	✓						✓	✓	✓	✓	✓	✓					✓	10
Masonry		✓		✓					✓												3
Plumbing & Heating	✓	✓		✓	✓	✓	✓		✓		✓		✓	✓	✓	✓				✓	13
Plumbing, Heating & Cooling																		✓			1
Sustainable Architecture		✓		✓									✓							✓	4
<b>ARTS, AV TECHNOLOGY &amp; COMMUNICATIONS CLUSTER – 2 CAREER PATHWAYS</b>																					
Digital Media										✓						✓					2
Sound Production Technology									✓												1
<b>HEALTH SCIENCE CLUSTER – 2 CAREER PATHWAYS</b>																					
Biotechnology															✓						1
Health Technology	✓			✓			✓				✓				✓	✓		✓	✓	✓	9
<b>HOSPITALITY &amp; TOURISM CLUSTER – 3 CAREER PATHWAYS</b>																					
Baking		✓																			1
Culinary Arts	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	18
Tourism, Hospitality & Guest Services Management						✓										✓					2
<b>HUMAN SERVICES CLUSTER – 2 CAREER PATHWAYS</b>																					
Early Child Care & Education		✓																			1
Hairdressing	✓	✓		✓	✓	✓	✓		✓		✓	✓	✓	✓	✓			✓	✓		14
<b>INFORMATION TECHNOLOGY CLUSTER – 3 CAREER PATHWAYS</b>																					
Electronics Technology			✓	✓							✓		✓	✓				✓	✓	✓	7
Graphics Technology		✓		✓		✓			✓		✓			✓		✓		✓			8
Information Systems Technology		✓				✓			✓	✓	✓	✓	✓	✓		✓			✓		10
<b>MANUFACTURING CLUSTER – 5 CAREER PATHWAYS</b>																					
Automated Manufacturing Technology									✓												1
Mechanical Design & Engineering Technology	✓			✓		✓	✓			✓		✓	✓	✓				✓	✓		10
Mechatronics											✓	✓									2
Precision Machining Technology	✓	✓	✓	✓	✓		✓			✓	✓	✓	✓	✓				✓	✓	✓	14
Welding & Metal Fabrication			✓							✓											2
<b>MARKETING, SALES &amp; SERVICE CLUSTER – 2 CAREER PATHWAYS</b>																					
Fashion Merchandising & Entrepreneurship		✓							✓											✓	3
Marketing, Management & Entrepreneurship							✓								✓						2
<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				✓	✓	✓			✓		✓	✓	✓					✓	✓		9
Automotive Technology	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	18
Diesel & Heavy-Duty Equipment Repair										✓											1

*Post-Secondary  
Career Technical Education Programs*

	ANSONIA O'BRIEN THIS	BRIDGEPORT BULLARD-HAVENS THIS	BRISTOL BRISTOL TEC	DANBURY ABBOTT THIS	DANIELSON ELLIS THIS	GROTON GRASSO THIS	HAMDEN WHITNEY THIS	HARTFORD CT AERO TECH AVIATION	HARTFORD PRINCE THIS	MANCHESTER CHENEY THIS	MERIDEN WILCOX THIS	MIDDLETOWN VINAL THIS	MILFORD PLATT THIS	NEW BRITAIN GOODWIN THIS	NORWICH NORWICH THIS	STAMFORD WRIGHT THIS	STRATFORD STRATFORD AVIATION	TORRINGTON WOLCOTT THIS	WATERBURY KAYNOR THIS	WILLIMANTIC WINDHAM THIS	TOTAL CAREER CLUSTER/PATHWAYS
5 Career Clusters Number of Career Clusters	0	0	5	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	7
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>INFORMATION TECHNOLOGY CLUSTER – 1 CAREER PATHWAY</b>																					
Electronics Technology			✓																		1
<b>MANUFACTURING CLUSTER – 2 CAREER PATHWAYS</b>																					
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

# 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.**

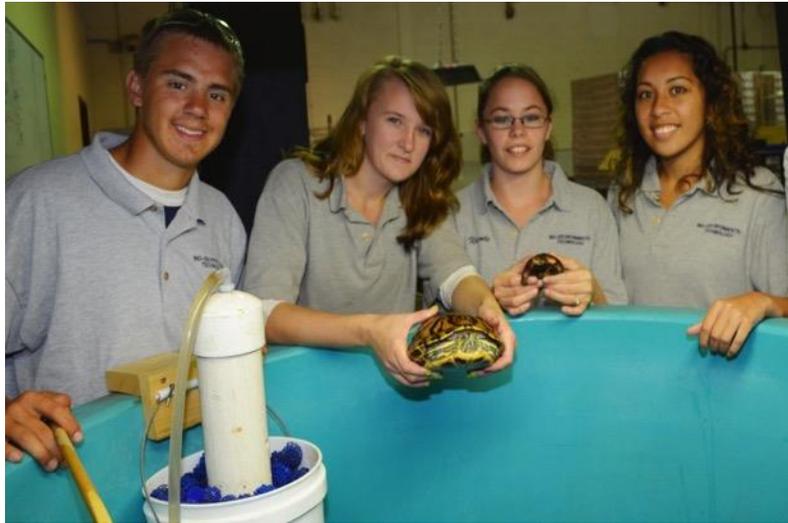
**This multifaceted program connects to all levels of the environment including fresh and wastewater management, plant propagation and greenhouse management, fresh and salt water aquatics, small animal care, forestry and landscape design.**

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

*(This program is only offered at our Grasso Technical High School located in Groton and Prince Technical High School located in Hartford.)*

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.

# 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 (AT110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 7 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 (AT210) (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 (AT310)**

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 (AT410) (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 7 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.

## FACILITIES MANAGEMENT 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 Facilities Management	Introduction to Basic Carpentry, Electrical, HVAC and Plumbing	Advanced HVAC, Introduction to Masonry, Landscaping and Welding	Advanced Troubleshooting of Electrical, HVAC and Plumbing Systems Introduction to Energy Management Systems

### FACILITIES MANAGEMENT COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Facilities Management (FC110) (3 credits)**

This course covers the overall management of a maintenance program in a commercial, industrial or residential building. The curriculum includes: general building repairs, including but not limited to Carpentry, Electrical, HVAC, Masonry, Plumbing and Solar operation and repairs. It also includes familiarization with welding, metal fabrication, landscaping maintenance and mechanical repairs.

In grade 9 students will learn building and shop safety including acquiring their OSHA 10 card. They will learn the theory of Plant and Building maintenance. They will learn how to use basic measuring instruments, hand tools, and safe operation of shop power equipment. Students will review basic mathematical computations and related sciences necessary to assist them in their work. They will learn how to work from simple shop drawings to accomplish their tasks including building basic wood, electrical, HVAC and plumbing projects. Students will be taught and practice Customer Service Skills and Organization of Work Tasks. They will also be introduced to “Green Building” including but not limited to gray water, indoor air quality, renewable energy, sustainable materials and volatile organic chemicals (VOCs).

#### **Introduction to Basic Carpentry, Electrical, HVAC and Plumbing (FC210) (3 credits)**

In grade 10 students will learn how to read, draw, interpret and wire basic electrical circuits in a safe, efficient and workable manner. The students will learn how to use voltage testers, continuity testers and basic electrical hand tools. They will learn the theory of electrical and plumbing because of its importance in that it is a licensed trade that pertains to the health and welfare of individuals. The students will also learn how to safely operate Oxy-Acetylene, Mig and Arc welding equipment. They will learn and practice basic masonry repair skills. They will learn how to prepare, prime and paint different types of materials. The course covers all the trades which pertain to the program. Building Trades Blueprint Reading and the use of Computer Aided Architectural Design (CAAD) software will be utilized in depth from basic prints to the actual building as-built.

**Advanced HVAC, Introduction to Masonry, Landscaping and Welding (FC310) (3 credits)**

In grade 11, students will advance toward OSHA 30 certification. The student will learn how to use basic HVAC equipment and testing instruments. The students will learn how to put to use those aspects that they have learned in shop by actively participating in the repair, maintenance and general upkeep of the school building and grounds. The students will learn how to prepare and pour concrete forms as they pertain to the maintenance and upkeep of a physical plant. The students will be trained and conduct an energy audit of the school facility including recommendations on energy-saving solutions. Low voltage systems including but not limited to security, voice, video and data systems, fire alarms and emergency lighting systems. Students will learn and install all types of door and cabinet locks and mechanisms including door openers. They will learn how to program locks and key fobs and cut traditional keys. Mechanical and architectural drawings will be learned and put into practice. Work-Based Learning (WBL) will be arranged for the students beginning in grade 11.

**Advanced Troubleshooting of Electrical, HVAC and Plumbing Systems, Introduction to Energy Management Systems (FC410) (3 credits)**

In grade 12, students will learn the theory of developing troubleshooting skills along with completing repairs within the building and grounds. The instruction and practice of energy management systems will be put into practice. Off campus maintenance of a sister school and/or local facility will be arranged to increase the students' knowledge and skills of other buildings. Mechanical and architectural drawing will be done in depth. Work-Based Learning (WBL) will be continued and expanded for the students in grade 12.

Students successfully completing this course of study will be able to pursue a two-year or four-year facilities management degree at a college or university. Students can obtain immediate employment in building facilities maintenance both large complex residential and commercial buildings. Graduates will also be able to enter employment in green technology areas including but not limited to solar photovoltaic, solar thermal and geothermal.

## 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 7 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 Industry Competency Exam (ICE) 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 7 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 7 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 Material Safety Data Sheets (MSDS) 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.

**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.

**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). Each student will take the Work Force Ready System Skill Connect Plumbing 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 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 7 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 Mechanical 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.

**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.

**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). Each student will take the Industry Competency Exam (ICE) in HVAC, which is a competency-based test, as well as the Work Force Ready System Skill Connect Plumbing Assessment; which is a computerized interactive test. Technology-related 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. 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

(This program is only offered at Cheney Technical High School, Manchester; 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 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 our Prince Technical High School located in 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 7 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 7 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 is 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 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 PLSC: (scientific, legal and ethical aspects of Biotechnology). In addition, articulation agreements have been created with Three Rivers Community College to earn credit prior to graduation.**



### **GRADE 9: Exploratory and Introduction to Biotechnology (BL110) (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 (BL210) (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 (BL310) (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 (BL410) (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

## BAKING COURSE SEQUENCE

12 credits required for graduation

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

Note: This program is not accepting enrollments for the class of 2018 and future classes.

Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits
Basic Commercial/Retail Baking	Bakeshop Production Operations	Advanced Bakeshop Principles

## BAKING COURSE DESCRIPTIONS



### **Basic Commercial/Retail Baking (BK210) (3 credits)**

In Grade 10, students learn basic principles of baking, balance scales, recipe formulations and baking procedures. Students are instructed in various baking ingredients and produce quick breads, yeast-raised breads and rolls. All students will concentrate on product identification, use of leavening agents and product development. They will be taught the differences in flours, sugars and shortenings, as well as the proper use and storage of ingredients. All students make many products and display them for sale in the school's bakery. Students will learn advanced decorating of cakes and cookies and how to display products for resale. Students will practice increasing and decreasing recipes for proper yields needed for daily sales. Students continue to receive instruction in safety requirements and demonstrate sound safety practices, sanitation and personal hygiene. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

### **Bakeshop Production Operations (BK310) (3 credits)**

In Grade 11, students produce many of the following items: donuts, puff pastry, danish, pie dough, cakes and sheet cakes. Each student will make a variety of icings, buttercreams and fillings. Each student will rotate through stations in the bake shop during production until proficiency is attained. Students will be taught about the many uses of ingredients in a basic bakery. All students will practice advanced cake decorating skills for theme cakes, wedding cakes and sheet cakes using a variety of icings, borders and designs. Theory will include basic mixing methods of straight dough, foaming, creaming and two-stage, as well as the many other techniques that pertain to baking. Students continue to receive instruction in safety

requirements and demonstrate sound safety practices, sanitation and personal hygiene. 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 Bakeshop Principles (BK410) (3 credits)**

In Grade 12, students continue to produce baked items for sale in the school's bakery. All students will refine their methods of design through practice and application. They will work on cost analysis and marketing of products. Seniors will operate the bakery and produce products at a professional level. They will interact with the public and prepare, decorate and box the products for pick-up. Seniors will assist in instructing the underclassmen in the proper procedures necessary to operate a successful bakery. All seniors will develop their own bakeshop plan to include a shop layout diagram, costs of equipment, labor, overhead and staffing. Students will demonstrate the highest standard of food safety training by completing ServSafe Certification through the National Restaurant Association. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and trade skills. Each student will participate in the Capstone Project, which is a culminating activity that provides a way for students to demonstrate the knowledge and skills they acquire during their four years of studies in the trade. It engages students in a project/experience that focuses on the trade content, career path, and/or academic pursuit that synthesizes classroom study and real-world perspective. This is a performance-based project. 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 successfully completing this program will be able to pursue a two-year or four-year degree in culinary. Immediate employment opportunities include: entry-level bakery positions at both large and small commercial or retail bakeries; supermarket bakeries; fine dining restaurants; coffee shops; as well as entrepreneurial enterprises such as cake decorating and catering.

## 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 7 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 SERVICE MANAGEMENT COURSE SEQUENCE

12 credits required for graduation

(This program is only offered at Grasso Technical High School located in Groton & J.M. Wright Technical High School located in Stamford)

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

## TOURISM, HOSPITALITY AND GUEST SERVICE MANAGEMENT COURSE DESCRIPTIONS



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

All Grade 9 students go through the Exploratory Program. Please see page 7 for more detail. Students deciding to enter the field of tourism, hospitality and guest service 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 service as well as local leisure services.

### **Guest Service 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 Service 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 service 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 work place 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 hospitality businesses including the two casinos in southeastern Connecticut. 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, 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 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

## EARLY CARE AND EDUCATION COURSE SEQUENCE

12 credits required for graduation

(This program is only offered at our Bullard-Havens Technical High School located in Bridgeport)

Grade 9	Grade 10	Grade 11	Grade 12
3 credits	3 credits	3 credits	3 credits
Exploratory and Introduction to Early Care and Education	Early Care and Education- The Learning Environment	Early Care and Education– Curriculum and Standards	Early Care and Education– Becoming a Professional

### EARLY CARE AND EDUCATION COURSE DESCRIPTIONS



#### **Exploratory and Introduction to Early Care and Education (EC110) (3 credits)**

All Grade 9 students go through the Exploratory Program. Please see page 7 for more detail. Students deciding to enter the field of early care and education will be introduced to the basics of safety, sanitation and personal hygiene. Students are provided with fundamental knowledge of early care and education programs, areas of child development, safety and emergency procedures, introduction to careers, introduction to play, basic observation skills, roles of an early childhood educator and basic care-giving skills. Students will participate in on-site activities in the Pre-Kindergarten (Pre-K) classroom. Career technical-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

#### **Early Care and Education II – The Learning Environment (EC210) (3 credits)**

In Grade 10, the curriculum consists of an in-depth study into the development of the learning environment for early child care. The course introduces the student to the skills necessary for the creation of a positive learning environment for children. Students are taught how to advance children’s physical and cognitive development, how to support children’s social and emotional development and promote positive guidance strategies. Students are introduced to storytelling and the creative arts. Students will demonstrate success in entry-level skills, such as: positive interactions with children; observation and recording techniques; identification of child abuse and neglect; universal precautions and emergency procedures; maintaining and promoting a safe and healthy learning environment; and basic planning and implementation of curriculum activities. Students will participate in on-site and off-site clinical experiences at Pre-K and child care facilities. Students will continue to be introduced to the basics of safety, sanitation and personal hygiene.

The necessary safety requirements are reinforced throughout this course. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

**Early Care and Education III – Curriculum and Standards (EC310) (3 credits)**

In Grade 11, the curriculum builds upon the two previous years and offers students an opportunity to develop teaching skills in the on-site preschool program, as well as through a community placement experience. The course focuses on providing positive guidance, promoting creativity, encouraging self-esteem and social skills, as well as encouraging children's communication and literacy. Students demonstrate knowledge on written exams, oral presentations and projects. Students also focus on mastering storytelling techniques, lessons and curriculum planning as well as implementing and evaluating experiences with children. Students will participate in on-site and off-site clinical experiences at Pre-Kindergarten (Pre-K) and child care facilities. Students begin working on the CDA resource file and professional trade portfolio. Students will continue to be introduced to the basics of safety, sanitation and personal hygiene. The necessary safety requirements are reinforced throughout this course. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL). Career technical-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum.

**Early Care and Education IV – Becoming a Professional (EC410) (3 credits)**

In Grade 12, curriculum will continue to build on the skills learned in the previous grades. Students continue to practice responsible assessment of child development, as well as systematic observation and documentation of child behaviors. The course focuses on managing a classroom, introduction to culturally relevant care, inclusion of children with special needs, promoting positive relationships with families and maintaining a commitment to professionalism and ethical standards. Students create a professional portfolio, a resource file of developmentally appropriate activities for children and a resource file for the Child Development Associate (CDA) credential - a national competency credential. Students will demonstrate competence in all of the functional areas of the child development credential. Students continue to apply their basic knowledge in the on-site Pre-K classroom and community programs. Through laboratory and internship experiences, relevant course work and participation in Work-Based Learning (WBL), students will demonstrate knowledge and critical perspectives of their work with young children. First Aid and CPR courses are required and must be completed by Grade 12. Students will continue to be introduced to the basics of safety, sanitation and personal hygiene. Students will demonstrate the ability to complete a job application and interview and to perform entry-level job readiness and career technical skills. Each student will take the National Occupational Competency Testing Institute (NOCTI) exam. The National Occupational Competency Testing Institute (NOCTI) exam is administered in the second half of the senior year. Technology-related mathematics, reading, writing, vocabulary and science are integrated throughout the curriculum. Students are eligible to receive college credit from Housatonic Community College.

The Early Childhood Education (ECE) program prepares each student with the necessary knowledge and skills to work effectively with children (birth to 5 years) in an early childhood setting. Postgraduate students may enter the field for entry-level positions as assistant infant/toddler and preschool teachers and may pursue a national child development credential (CDA), associate or bachelor's degree to work in public school programs and government subsidized programs such as Head Start or a career in the field of Special Education. Employment in the field of Early Care and Education (ECE) may include: early childhood educator; home childcare provider; educational assistant; preschool/nursery school teacher; before and after school provider; special education teacher, paraprofessional or related area.

## 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 7 for 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 7 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.

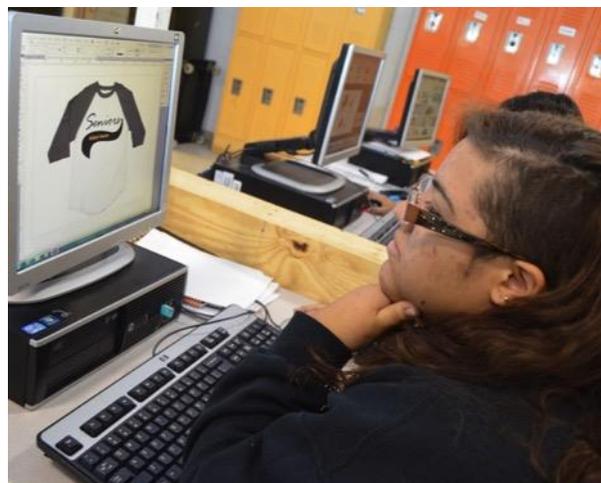
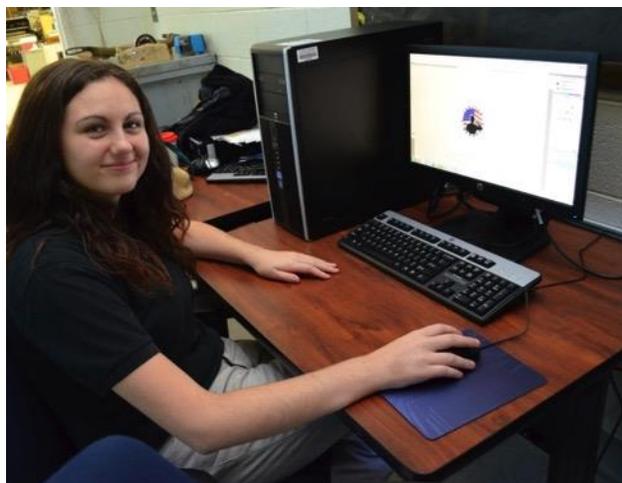
Students successfully completing this course of study will be able to pursue a two-year engineering technology degree at state colleges and universities or go on to a four-year electrical engineering degree. Students can obtain immediate employment in the electronics field. Jobs include: engineering 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 7 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 SYSTEMS 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 SYSTEMS TECHNOLOGY COURSE DESCRIPTIONS



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

All Grade 9 students go through the Exploratory Program. Please see page 7 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). Students are then introduced to other Microsoft products and to Adobe and Macromedia products. Basic computer programming, accounting basics, school-to-work and job readiness skills are also introduced. Students are prepared to take Microsoft Office User Specialist (MOUS) Certification Tests. 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. Networking skills are introduced 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 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.

# MANUFACTURING CLUSTER

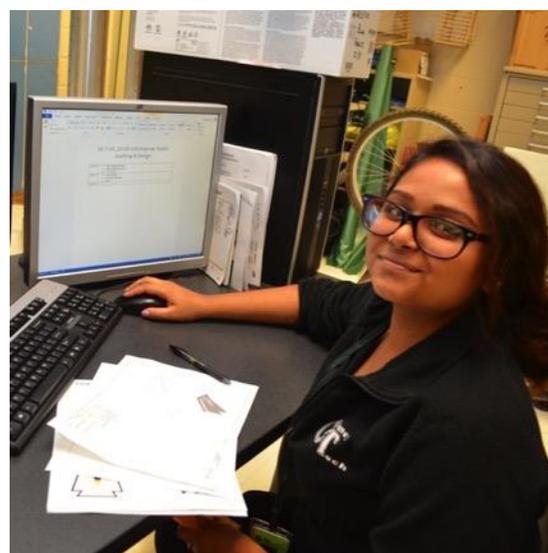
## AUTOMATED MANUFACTURING TECHNOLOGY COURSE SEQUENCE

12 credits required for graduation

(This course is only offered at our A.I. Prince Technical High School located in 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 7 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 7 for more detail. Students deciding to enter the field of drafting 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.

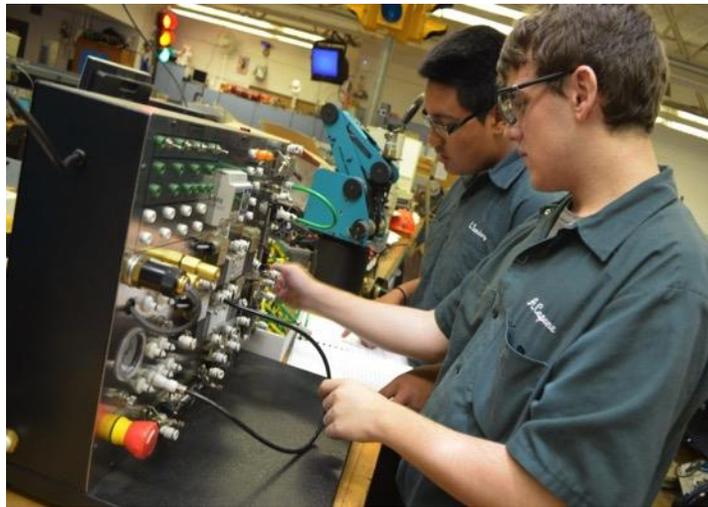
Students successfully completing this course of study will be able to pursue a two-year or a four-year degree in the areas of manufacturing or mechanical engineering or other related fields. Students can obtain immediate employment as a computer-aided drafter or illustrator or as an engineering technician 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 7 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, Appliance Repair, Refrigeration, Programmed Logic Controllers and Variable Speed Drives (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 7 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 7 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 is 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

## FASHION MERCHANDISING AND ENTREPRENEURSHIP COURSE SEQUENCE

12 credits required for graduation

(This program is not accepting enrollments for the class of 2018 and future classes)

<b>Grade 12</b>
3 credits
Fashion 12 - Marketing

### FASHION MERCHANDISING AND ENTREPRENEURSHIP COURSE DESCRIPTION



#### **Fashion 12 – Fashion Merchandising/Entrepreneurship IV (FM410) (3 credits)**

In Grade 12, students will be operating a store featuring fashion related items within the school, which will be open to the public. Students will be expected to perform all the operations of running the fashion store including budgeting, sales promotions, events coordination, product merchandising, inventory control and utilizing the electronic Point of Sale System. Students will set and establish goals and objectives for an e-commerce website while considering the target audience demographics; practice website development and follow basic design principals, including color consistency, visual balance, graphics and multimedia as well as understand the importance of website positioning and back-end management to ensure a good customer experience. They will also be introduced to fashion marketing and to entrepreneurship trends. Students reaching an acceptable level of proficiency may be eligible for Work-Based Learning (WBL).

Students can choose to further their education at numerous colleges and universities across the country in order to obtain a two- or four-year degree in fashion merchandising, retail merchandising or visual merchandising. Immediate employment opportunities upon graduation include sales opportunities in a variety of retail stores or clothing manufacturers or tailoring.

## MARKETING, MANAGEMENT AND ENTREPRENEURSHIP COURSE SEQUENCE

12 credits required for graduation

(This program is only offered at our Norwich and Eli Whitney Technical High Schools)

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 7 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

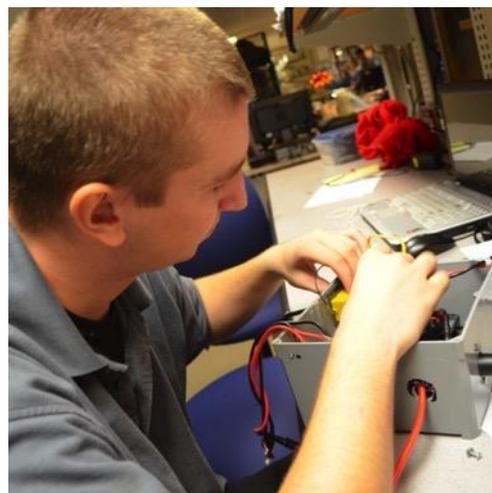
## PRE-ELECTRICAL ENGINEERING AND APPLIED ELECTRONICS TECHNOLOGY COURSE SEQUENCE

*12 credits required for graduation*

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

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 7 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 7 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 7 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 National Automotive Technicians Education Foundation (NATEF). NATEF is a division of ASE, 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

(This course is only offered at our Cheney Technical High School located in Manchester)

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 7 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

2017-2018



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

# THE ARTS

## VISUAL ARTS

### Scope

High school Art programs begin with observation of the real world: recording, analysis and creation of a visual response to the surroundings. Art makes students look at things anew—even ordinary aspects of the world.

When art is added to STEM the acronym becomes STE(A)M—Science, Technology, Engineering, **ART** and Math. Students are encouraged to connect art to their core academic subjects as well as their chosen career technologies. Art is a creative force that allows expression of design to the academic process.

The Connecticut Technical High School System recommends offering Elements and Principles of Art to grades 9-12 in order to support students in gaining prerequisite foundation skills in visual arts.

### Art Course Sequence

Grade 9	Grade 10	Grade 11	Grade 12
½ credit	½ credit	½ credit	½ credit
Elements and Principles of Art I	Elements and Principles of Art I and II Digital Photography 2-D Design 3-D Design Drawing Painting Studio Art	Elements and Principles of Art I and II Digital Photography 2-D Design 3-D Design Drawing Painting Studio Art Advanced Art Printmaking Trade Art 11 AP Art I	Elements and Principles of Art I and II Digital Photography 2-D Design 3-D Design Drawing Painting Studio Art Advanced Art Printmaking Trade Art 12 AP Art II

### VISUAL ARTS COURSE DESCRIPTIONS

#### **Elements and Principles of Art I All Grades (FA613, FA614, FA615) (*¼ credit, ½ 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.

**Elements and Principles of Art II Grades 10-12** (FA616, FA617, FA618) (*¼ credit, ½ credit, 1 credit*)

*Prerequisite: Elements and Principles of Art I*

In this course, students will continue to create and respond to visual arts, focusing on drawing, design, color, painting and sculpture.

**Advanced ART Grades 11, 12** (FA631, FA632) (*½ credit, ¼ credit*)

*Prerequisite: Elements and Principles of Art I*

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, FA612) (*1 credit, ½ credit, ¼ credit*)

*Prerequisite: Elements and Principles of Art I*

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.

**3-Dimensional Design Grades 10, 11, 12** (FA620, FA621, FA622) (*1 credit, ½ credit, ¼ credit*)

*Prerequisite: Elements and Principles of Art I*

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.

**Painting Grades 10, 11, 12** (FA655, FA656, FA651) (*1 credit, ½ credit, ¼ credit*)

*Prerequisite: Elements and Principles of Art I*

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.

**Drawing – Grades 10, 11, 12** (FA634, FA635) (*½ credit, ¼ credit*)

*Prerequisite: Elements and Principles of Art I*

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.

**Printmaking Grades 11, 12** (FA652, FA658) (*1 credit, ½ credit*)

*Prerequisite: Elements and Principles of Art I*

Printmaking is a course designed to allow the student an opportunity to expand their drawing abilities and explore various printing techniques. Some of the topics covered include relief printing, screenprinting, and monoprinting. Students will also explore paper making and bookmaking techniques. Sketchbooks are required for idea development and for both visual and verbal responses to artwork.

**Studio Art Grades 10, 11, 12** (FA659, FA660) (*1 credit, ½ credit*)

*Prerequisite: Elements and Principles of Art I*

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.

### **Digital Photography Grades 10, 11, 12 (FA678) (½ credit)**

*Prerequisite: Elements and Principles of Art I*

Digital Photography is presented as a techniques and tools class. Students will become proficient at the technical aspects of photographing with a digital camera and working with those images using editing software. Students will not only develop their ability to express themselves in a visual form but will also engage in written reflection of their own art and the artwork of others.

## **TRADE ART**

### **Trade-Art I Grade 11 (FA665, FA666, FA667) (1 credit, ¼ credit, ½ credit)**

*Prerequisite: Elements and Principles of Art I*

Trade Art I is presented as a studio art class that addresses aspects of their trade. It is an introductory course outlying the basic tenets of connections between the visual arts and the CTHHS technologies. After completing Trade Art I, students will be able to begin study in Trade Art II which is further advanced study in the arts and technologies. Students will make art that enhances connections between aesthetics and their chosen trade. Students will have an opportunity to use media both used traditionally by the professional artist and also media more directly related to the trade technologies. The curricula are designed sequentially from the foundations of the visual arts to trade specific design.

### **Trade Art II Grade 12 (FA668, FA669, FA670) (1 credit, ½ credit, ¼ credit)**

*Prerequisite: Trade Art I*

Trade Art II addresses advanced connections between the visual arts and the CTHHS technologies. Students will make art that enhances connections between aesthetics and their chosen trade. Students will have an opportunity to use media both used traditionally by the professional artist and also media more directly related to the trade technologies. The curriculum is designed to advance the skills developed in Trade Art I.

**Automotive Collision Repair and Refinishing:** Topics may include, but are not limited to, advanced color theory, airbrush techniques, advanced design theory, pin striping and automotive design.

**Culinary Arts:** Topics may include, but are not limited to, advanced color theory, design, food styling, menu and restaurant design, table-setting design and three-dimensional design.

**Drafting Technology:** Topics may include, but are not limited to, advanced color theory, architectural design, three-dimensional models, advanced design projects and mechanical and architectural rendering.

**Fashion Merchandising:** Topics may include, but are not limited to, figure-drawing, portraiture, advanced color theory and design, jewelry design and fashion design.

**Graphic Communication:** Topics may include, but are not limited to, advanced color theory, layout design, lettering, printmaking, painting and introduction to computer art.

**Hairdressing & Cosmetology:** Topics may include, but are not limited to, portraiture, advanced color theory and design, jewelry and hair ornamental design, masks, nail art and figure drawing.

**Information Systems Technology:** Topics may include, but are not limited to, advanced color theory, layout design, font explorations, and introduction to computer art.

## MUSIC

(Grasso, Kaynor, Norwich and Prince Technical High Schools only)



**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*

- Concert Band (MU601-MU611; (MU 673)
- Concert Choir (MU617-MU627)
- Introduction to Guitar and Advanced Guitar (MU646, MU649)
- Introduction to Drum Line and Advanced Drum Line (MU660-MU661, MU760)
- Music Appreciation (MU665-MU666)
- Music Theory (MU670)
- Piano I and II (MU680-MU683)
- Voice Class (MU634-MU635)
- Advanced Music Independent Study (MU690, MU691)
- Band Sectional Rehearsal (MU672)
- **Chorus Sectional Rehearsal (MU631) (MU636)**

**Concert Band** (MU601-MU611) (*½ credit, ¼ credit*) (MU673) (*non-credited*)

*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 a rotating group lesson or sectional schedule or full group rehearsal period in addition to the scheduled course.

**Concert Chorus (MU617-MU627) (*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 a rotating sectional schedule or full group rehearsal period in addition to the scheduled course.

**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. This class may NOT be repeated for credit.

**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 and writing about music, students will gain a deeper understanding of this art form. The class will feature many different styles of music including American popular, American jazz and European art music.

**Music Theory (MU670) (*½ credit*)**

This course is an introduction to the fundamentals of music. Scale and chord construction are taught. Work progresses to sight-singing, elementary harmony and analysis. This class may NOT be repeated for credit.

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

Piano I offers basic piano instruction to students. Classes will focus on basic keyboarding skills including hand position, posture, form and musical literacy. Students will perform a variety of repertoire alone and with others. This class may NOT be repeated for credit.

**Piano II (MU682) (*½ credit*) (MU683) (*¼ credit*)**

*Prerequisite: Piano I and/or Instructor Approval*

This class may be offered to students in 10th, 11th and 12th grades. Students enrolled in this class must have completed Piano I. This class is a continuation of Piano I. Classes will continue to expand students' knowledge of basic piano skills and techniques and will focus on scales, basic music theory, performance practices and standard piano repertoire.

**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 basic vocal production and posture, musical literacy, solfège and study of both the repertoire covered in the ensembles as well as a variety of specialized 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.

**Band Sectional Rehearsal (MU672) (*½ credit*)**

*Prerequisite: Instructor Approval*

Students in this class will work in a “sectional” setting and will focus on musicality, chamber music (depending upon instrumentation), performance practices, musical literacy, sight-reading, audition skills, scales, and the study of repertoire covered in ensembles. Students in the class may also work on solo repertoire including, but not limited to, the literature required for the CMEA regional festival. All students in this class must be able to read music and must be proficient on a band instrument (percussion, woodwind, or brass). This class is offered to students in 9th, 10th, 11th and 12th grade. This class may be repeated for credit and will vary depending upon the ability of the students in the class.

**Chorus Sectional Rehearsal (MU631) (*¼ credit*) (MU636) (*½ credit*)**

*Prerequisite: Instructor Approval*

**This class offers vocal music instruction for students in a “sectional” setting. Classes will focus on basic vocal production and posture, musical literacy, solfège, and study of both the repertoire covered in the ensembles as well as a variety of specialized repertoire selected depending upon the needs of the individual class. This class is offered to students in 9th, 10th, 11th, and 12th grade. There is no prerequisite for this class and the class may be repeated for credit and will vary depending upon the ability of the students in the class.**

# ENGLISH/LANGUAGE ARTS

## ENGLISH/LANGUAGE ARTS COURSE SEQUENCE

4 credits required for graduation

Grade 9	Grade 10	Grade 11	Grade 12*
1 credit English I or Honors English I	1 credit English II or Honors English II	1 credit English III or Honors English III	1 credit Senior Seminar or Honors Senior Seminar or UCONN ECE English Course or Community College 3 Credit English Course

## ENGLISH/LANGUAGE ARTS COURSE DESCRIPTIONS



### The English Language Arts Program of Studies

The ELA Curriculum provides students with a rigorous academic experience throughout their four years of high school. The curriculum units are carefully designed to ensure skill practice in reading, writing, researching and listening and speaking and to provide rigorous learning experiences aligned to the CT Core Standards. Each unit of study builds on the previous one to ensure that students have acquired the prerequisite skills to move onto the next level of learning. Likewise, each grade level curriculum is designed in light of the previous year's curriculum to ensure student readiness for the next grade level. The CTHSS English Language Arts Curriculum also supports the development of skills recommended by the 21st Century Learning Standards and Career Technical Education (CTE) Career Ready Practices.

## ENGLISH COURSES

**English I (EN110), Honors English I\* (EN111) (NCAA Approved Course) (1 credit) See section XV for Honors/Advanced Level Selection Criteria**

The English I curriculum is comprised of six units of study: Story Elements and Literacy Devices; Close Reading; Thematic Unit: Coming of Age; MLA Style Guide and Evaluating Sources; Writing Informative Essays; Foundations in Research Skills: Annotated Bibliography. Each unit of study builds on the previous one to ensure that students have acquired the prerequisite skills to move onto the next level of learning. The curriculum units are carefully designed to ensure skill practice in reading, writing, researching and listening

and speaking and to prepare students for the next grade level. The English I curriculum also supports the development of skills recommended by the 21st Century Learning Standards and CTE Career Ready Practices.

**English II (EN210), Honors English II\* (EN211) (NCAA Approved Course) (1 credit) See section XV for Honors/Advanced Level Selection Criteria**

The English II curriculum is comprised of six units of study: Thematic Unit: Social Forces; Rhetorical Texts; Writing Argumentative Essays; Evaluation Student Writing: Editing and Revising Workshop; Emerging Research Skills: Synthesizing and Integrating Sources in a Mini-Research Project; Presentation Skills. Each unit of study builds on the previous one to ensure that students have acquired the prerequisite skills to move onto the next level of learning. The curriculum units are carefully designed to ensure skill practice in reading, writing, researching and listening and speaking and to prepare students for the next grade level. The English II Curriculum also supports the development of skills recommended by the 21st Century Learning Standards and CTE Career Ready Practices.

**English III (EN310), Honors English III\* (EN311) (NCAA Approved Course) (1 credit) See section XV for Honors/Advanced Level Selection Criteria**

The English III curriculum is comprised of six units of study: Refining Research Skills: Using Primary Sources and Reaching Original Conclusions; Presentation Skills; Thematic Unit: Foundations of American Experience; Assess, Reflect, Reteach; Thematic Unit: The American Journey and Dream; Writing Narrative Essays. Each unit of study builds on the previous one to ensure that students have acquired the prerequisite skills to move onto the next level of learning. The curriculum units are carefully designed to ensure skill practice in reading, writing, researching and listening and speaking and to prepare students for the next grade level. The English III Curriculum also supports the development of skills recommended by the 21st Century Learning Standards and CTE Career Ready Practices.

## 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 as few as three or as many as 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.

**(EN450)/Honors (EN451\*) Creative and Non-fiction Writing (NCAA Approved Course) (1 credit) See section XV for Honors/Advanced Level Selection Criteria**

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 in the following genres: poetry, fiction, nonfiction and drama. 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 with a masterful portfolio full of creative work.

**(EN452)/Honors (EN453\*) Contemporary Literature of Our Lifetime (NCAA Approved Course) (1 credit) See section XV for Honors/Advanced Level Selection Criteria**

This seminar takes as its focus literature written from the 1940s to present time to explore themes central to our lifetime. Through reading contemporary works, such as J. D. Salinger's *The Catcher in the Rye*, Toni Morrison's *Beloved*, Khaled Hosseini's *The Kite Runner* and Mark Haddon's *The Curious Incident of the Dog in the Night-Time*, students will explore the themes of the meaning of life in a modern world, cultural differences, feminism, post-war responsibility, the plight of the oppressed, living in a time of terror and many more. Close reading, critical thinking, essay writing, researching and speaking skills will be emphasized.

(EN454)/Honors (EN455\*) **Mythology, Sci-Fi and Fantasy Literature (NCAA Approved Course)** (1 credit) *See section XV for Honors/Advanced Level Selection Criteria*

This seminar focuses on the creative literary subgenres of myth, legend, science-fiction, fantasy and gothic. Students will study ancient legends and cultural mythology, the fantasy enriched worlds of utopia and dystopia and gothic literature to explore such themes as human nature and social forces, faith and belief, fear and hope. Literature may include Sir Thomas Malory's *Le Morte D 'Arthur*, Mary Shelley's *Frankenstein*, works by Edgar Allen Poe, Ayn Rand's *Anthem*, Ursula Le Guin's *The Left Hand of Darkness*, Ray Bradbury's *Something Wicked this Way Comes* and Kurt Vonnegut's *Slaughterhouse-Five*. Close reading, critical thinking, essay writing, researching and speaking skills will be emphasized.

(EN456)/Honors (EN457\*) **Reading Literature through the Ages (NCAA Approved Course)** (1 credit) *See section XV for Honors/Advanced Level Selection Criteria*

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.

(EN458)/Honors (EN459\*) **Journalism and Media Awareness** (1 credit) *See section XV for Honors/Advanced Level Selection Criteria*

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. Students 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.

(EN460)/Honors (EN461\*) **Comedy and Tragedy in Film and Theater** (1 credit) *See section XV for Honors/Advanced Level Selection Criteria*

This seminar introduces students to the critical study of theater and film to deepen their understanding of the cinematic and performative experience. The course studies film and theater through the genres of comedy, tragedy, history and romance. Students will learn how directors use setting, sound effects, visual effects and acting techniques to make us laugh and cry, to make us think and wonder. The course may include the study of the following directors and writers: Alfred Hitchcock, Woody Allen, Martin Scorsese, Steven Spielberg, William Shakespeare, Tennessee Williams, Arthur Miller and David Mamet. Close reading and observation, critical thinking, essay writing, researching and speaking skills will be emphasized.

**\*Honors Courses:** The honors version for each English course will cover the same topic as the core course. *See section XV for Honors/Advanced Level Selection Criteria*

The course materials in an honors course will be more rigorous in the following areas:

- Text selection;
- Length of reading assignments;
- Writing assignment prompts; and
- Assessment types.

An honors course will expect students to do the following:

- Comprehend complex texts independently.
- Contribute thoughtful commentary to classroom discussion.
- Write effectively with attention to organization, detailed content, precise analysis and writing conventions.
- Understand the fundamentals of the research process and execute research independently.
- Create and conduct presentations for classmates and take a lead role in classroom discussions.

### **UCONN ECE Course Descriptions**

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

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

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

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

## 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)
<b>OR</b>			
½ credit	½ credit		
Health Education IA (HE111)	Health Education IIB (HE211)		

### HEALTH EDUCATION COURSE DESCRIPTIONS



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

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

Each CTHSS Health Education course is designed to provide CTHSS students with the basis for continued methods of developing knowledge, concepts, skills, behaviors, and attitudes related to health and well-being. All CTHSS 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 CTHSS 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
<b>Pre-Algebra</b> Algebra I Geometry <b>One of the following</b> <b>Electives:</b> <ul style="list-style-type: none"> <li>• Business Math with Algebra</li> <li>• Mathematical Application I</li> </ul>	<b>Pre-Algebra</b> Algebra I Algebra II Geometry <b>One of the following</b> <b>Electives:</b> <ul style="list-style-type: none"> <li>• Business Math with Algebra</li> <li>• Mathematical Application I</li> </ul>	Algebra I Algebra II Geometry <b>One of the following</b> <b>Electives:</b> <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 <b>One of the following</b> <b>Electives:</b> <ul style="list-style-type: none"> <li>• Honors Pre-calculus</li> <li>• Honors Calculus</li> <li>• Honors Trigonometry</li> <li>• Honors Statistics</li> </ul>

*Note: Pre-Algebra is open only to the Class of 2021. Business Math with Algebra and Math Applications will be terminated for the Class of 2021 and no longer an option.*

## MATHEMATICS COURSE DESCRIPTIONS



CTHSS is in the midst of changing the approach to mathematics instruction and learning. Many of our schools are implementing a Mastery-based Learning Model. The course content under this model has not changed, however the expected achievement is set at a higher level. Students are required to earn 70% or better in CORE courses and 80%, or better in Honors Courses with our Model for a mastery-based course in mathematics. If your son/daughter is involved in a mastery-based course, you will be clearly notified prior to the beginning of the school year. School personnel will be able to answer questions regarding the mastery-based model. Informational material will be distributed at all orientation events along with a letter mailed home prior to the beginning of the school year.

### 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. Available to the Class of 2021 only.**

**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)**  
**(NCAA Approved Course)**

*Prerequisite: Algebra I*

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

*Prerequisite: Honors Algebra I*

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)**

**(NCAA Approved Course)**

*Prerequisite: Successful completion of Algebra I*

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)**

**(NCAA Approved Course)**

*Prerequisite: Successful completion of Algebra II*

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 piece-wise. 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)**

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

*Prerequisite: Successful completions of Honors Algebra I (or teacher recommendation)*

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)**

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

*Prerequisite: Successful completion of Honors Algebra II (or teacher recommendation)*

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)**

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

*Prerequisite: Successful completion of Honors Pre-calculus*

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.

**Business Math with Algebra (MA630) (1 credit)**

*Prerequisite: Successful completion of Algebra I and Geometry*

This course can be used to fulfill a math credit toward graduation. The purpose of the course is to better understand both personal and business finances. Banking, cost of ownership (car and home) as well as investment are some of the topics for personal finance. Reading reports, mark-ups and discounts and depreciation are some of the topics for business finance. **Available to the Class of 2018, 2019 and 2020 only.**

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

*Prerequisite: Successful completion of Algebra I and Geometry*

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. **Available to the Class of 2018, 2019 and 2020 only.**

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

*(NCAA Approved Course)*

*Prerequisite: Successful completion of Algebra II*

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.

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

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

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

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)**

*(NCAA Approved Course)*

*Pre-requisite: Successful completion of Algebra II*

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)**

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

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

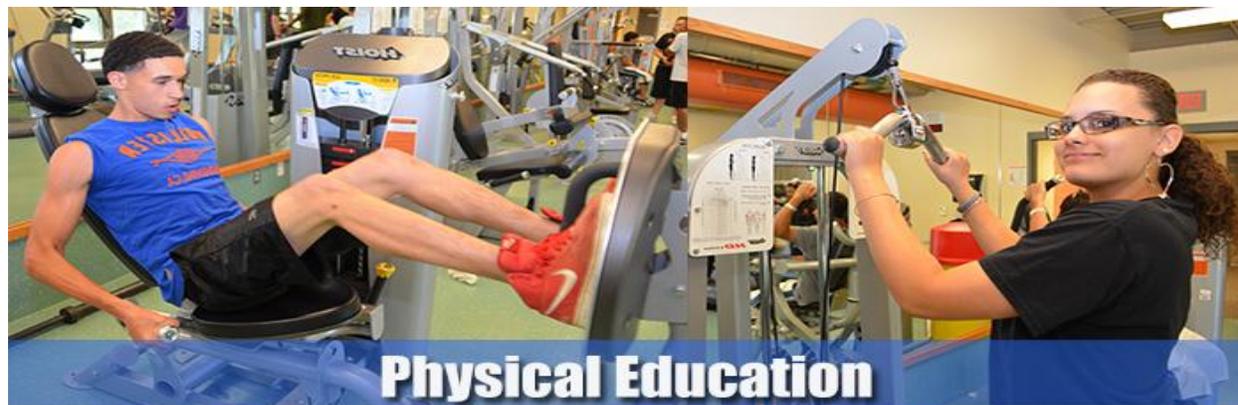
Honors Trigonometry is designed for students wishing to take a fourth or fifth credit in math. This is a very traditional trigonometry course and includes the following topics; trigonometry functions, right triangle trigonometry, circular functions and radian measure, trigonometric identities, inverse 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.

## PHYSICAL EDUCATION

Students 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 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 108.

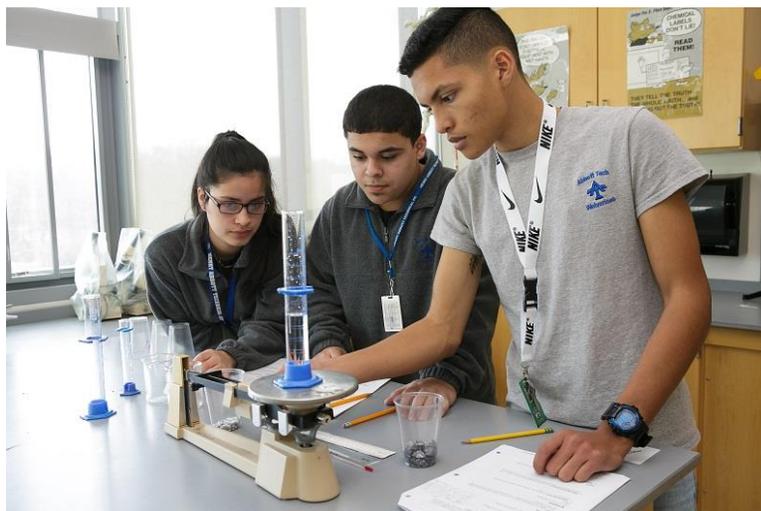
# SCIENCE

## 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 or Foundations of Life Science 10 Honors Foundations of Life Science 10	Biology II Chemistry Honors Chemistry Physics Honors Physics Astronomy Environmental Science Forensics Human Anatomy and Physiology	Chemistry Honors Chemistry Physics Honors Physics General Physics - UCONN Astronomy Environmental Science Forensics Human Anatomy and Physiology

## SCIENCE COURSE DESCRIPTIONS



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

General Science 9 with Lab develops the student's scientific inquiry by integrating the sciences, with a focus on preparing the student for the Connecticut Academic Performance Test (CAPT). 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 Science Framework by following Strands 1-3.

**Honors General Science 9 with Lab (SC116) (NCAA Approved Course) (1 credit) 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) or Foundations of Life Science 10 with Lab (SC213) (NCAA Approved Course) (1 credit)**

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 Connecticut Academic Performance Test (CAPT). 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) or Honors Foundations of Life Science 10 with Lab (SC214) (NCAA Approved Course) (1 credit) See section XV for Honors/Advanced Level Selection Criteria**

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

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) (NCAA Approved Course) (1 credit)**

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

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) (NCAA Approved Course) (1 credit)**

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) (NCAA Approved Course) (1 credit) 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.

**Physics (SC625) (NCAA Approved Course) (1 credit)**

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) (NCAA Approved Course) (1 credit) 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, on line programs and independent study is an integral component of this program. Laboratory activities are included.

**Environmental Science (SC660) (NCAA Approved Course) (1 credit)**

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.

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

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) (NCAA Approved Course) (1 credit)**

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) (NCAA Approved Course) (1 credit) 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.

# SOCIAL STUDIES

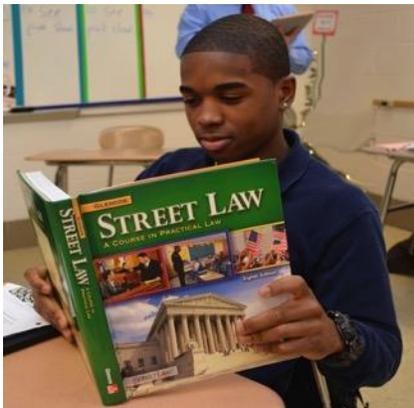
## SOCIAL STUDIES SEQUENCE

(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* AP U.S. History I * U.S. History-UCONN* American Studies-UCONN*	1 credit Electives American Studies AP U.S. History II Civics/American Government Contemporary Issues Economics Economics-UCONN Holocaust, Genocide and Human Rights Honors Economics Law Psychology Social Studies Topics Sociology Topics in Modern U.S. History U.S. History to 1877- UCONN
		½ credit Electives	½ credit Electives
		Civil Law Contemporary Issues Economics Holocaust, Genocide and Human Rights Law Psychology Sociology Social Studies Topics <b>Three American Wars</b>	Civil Law Contemporary Issues Economics Holocaust, Genocide and Human Rights Law Psychology Sociology Social Studies Topics <b>Three American Wars</b>

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

## SOCIAL STUDIES COURSE DESCRIPTIONS



## **Grade 9**

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

World History examines our past, explains our present, and imagines our future. It's 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 Big History Project 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) (NCAA Approved Course) (1 credit) 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 Big History Project 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 state assessment test by teaching key college and career-ready skills.

## **Grade 10**

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

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 state assessment test by teaching key skills throughout the curriculum.

### **Honors Civics/American Government (SS211) (NCAA Approved Course) (1 credit) 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 state assessment test by teaching key skills throughout the curriculum.

## **Grade 11/12**

### **Modern U.S. History (SS310) (NCAA Approved Course) (1 credit)**

Modern United States History builds upon the historical foundations learned in Civics/American Government. This course focuses on the major historical periods, issues and trends in U.S. History from the 20<sup>th</sup> century to the present. Students examine historical themes such as ideals, beliefs and institutions, change and conflict, and mass media and technology in order to understand how the United States came to be the way it is. The course emphasizes the historical, political, social, cultural and economic events and developments that shaped our nation. 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) (NCAA Approved Course) (1 credit) 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. This course focuses on the major historical periods, issues and trends in U.S. History from the 20<sup>th</sup> century to the present. Students examine historical themes such as ideals, beliefs and institutions, change and conflict, and mass media and technology in order to understand how the United States came to be the way it is. The course emphasizes the historical, political, social, cultural and economic events and developments that shaped our nation. 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.

### **Advanced Placement U.S. History I (SS312) (NCAA Approved Course) (1 credit) See section XV for Honors/Advanced Level Selection Criteria**

United States History at the Advanced Placement level as an in-depth chronological and topical study of United States history from the Constitutional period through Reconstruction. Emphasis will be placed on writing, critical thinking, research and discussion. Original source documents will be examined and extensive reading in economics, cultural, intellectual and political history will be assigned. Students selecting this course should have the ability to work independently and as a member of a team, be self-motivated and have solid time management, reading, writing and analytical skills.

### **Advanced Placement U.S. History II (SS605) (NCAA Approved Course) (1 credit) See section XV for Honors/Advanced Level Selection Criteria**

United States History at the Advanced Placement Level II is a continuation of an in-depth chronological and topical study of issues in United States history from post-Reconstruction to the present. Emphasis will be placed on writing, critical thinking, research and discussion. Original source documents will be examined and extensive reading in economics, cultural, intellectual and political history will be assigned. Students selecting this course should have the ability to work independently and as a member of a team, be self-motivated and have solid time management, reading writing and analytical skills. Students will take the College Board AP exam in May of their senior year.

### **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) (NCAA Approved Course) (1 credit) 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) (NCAA Approved Course) (1 credit) 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) (NCAA Approved Course) (1 credit, ½ credit)**

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) (NCAA Approved Course) (1 credit, ½ credit)**

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.

**Essentials of Economics - UCONN ECE (SS661) (1 credit). 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.

**Honors Economics (SS630) (NCAA Approved Course) (1 credit) 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.

**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.

**Law (SS610, SS670) (NCAA Approved Course) (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) (NCAA Approved Course) (1 credit or ½ credit)**

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) (NCAA Approved Course) (1 credit or ½ credit)**

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) (NCAA Approved Course) (1 credit, ½ credit, ¼ credit)**

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) (NCAA Approved Course) (1 credit)**

**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) (NCAA Approved Course) (1 credit)**

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.

Elective courses and descriptions are listed beginning on page 108.

## 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.

#### **II. Language Arts 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 Language Arts Literacy Lab** provide instruction to students through the implementation of **Differentiated Instruction Strategies** and **SRBI (Scientific Research-Based Intervention) practices**. 9th and 10th grade students receive additional instructional time in these key content areas when they are in their career and technical cycle.

The lab instructional model supports:

- **Differentiation of instruction** for all learners including students performing above and below grade level expectations and English Learners (ELs)
- Student-focused interventions – **Learning Strategies** – designed to provide the skills students need to access the content.
- **Common assessments** of students that enable teachers to monitor academic progress, and provide appropriate interventions for those who are experiencing difficulty early
- **Language transition support services** for English Learners (ELs) are provided by continued monitoring of the student's language needs and services are modified as the student's proficiency in the second language grows.

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 CTHSS environment. Upon enrollment, CTHSS 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

2017-2018



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

## **APPROVED ELECTIVE COURSE OFFERINGS 2017 – 2018**

*(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)

## ELECTIVE COURSE DESCRIPTIONS 2017 - 2018

*(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: 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: 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.*

### 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 is 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) (*½ credit*), (FL118), (*½ credit*), (FL115), (*1 credit*),

**The design of the Spanish credit program for the CTHSS strives to meet college credit requirements for World Languages based on Common Core Standards and Spanish World Languages course standards. The CTHSS Spanish program complies. CTHSS 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 and II 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 CTHSS 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 the best of 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.**

## 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

The course materials in an English honors or advanced course are more rigorous in the following areas: text selection; length of reading assignments; writing assignment prompts; assessment types. For this reason, students in an honors or advanced 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 an English honors or advanced course should meet at least 2 of the 3 following criteria:**

1. **Reading on Grade Level:** Students seeking to take an English honors or advanced course should be reading on the same grade level of the course they are seeking entry into as demonstrated by the STAR Reading Diagnostic Test. (Example: Students seeking entry to English II Honors, should be reading on a 10<sup>th</sup> grade reading level at the time of scheduling the course.)
2. **Current grade in English course:**
  - a. If student is currently in an English honors course, h/she should have an earned 85% average at the time of scheduling.
  - b. If student is currently in a core level English course, h/she should have an earned 90% at the time of scheduling.
3. **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.

---

<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
<b>Pre-Algebra</b> Algebra I Geometry <b>One of the following Electives:</b> <ul style="list-style-type: none"> <li>• Business Math with Algebra</li> <li>• Mathematical Application I</li> </ul>	<b>Pre-Algebra</b> Algebra I Algebra II Geometry <b>One of the following Electives:</b> <ul style="list-style-type: none"> <li>• Business Math with Algebra</li> <li>• Mathematical Application I</li> </ul>	Algebra I Algebra II Geometry <b>One of the following Electives:</b> <ul style="list-style-type: none"> <li>• Statistics</li> <li>• Advanced Algebra</li> <li>• Trigonometry</li> </ul>	Honors Algebra I Honors Algebra II Honors Geometry <b>One or more of the following Electives:</b> <ul style="list-style-type: none"> <li>• Honors Pre-calculus</li> <li>• Honors Trigonometry</li> <li>• Honors Statistics</li> </ul>

**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 hyperlink document [Pathways for Meeting Graduation Requirements](#) outlines in great detail the necessary prerequisite performances a student must achieve to remain in an honors math class. The chart below illustrates four possible pathways for meeting the graduation requirement and readiness for career and college.

Additionally, with the implementation and expansion of the Mastery-Based Learning Model for Mathematics, flexibility is part of 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 (see hyperlink to [Pathways for Meeting Graduation Requirements](#) for further details).

## SCIENCE

**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. For this reason, 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, h/she should have an earned 85% or higher at the time of scheduling.
  - b. If student is currently in a core level social studies course, h/she 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

2017-2018



A.I. PRINCE TECHNICAL HIGH SCHOOL



BRISTOL TECHNICAL EDUCATION CENTER



BULLARD-HAVENS TECHNICAL HIGH SCHOOL



CT AERO TECH SCHOOL FOR AVIATION MAINTENANCE TECHNICIANS



E.C. GOODWIN TECHNICAL HIGH SCHOOL



ELI WHITNEY TECHNICAL HIGH SCHOOL



ELLA T. GRASSO TECHNICAL HIGH SCHOOL



EMMETT O'BRIEN TECHNICAL HIGH SCHOOL



HARVARD H. ELLIS TECHNICAL HIGH SCHOOL



H.C. WILCOX TECHNICAL HIGH SCHOOL



HENRY ABBOTT TECHNICAL HIGH SCHOOL



HOWELL CHENEY TECHNICAL HIGH SCHOOL



J.M. WRIGHT TECHNICAL HIGH SCHOOL



NORWICH TECHNICAL HIGH SCHOOL



OLIVER WOLCOTT TECHNICAL HIGH SCHOOL



PLATT TECHNICAL HIGH SCHOOL



STRATFORD SCHOOL FOR AVIATION MAINTENANCE TECHNICIANS



VINAL TECHNICAL HIGH SCHOOL



W.F. KAYNOR TECHNICAL HIGH SCHOOL



WINDHAM TECHNICAL HIGH SCHOOL



ADDRESS	TELEPHONE	E-MAIL ADDRESS	PRINCIPAL
<b><u>ABBOTT TECH</u></b> 21 Hayestown Avenue Danbury 06811	(203) 797-4460	<a href="mailto:henry.abbott@ct.gov">henry.abbott@ct.gov</a>	Stacy Butkus
<b><u>BRISTOL T.E.C.</u></b> 431 Minor Street Bristol 06010	(860) 584-8433	<a href="mailto:bristol.ed.tech@ct.gov">bristol.ed.tech@ct.gov</a>	Luz Manson
<b><u>BULLARD-HAVENS TECH</u></b> 500 Palisade Avenue Bridgeport 06610	(203) 579-6333	<a href="mailto:bullard.havens@ct.gov">bullard.havens@ct.gov</a>	Richard Cavallaro
<b><u>CHENEY TECH</u></b> 791 W. Middle Tpk. Manchester 06040	(860) 649-5396	<a href="mailto:howell.cheney@ct.gov">howell.cheney@ct.gov</a>	Robert Sartoris
<b><u>ELLIS TECH</u></b> 613 Upper Maple St. Danielson 06239	(860) 412-7500	<a href="mailto:hh.ellis@ct.gov">hh.ellis@ct.gov</a>	Dr. Brian Mignault, Sr.
<b><u>GOODWIN TECH</u></b> 735 Slater Road New Britain 06053	(860) 827-7736	<a href="mailto:ec.goodwin@ct.gov">ec.goodwin@ct.gov</a>	Daniel Mello
<b><u>GRASSO TECH</u></b> 189 Fort Hill Road Groton 06340	(860) 448-0220	<a href="mailto:grasso@ct.gov">grasso@ct.gov</a>	Patricia Feeney
<b><u>KAYNOR TECH</u></b> 43 Tompkins Street Waterbury 06708	(203) 596-4302	<a href="mailto:wf.kaynor@ct.gov">wf.kaynor@ct.gov</a>	David J. Telesca
<b><u>NORWICH TECH</u></b> 7 Mahan Drive Norwich 06360	(860) 889-8453	<a href="mailto:norwich@ct.gov">norwich@ct.gov</a>	Dr. Nikitoula Menounos
<b><u>O'BRIEN TECH</u></b> 141 Prindle Avenue Ansonia 06401	(203) 732-1800	<a href="mailto:emmett.obrien@ct.gov">emmett.obrien@ct.gov</a>	Laurie LeBouthillier
<b><u>PLATT TECH</u></b> 600 Orange Avenue Milford 06461	(203) 783-5300	<a href="mailto:platt@ct.gov">platt@ct.gov</a>	Scott Zito
<b><u>PRINCE TECH</u></b> 401 Flatbush Avenue Hartford 06106	(860) 951-7112	<a href="mailto:ai.prince@ct.gov">ai.prince@ct.gov</a>	Sheila Williams
<b><u>VINAL TECH</u></b> 60 Daniels Street Middletown 06457	(860) 344-7100	<a href="mailto:vinal@ct.gov">vinal@ct.gov</a>	<b>Dr. Nikitoula Menounos (Assisting Principal)</b>
<b><u>WHITNEY TECH</u></b> 100 Fairview Avenue Hamden 06514	(203) 397-4031	<a href="mailto:eli.whitney@ct.gov">eli.whitney@ct.gov</a>	Dr. Mary Moran
<b><u>WILCOX TECH</u></b> 298 Oregon Road Meriden 06451	(203) 238-6260	<a href="mailto:hc.wilcox@ct.gov">hc.wilcox@ct.gov</a>	Joyce Mowrey
<b><u>WINDHAM TECH</u></b> 210 Birch Street Willimantic 06226	(860) 456-3879	<a href="mailto:windham@ct.gov">windham@ct.gov</a>	Mark D. Ambruso
<b><u>WOLCOTT TECH</u></b> 75 Oliver Street Torrington 06790	(860) 496-5300	<a href="mailto:oliver.wolcott@ct.gov">oliver.wolcott@ct.gov</a>	<b>Richard Shellman</b>
<b><u>WRIGHT TECH</u></b> 120 Bridge Street Stamford 06905	(203) 356-0190	<a href="mailto:jm.wright@ct.gov">jm.wright@ct.gov</a>	Eric K. Hilversum
<b><u>CT AERO TECH</u></b> Brainard Airport 500 Lindbergh Drive Hartford, CT 06114	(860) 566-1234	<a href="mailto:Charles.hilton@ct.gov">Charles.hilton@ct.gov</a>	Robert Sartoris
<b><u>STRATFORD SCHOOL FOR AVIATION MAINT. TECH</u></b> Sikorsky Memorial Airport 200 Great Meadow Road Stratford 06615	(203) 381-9250	<a href="mailto:sikorsky@ct.gov">sikorsky@ct.gov</a>	Scott Zito