South Shore Vocational Technical High School
Program of Study

ENGLISH DEPARTMENT

Guided by the Massachusetts Curriculum Frameworks, the English department seeks to improve students' reading, writing, speaking and language skills. Students will read a variety of genres and texts, produce several styles of writing, conduct credible research, refine grammatical skills, and give effective presentations. English courses will prepare students for state assessments, college, and career.

Allie Provost: Department Chair - ELA, 8-12
Toni Bourgea - ELA, 9-12
Joanne Desmarais - ELA, 9-12; Moderate Disabilities, 5-12
Jessica Mandeville - ELA, 8-12
Erin Martin - ELA, 5-12; Moderate Disabilities, 5-12
Jay Savage - ELA, 9-12; Special Needs, 5-12

English 9 CP Credits: **1**

Students will be instructed in Reading & Literature, Language, Writing, and Speaking. The emphasis in English 9 is to develop essential skills for success in high school and on state assessments, concentrating on reading prose, short stories, and novels. Students will write various styles of essays, with a focus on mastering informative writing. The curriculum has been designed to prepare students to be college- and career-ready. English 9 is the first of a two-year loop, culminating at the end of English 10. There will be department-selected formative and summative assessments in English 9.

English 9 Honors Credits: **1**

Prerequisite: Combination of Grade 8 grades and SST placement test scores
This honors-level course is intended for students who are ready for more rigor, a faster pace, and higher-level writing tasks and critical thinking skills. Students in this course will study many of the same texts as other freshmen--focusing on prose, short stories, and novels. However, students in the Honors course will critically examine supplementary material to deepen their understanding of these works and their relevance. Students in this course will also encounter a variety of rigorous assignments, including a research paper, several class discussions, and collaborative projects. There will be department-selected formative and summative assessments in English 9 Honors.

English 10 CP Credits: **1**

Students will be instructed in Reading & Literature, Language, Writing, and Speaking. The

emphasis in English 10 continues to develop essential skills for success in high school and on state examinations, with a focus on reading non-fiction, poetry, and plays. Students will write informative and narrative essays but will concentrate on mastering argumentative writing. The curriculum has been designed to prepare students to be college- and career-ready. There will be state and department-selected formative and summative assessments in English 10.

English 10 Honors Credits**: 1**

Prerequisite: Advanced or better in English 9 Honors or Exemplary in English 9 CP

This honors-level course is intended for students who are ready for more rigor, a faster pace, and higher-level writing tasks and critical reading and thinking skills. The emphasis in English 10 Honors continues to refine essential skills for success in high school and on state examinations, with a focus on reading non-fiction, poetry, and plays and writing argumentative essays. The curriculum has been designed to prepare students to be college- and career-ready. There will be state and department-selected formative and summative assessments in English 10 Honors.

English 11 CP Credits: **1**

Students will be instructed in Reading & Literature, Language, Writing, and Speaking. English 11 has a focus on American Literature. A central focus in all English 11 courses are assignments that prepare all students for college and careers, with a focus on technical writing. English 11 is the first of a two-year loop, culminating at the end of English 12. Students will develop a required career-ready digital portfolio in English 11.

English 11 Honors Credits: **1**

Prerequisite: Advanced or better in English 10 Honors or Exemplary in English 10 CP

This honors-level course is intended for students who are ready for more rigorous texts, a faster pace, and higher-level writing tasks and critical thinking skills. Students will be instructed in Reading & Literature, Language, Writing, and Speaking. English 11 Honors has a focus on American Literature. A central focus in all English 11 courses are assignments that prepare all students for college and careers, with a focus on technical writing. Students will develop a required career-ready digital portfolio in English 11 Honors.

English 12 CP Credits: **1**

Students will be instructed in Reading & Literature, Language, Writing, and Speaking. English 12 has a focus on World Literature, allowing students to be exposed to various cultures and to become well-versed world citizens. A central curriculum focus is preparing all students for college and careers, specifically focusing on argumentation.

English 12 Honors Credits: **1**

Prerequisite: Advanced or better in English 11 Honors or Exemplary in English 11 CP

This honors level/dual enrollment course provides a hybrid curriculum of SST Senior English and Quincy College English Composition 101. The course focuses on writing coherent, unified, well-structured compositions that demonstrate critical analysis of complex topics and texts. A major component of the course is a research-based argument paper/presentation. Students who successfully complete this course can earn 3 college credits through Quincy College.

MATHEMATICS DEPARTMENT

Pamela Walsh, Department Chair - Math, 9-12
Minnie Clark - Math, 8-12; Moderate Disabilities, 5-12
Matthew Doyle - Math, 8-12
Elizabeth Gerrish - Math, 8-12
Jane Lombardi - Math, 9-12
Christine Fortin - Math, 8-12; Math, 5-8
Allison King - Math, 8-12; Moderate Disabilities, 5-12; History, 8-12
Lauren White - Math, 8-12; Math, 5-8

Math is a critical ingredient in nearly every program at SST. A wide range of math subjects are available to stimulate and challenge all of our students. Courses are designed to support students' career objectives, as well as college ambitions. All courses are guided by the Massachusetts Curriculum Framework for Mathematics, 2017.

Geometry Credits: **1**

The concepts of Geometry are introduced in this course. Emphasis is placed on discovering postulates and theorems through exploration. Topics covered include segments and angles, parallel and perpendicular lines, triangle relationships and congruency, circles, polygons, similarity, areas of plane and solid figures, and right triangle trigonometry. The course includes a review of number sense and some Algebra I concepts.

Geometry Honors Credits: **1**

Prerequisite: Proficient or better in prior Honors Math class, or Advanced or better in prior CP Math class

This course covers all the topics in the standard Geometry course but at a faster pace. Students also work through two-column proofs in addition to the informal proofs in the standard Geometry course. The course includes an Algebra review.

Algebra 1 Credits: **1**

The concepts of Algebra are introduced in this course. Topics covered include solving equations

and inequalities, graphing linear equations in two variables, solving and graphing linear inequalities, solving absolute value equations, solving systems of equations, and an introduction to quadratic functions. This course also covers the probability and statistics topics as required by the Massachusetts Mathematics Frameworks.

Algebra 1 Honors Credits: **1**

Prerequisite: Combination of Grade 8 grades and SST placement test scores
This course covers all the topics in Algebra 1 but goes at a faster pace. It also goes further into the study of quadratics and an introduction to polynomial functions.

Algebra 2 Credits: **1**

Students will do a brief review of linear equations and inequalities as well as the topics of systems of linear equations and inequalities. They will cover quadratic functions and be introduced to rational functions, polynomial functions, and complex number theory. Students will also be introduced to transformation of functions.

Algebra 2 Honors Credits: **1**

Prerequisite: Proficient or better in prior Honors Math class, or Advanced or better in prior CP Math class
Students cover the same topics as in the standard Algebra 2 course, but at a faster pace. They also study, in greater depth, rational and polynomial functions and are introduced to radical functions.

Financial Literacy Credits**: .5**

The intent of this course is to answers the question so often asked by students of math teachers: "When will I ever use this in real life?" The course will cover a wide range of topics including budgeting, finding an apartment to rent, creating and managing a food budget, understanding credit and credit cards, learning ways to protect against identity theft, various types of insurance, investment strategies, and understanding taxes and how to file a tax return. Students will conduct research online for future real-life purchases. Students will also compare checking and savings accounts from different banks and learn how to balance their accounts. Throughout the course, students will find themselves using math from their shops (fractions, decimals, percentages), as well as topics from Algebra.
This is course is offered only to students in Grade 12.

Statistics Credits **0.5**

This is a half-year course that explores the many uses and misuses of statistics in our everyday

lives. Students will investigate how a normal curve is created and what those percentages mean when data is skewed. They will learn how probability is directly related to the study of statistics. Students will use technology (DESMOS, spreadsheets, etc.) to record, interpret, and analyze data sets and learn how to put their findings into various graphs.

This is course is offered only to students in Grade 12.

Precalculus CP Credits: **1**

This course begins with a review of quadratic functions. Students will spend a great deal of time in this course graphing functions, understanding how algebra and graphing are related. They will study circular trigonometry, go further into graphing local minimums and maximums of all polynomial functions, solve and graph rational functions, and be able to identify and explain all transformations of the functions they study. If time permits, students will also study conic sections.

This is course is offered only to students in Grade 12.

Precalculus Honors Credits: **1**

Prerequisite: Proficient or better in prior Honors Math class, or Advanced or better in prior CP Math class

This course will follow the Quincy College PreCalculus MAT 113 syllabus. It begins with a review of quadratic functions. Students will spend a great deal of time in this course graphing functions, understanding how algebra and graphing are related. They will study circular trigonometry, go further into graphing local minimums and maximums of all polynomial functions, solve and graph rational functions, and be able to identify and explain all transformations of the functions they study. If time permits, students will also study conic sections.

This is course is offered only to students in Grade 11 at the Honors level.

Calculus Honors Credits: **1**

Prerequisite: Proficient or better in prior Honors Math class, or Advanced or better in prior CP Math class

This course covers topics such as conic sections, limits, differentiation, and integrations (including L'Hopital's Rule). Students will also be introduced to the various applications of derivatives and integrals.

SCIENCE DEPARTMENT

Using the Massachusetts Common Core Curriculum as a guide, it is the aim of the Science Department to produce scientifically literate student citizens who make informed decisions with

scientific evidence. Students will learn and use skills that promote critical and analytical thinking to draw valid conclusions. Science courses will be taught in a manner to foster students' curiosity and interests using lab-based instruction in an inquiry-based learning atmosphere.

Matthew Fallano, Department Chair - Biology, 8-12
Christina Brennan - Physics, 8-12; Technology/Engineering, 5-12
Heather Brennan - Biology, 8-12; Earth Science, 8-12; General Science, 5-8
Tyler Brown - Physics, 8-12
Kara Cromack - Biology 8-12; Chemistry 8-12
Kevin Jumper - Physics, 8-12; Earth and Space Science 8-12; Biology, 8-12; Math, 8-12
Suzanne Mathisen - Biology, 8-12, Special Needs, 5-12; Social Studies, 9-12

Anatomy and Physiology Credits: **1**

This elective course will explore the major human organ systems, including cell and tissue studies, as well as coverage of the body systems. Particular emphasis is placed on the interconnected relationships of the structure of human organ systems and how these systems are designed to function together to maintain homeostasis. Students will explore current medical issues throughout the course and will engage in collaborative laboratory investigations, research projects, and presentations. This course is designed for students planning on pursuing a career in the healthcare sciences, including nursing, emergency medical technician, and sports medicine. Intense memorization of terminology is required every cycle.

Biology Credits: **1**

Students will explore seven major units throughout the year: biochemistry, cellular biology, cell metabolism, genetics, evolution and biodiversity, ecology, and human anatomy and physiology. Concepts will be investigated by means of models, group assignments, and individual projects along with laboratory investigations. These learning activities provide hands-on exploration of scientific principles designed to provide students with the opportunity to work collaboratively and develop critical thinking, communication, and problem-solving skills. This course is designed to prepare students for the Biology MCAS Exam.

Chemistry Credits: **1**

This is an inquiry-based course that explores the properties of matter in the universe and the changes that matter undergoes. Topics include atomic structure, understanding the periodic table, moles, chemical reactions, kinetic energy of state changes, gas laws, and nuclear chemistry. Laboratory activities provide hands-on exploration of scientific principles designed to allow students to work collaboratively and develop critical thinking, communication, and problem-solving skills. This course will prepare students for post-secondary studies and provides

an understanding of the composition of the natural world.

Engineering Credits: **1**

Engineering is a project-based course that intends to form connections between academic theory and practical application. Students will build solutions to real-world situations exploring the design concepts, social implications, and supporting technology that form the backbone of engineering. Students will be exposed to the branches of engineering which include mechanical, electrical, civil/structural, and computer science.

Environmental Science Credits: **1**

This lab-based course will cover the scientific principles and methods required to understand the relationship between anthropological impacts on the natural environment. Students will explore both naturally occurring and human-driven changes, evaluate the associated risks, and examine alternative solutions for resolving and mitigating them. Students will explore the concept of global stewardship and responsibility. Students will examine the economic, cultural, and political impacts of our actions.

Physics Credits: **1**

In this course, students recognize the nature and scope of physics and how manifests in the world around them. Topics include motion, forces, energy, heat, waves, electricity, and magnetism. Students learn about natural phenomena by using concepts to calculate quantities such as velocity, acceleration, momentum, and energy. This is a hands-on, laboratory-oriented course that will prepare students for post-secondary science courses.

Biotechnology Credits: **1**

This course is designed to give students a comprehensive introduction to the scientific concepts and laboratory research techniques currently used in the field of biotechnology. Bioethics standards in the industry will also be explored. Students will learn to master lab skills, properly use lab equipment, and follow standard operating procedures. Specific topics include DNA and protein analysis, gene cloning, and proper cell plating techniques. In addition, students develop the laboratory, critical thinking, and proper communication skills currently used in the biotechnology industry.

Marine Science Credits: **1**

Students in this course will learn about the diversity of ocean life, the physical and chemical aspects of the ocean, as well as interrelationships with marine and terrestrial environments. They will gain an in-depth awareness of coastal and marine systems. Lab activities will reinforce concepts presented in this class. Marine Science builds on the previous life science and physical science concepts learned and applies that knowledge to the exploration of living and nonliving environments of our bays and oceans.

SOCIAL STUDIES DEPARTMENT

The goal of the Social Studies Department at SST is to engage our students in understanding the history of the world in which we live. In addition, the department teaches history through skill-based learning that emphasizes reading, writing, and critical thinking. The department also incorporates 21st-century skills, including global awareness as well as economic, civic, and environmental literacy.

The department's approach is to teach for greater historical understanding, using a variety of methods to elicit each student's interpretation and insight in looking at past events. SST believes this will help to make graduates well-rounded, productive, and better grounded in the world we live in today. To create active and more engaged citizens, the department focuses on U.S. History, Modern World History, and Civics.

Tammie Glass, Department Chair - History, 8-12; History, 5-8
Brian Chamberlain - History, 8-12; History, 5-8; Moderate Disabilities, 5-12
Craig Davis - History, 8-12; History, 5-8
Michael Hernon - History, 8-12; History, 5-8

United States History CP Credits: **1**

Students will trace the development of the United States from antebellum America through the present day by examining the political, social, and economic issues relevant to each unit of study. Topics covered will include the Civil War, Reconstruction, Industrialization, Immigration, the Progressive Era, the domestic impact of the World Wars and Great Depression, the Cold War Era, and an analysis of how modern foreign and domestic policy decisions have shaped the country. The College Prep course includes projects that support critical thinking skills.

United States History Honors Credits: **1**

Prerequisite: Combination of Grade 8 grades and SST placement test scores
Students will trace the development of the United States from antebellum America through the present day by examining the political, social, and economic issues relevant to each unit of study. Topics covered will include the Civil War, Reconstruction, Industrialization, Immigration, the Progressive Era, the domestic impact of the World Wars and Great Depression, the Cold War Era, and an analysis of how modern foreign and domestic policy decisions have shaped the country. The Honors course includes projects and activities that offer the opportunity to further build critical thinking skills around complex topics.

Modern World History CP Credits: **1**

Beginning with a study of European imperialism in the mid-19th century, students will examine the roots of the political, social, and economic forces that fuel the actions of nation states and drive world events in the modern era. Students analyze primary and secondary sources to develop critical thinking skills and make meaning of complex world events.

Modern World History Honors Credits: **1**

Prerequisite: Advanced or better in US History Honors or Exemplary in US History CP
Beginning with a study of European imperialism in the mid-19th century, students will examine the roots of the political, social, and economic forces that fuel the actions of nation states and drive world events in the modern era. Students analyze and evaluate primary and secondary sources to develop critical thinking skills and expand understanding of complex world events. The Honors course includes projects and activities that offer the opportunity to further build critical thinking skills around complex topics.

Civics Credits**: .5**

Civics is a semester-long course that offers students the opportunity to examine the roots of the American democratic system of government and engage with American history from the Cold War to the present. Students explore the founding documents of the republic, discuss relevant Supreme Court cases, engage in discussions and debates of current events, and create a DESE-required civics project.

WELLNESS / HEALTH

This course is designed to give students the necessary skills and knowledge necessary to live an active and healthy lifestyle.

Mike Clark - Physical Education, 5-12; Physical Education, PreK-8; Health/Family and Consumer Sciences, All Levels

Wellness/General Health & Fitness Credits **.1**

In General Health & Fitness, students will be involved in team and individual sports with the expectation that they will learn the necessary tools to engage in the activity outside of school. Leadership, teamwork, problem-solving, respect, and maintaining a cooperative attitude will be emphasized through sport. Fitness classes will include circuit training, weight lifting,

cardiovascular exercise, and fitness testing in the areas of cardiovascular endurance, muscular strength/endurance, flexibility, and body composition. Students will learn the fundamentals to exercise appropriately and effectively as well as how to develop a workout plan to fit their personal needs.

In Health, students will learn the content through a variety of instructional strategies including lecture, group work, videos/documentaries, individual student-centered classes, test/quizzes, and role playing. Students will learn how to make positive choices as well as the potential consequences of making negative or poor choices.

Physical education and health education topics will fall under the categories of physical health, social/emotional health, safety & prevention, and media impact as outlined in the Massachusetts Comprehensive Health Curriculum Framework.

DIGITAL LITERACY & GUIDANCE

South Shore Technical High School has developed a guidance curriculum focused on student transitions and student wellness. The instructional goal of the guidance curriculum is to provide students with opportunities to learn about our school, how to navigate their chosen career field, and how to prepare for college, all in a safe and healthy environment. Students will be provided the tools to be college- and career-ready upon graduation. Additionally, during a discrete Digital Literacy course taken during Grade 9, students learn about digital tools and communication and their impact on society and individuals.

Pat Henderson - Library, All levels
Joe Madera - School Guidance Counselor, 5-12
Todd Zahurak - School Guidance Counselor, 5-12

Digital Literacy Credits: .1

Through various activities, students will enhance their understanding of digital technologies, including responsible and appropriate use of technology.

Employability and Career Choices Credits: .1

Through various programs, students will begin to compile their career plans. Students will identify their personal interests and crosswalk those interests to different options for post-secondary success (career, college, military). Students in this year will begin to assemble a portfolio of career resources such as developing job interview skills, beginning a resume, and learning how to fill out job applications. Additionally, tests such as the PSAT and the ASVAB are offered.

Career Planning and Opportunities Credits: .1

Students will take the steps to organize and plan for post-graduation. Career and college searches will become more focused, and initial steps will be taken to move forward. College searches will rotate to the forefront this year, and students will spend time researching colleges that will meet their academic and career goals. PSAT, SAT, and ASVAB tests are offered again, and students will have the opportunity to attend a college fair. Career-wise, students are introduced to the requirements of co-op, and efforts are made to continue filling out their career plans.

Senior Decisions Credits: .1

This course will be focused on putting post-secondary plans into action. Students will explore post-secondary options, update and enhance resumes, and receive college application support and scholarship search assistance.

VOCATIONAL PROGRAMS

The curriculum for South Shore Vocational Technical High School's approved Chapter 74 Career Vocational Technical Education (CVTE) programs, is developed, aligned and revised based on the current Massachusetts CVTE Frameworks. Vocational instruction is designed utilizing the Massachusetts Framework strands, competencies and tasks, as well as local, state, and national licensing and certification requirements. Valuable industry input is derived from the Program Advisory Committees, the General Advisory Committee and subject matter experts in each area of instruction.

ALLIED HEALTH

Healthcare is one of the largest and fastest-growing industries in the country today. Population growth, longevity, and health reform have increased the need for additional educated and skilled healthcare workers. The Allied Health field encompasses varied occupations such as surgical technician, nurse assistant, ultrasound technicians, registered nurse, occupational and physical therapists, emergency medical technicians, paramedics, speech therapy, medical office assistants and medical laboratory technicians to name a few. The Allied Health Program is designed to provide an introduction to health related careers. It also prepares students for the Nurse Assistant certifications. Students complete the Alzheimer's Disease Habilitation Training, are certified in CPR and First Aid, and complete 10 hours of OSHA training. Medical terminology is studied all four years. Additionally, students participate in externship experiences at a long term care facility, daycare/preschool, and an adult day care facility. These experiences support the Allied Health curriculum and allow students to apply what they have learned. The importance of professionalism, work ethic, critical thinking and teamwork are stressed throughout the program.

Allied Health Exploratory

The Allied Health Technology exploratory is designed to introduce students to concepts, skills and information related to this field. This experience teaches the students cardiopulmonary resuscitation using the American Heart Association CPR for Family and Friends program. During exploratory, students are introduced to nursing assistant skills as they relate to patients with sensory impairments and physical disabilities. Students are introduced to a variety of Allied Health careers. Hands on learning assess each student's aptitude for the field of Allied Health. Concepts of professionalism, communication, work ethic and teamwork are introduced during exploratory.

510000_9 **G-9 Introduction to Allied Health Careers** Credits: **3**

Students will begin introductory instruction for completion of the Massachusetts Department of Public Health Certified Nursing Assistant (CNA) theory and skills. Concepts include infection control, environmental, patient and nurse assistant safety, communication, legal and ethical concepts including scope of practice, work ethic, body organization, and intellectual disabilities. Skills include: handwashing, personal protective equipment donning and doffing, medical bed making, and introductory skills necessary for providing personal care. In addition to in-shop practice of skills, students are introduced to the clinical setting with clinical rotations at an Assisted Living Facility and Adult Day Care where they practice the importance of effective communication and teamwork in the healthcare setting. Certifications completed in the freshman year of Allied Health include OSHA 10 hour training.

510000R_9 **G-9 Introduction to Medical Terminology** Credits: **1**

The study of medical terminology begins in grade 9. Medical terminology is the study of the principles of medical word building to help the student develop the extensive medical vocabulary used in healthcare occupations. Students receive a thorough grounding in basic medical terminology through a study of root words, prefixes and suffixes.

510000_10 **G-10 Nurse Assisting I Credits:** 3

Coursework is focused on completion of the Massachusetts Department of Public Health Certified Nursing Assistant (CNA) theory and skills. Students will expand knowledge of body systems through studying the care of individuals with various medical and mental health diagnoses. Students will learn skills involved in patient care, including: obtaining vital signs, range of motion, patient positioning, and expanded skills necessary for providing personal care. Students will apply skills learned in the shop setting during their clinical rotation on a long term care facility unit through one on one patient care. Certifications completed in sophomore year of Allied Health include American Heart Association Basic Life Support and The Alzheimer's Association Habilitation Certification.

510000R_10 **G-10 Medical Terminology I** Credits: **1**

Medical terminology is the study of the principles of medical word building to help the student develop the extensive medical vocabulary used in healthcare occupations. Students receive a thorough grounding in basic medical terminology through a study of root words, prefixes and suffixes. Students will continue instruction and assessment in Medical terminology.

510000_11 **G-11 Nurse Assisting II** Credits: **3**

Coursework is focused on completion of the Massachusetts Department of Public Health Certified Nursing Assistant (CNA) theory and skills. Direct patient care in junior year including transfers, feeding, oral care, denture care, bathing, dressing and toileting allows students

opportunities to apply what they have learned in the classroom and apply it to a long-term care clinical setting. Students will take a written and practical exam for their CNA license. Upon completion of the CNA curriculum, students will be introduced to Home Care. The certification completed in junior year is Certified Nurse Assistant Certification.

510000R_11 **Medical Terminology II** Credits: **1**

Medical terminology instruction and assessments continue throughout junior year. Medical terminology is the study of the principles of medical word building to help the student develop the extensive medical vocabulary used in healthcare occupations. Students receive a thorough grounding in basic medical terminology through a study of root words, prefixes and suffixes.

510000_12 **G-12 Patient Care Technician** Credits: **3**

Allied Health grade 12 shop builds upon concepts previously learned in the program. In the first semester students will focus on advanced CNA skills including performing and EKG, bladder scanner, glucose finger stick, and specimen collection. In the second semester, students will focus on an intensive senior project. Students will select a topic of their choice related to the health field, and produce a research paper, a paper product, and a presentation. Students will be required to keep a journal throughout the semester to reflect on goals, accomplishments, and challenges. Externship includes clinical experience on a sub-acute unit where patients are transitioning from the hospital to home in most cases. Cooperative education employment is another option for students during shop week. The certifications senior year students are American Heart Association Heartsaver First Aid and re-certification in Basic Life Support CPR.

510000R_12 **G-12 Medical Terminology III** Credits: **1**

Students will utilize the 350 medical term word parts that they learned their previous 3 years and put them together to form full medical terms. Additionally, students will learn more about medical conditions as they relate to each body system along with medical terms that coincide with these conditions.

AUTOMOTIVE

The NATEF (National Automotive Technicians Education Foundation) AST Certified Program is where you learn the full range of diagnostic techniques necessary to be a proficient technician. You'll be involved with everything from new car preparation to engine and transmission work. In addition, you'll gain insight and experience with complex automotive computer systems. Using such state-of-the-art technology, well-trained technicians quickly go to the heart of the problem, applying their skills and giving greater customer satisfaction in terms of time, workmanship, and money. Automotive students are trained in: safety orientation, the use of hand tools, the use of

power tools, basics of vehicle maintenance, service and repair of tires and brakes, engine fundamentals, suspension and alignment, tune-up, emission control, drive lines, and electrical/electronic systems. Students learn the basic in-depth aspects of Auto Body Technology, collision repair and finishing and Detailing.

Automotive Exploratory

This 2.5 day program provides the 9th grade student with instruction in basic maintenance of vehicles. Students receive instruction in shop operational procedures, personal and shop safety, and tool usage. Students will be instructed in service information lookup procedures and recording of specifications, jacking procedures, and if time allows, tire mounting and balancing. Hands-on performance testing, safety and written tests are used to determine the student's potential success in the automotive program. Students will also be given a basic introduction to panel refinishing including base coat / clear coat painting procedures as well as Virtual Spray painting. Related theory focuses on the general topics of shop safety and career potential in the Automotive / Crt repair industry.

470604_9 **G-9 Automotive Shop** Credits: **3**

The program prepares the students to apply technical knowledge and skills to repair, service, and maintain all types of automobiles. Grade 9: Topics include: Shop safety, shop manuals, tool identification, preventive maintenance and procedures., introduction to tire service, basic tool skills. In addition the program prepares the student to apply technical knowledge and skills to repair, finish automobile bodies. Topics include: Safety and Environmental Practices, Understanding Automotive Finishes, Refinishing, Applying the Finish, Blending, Paint Application, Finish Defects, Detailing.

470604R_9 **G-9 Automotive Related** Credits: **1**

This course provides students with the basic knowledge and skill training necessary for continued success in the Automotive Technology program. Grade 9: Topics include: Shop safety, shop information systems, hand tool identification, fasteners & fittings, precision measuring instruments, preventive maintenance and procedures, introduction to tire service, basic tool skills. Instructional delivery includes the use of instructor led presentations, reading and writing assignments, classroom and media demonstrations. Reading, writing, and math assignments related to the automotive industry are an integral part of this course. The program also prepares the student to apply technical knowledge and skills to repair, finish automobile bodies. A Written Pre,Mid, and Post tests are used to determine the student's potential success in the auto body program.Topics include: Safety and Environmental Practices, Understanding Automotive Finishes, Refinishing, Applying the Finish, Blending, Paint Application, Finish Defects, Detailing.Hardware and basic hand tools for automotive and collision repair. Instructional delivery includes the use of instructor led presentations,online book reading and writing assignments, classroom demonstrations and media demonstrations.Students will participate in an online instruction and test for their OSHA 10 card

470604_10 **G-10 Automotive Shop** Credits: **3**

The program prepares the students to apply technical knowledge and skills to repair, service, and maintain all types of automobiles. Grade 10: Topics include:; Brake system: inspect brake system, replace brake shoes, replace disc brake pads, adjust and resurface brakes (drums and rotors), service emergency brake, service hydraulic system, flush hydraulic brake system, bleed hydraulic brakes, test/repair brake warning light, test/service anti-lock brake system.In addition the program prepares the student to apply technical knowledge and skills to repair and finish automobile bodies. Topics include: Non-structural repair, Refinishing (tinting), detailing, and paint mixing. Safety and quality of workmanship are stressed.

470604R_10 **G-10 Automotive Related** Credits: **1**

This course provides students with the basic knowledge and skill training necessary for continued success in the Automotive Technology program. Topics include brake system theory and repair. Instructional delivery includes the use of instructor led presentations, reading and writing assignments, classroom and media demonstrations.

470604_11 **G-11 Automotive Shop** Credits: **3**

Hands on study of automotive systems including: introduction to scan tool diagnostic technology, cooling system diagnostics and repair, electrical system, steering and suspension, automotive electrical system, servicing engine management system.In addition The program prepares the students who may choose Collision repair as their pathway to apply technical knowledge and skills to repair, and finish automobile bodies. Topics may include: Partial and complete refinish procedures, detailing, and paint mixing. Eligible students may participate in co-op programs mid year. Safety and quality of workmanship are stressed. Students will also participate in teaching freshman skills learned in Automotive and Crt.

470604R_11 **G-11 Automotive Related** Credits: **3**

In depth study and comprehension and study of automotive systems including: introduction to scan tool diagnostic technology, introduction to engine construction, engine electrical system, introduction automotive electrical/electronic system, servicing engine management system.

470604_11 **G-12 Automotive Shop** Credits: **1**

Hands on study of automotive systems including: advanced scan tool diagnostic technology, emission control system; advanced electrical/electronic systems, service heating/air-conditioning

systems, construction of engines, introduction to drivetrain systems. electrical and electronic systems,. Eligible students may participate in the co-op program

In addition students who feel that their career lies in Painting and refinishing may choose to apply technical knowledge and skills to repair, and finish automobile bodies. Topics may include: paint and refinish, Detailing and paint mixing, repair and refinish of plastic,.

470604R_12 **G-12 Related -On-board Computer Fundamentals and Diagnostics**
Credits: **1**

Continued study and comprehension of the emission control system; advanced scan tool diagnostic technology, advanced electrical/electronic systems, service heating/air-conditioning systems, construction of engines, and introduction to drivetrain systems.

CARPENTRY

The Carpentry program prepares individuals to apply technical knowledge involved in cabinet making, building construction, remodeling and renovation for a wide vari

ety of positions in the construction industry. Skills are developed in the safe use of hand and power tools, setup and use of stationary power equipment and the layout, design and fabrication of wooden structures. Students also receive instruction in technical mathematics, blueprint reading, rough and finish carpentry techniques, job costs and materials estimating, and application of building codes and standards. During the first two years, students acquire basic woodworking skills through a variety of in-shop and on-location woodworking projects. During the last two years of the program, students work on off-site public and nonprofit remodeling and building projects. Sound safety practices, work ethic, positive attitude and a sense of teamwork are strongly emphasized in each of the four years.

Carpentry Exploratory

The two and one half day program provides students with the basic knowledge and relevance of safety, math skills, and career paths in the field of carpentry. Students receive instruction in hand tools and their applications and general shop safety. Students put into practice what they have learned by building an assigned project. Critical thinking skills are emphasized throughout the course. Hands-on performance testing, safety and written tests are used to determine the student's potential success in the carpentry program.

460201_9 **G-9 Carpentry Shop** Credits: **3**

The program prepares students to apply technical knowledge and skills to layout, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Topics include: basic wood joints, wood structure, fastening systems, measuring tools, sawing tools,

boring and clamping tools, smoothing tools and jobsite safety. Basic math functions: place value, whole number operations, common fractions and measurements. Students will earn their OSHA 10 certification.

460201R_9 **G-9 Carpentry Related** Credits: **1**

The program prepares students to apply technical knowledge and skills to layout, cut, fabricate, milling practices, assembly, and construction of basic wooden structures and components, using hand and power tools. Instructional delivery includes the use of instructor led presentations, reading and writing assignments, classroom demonstrations and media demonstrations. Reading, writing, and math assignments related to the carpentry industry are an integral part of this course.

460201_10 **G-10 Carpentry Shop Credits:** 3

The program prepares students to apply technical knowledge and skills to layout, cut, fabricate, more advanced milling procedures, assembly, and construct more advanced wooden structures and components, using more advanced power tools and equipment. Topics include: cabinet construction, design and basic plans, floor framing, wall framing, roof framing, concrete forms, ceiling framing, basic roof types, and job/site safety. Basic math functions: Framing layout, area, perimeter, board feet, estimating framing material. Basic math functions: place value, whole number operations, common fractions and measurements.

460201_10 **G-10 Carpentry Related Credits: 1**

The program prepares students to apply technical knowledge and skills to layout, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Basic math functions: Framing layout, area, perimeter, board feet, and estimating framing material. Instructional delivery includes the use of instructor led presentations, reading and writing assignments, classroom demonstrations and media demonstrations. Reading, writing, and math assignments related to the carpentry industry are an integral part of this course.

460201_11 **G-11 Carpentry Shop** Credits: **3**

The program prepares students to apply technical knowledge and skills to layout, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Topics include: blueprint reading and design, concrete forms, concrete floors, moisture control, ventilation, exterior finish, advanced roof design and jobsite safety. Basic math functions: Cubic yard, cubic feet, finish material estimating, roof framing calculations and sidewall calculations. Students have the option of working on more advanced projects within the shop setting to working on off-campus projects within the district's eight sending towns, engaged in community service and private construction projects. Eligible students also have the option to participate in our co-op program. Students will have the opportunity to earn their OSHA 30 Certification.

460201R_11 **G-11 Carpentry Related - Residential Print Reading, Exterior Roofing, and Sidewall Finishes and Installation Credits:** 1

The program prepares students to apply technical knowledge and skills to layout, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Instructional delivery includes the use of instructor led presentations, reading and writing assignments, classroom demonstrations and media demonstrations. Reading, writing, and math assignments related to the carpentry industry are an integral part of this course.

460201_12 **G-12 Carpentry Shop Credits: 3**

The program prepares students to apply technical knowledge and skills to layout, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Topics include: stairway construction, sound control, windows and doors, interior finish, Mass Code book, house design and calculations, resume, job applications and job/site safety. Basic math functions: Interior finish material estimating, stairway calculation and estimating, framing member size calculations and total project estimating and calculations. Students have the option of working on more advanced projects within the shop setting to working on off-campus projects within the district's eight sending towns, engaged in community service and private construction projects. Eligible students also have the option to participate in our co-op program.

460201R_12 **G-12 Carpentry Related- Construction Practices and Component Layouts** Credits: **1**

The program prepares students to apply technical knowledge and skills to layout, cut, fabricate, erect, install, and repair wooden structures and fixtures, using hand and power tools. Topics include: stairway construction, sound control, windows and doors, interior finish, Mass Code book, house design and calculations, resume, job applications and job/site safety. Basic math functions: Interior finish material estimating, stairway calculation and estimating, framing member size calculations and total project estimating and calculations. Instructional delivery includes the use of instructor led presentations, reading and writing assignments, classroom demonstrations and media demonstrations. Reading, writing, and math assignments related to the carpentry industry are an integral part of this course.

COMPUTER INFORMATION TECHNOLOGY

The Computer Information Technology program provides a pathway for graduates to secure high-demand, high-paying jobs. Students will receive instruction based on three Information Technology areas: Network and Infrastructure Systems, Operating Systems, Server, and computer hardware. Students will have the opportunity to obtain dual enrolment credits and local colleges.

CIT Exploratory

This 2 ½ day program introduces students to the basic knowledge and skills necessary to pursue

study in the Computer Information Technology program. Basic instruction in shop safety and CIT program orientation is provided. Students learn the skills necessary to open the way to various career options for the CIT professional. Students develop an understanding of the scope of the program and the technology systems involved. Hands-on performance testing, safety and written tests are used to determine the student's potential success in the computer information technology program.

110401_9 **G-9 CIT - Intro to Computer Hardware and Operating Systems Credits: 4**

When each grade is in shop, they will apply the theory concepts in a practical hands-on setting as they perform lab exercises from lab manuals and other sources. In addition, they will apply their knowledge to real-life problems as they maintain the computers used by staff and students in the school. An emphasis is placed on Learning the latest Windows Operating System along with computer hardware and software applications. Students are introduced to programming and game design applications. Students will have the opportunity to obtain their OSHA 10 certification.

110401_10 **G-10 CIT Introduction to Networking and Security Fundamentals** Credits: **3**

When each grade is in shop, they will apply the theory concepts in a practical hands-on setting as they perform lab exercises from lab manuals and other sources. In addition, they will apply their knowledge to real-life problems as they maintain the computers used by staff and students in the school. Students will have the opportunity to obtain the following certifications, It Specialist Certification, Networking and Network Security.

110401_10a **Computer Science Principles** Credits: **1**

In Grade 10 students will participate in an introductory computing course that introduces students to the breadth of the field of computer science. Students learn to design and evaluate solutions and to apply computer science to solve problems through the development of algorithms and programs.

110401_12 **G-11 Shop - Intro to Server** Credits: **4**

Students will apply their knowledge to real-life problems as they maintain the computers used by staff and students in the school. Instructional topics include server fundamentals such as managing Windows (including virtualization) and storage, along with monitoring and troubleshooting servers. Topics also covered are, essential naming, and Active Directory. Students also learn about popular Windows Network Services, Applications and server hardware. Students will have the opportunity to obtain the following certification, IT Specialist Certifications in Device Configuration and Management and Cybersecurity.

110401_12 **G-12 Shop - Intro to Server** Credits: **4**

Students will apply their knowledge to real-life problems as they maintain the computers used by

staff and students in the school. Instructional topics include server fundamentals such as managing Windows (including virtualization) and storage, along with monitoring and troubleshooting servers. Topics also covered are, essential naming, and Active Directory. Students also learn about popular Windows Network Services, Applications and server hardware. Students will have the opportunity to obtain the following certification, IT Specialist Certification, Device Configuration and Management.

110401_12 **G-12 Shop 2025- Comp TIA Cloud + Guide to Cloud Computing.**
Credits: **4**

Students will learn the fundamentals of cloud computing. Students will cover topics such as Virtual hardware, how to migrate to the cloud, cloud networking, troubleshooting, securing cloud resources, storage performance and automation. Students will be able to obtain a cloud computing certification.

COSMETOLOGY

The cosmetology program is designed to prepare students for entry into the vast and ever-growing beauty industry in which they will be able to utilize their learned skills, natural creativity and personal charisma to build a rewarding and successful career. From both teachers and guest industry professionals, students in this program can expect to learn everything from the basics of manicuring and skin-care to the newest and most cutting-edge techniques for hair cutting, coloring, and texturizing. While underclassmen are practicing their new skills on mannequins and fellow classmates, upperclassmen have the opportunity to work with live models in the school student-run salon, *Studio B,* and practice not only their technical skills but learned customer service techniques as well. While in the shop, students participate in hands-on training for mastery of manicuring, facials, waxing, haircutting, hair coloring, chemical texture services, formal event styling, makeup, and many other services offered in the salon and spa industry. Students can also expect to learn not only the theory relating to hair, skin and nails, but also the basics of salon management and entrepreneurship to encourage future business owners to pursue their dreams. Upon completion of the 1000 training hours mandatory for state licensure, students take their state cosmetology licensing exam and have the opportunity to participate in co-op job placement. This license allows students to legally work in salons throughout Massachusetts. The cosmetology program opens the doorway to a multitude of career paths including hair designer, esthetician, color specialist, salon owner, manicurist, platform artist, session stylist, makeup artist and more.

Cosmetology Exploratory

This 2.5-day exploratory program introduces students to the basic knowledge and skills

necessary to pursue a career in cosmetology. Students will explore the many career opportunities available to industry professionals as well study basic safety and sanitation, personal hygiene, and interpersonal communication. Students are introduced to basic practices in all three elements of the industry: hair, skin, and nails.

120401-9 **G-9 Introduction to Cosmetology** Credits: **3**

This course is designed to provide students a strong foundation and the basic knowledge and skill set necessary for a successful progression to the next level of our program of study. Students will be instructed on safe and proper use of shop equipment and tools, and will practice proper safety and sanitation daily. During their first year, students will learn the fundamentals of wet and thermal hairstyling, basic manicuring, basic facials, and introductory makeup application.

120401R-9 **G-9 Related: Introduction to Cosmetology** Credits: **1**

This course introduces students to the history of cosmetology and allows them to explore the many career opportunities available to industry professionals. Students are also provided with comprehensive instruction on sanitation/infection control, fundamental properties of the hair and scalp, structure and growth of skin and nails, and basic principles of design.

120401-10 **G-10 Cosmetology Shop** Credits: **3**

This course builds upon the skills learned during G-9 Shop, and also introduces the fundamentals of haircutting, hair coloring, and chemical texture services and application techniques. Students are instructed in ergonomics, proper body position, and tool safety for all learned procedures and the importance of health and wellness within the industry. Students also practice customer service skills and learn the salon management software for scheduling appointments. Throughout the year, students will continue to work toward proficiency in wet and thermal hair styling, manicuring, waxing, facials and makeup application. Upon completion of 250 training hours students have the opportunity to complete non-chemical services on guests in the student salon.

120401R-10 **10th Grade Related** Credits: **1**

This course introduces students to the fundamentals of cosmetology as well as prepares them for working in the student salon. Topics include: principles of design, haircutting, anatomy of the head, face, neck and shoulders, laws of color theory, chemical and physical changes associated with permanent waves and chemical relaxers, and structure of hair, skin and nails. Students are instructed in varying aspects of customer service and client relations including communication techniques to prepare them for interacting with clients and facilitating effective consultations.

120401-11 **G-11 Shop** Credits: **3**

This course reinforces practices learned and introduces students to new and more advanced

techniques that will advance their knowledge and technical skills. Instruction will include a focus on mastery of fundamental haircuts, finish and texturizing work, point cutting, razor cutting, classic highlighting, balayage, color formulation, creative color placement and introduction to color correction. Students continue to refine skills in basic skin care and makeup and are introduced to artificial nail wraps, and acrylic nail application. Students in their Junior year have the opportunity to perform a variety of services on live models in our school-run salon. This course prepares students for the workforce by providing hand-on experiences that reinforce professionalism, work ethic, customer service skills, and communication.

120401R-11 G-11 Related Credits: **1**

This course reinforces student understanding of the principles of design, haircutting, hair color and chemical services, and explores more in-depth techniques and design elements. Students are also instructed in basic general sciences as they relate to cosmetology. This course focuses on preparing students for their cosmetology license exam.

120401-12 **G-12 Comprehensive Cosmetology Credits:** 3

This course will provide students the opportunity to advance and master their technical skills, and prepare students for the State Board exam as well as successful employment in a local salon. This course prepares students for the workforce by providing hand-on experiences that reinforce professionalism, work ethic, customer service skills, and communication.

120401R-12 **G-12 Cosmetology Related State Board Prep and Intro to Entrepreneurship Credits:** 1

This course is designed to prepare students for State Board licensing and workforce readiness. Instruction includes chapter review of subject matter learned, resume writing, and an introduction to entrepreneurship. Additionally, students are introduced to the fundamental concepts of salon management and ownership, as well as the various entrepreneurial opportunities available within the cosmetology industry. Students will also study social media marketing and photography for creating professional promotional content.

CULINARY ARTS

The Culinary Arts program gives students instruction and experience in baking, cooking, and dining room service. In addition, restaurant management and the planning and preparation of meals are covered within the diverse curriculum. Students are trained to be work-force ready and employable in restaurants, hotels, resorts, and hospitals.

Our Culinary Arts program will prepare you for: dining room service, retailing, weights and

measurements, cooking, baking, mixing, line cooking, cake decorating, using herbs, spices and seasonings, chef and pastry chef training, inventory purchasing and receiving, and management skills. In addition, students will also be able to earn National Restaurant Association Servsafe manager certification, OSHA10-hour (Culinary) certification and Servsafe allergen awareness certification.

Culinary Arts Exploratory

This 2.5-day course of study provides the 9th grade student with an introduction to the food and beverage industry from three vantage points: kitchen, dining room and bakery. The students spend time in each area learning hands-on applications. The student is introduced to safety, sanitation, personal hygiene, table settings, order taking, bakery, and basic food preparations and beginner knife skills. Instruction utilizing demonstrations, hands-on performance assessments, and online quizzes are used to help determine the student's potential success in the foodservice and hospitality industry.

120500R_9 **G-9 Introductions to Culinary Arts Shop** Credits: **4**

In this course freshmen students are introduced to each of the three areas of the Culinary Arts Shop. Hands on fundamentals and training in safety and sanitation, the development of basic hand tool and equipment operation (emphasizing technique) with particular emphasis on knife skills. Students are exposed to food preparations and production within each entry level workstation with emphasis on the restaurant and bakery open to the public.

120500R_9 **G-9 Culinary Arts Related** Credits: **4**

The course prepares students to provide professional services related to food preparation and service. Food service careers, personal hygiene, food service safety, tools and equipment, basic food items, baking ingredients, cooking methods and techniques, appetizers, herbs, spices and seasonings, salads and salad dressings, soups, stocks and sauces, breakfast preparation, meat/poultry/fish/shellfish preparation, vegetable preparation, dining room service, baking methods and techniques. Students will earn OSHA 10 hour General Industry (Culinary) certification.

120500_10 **G-10 Culinary Arts Shop** Credits: **3**

This course is a more in-depth approach to entry-level positions within the bakery, line and dining room. Students gain more experience in daily shop and restaurant operations. Students are taught the importance of workforce ready skills such as professionalism, task and personal accountability, solid work ethic and self-control.

120500R_10 **G-10 Culinary Arts Related** Credits: **1**

This course prepares students to provide professional services related to food preparation and service. Food service careers, personal hygiene, food service safety, tools and equipment, basic

food items, baking ingredients, cooking methods and techniques, deep frying, appetizers, herbs, spices and seasonings, salads and salad dressings, soups and stocks, sauces and gravies, breakfast preparation, meat/poultry/fish/shellfish preparation, vegetable preparation, dining room service, baking methods and techniques. Culinary history, science and techniques are also investigated in detail through research based and real life situation based projects. OSHA training and certification through the CareerSafe online course are also required.

120500_11 **G-11 Culinary Arts Shop** Credits: **4**

In this course of study students are rotated through intermediate positions and workstations with increased independence. Students are given more leadership opportunities as they perform as both upperclassmen and peers. Students are encouraged to develop their skills learned thus far, as well as newly acquired skills. Topics include: Perform on the line stations (including sauté, broiler, fry, grill, expediter), explain and create "mother" sauces, demonstrate basic meat, poultry, seafood breakdown skills, continue to expand on knife skills, identify fruits and vegetables, understand the basic of checking in food deliveries, how to use a POS system, demonstrate the safe use, storage and maintenance of a every major piece of equipment in the shop (as listed in the Safety Performance Test Booklet), describe cross contamination and use of acceptable procedures when preparing and storing potentially hazardous foods, prepare and maintain restaurant and workstations for bakery sales, deep frying, using thickening agents, define relevant baking terms, prepare and bake lean and rich dough products, prepare various frostings and icings, prepare baked goods to be finished, frost cakes and pastries, prepare and cook custards and fillings and prepare plated desserts for the restaurant.

120500R_11 **G-11 Culinary Arts Related - Food Service Sanitation, Advanced Culinary Techniques, Principles of Restaurant Management** Credits: **1**

This course prepares students to provide professional services related to food preparation and service. Topics include: providing safe food, the micro world, contamination and foodborne illness, the safe food handler, establishing the HACCP Food service Safety System, purchasing and receiving safe food, keeping food safe in storage, protecting food in preparation and service, sanitary facilities and equipment, cleaning and sanitizing. Prepare for and take the ServSafe Manager Certification Course and Exam.

120500_12 **G-12 Culinary Arts Shop** Credits: **4**

In this course of study senior students will take on the role of station and shop managers and will be required to write daily production lists and assist in daily menu decisions with approval from their instructor. This also includes how to exhibit management, organizational and time management skills; operate all shop equipment with 100% accuracy; management of receiving, checking and storing of food items; demonstration of teamwork skills as it applies to end of the day and vacation cleanup; locate emergency equipment and MSDS sheets in shop; demonstrate safe knife skills emphasizing technique on specific cuts; recognize signs of food spoilage and contamination, plan a menu, order food products, identify and use of specific equipment and utensils used in baking, various mixing methods in baking, prepare specialty desserts and finish

work, answering phones, taking customer orders and customer interaction as a bakery sales associate, perform the expo/sous chef station on the line and execute derivative sauces from the "mother" sauces.

120500R_12 **G-12 Culinary Arts Related - Business, Entrepreneurship and Employment Skills**
Credits: 1

This course prepares students for careers in culinary management with an introduction to the basic skills required for successful restaurant management. Topics include development of inventory control forms, cost controls and purchasing requirements, par stock lists and product specification sheets. Also students will be exposed to state and federal labor and tax regulations, interviewing techniques, application review and payroll cost forecasting and employee scheduling. Small business development research and business plan outlines are also covered in the curriculum. Students will also prepare for and take the Allergen Awareness Certification Course and test.

ELECTRICAL

The Electrical program prepares you for entrance as an electrical apprentice with the goal of becoming a licensed electrician and work would include residential,commercial and industrial wiring. Motors and controls, and industrial electronics will be part of your training. Students plan, layout, install and repair wiring and services according to electrical codes. National and local codes are stressed in the classroom and shop and on “live” jobs outside the school. The Electrical program at SST will teach you: safety, use of hand tools, splicing, circuits using multiple wiring methods to include cable and raceway conduit,electrical service equipment motors, transformers, and National & Massachusetts Electrical Code.

Electrical Exploratory

This 2.5-day program allows students to explore the electrical program. They are introduced to basic electrical theory and hand tools. Using basic hand tools, students demonstrate the skills required for: wire splicing, low voltage circuitry, entering and terminating Romex, MC and low voltage cables, terminating single pole and three-way switches, and terminating lights and duplex receptacles. Emphasis is placed on hand tools and electrical safety. Instruction incorporates presentation, demonstrations, hands-on performance assessment, and written tests and quizzes are used to help determine the student’s potential success in the electrical program.

4960302_9 **G-9 Introduction to Electrical Shop** Credits: **3**

The Electrical program prepares students to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, and electrical distribution panels. Topics include general and electrical safety in the workplace, hand and power tool safety

and the use and methods of fastening various materials to different types of construction, methods of splicing and device termination, application and installation requirements for the following wiring methods, low voltage cabling, including bells, buzzers, and the basics of lighting circuits controlled by single, three-way and four-way switches. Installation of nonmetallic sheath cable, electric metallic tubing rigid galvanized conduit, armored cable, and metal clad cable, and flexible conduits and tubing. The 9th grade curriculum includes an introduction to the Massachusetts Electrical Code, as well as an overview of state licensing laws as applicable to the Board of State Examiners of Electricians.

4960302R_9 **G-9 Electrical Related** Credits**: 1**

The Electrical program prepares students to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, and electrical distribution panels. Topics include: Developing and using wiring diagrams to install and troubleshoot circuits for receptacle and lighting outlets, utilizing various wiring materials, using the Massachusetts Electrical Code to determine the appropriate size of circuit conductors, raceways and enclosures; and to install electrical equipment, utilizing basic electrical formulas to calculate circuit values of voltage, current and power and blueprint reading and using an architect's scale. Topics require the application of basic math skills, including adding, subtracting, multiplying and dividing whole numbers, decimals and fractions; basic algebra, solving ratios & proportions and calculating area. Instructional delivery includes the use of instructor led presentations, reading and writing assignments, classroom demonstrations and media demonstrations.Students will earn OSHA 10 Construction Certification

4960302_10 **G-10 Electrical Shop** Credits: **3**

The Electrical program prepares students to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, and electrical distribution panels. Topics include various introductory wiring methods including Nonmetallic sheathed cable, electrical metallic tubing, rigid conduit, flexible metal conduit, surface metal raceway, along with low voltage control systems. Students also continue on the proper and safe ways to work with equipment including ladders and power tools.

4960302R_10 **G-10 Electrical Related** Credits: **1**

The Electrical program prepares students to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, and electrical distribution panels. Topics include: Basic DC Circuits: Ohm's Law, Series circuits, Parallel circuits, power and energy, Series/Parallel circuits. Resistance of conductors: resistance per foot, resistance per code tables, ampacity of conductors; NEC: sizing enclosures, sizing branch circuits, sizing services (dwellings), sizing raceways, derating conductors; Electron Theory: molecular structure,

electrical quantities; Magnetism: Laws of attraction and repulsion; basic relays, meter movements, induction; Sources of EMFs: conductors in liquids, chemical batteries, pressure.

4960302_11 **G-11 Electrical Shop Credits: 4**

The Electrical program prepares students to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, and electrical distribution panels. Students continue to further their skills with continued variations of project based wiring methods. Safety continues to be a top priority as students are introduced to " real work " projects of maintaining buildings on school grounds, residential and commercial wiring service and construction, community electrical projects with emphasis on business applications and customer relations. Students are also introduced to the Co-op Program that allows the students to expand their technical skills with employment from an approved Employer during their 2nd semester.

4960302R_11 **G-11 Electrical Related - AC/DC Technology, National Electric Code** Credits: **1**

The Electrical program prepares students to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, and electrical distribution panels. Topics include: AC/*DC* generation of electromotive force, and operating principles Direct-current motor principles, basic principles of automatic motor control, AC/DC motor controllers; AC theory: alternating current principles, inductance; capacitance; AC Series circuits; AC parallel Circuits; AC Power and Power Factor; single Phase AC Equipment: Transformer principles, Single phase transformers, single phase induction motors, AC motor control. Math Topics: Working with percent; conversion factors for power, efficiency of DC generators, generator voltage regulation, efficiency voltage regulation, efficiency of DC motors, motor speed regulation, motor branch circuit calculations (overcurrent and overload; conductor ampacity and size); Power, voltage and current in simple circuits; trigonometry for alternating current; generation of an AC voltage, AC values (maximum, effective, instantaneous) vectors and phasors, Pythagorean theorem; transformer ratios (voltage and current); Efficiency of transformers; Transformers voltage regulation; single-phase motor calculations; motor-branch circuit calculations. Instructional delivery includes the use of instructor led presentations, reading and writing assignments, classroom demonstrations and media demonstrations.

4960302_12 **Grade - 12 Electrical Shop** Credits: **4**

The Electrical program prepares students to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, and electrical distribution panels. Safety continues throughout the year to identify and rectify any unsafe working conditions. Students continue to work on an " outside crew" with work including the

maintenance of school buildings and grounds, residential and commercial service and construction, community electrical projects with continued emphasis on business applications and communication skills with customer relations. Students are encouraged to participate in the Co-op program with approved Employers to further their technical knowledge and skill in an established working environment.

4960302R_12 **Grade - 12 Electrical Related - Advanced AC/DC Technology w/ National Electric Code** Credits: **1**

The Electrical program prepares students to apply technical knowledge and skills to install, operate, maintain, and repair electric apparatus and systems such as residential, commercial, and industrial electric-power wiring; and DC and AC motors, controls, Programmable Logic Controller programing, wiring and troubleshooting. Topics include: Topics apply algebra, trigonometry and basic math skills. Topics include: Three phase: kVA, kW, Power Factor; Transformers: Size Primary Feeders, Size Secondary Feeders, Size distribution Boards, Size Commercial Branch Circuits and Feeders; Motor Controls: Article 430 Motor Branch Circuit Calculation; Services Commercial and Industrial: Article 220, 230, 310; Overcurrent Protection: Article 240, Calculations of Point to Point Available Short Circuit Current. Three Phase: Basic circuits, motors, transformers; Motor controls: Manual, magnetic, reduced voltage and reversing starters; Luminaries: Lighting theory and maintenance, Code Requirements; Overcurrent Protection: Short circuit interrupting Capacity, Limiting Fuses, Molded Case Circuit Breakers; Industrial Electronics: Binary, Octal, Hexadecimal number systems, Solid state circuits, Programmable controllers. Instructional delivery includes the use of instructor led presentations, reading and writing assignments, classroom demonstrations and media demonstrations.

GRAPHIC DESIGN AND VISUAL COMMUNICATIONS

1003001_9 GRADE 9-Introduction to Graphic Production Credits: 4

This course is designed to provide vocational students with a basic knowledge of a graphic design production environment. Students will learn basic functionality and maintenance of copiers, network printers and print finishing including cutting and bindery. General understanding of paper type and paper weights and industry specific math and measurement as well as remembering and describing health and safety practices. Introductory level of the following:fundamentals of page layout, raster/vector images, design-principles & elements, basic anatomy & history of typography, web design, and color theory.

1003001_9 GRADE 10-Graphic Production Credits: 4

Second year students learn full functionality of the shop machinery; Digital Press, Screen Printing, Wide Format Printer, Cutter, Stitcher, Folder, Dye Sublimation, and Embroidery. Students are introduced to the daily operations of the live work done for the school and

community. Additionally, students will apply design theories and industry standard software. Students will problem-solve on various projects. We will apply the function and importance of page layout workspace, setting up documents/pages, working with objects, flowing and editing text, working with typography/color/styles, tables, transparencies, printing and exporting, pdfs and epub. Small to mid-size project based learning will introduce students to a variety of opportunities within the graphic design field and will develop student's ability to address real-world consumer driven problems with creative solutions.

1003001_9 GRADE 11-Advanced Graphic Production Credits: 3

Third year students gain independence in content areas. Students will actively analyze and evaluate daily operations of live jobs for clients both on the design and production side. Additionally, students will analyze, apply and evaluate the best practices of a design studio. This year students will expand understanding of real-world marketing concepts through the application of design fundamentals, the creative process and content creation using a variety of desktop publishing tools. Students will begin to develop their individual style and interests as well as hone their skills and professionalism. Using project based learning areas of focus will include publication design, advertising/marketing, branding, illustration, web design, animation, videography and photography. Professional resumes, web portfolios and social media accounts for job/coop applications are created.

500401_11.2 GRADE 11-Adv Design Theory & App 11 Credits: 1

In grade 11 related, students continue exploration of digital media creation including digital photography, videography/editing and animation through project based learning. Mid-year we prepare industry specific resumes, basic electronic portfolios, create professional networking profiles online and begin the application process for co-op and career planning. Finally, towards the end of the year as students become advanced in software, they have the opportunity to test for their industry recognized credentials for Adobe Certified Associate in Photoshop, Illustrator, Premiere, After Effects and/or InDesign.

1003001_9 GRADE 12-Independent Graphic Production Credits: 3

Grade 12 shop will consist of all live work for the school and community. This potentially includes every aspect of our shop from a digital space to our school store to product production. Students will continue to refine advanced skills in screen printing, embroidery, graphic design, print production, bindery, marketing and retail sales.

500401_12 GRADE 12 Related - Advanced Design & Visual Communications Credits: .5

In Grade 12 Related half year course, students prepare for graduation, higher education and/or the workplace. This course offers a gamut of professional growth opportunities to gaining a co-op job to college portfolio preparation and writing. As a summative project, students participate in a capstone event (digital or physical show) highlighting specific skills.

HEATING, VENTILATION, AIR-CONDITIONING, & REFRIGERATION

The HVAC-R course will provide students with a basic understanding of the theories of heating, ventilation, A/C and refrigeration. The course includes specific training in the individual components of heating and cooling systems, and instruction in electrical, controls and wiring schematics. The HVAC program at SST includes: safety, fittings, soldering, brazing, piping, valves, pumps, electrical circuits, refrigeration, air conditioning, and heating principles and theory.

HVAC Exploratory

This 2.5-day program is designed as an overview of several disciplines within the HVAC & R trade. Students gain specific knowledge and skills to explore many career opportunities in the Heating, Ventilation, and Air Conditioning, and Refrigeration fields. Students receive instruction in hand tools and their applications and general shop safety. Students put into practice what they have learned by building an assigned project. Critical thinking skills are emphasized throughout the course. Hands-on performance testing, safety and written tests are used to determine the student's potential success in the HVAC & R program.

470201_9 **G-9 HVAC Shop** Credits: **3**

The HVAC program will allow the student to develop marketable work habits and ethics, such as attendance, honesty, self-confidence, self-esteem and craftsmanship that are required by the HVAC industry. In a safe and well equipped training facility, students will experience the wide spectrum in the industry which encompasses heating, ventilation, air conditioning, refrigeration, appliances, sales and service. With the use of the project driven curriculum, basic trade knowledge and logical deductive reasoning skills are learned and practiced. Grade 9 students learn five basic skills, cutting, flaring, swaging, bending, and soldering. Using these skills, the student will complete the copper square and copper shelf projects.

470201R_9 **G-9 HVAC Related** Credits: **1**

The program prepares the student to apply technical knowledge and skills to repair, install, service and maintain the operating condition of heating, air conditioning, and refrigeration systems including instruction in diagnostic techniques, the use of testing equipment and the principles of mechanics, electricity, and electronics as they relate to the repair of heating, air conditioning, and refrigeration systems. The HVAC-R program is designed to give the student the necessary subject matter and hours required by the state of Massachusetts in order to attain

the licenses to be successful in the field.

470201_10 **G-10 HVAC Shop** Credits: 3

The HVAC program will allow the student to develop marketable work habits and ethics, such as attendance, honesty, self-confidence, self-esteem and craftsmanship that are required by the HVAC industry. In a safe and well equipped training facility, students will experience the wide spectrum in the industry which encompasses heating, ventilation, air conditioning, refrigeration, appliances, sales and service. Topics include: Learning basic refrigeration systems, copper piping and soldering techniques, electrical circuits, domestic refrigeration troubleshooting, and servicing motors.

470201R_10 **G-10 HVAC Related** Credits: **1**

Grade 10 topics include: Learning basic refrigeration systems, copper piping and soldering techniques, electrical circuits, domestic refrigeration troubleshooting, and servicing motors. Instructional delivery includes the use of instructor led presentations, reading and writing assignments, classroom demonstrations and media demonstrations.

470201_11 **G-11 HVAC Shop** Credits: **4**

Grade 11 topics include: Expanding their knowledge of various refrigerants and refrigeration components, commercial refrigeration, oil fired hydronic boilers, developing and using electrical schematics, and applying preventive maintenance procedures. Eligible students also have the option to participate in our co-op program.

470201R_11 **G-11 HVAC Related - Professional Service and Development** Credits: **1**

Topics include: Physical thermal relations in refrigeration and heating, Chemical relations regarding refrigerants, fuels, solders etc, Mechanical laws of equipment and tools used to service and install systems, Electricity, OHMS law, circuit wiring and code, Electrical schematics: power and control circuits, Mechanical: piping systems, duct systems, Floor plans: residential, commercial, Gasfitting and sizing and an introduction to plumbing: career pathways and licensing requirements. Identification of plumbing parts and tools. Computer aided drafting skills relative to floor plans and overlays of equipment, all mathematical functions a technician uses in lineal, angular and geometric measurements, Measurements relative to area and volume for heating and cooling load calculations, Algebraic expression and equations needed to design, service and install HVAC-R systems.

470201_12 **G-12 HVAC Shop** Credits: **4**

Topics include: Servicing and installing air conditioning systems, determining heat loss calculations, air duct sizing, wiring high and low voltage control circuits, gas fired hot air and hydronic heating systems, and heat pump systems. Eligible students also have the option to participate in our co-op program.

470201R_12 **G-12 HVAC Related -Plans, Schematics, and Systems** Credits: **1**

Topics include: Physical thermal relations in refrigeration and heating, Chemical relations regarding refrigerants, fuels, solders etc, Mechanical laws of equipment and tools used to service and install systems, Electricity, OHMS law, circuit wiring and code, Electrical schematics: power and control circuits, Mechanical: piping systems, duct systems, Floor plans: residential, commercial, Computer aided drafting skills relative to floor plans and overlays of equipment, All mathematical functions a technician uses in lineal, angular and geometric measurements, Measurements relative to area and volume for heating and cooling load calculations, Algebraic expression and equations needed to design, service and install HVAC-R systems.

HORTICULTURE AND LANDSCAPE CONSTRUCTION

The Horticulture/Landscape Construction program offered by SST will prepare students in all phases of horticulture, landscape/hardscape design and installation, hydraulic equipment operations, nursery operations, and sports turf management. With an emphasis on residential and commercial installation, students will learn the proper use of hand and power tools, skid loaders/excavators, construction materials, measuring and estimating, blueprint and plan reading, and job site safety. Topics of study include Plant Identification, Plant & Soil Science, Landscape Installation and Management, Greenhouse/Nursery Production, Arboriculture and Floriculture. Students may receive industry recognized certifications offered by Massachusetts Association of Landscape Professionals (MCLP), Massachusetts Nursery and Landscape Association (MCH), Interlocking Concrete Pavement Institute (ICPI), Association of Professional Landscape Designers (APLD), Massachusetts Arborist Association (MCA), and International Society of Arboriculture (ISA). Licenses include Massachusetts State 2A Excavators and Massachusetts State Pesticide (Applicators).

Horticulture and Landscape Construction Exploratory

This 2.5-day program allows students to explore the horticulture and landscape construction program offered at SST. They are introduced to occupational safety, heavy/turf equipment operations, arboriculture/tree climbing, hardscape/masonry, irrigation/water management, greenhouse operations, and floral design. During the freshmen exploratory experience, students will learn about the many career avenues offered and their growth throughout this lucrative industry.

010601_9 **G-9 Horticulture and Landscape Construction I Shop** Credits: **3**

In this first year, the freshmen class will be introduced to all career pathways associated within the industry. Students will develop work ethic/professional skills along with proper shop safety

procedures (OSHA 10 Certification) and tool/equipment use including but not limited to hand/power tools, 2- stroke engines, and 4-stroke engines. Students will be introduced to the basic skills associated with landscape design, landscape construction, equipment operation, arboriculture, sports turf management, plant identification, floral/interior landscapes, and greenhouse production. All will automatically be enrolled in the South Shore Tech FFA Chapter with the opportunity to compete in competition their sophomore year.

010601_9 R **G-9 Botany Related** Credits**: 1**

In this first year, the freshmen class will get an introduction to botany. Students will use plant classification principles to identify a wide variety of plants. Students will also demonstrate an understanding of plant anatomy and plant cell biology. Students will identify internal and external plant components and learn about their functions. Learning about botany is the base structure that helps students to identify factors that impact plant health and growth.

010601_10 **G-10 Horticulture and Landscape Construction II Shop** Credits: **3**

In this second year, the sophomore class will build their knowledge towards all career pathways associated within the industry. Students will transition the basic skills they learned their freshmen year into secondary skills associated with landscape design, landscape construction, equipment operation, arboriculture, sports turf management, plant identification, floral/interior landscapes, and greenhouse production. All will have the opportunity to compete in the FFA State Competition this year. Students will also have the opportunity to compete in the SkillsUSA masonry/team works competition.

010601_10 R **G-10 Plant Health Care & Soil Sciences Related** Credits**: 1**

In this second year, the sophomore class will build their knowledge and understanding of principles of entomology, plant pathology, plant physiology and integrated pest management plans. Students will analyze the relationship of soil life to plant health. Students learn how to evaluate physical properties of soil in relation to soil characteristics and demonstrate an understanding of concepts of soil origin and development.

010601_11 **G-11 Horticulture and Landscape Construction III Shop** Credits: **3**

In this third year, the junior class will develop a more in depth knowledge towards all career paths associated within the industry. Students will transition the secondary skills they learned their sophomore year into advanced skills associated with landscape design, landscape construction, equipment operation, arboriculture, sports turf management, plant identification, floral/interior landscapes, and greenhouse production. All are encouraged to participate in the FFA State Competition in March, and the Co-op program (paid internship) starting in February. Students will still have the opportunity to compete in SkillsUSA masonry/team works

competition.

010601_11 R **G-11 Career Readiness & IRC's Related** Credits**: 1**

In this third year, students will develop the necessary skills that will assist them in resume/cover letter writing, applying for a job, interviewing for a job, securing a job, and best work practices. Students will also complete activities related to starting and owning business in the horticulture/landscape construction industry. Throughout this course, students will also be trained for the Certified Concrete Pavement Installer (CCPI) certification offered by the Interlocking Concrete Pavement Institute (ICPI).

010601_12 **G-12 Horticulture and Landscape Construction IV Shop** Credits: **3**

Horticulture/Landscape Construction IV In this final year, the senior class are all encouraged to participate in the Co-op program (paid internship) starting at the beginning of the school year. Students will apply the knowledge they gained the last three years directly into the workforce, and will also gain valuable instruction from outside employers. Students who are not eligible, or decide not to participate in Co-op, will continue to work on projects around the school campus and communities within the district. During related instruction, students will be prepared for the Massachusetts State 2A Excavators License and the Massachusetts State Pesticide (Applicators) License. Students may choose to take either test when they turn 18 years of age.

010601_12 R **G-12 Hoisting/Pesticide License Prep Related** Credits**: 1**

In this fourth year, students will be prepared for the Massachusetts 2A Hoisting Engineers and the Massachusetts Pesticide Applicators state exams. Upon completion of this course, students will have the necessary knowledge to assist them in passing both tests. When students turn the age of 18 they are encouraged to take one or both exams, and the program will pay for the necessary exam fees.

MANUFACTURING ENGINEERING TECHNOLOGY

MET EXPLORATORY

This 2.5-day program provides the student with an overview of the programs' practical aspects of Manufacturing Engineering Technology including manufacturing, electronics and engineering. Students receive instruction encompassing milling, basic circuits, engineering, equipment, materials and safety. Students utilize live work to build projects that accentuate learning and provide the overall scope of the industry. Instruction incorporates presentation, demonstrations,

and hands-on performance assessments.

480501-9 **G-9 MET Shop** Credits: **3**

The Manufacturing Engineering Technology program prepares students to apply basic engineering principles and technical skills. Students will be exposed to a variety of machine tools including manual lathes, and milling machines. They also design and create an individual project in grade 9. Includes instruction in electric circuitry, prototype development and testing; systems analysis and testing, systems maintenance, instrument calibration, and report preparation. Grade 9: Topics include: DC Theory, measuring voltage/current/resistance, design pc boards, introduction to CAD/project development, reading schematic symbols, basic algebra and powers of ten, introduction to CNC Milling Equipment/Schematic Capture, advanced soldering skills. Students will be exposed to the application of circuitry, integrated machining, and drafting layout components. A line following robot project will combine many aspects of the engineering design process.

480501R-9 **G-9 MET Related** Credits: **1**

Students in grade 9 receive detailed instruction in machine tool operation, machine tool safety and hand tool usage. CAD, 3D Printing, and blueprint reading are incorporated throughout instruction in civil and electro mechanical engineering. Students learn to solve real world problems through instruction in electric circuitry, prototype development and testing. Vex Robotics is used to expose students to robotic automation as they design and create robots to complete different competition requirements. Students are assessed through practical formative and summative assessments in multiple modalities.

480501-10 **G-10 MET Shop** Credits: **4**

Students will receive advanced instruction on all manual machine tools. Students are assigned projects that incorporate both heat-treating and surface grinding skills. Students will advance to introductory skills on CNC machine tools. This will also include basic machine programming and setup.The Electronics & Engineering Technology program prepares students to apply basic engineering principles and technical skills in support of electrical, electronics, and communication engineers. Includes instruction in electric circuitry, prototype development and testing; systems analysis and testing, systems maintenance, instrument calibration, and report preparation. Topics include: Advanced DC Theory, advanced design pc boards, designing multi-layered PC boards, introduction to Surface Mount Technology, Three dimensional modeling and automation will culminate in a building and testing solutions. A Bluetooth

controlled airship will be designed and cellphone software will be designed to compete and will combine many aspects of the advanced engineering design process.

480501R-10 **G-10 MET Related** Credits: **1**

The electronics & engineering technology program prepares students to apply basic engineering principles and technical skills in support of electrical, electronics, and communication engineers. Students continue to explore additive manufacturing and advance their skills in CAD, 3D Printing, blueprint readings, and iterative engineering design process. Curriculum explores robotics as students are expected to write code to control an automated process for robotic arms. Students are assessed through practical formative and summative assessments in multiple modalities.

480501-11 **G-11 MET Shop** Credits: **3**

In this course of study students progress onto advanced manual machining projects. They are required to produce a sequence of operations to complete this project. Shop projects incorporate accepted engineering practices including design, manufacturing, and assembly. Students advance to incorporate these skills into more sophisticated CNC machine tools. The Electronics & Engineering Technology program prepares students to apply basic engineering principles and technical skills in support of electrical, electronics, and communication engineers. Includes instruction in electric circuitry, prototype development and testing; systems analysis and testing, systems maintenance, instrument calibration, and report preparation. Topics include: RLC and Filter Circuits, basic semiconductor theory, transformer characteristics, testing semiconductor devices, transistor biasing. Students will continue to learn about engineering resources and components. AC theory, measuring of AC voltage, using an oscilloscope/frequency generator/frequency counters, Filters, transistor amplifiers, oscillators, modulation techniques, power amplifiers, Field Effect transistors, Op-Amp theory, active filters, integrated circuits, timers, thyristors, AM/FM receivers. Advanced projects and training will be available for students wanting to concentrate on mechanical and / or civil engineering.

150303R_11 **MET 11 Related - AC Theory / Mechanical Engineering I Theory, Civil Engineering I Theory Credits:** 1

The MET program prepares students to apply basic engineering principles and technical skills in support of electrical, electronics, and communication engineers. Includes instruction in electric circuitry, prototype development and testing; systems analysis and testing, systems maintenance, instrument calibration, and report preparation. Topics include: AC theory, measuring of AC voltage, using an oscilloscope/frequency generator/frequency counters. Instructional delivery includes the use of instructor led presentations, reading and writing assignments, classroom demonstrations and media demonstrations. Advanced projects and training will be available for students wanting to concentrate on mechanical and /or civil engineering.

480501-12 **G-12 MET Shop** Credits: **3**

Students are encouraged to participate in the coop program in senior year. Students who remain in the classroom advance CNC and manual tool skills. The Electronics & Engineering Technology program prepares students to apply basic engineering principles and technical skills in support of electrical, electronics, and communication engineers. Includes instruction in electronic circuitry, prototype development and testing; systems analysis and testing, systems maintenance, instrument calibration, and report preparation. Topics include: Semiconductor theory, transistor amplifiers, oscillators, modulation techniques, power amplifiers, Field Effect transistors, Op-Amp theory, active filters, integrated circuits, timers, thyristors, AM/FM receivers. Digital logic application, microprocessor theory, and basic microcontroller operation. Advanced projects and training will be available for students wanting to concentrate on mechanical and civil engineering.

480501R-12 **G-12 MET Related** Credits: **1**

The program is a continuation and reinforcement of CNC programming, setup & operation. Students fine tune machining theories and operations. Advanced preparation in work quality issues, quality standards, trigonometry (both basic and advanced complex angles), and GD&T principles is at the core of instruction. Quizzes and tests are applied to determine students' skill and competency level. Students are expected to earn Macwic level-2 certification.

The Electronic Engineering Technology Program is designed to develop entry-level electronic technicians and engineering students. This is accomplished by developing a fundamental background in a number of areas including computer repair and maintenance, communications, analog and digital technology, and robotics. Students will also have access and learn how to use Industry Standard Drafting and Design software including Autocad and Solidworks to model and build projects using 3D printers, Laser Cutters, and Injection Molders. Students will be exposed to the application of circuitry, integrated machining, and drafting layout components. Electronic Engineering at SSVT will prepare you in: DC theory, AC theory, semiconductor devices, and digital circuit designed computer technology. Students will perform advanced projects in the 11th and 12th grade where they can focus on cutting edge Electronics projects

from inception to limited production, and can also participate in projects in Mechanical and Civil Engineering. This advanced work in conjunction with Engineering and Advanced Engineering courses allows students to participate in a broad range of Engineering Activities.

150303_12 **G-12 EET Related - Digital and Semiconductor Theory** Credits: **1**

The Electronics & Engineering Technology program prepares students to apply basic engineering principles and technical skills in support of electrical, electronics, and communication engineers. Includes instruction in electronic circuitry, prototype development and testing; systems analysis and testing, systems maintenance, instrument calibration, and report preparation. Topics include: Semiconductor theory, transistor amplifiers, oscillators, modulation techniques, power amplifiers, Field Effect transistors, Op-Amp theory, active filters, integrated circuits, timers, thyristors, AM/FM receivers. Digital logic theory, microprocessor theory, and basic microcontroller operation. Instructional delivery includes the use of instructor led presentations, reading and writing assignments, classroom demonstrations and media demonstrations. Advanced projects and training will be available for students wanting to concentrate on mechanical and civil engineering.

METAL FABRICATION & WELDING

The Welding/Metal Fabrication program emphasizes the procurement of the skills necessary to shape, form, weld, and fasten all types of metals and products.
In Welding & Metal Fabrication, a student will learn: arc welding processes including, but not limited to SMAW (stick), GMAW (mig), GTAW (tig), and FCAW (flux cored) in the flat, horizontal, vertical and overhead positions. Students will take AWS recognized welder qualification tests. Students will also learn mechanical, flame and plasma cutting of ferrous and non-ferrous materials. Students will learn PMF, blueprint reading, layout, measurement, basic metallurgy, machine operation and fabrication procedures.

MFW Exploratory

This 2.5-day program provides the student with an overview of the metal fabrication and welding program. Students are introduced to the safe operation of welding and metal working equipment. In addition, students gain an understanding of the careers available to the metal fabrication and welding students. The skills discussed include: oxy/fuel welding, GMAW (mig) welding, flat metal layout, problem solving, creative designs, metal shaping, cutting, and an emphasis on safety. Hands-on performance assessments, safety and written tests are used to determine the student's potential success in the Metal Fabrication program.

480599-9 G-9 MFW Shop Credits: **3**

During grade 9 shop students will learn how to safely operate shop equipment including but not limited to horizontal band saw, vertical band saw, Shielded metal arc welder, gas metal arc welder, oxy-fuel equipment, drill press, and hand / power tools. Students will learn and apply basic shop math involving linear, angular and geometric measurements. Students will also learn and apply basic mechanical drawing skills and terminology that will develop the ability to read blueprints and drawings. In addition, they will learn fabrication techniques used throughout the industry.

480599R-9 G-9 MFW Related Credits: **1**

During grade 9 related students will learn the basic technical knowledge and skills needed to identify, weld and fabricate ferrous and nonferrous metals. Students will learn electrode identification. Students will learn how to safely use and maintain equipment / hand tools used in

the metal fabrication industry and receive their OSHA 10 certificate and NFPA hot work certification . Students will learn basic mathematical functions involving linear, angular and geometric measurements. Students will learn basic mechanical drawing skills and terminology. Students will learn basic skills for SMAW (stick), GMAW (mig), and OFW (oxy-fuel welding).

480599-10 G-10 MFW Shop Credits: **3**

During their second year students will continue to build on the skills they learned freshman year. Students will learn SMAW and GMAW in the 1G, 2G and 3G positions in order to build the skills needed to take a welder qualification test during their junior year. Students will also be introduced to GTAW in the 1G position. Students will be trained how to safely operate larger machines including but not limited to Press brake, Iron worker, CNC plasma table, trip hammer and forge. Students will work on basic projects for school and the surrounding community.

480599R-10 G-10 MFW Related Credits**: 1**

The program prepares students to apply technical knowledge and skills to join and cut metal. Grade 10 topics include: the physical, chemical, mechanical properties of ferrous and non-ferrous metals. Students will learn the mathematical functions involving linear, angular and geometric measurements They will also continue with mechanical drawing skills and terminology. They will be exposed to intermediate layout and fabrication practices currently used in the trade. Instructional delivery includes the use of instructor led presentations, reading and writing assignments, classroom demonstrations and media demonstrations. Reading, writing, and math assignments related to the metal fabrication and welding fields are an integral part of this course. Students will receive training and a certificate for their NFPA hot work certification.

480599-11 **G-11 MFW Shop** Credits: **4**

During junior year in shop students will be eligible to participate in the COOP program. COOP allows students to work in the trade during their shop week and earn pay. During their third year in shop students will continue to be challenged while building on what was learned Sophomore year. Students will learn advanced welding techniques in SMAW, GMAW, and GTAW in the 1G, 2G, 3G, and 4G positions. Students will work on more advanced projects for the school and surrounding community. Students will take their D1.1 welding certification test at the end of the year. Grade 11 Topics include: The safe operation of all metalworking machines and power tools available in the shop. Measuring, relative to area, volume and mass, necessary for cost estimating work orders is learned. Computer-aided drafting skills relative to the making of basic mechanical drawings. Students will be working in a job shop atmosphere performing live work for outside customers.

480599R-11 **G-11 MFW Related - Intermediate Welding and Manufacturing Process**

Credits: **1**

Grade 11 topics include: the physical, chemical, and mechanical properties of ferrous and non-ferrous metals. Mathematical functions involving linear, angular and geometric measurements, basic mechanical drawing skills and terminology. Students will continue to learn blueprint reading. In addition, students will learn how to read a WPS (weld procedure specification) and understand its importance. Instructional delivery includes the use of instructor led presentations, reading and writing assignments, classroom demonstrations and media demonstrations. Reading, writing, and math assignments related to the metal fabrication and welding fields are an integral part of this course.

480599-12 **G-12 MFW Shop** Credits: 4

During senior year in shop students will be eligible to participate in the COOP program. COOP allows students to work in the trade during their shop week and earn pay. For the students who do not participate in the program, they will continue to sharpen their welding skills. They will continue to build on what they have learned in their previous years. In addition, they will be taught open root welding. They will learn CNC plasma cutting, heat treating, milling, and blacksmithing. They will take charge of the fabrication of larger projects, including, but not limited to fences, railings, trailers, truck bodies,and other custom jobs.

480599R-12 **G-12 MFW Related -Advanced Welding and Manufacturing Process**
Credits: **1**

The program prepares students to apply technical knowledge and skills to join or cut metal surfaces. Grade 12 topics include: the behavioral effects of the physical, chemical, mechanical, electrical, weld ability and corrosive properties of the many types of metals used in the metals trades, all mathematical functions involving linear, angular and geometric measurements, basic mechanical drawing skills and knowledge of the language of lines that will develop the ability to both make and read blueprints and drawings as fabrication techniques employed for the purpose of fastening of and the alignment of structures and the concepts of building a product by interpreting drawings, specification notes, schematics, diagrams and sketches. Instructional delivery includes the use of instructor led presentations, reading and writing assignments, classroom demonstrations and media demonstrations. Reading, writing, and math assignments related to the metal fabrication & welding fields are an integral part of this course.