

Nashoba Valley Technical High School



Ayer • Chelmsford • Groton • Littleton • Pepperell • Shirley • Townsend • Westford

Program of Studies 2017-2018

Nashoba Valley Technical High School
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Telephone: 978.692.4711

www.nashobatech.net

Approved by School Committee on October 18, 2016

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Superintendent's Message

Dear Parents and Students:

Nashoba Valley Technical School District inspires students to believe in their abilities and focus on learning for their future. Whether their goals after high school are to continue on to postsecondary education in their chosen field, enter directly into the skilled workforce, enter the military, or a combination of these options, our students are already a step ahead with college readiness and workforce skills, credentials, and experience.

To help students achieve their goals, we focus daily on our mission of providing the highest quality academic and technical education possible. Looking to the future is a continuous task of a vocational-technical school focused on labor market trends and the needs of industry. To that end, we are constantly expanding and improving program offerings to meet the needs of our students and the future workforce with relevant learning opportunities. To ensure expansion opportunities, Nashoba Valley Technical School District proactively seeks opportunities to provide only the best for its students.

Recently, Governor Baker and Lieutenant Governor Polito announced \$9.3 million in workforce skills equipment grants for vocational-technical education and training equipment purchases that connect Massachusetts students and residents to economic opportunities in high-demand fields. Nashoba Valley Technical High School recognized this grant as an advantageous opportunity to enhance and transform our Machine Tool Technology program. Now, as a proud recipient of a \$500,000 Workforce Skills Capital Grant, we were able to reopen this fall as the Advanced Manufacturing Program, completely renovated and updated with state of the art equipment designed to train students for their future.

Just last year, Nashoba implemented two new technical programs, Veterinary Assisting and Biotechnology. Partnering with MSPCA-Angell, we were fortunate to open Angell at Nashoba, an onsite, fully functioning veterinary clinic. The program is dedicated to providing quality care to low income pet owners across Nashoba Valley, while providing instruction and hands-on experience for our veterinary students. It also allows for collaborative projects between the clinic and other technical programs, like last year when the Engineering program designed a special wheelchair to assist a bunny whose hind legs were paralyzed. It was a wonderful example of two different technical programs working together. With the addition of Biotechnology, Nashoba Tech's one-of-a-kind Engineering Academy continues to expand. Its specially devised program of technical and academic classes are designed specifically to prepare students for a future in STEM – (Science, Technology, Engineering, and Mathematics) related fields, including robotics, engineering, and Biotechnology.

Our model of technical education is clearly working. As cited in numerous reports such as the Pioneer Institute White Paper on Technical Education in the Commonwealth (2014), Mass Inc.'s Massachusetts Education Reform at 15 (2010), and "Robert Reich Demolishes Myth That College is the Gateway to the Middle Class" (2015), vocational-technical high school graduates are recognized for possessing superior job skills, discipline, teamwork and work ethic. We remain firmly committed to expanding opportunities for our students and will continue to strive for the next level of success. We recognize and are most appreciative for the support we receive from our eight member towns which include Ayer, Chelmsford, Groton, Littleton, Pepperell, Shirley, Townsend, and Westford.

We look forward to welcoming you and your family to the Nashoba Valley Technical School District Community.

Thank you,
Denise P. Pigeon, Superintendent

ADMINISTRATION & SCHOOL COMMITTEE

SUPERINTENDENT

Denise P. Pigeon

PRINCIPAL

Matthew Ricard

ADMINISTRATION

Kyla Callahan, Coordinator of Guidance & Admissions

Carol Heidenrich, Director of Technology

Wendy Hood, Coordinator of Special Education

Paul Jussaume, Vocational/Co-Op Coordinator

Jeanne Savoie, Business Manager

Jeremy Slotnick, Assistant Principal

Gabriella White, Director of Curriculum

Ryan Wood, Dean of Students

SCHOOL COMMITTEE

Al Buckley, Pepperell (Chairman)

Ronald Deschenes, Westford (Vice-Chairman)

Samuel Poulten, Chelmsford (Secretary)

Ted Januskiewicz, Ayer

Christine Logan, Ayer alternate

Donald Ayer, Chelmsford

Maria Karafelis, Chelmsford

Richard DeFreitas, Chelmsford alternate

Robert Flynn, Groton

Patricia Madian, Groton alternate

Charlie Ellis, Littleton

Carl Melberg, Littleton alternate

Sandra Proctor, Pepperell

Michael Tang, Pepperell

Jessica Cobleigh, Pepperell alternate

Tanya Clark, Shirley alternate

Karen Chapman, Townsend

Sheldon Chapman, Townsend

Emanuel Manolopoulos, Westford

Warren Adam, Westford alternate

General Information

Mission Statement

The Mission of Nashoba Valley Technical High School is to provide the highest quality academic and technical education possible to prepare our students for college and career paths leading to success in an ever-changing technological world. The school strives to promote citizenship through a safe and inclusive atmosphere encouraging a diverse population of students to become positive and productive members of the community.

Philosophy

The philosophy of Nashoba Valley Technical High School is to provide a safe, nondiscriminatory educational environment for students who are residents of our district, school choice participants, and tuition pupils. We are committed to an educational process in which students are treated with dignity and respect at all times. All students receive occupational training, academic education, and cultural enrichment which assist them in developing their potential and contribute to their becoming responsible and productive members of society.

Our basic objective is to provide an education for all students, ensuring that they graduate with the training that will allow them to achieve gainful employment if they so choose. We also provide the academic skills necessary to successfully pursue post-secondary and higher education and to recognize the importance of education as a continuous process. We encourage all students to become lifelong learners, continuing to combine their employment and educational options in order to achieve their full potential. It is the aim of this school that students become self-reliant, responsible citizens, have pride in their vocations, develop a positive attitude, show respect, toleration, and concern for others, and have an awareness of the diverse world in which they live.

Our curriculum emphasizes the knowledge and thinking skills that students require to become contributing citizens in a democratic society. We acknowledge that students have different levels of ability and motivation, rates of learning, types of intelligence, and interests. We are committed to providing diversified programs and state-of-the-art technical instruction that will enable our students to become skilled workers and technicians and responsible citizens.

Our philosophy also seeks to provide educational opportunities for area adults seeking to change their vocations, to upgrade capabilities in their current fields, to develop new technical skills, or to pursue recreational activities.

Nashoba Valley Technical High School is committed to providing innovative programs that meet the educational needs of citizens within all our participating communities. Our administrators and staff partner with residents, representatives from business, industry and affiliated colleges and universities, and students to identify new challenges and to ensure that we are responsive to changing industrial, technological, professional, and academic requirements that could impact our students.

Our school encourages open communication among parents, teachers, students, town and school officials, school committee members, school councils, and the broader community to support the needs of our students. We participate in forums and actively reach out to the community for feedback to ensure that we are fulfilling our unique mission and meeting our responsibility to provide quality, cost-effective educational opportunities for all students and citizens in our district.

About the School

Nashoba Valley Technical High School is a four-year public regional technical high school that opened in 1969 with nine technical program areas to serve both the technical and academic needs of high school-aged young men and women. Nashoba Valley Technical High School was founded in 1965 by the towns of Chelmsford, Groton, Littleton and Westford to provide career and technical education to students of this area. By 1979, the Nashoba Valley Technical High School District expanded to incorporate the three additional towns of Shirley, Pepperell, and Townsend. In 2012, the District grew once more with the addition of Ayer. Nashoba Valley Technical High School recently underwent a major two-year expansion and modernization project in the early 2000s. An expansive overhaul of the athletic facilities was completed in 2013 including the installation of a track, tennis courts, new practice fields and a renovation to the football, baseball and softball fields. In 2014 an arts complex was added housing dance and art studios by remodeling an existing building on the property. Nashoba Valley Technical High School now offers twenty technical programs in a state-of-the-art facility. Students also take rigorous academic courses required for a high school diploma and entrance into post secondary education. Finally, post graduate technical certificate programs are available for all recent district High School graduates.

During the freshmen year, students explore all technical program areas. In late winter, one area in which to major will be chosen. This exploratory program enables students to make realistic and informed decisions that reflect their needs, interests, and abilities. For students entering Nashoba Valley Technical High School in the sophomore year, a mini-exploratory is also available.

Daytime classes operate Monday through Friday from 7:50 a.m. to 2:30 p.m. The school year is 180 days long. Instruction is divided between the technical and academic areas over a two-week rotating schedule, with the exception of the Engineering Academy. This unique program includes a prescribed course of academic study integrated over both the academic and technical weeks. Academic areas for all students consist of English Language Arts, Social Studies, Mathematics, Science, World Languages, the Arts and Physical Education. All academic courses are rigorous and the curriculum is designed to prepare students for standardized testing, as well as college. Students are encouraged to apply for Honors level courses offered at every grade level. Advanced placement classes are available in all core subjects. In addition, we offer a college dual enrollment program for juniors and seniors seeking to earn college credits while enrolled in high school.

Athletics play a large part of the overall high school program. Extracurricular athletics include soccer, cross-country, football, hockey, track & field, basketball, baseball, softball, volleyball, cheerleading, lacrosse, tennis, wrestling and golf. Varsity and junior varsity sports are available for student participation. No user fees are charged; however, athletes are expected to participate in required fundraising activities. In addition, other extracurricular activities may be experienced through clubs such as National Honor Society and National Technical Honor Society, Student Council, Drama Club, Mock Trial, FIRST Robotics, Yearbook, Students Against Destructive Decisions, and Skills USA. A variety of additional clubs may be available each year based on student interest.

Accreditation

Nashoba Valley Technical High School is accredited by the New England Association of Schools and Colleges, Inc. (NEAS&C), a non-governmental, nationally recognized organization whose affiliated institutions include elementary schools through collegiate institutions.

Accreditation of an institution by NEAS&C indicates that it meets or exceeds criteria for the assessment of institutional quality periodically applied through a peer group review process. An accredited school or college is one which has available the necessary resources to achieve its stated purposes through appropriate educational programs, is substantially doing so, and gives reasonable evidence that it will continue to do so in the foreseeable future. Institutional integrity is also addressed through accreditation.

In addition, all of Nashoba Valley Technical High School's technical programs meet the requirements of state and federal mandates. Nashoba Valley Technical High School is authorized by the Massachusetts Department of Elementary and Secondary Education to award high school diplomas, technical certificates and post graduate technical certificates to its graduates that meet district and state requirements.

Admissions

Students who have been successfully promoted from the previous grade level, passed both English Language Arts or its equivalent and Mathematics, and reside in the towns of Ayer, Chelmsford, Groton, Littleton, Pepperell, Shirley, Townsend or Westford are eligible to apply for admission as a district student. Students who live outside the district may apply as a non-resident or school choice candidate if space permits. Transfer students from traditional high schools and/or other technical high schools may also apply, if space permits. Per McKinney-Vento, homeless students are eligible to apply using the same criteria indicated above. Home-schooled students are eligible to apply after providing a copy of the Home School approval letter from the local school superintendent.

Students must meet admission standards set forth in the approved admission policy on file with the Massachusetts Department of Elementary and Secondary Education.

The Admissions Committee reviews each application and determines the status of the application: acceptance, waiting list or rejection. District applicants are given priority for processing. Non-resident and school choice applicants are processed after all district applicants. The Nashoba Valley Technical High School's Admissions/Guidance Coordinator informs all applicants of their status in writing.

To view Nashoba Valley Technical High School's complete policy and application, please visit the website: www.nashobatech.net.

Notice of Non-Discrimination and Compliance

Title IX Ch. 622, S.504

Nashoba Valley Technical High School does not discriminate in admission to, access to, treatment in, or employment in its services, programs and activities on the basis of race, color, sex, or national origin, in accordance with Title VI of the Civil Rights Act of 1964 (Title VI); on the basis of sex, in accordance with Title IX of the Education Amendments of 1972; on the basis of disability, in accordance with Section 504 of the Rehabilitation Act of 1973 (Section 504) and Title II of the Americans with Disabilities Act of 1990 (ADA); or on the basis of age, in accordance with the Age Discrimination Act of 1974 (Age Discrimination Act). Nor does it discriminate on the basis of race, color, sex, national origin, sexual orientation or gender identity, religion, disability, or homelessness status in accordance with Chapter 622 of the Acts of 1971 (M.G.L. c.76 §5) and Chapter 151B of the General Laws.

Graduation Requirements

To receive a diploma a senior must:

- Fulfill state mandated MCAS requirements including:
 - Earn a score of 240 or higher on the English and Math MCAS exams OR
 - Earn a score of 220 or higher on the English and Math MCAS exam and fulfill the requirements of an Educational Proficient Plan (EPP)
 - Earn a score of 220 or higher on the Science MCAS
- Complete all academic, technical program & attendance requirements
- Obtain 315 credits (320 are offered)
- Pay all outstanding bills
- Complete all discipline requirements and assignments
- Pay their \$20.00 class dues for every year they attend Nashoba Valley Technical School

- Complete a senior project (research paper, product and presentation)
- Participate in five hours of community service per year for every year that they attend Nashoba Valley Technical High School
- Meet the Physical Education course requirements

To meet the MassCore requirements, students are required to take the following:

English	Math	Science	Social Studies	Physical Education	Technical Program	World Language
4 Years	4 Years	4 Years	4 Years	4 Years	4 Years	2 Years*

*Two years of world language is recommended for college admission requirements, but is not a graduation requirement.

For full information on graduation requirements, see student handbook.

Attendance Requirements

Regular attendance and promptness are essential for instruction and progress in technical and academic learning. Attendance records at Nashoba Valley Technical High School are a prime consideration for placement, recommendations, and for certification in a technical area. Students must meet the strict attendance rate set by the Board of Education in order to qualify for an MCAS appeal. During a trimester, a student with four (4) unexcused absences in a technical or academic program will fail for that trimester and be prohibited from the school to work program and extracurricular activities.

Student Services

The Nashoba Valley Technical High School Guidance Department consists of a Coordinator of Guidance & Admissions, a school psychologist and three full-time guidance counselors. All department members work together toward a common goal of enabling students to take advantage of the highest quality academic and technical education possible to prepare students for their future success in a technological world. This includes recruitment, admissions, retention and support of all students, and developmental guidance for each grade level.

Special Education

All students follow the academic curriculum frameworks as established by the Massachusetts Department of Elementary and Secondary Education. In order to provide a Free and Appropriate Public Education to all, services are provided to special needs students as specified in their Individual Education Plans (IEPs). According to regulations, students must receive these services in the least restrictive environment. As a result, most students will receive these services in the regular education inclusion class setting. Some students may require a smaller setting for key academic skills of Language Arts and Mathematics. Students enrolled in such self-contained courses continue to follow the curriculum frameworks for their grade level. All special education students are afforded access to the same technical programs as non-disabled students.

Health Services

A full-time nurse is available to students and faculty every day from 7:55 a.m. to 2:40 p.m. The nurse is responsible for emergency medical assistance, vision and hearing testing, the distribution of safety glasses, respiratory and hearing protection.

Library Media Center

The Library Media Center was constructed in 2005. It is open every school day from 7:45 a.m. to 2:30 p.m. and after school on Tuesdays and Thursdays until 3:30. It maintains a book, reference, periodical, and video library. Audio-visual and technical presentation equipment are available for staff and qualified users. The technology in the Library Media Center includes 30 computers with internet connectivity, the Microsoft Office Suite, Web-based World Book Encyclopedia access, Inspiration Mind-Mapping Software, World Book Online, Reference Center, access to several quality databases provided by Northeastern Massachusetts Regional Library System and Web based connectivity to the Bridges Career Planning program. An electronic card catalog system, Follett Destiny, is accessible to all staff and students throughout the school. In addition, multiple computer labs with internet connectivity are available for classroom use.

Chromebooks

At the outset of the 2015-2016 school year, we are providing all freshmen and sophomores with a Chromebook as part of our 1-to-1 device initiative. This initiative supports the technology mission of Nashoba Valley Technical High School to provide the highest quality academic and technical education possible to prepare our students for college and career paths leading to success in an ever-changing technological world. The Chromebooks enhance teaching and learning with access to Web 2.0 resources for reading, writing, communicating and collaborating. Using Google Apps for Education, students build digital skills in word processing, spreadsheets and presentations.

The 1-to-1 environment enables students and teachers to implement transformative uses of technology while enhancing students' engagement with content. This initiative promotes the development of self-directed, responsible life-long learners. Students will transition from consumers of information to creative producers and owners of knowledge. Professional development for teachers prepared instructors to enhance classroom environments with technology by implementing high-quality instruction, assessment and learning through the integration of technology into the curriculum. Our technology immersion transforms teachers from directors of learning to facilitators of learning.

Career Planning and Testing

Nashoba Tech's mission is to provide the best quality career education to all of its students. With this in mind, it is important to help students choose the right career field. Our student services department meets with students on a regular basis to discuss career pathways and help students consider their options. Counselors guide students during the exploratory process, in choosing their technical programs, with course selection, and ultimately with the college process. Each student completes a career plan during freshmen year which serves as a template throughout their four years at Nashoba and into the world of work beyond.

Students choose their technical program in the winter of their freshmen year. They will spend the next three and a half years learning to become experts in this field with the skills necessary to gain employment upon graduation. The choice of technical program is, therefore, an important decision and needs to be a good fit for the student. All students entering Nashoba Valley Technical High School participate in career testing to gauge aptitude, ability and interest using the Naviance software. Transcripts, past course work, teacher input and all standardized testing is also used to appropriately place students. Students will be placed into programs that suit their individual aptitudes and abilities, as well as interest. No student will be placed in a program based on interest alone.

Extracurricular Activities

These activities are offered to help our students interact with their classmates in an informal setting and to develop skills not taught in a regular classroom. All students are strongly encouraged to take part in at least one extracurricular activity each year. Some activities include:

- National Honor Society
- National Technical Honor Society
- Students Against Destructive Decisions
- Student Council
- Skills USA
- Tri-M Music Honor Society
- Yearbook
- FIRST Robotics
- Mock Trial
- Drama Club
- Band
- Chorus
- Astronomy Club
- Ski/Snowboard
- GLBQT

In addition, a variety of additional clubs may be available each year based on student interest.

Athletics

Nashoba Valley Technical High School offers a wide range of interscholastic athletic programs throughout the school year. Athletes are reminded that they are students first and, as such, must be in good academic standing in order to participate.

The Nashoba athletic program offers students many advantages:

- All teams maintain a “no cut” policy; therefore, more students have the opportunity to participate.
- There are NO USER FEES required for any sport, thus insuring that cost does not exclude any student; however, students are expected to participate in required team fundraising activities.
- A new Athletic Complex including a Track, Tennis Courts and a Turf Field
- Student athletes at Nashoba receive widespread recognition in both local and regional press. Many continue their athletic careers at the college level. Recent Viking athletes have gone on to play at such schools as University of Massachusetts, American International College, and Northeastern University.
- The services of a professional athletic trainer are available, and our “state-of-the-art” training and weightlifting facilities are open to all students throughout the school year.

The Nashoba Vikings are members of the Colonial Athletic League District E. The Vikings compete under guidelines set forth by the Massachusetts Interscholastic Athletic Association. They hold Division III status.

Baseball,	Golf	Lacrosse
Basketball	Ice Hockey	Soccer
Football	Track and Field	Tennis
Cheerleading	Volleyball	Wrestling
Cross Country	Softball	

All of our athletes are recognized by an awards ceremony each season sponsored by Nashoba Valley Technical High School.

Nashoba at Night

Community and Continuing Education Division

Nashoba at Night provides vast opportunities to the residents of our communities for career and technical training, academic and cultural enrichment and health and wellness improvement.

Classes are held evenings at Nashoba Valley Technical High School and utilize academic and technical areas. Classes begin twice a year in the Fall and Winter. Many of our technical programs provide certification and licensure. We also offer a variety of online course options at www.ed2go.com/nan.

For more information regarding the Community and Continuing Education programs, please visit the school website and click on the community education link or call (978) 692-4711 extension 1001.

Nashoba Career & Technical Institute (NCTI)

The Nashoba Career & Technical Institute (NCTI) offers Post-Graduate Certificate Programs in many of our technical areas. This tuition-free program provides eligible students real world skills that directly relate to a future career pathway. Recent district high school graduates who reside in the towns of Ayer, Chelmsford, Groton, Littleton, Pepperell, Shirley, Townsend and Westford may apply (if space permits) to obtain a technical certificate in one of our 20 industry-approved technical programs.

For more information regarding NCTI, please call the Admissions & Guidance Coordinator at 978-692-4711 extension 1122.

Dual Enrollment

The Dual Enrollment program is an exciting state sponsored program that allows eligible NVTHS students the opportunity to enroll in courses at a local college while they are still in high school. Credit for the courses applies to both the high school and college transcripts. The program allows a student to attend Middlesex Community College, Mt. Wachusett Community College, the University of Massachusetts Lowell or Fitchburg State University on a full time basis, while still enrolled at NVTHS as a high school student. The Dual Enrollment Program is available to any junior or senior who meets the criteria adopted by both the State and the School District. The student must be prepared to pay for tuition, fees and books, as well as, provide transportation. As an additional incentive to students to tackle more challenging coursework, grades received in dual enrollment courses receive additional weight in the calculation of weighted Grade Point Averages (GPA).

Advanced Placement

Nashoba Valley Technical High School offers Advanced Placement courses in all core academic subjects. Students who meet eligibility requirements, including grades and teacher recommendation, or are enrolled in the Engineering Academy, may take Advanced Placement courses. Nashoba Valley Technical High School's Advanced Placement course offerings are approved by the College Board, and students sit for the exam at the end of the course to potentially earn college credit. In order to maximize the likelihood of achieving a qualifying score on the Advanced Placement Exam, enrolled students are expected to attend three Saturday sessions.

Academic Programs

Nashoba Valley Technical High School operates on an alternate week schedule. One week is spent in academic classes followed by a week of training in technical programs. This rotation continues throughout the school year. The exception being the Engineering Academy which operates as a “school within a school” and, therefore, has a separate schedule track. It is the school’s philosophy that well-rounded individuals who are ready to become responsible and contributing members of society must be prepared in academic, as well as technical areas. The courses offered at Nashoba Valley Technical High School have been designed to assist every student to meet this goal.

Nashoba Valley Technical High School’s academic program consists of a core curriculum for all grades in all subjects. The level or degree of difficulty of the assigned course will be determined by the student’s aptitude, standardized test scores, and past academic performance and recommendations. All academic courses are aligned with the Massachusetts Curriculum Frameworks and are designed for utmost success on standardized exams including the Massachusetts Comprehensive Assessment System (MCAS), Advanced Placement, SAT and the Stanford exams. Nashoba Valley Technical High School offers a college preparatory and honors program in all grade levels. Advanced placement courses are available during the junior and senior year. Grades received in honors and Advanced Placement courses earn additional weight in the calculation of GPA. Dual enrollment and Advanced Placement courses are weighted equally. Honors courses are weighted but less than Dual or AP courses.

Title I

Student skill level is assessed at the start of a student’s academic career at Nashoba Valley Technical High School. All assessment data, along with an examination of past school records and teacher input is considered when placing students in classes, and when assigning them to extra assistance. The Title I program is open to students in grades 9 and 10 who are identified using this multi-level criteria as needing help in English or Math to bring their skills to grade level. Title I courses are taught by certified teachers and use a hybrid approach of in-class instruction and the computer application Edgenuity ®.

Tutoring

Students are identified for tutoring based on previous MCAS scores. Grade 9 and 10 students are identified as “at risk” based on their grade 8 MCAS score. Students in grades 11 and 12 who have not earned a score of 220 or higher on the grade 10 English, Mathematics or Science MCAS exams will be placed in tutoring upon the reveal of their scores in preparation for a retest. Small groups of students are clustered together for tutoring with English, Math or Science teachers. The tutoring takes place 2-5 days per week during the technical week depending on the level of need.

District Curriculum Accommodation Plan (DCAP)

The DCAP is designed to ensure all students at Nashoba Valley Technical School have every opportunity for success in their academic and technical courses. For more specifics about the school DCAP, please visit the school website,

http://www.nashobatech.net/curriculum/district_curriculum_accommodation_plan.

Academic Course Matrix

Grade Level	English		Math		Science		Social Studies		Electives
	College Prep	Honors*	College Prep	Honors*	College Prep	Honors*	College Prep	Honors*	
9	English 9	English 9 Honors	Algebra I	Geometry	Biology I	Biology Honors (Students will take the MCAS exam in Biology at the end of the 9 th grade year)	World History	N/A	Title I Math Title I English Spanish 1-3** Music Choir Band Art Dance PE (All Students)
10	English 10	English 10 Honors	Geometry	Algebra II	Biology II Physics*** (Students will take the MCAS exam in Biology, or Physics at the end of the 10 th grade year)	Chemistry Honors Physics Honors	US I	N/A	Title I Math Title I English Spanish 2-4 Music Choir Band Art Dance PE (All Students)
11	English 11	English 11 Honors AP English Language	Algebra II	Pre-Calculus	Chemistry**** Physics	Chemistry Honors Physics Honors	USII	AP US	Spanish 1-4 Music Choir Band Art Dance Psychology Virtual High School PE (All Students)

Grade Level	English		Math		Science		Social Studies		Electives
	College Prep	Honors*	College Prep	Honors*	College Prep	Honors*	College Prep	Honors*	
12	English 12	English 12 Honors AP English Literature	Pre-Calculus	Calculus Honors AP Calculus AP Statistics	Chemistry Physics Electrical Code***** Plumbing Code***** Anatomy & Physiology	Chemistry Honors Physics Honors AP Biology	Government	AP Government	Spanish 2-4 Music Choir Band Art Dance Sociology Virtual High School PE (All Students)

*Requires authorization by teacher, exam, application and recommendation

**Incoming 9th grade students are evaluated by the Spanish Department for proper level placement

***Grade 10 students in Electrical and Plumbing are placed in Physics

****Placement determined by technical program

*****Code classes for students enrolled in the Electrical or Plumbing Programs only

Honors, AP, and Dual Enrollment courses receive extra weighting in the calculation of Grade Point Average (GPA).

Please note, the Engineering Academy has a separate academic course matrix, which can be found on pg. 29.

Matrix subject to change based on enrollment, student interest and school committee approval.

Academic Course Offerings

English

ENGLISH 9, ENGLISH 9 HONORS (15 Credits)

These courses are designed to present language, world literature, and composition to ninth graders and meet college preparatory requirements. A foundation in the skills of writing, research, and oral presentations will be developed, utilizing resources in the library media center and emphasizing grammar, spelling, and vocabulary. The literature component is novel-based and designed to increase reading and comprehension skills using a range of developmentally appropriate literary and informational texts such as poetry, essays, plays and short stories.

ENGLISH 10, ENGLISH 10 HONORS (15 Credits)

These courses are designed to present world literature, language, composition, and communication skills to tenth graders and meet college preparatory requirements. The goal of the novel-based curriculum is to increase a student's capacity to read for meaning and understanding. Students will receive instruction in Standard English conventions as outlined in the Massachusetts Curriculum Frameworks and will be required to complete research papers. Emphasis will be placed on preparation for the English Language Arts MCAS test administered in the spring of the sophomore year.

ENGLISH 11, ENGLISH 11 HONORS (10 Credits)

These course readings are designed to survey American authors and playwrights from a historical perspective. In these courses students will continue the development of both their written and verbal communication skills. Course content and skills practiced are designed to meet college preparatory requirements. The development of skills for the workplace will also be emphasized: resume writing, oral communication, research, and job acquisition.

ENGLISH 12, ENGLISH 12 HONORS (10 Credits)

These courses are designed to include novels and readings that reflect a diverse and multicultural world. Other areas of study include language and composition with a focus on writing and the senior research project. Course content and skills practiced are designed to meet college preparatory requirements.

ADVANCED PLACEMENT ENGLISH LITERATURE & COMPOSITION® (10 Credits)

This course is designed to follow The College Board's guidelines for Advanced Placement English Literature & Composition. The course provides an opportunity for serious study of diverse works from a variety of genres and periods. Representative works from the sixteenth through the twenty-first centuries will make up the curriculum's core content. Students enrolled in the Advanced Placement English Literature & Composition® course are expected to take the Advanced Placement English Literature & Composition® national exam. This allows students the opportunity to earn college credit or advanced standing at most of the nation's colleges and universities.

ADVANCED PLACEMENT ENGLISH LANGUAGE & COMPOSITION® (10 Credits)

The AP English Language and Composition course is designed to help students become skilled readers of prose written in a variety of rhetorical contexts and to become skilled writers who compose for a variety of purposes. Both their writing and their reading should make students aware of the interactions among a writer's purposes, audience expectations, and subjects as well as the way generic conventions and the resources of language contribute to effectiveness in writing. This course follows The College Board's guidelines for Advanced Placement English Language & Composition. Students enrolled in the Advanced Placement English Language & Composition® course are expected to take the Advanced Placement English Language & Composition® national exam. This allows students the opportunity to earn college credit or advanced standing at most of the nation's colleges and universities.

Academic Course Offerings

Math

ALGEBRA I (15 Credits)

Algebra I is designed to give students an opportunity to develop skills needed to be successful in real life, work and careers, future math courses, and state and national testing. Topics include the study of properties and operations of the real number system; evaluating rational algebraic expressions; solving and graphing first degree equations and inequalities; translating word problems into equations; solving systems of linear equations; operations with and factoring of polynomials; and solving simple quadratic equations.

ALGEBRA II (10 Credits)

Algebra II is designed for students who have successfully completed Algebra I and Geometry. Topics include irrational expressions; factoring of rational expressions; graphing of constant, linear and quadratic equations; properties of higher degree equations; rational exponents and radical functions; and trigonometry.

Pre-requisite: Successful completion of Algebra I and Geometry.

PLANE GEOMETRY (15 Credits)

This course emphasizes an abstract, formal approach to the study of geometry, including topics such as, properties of plane and solid figures; deductive methods of reasoning and use of logic; geometry as an axiomatic system, including the study of postulates and theorems; rules of congruence, similarity, parallelism and perpendicularity; rules of angle measurement in triangles; area, surface area, and volume; coordinate geometry and transformational geometry. Students will experience concepts through real world applications.

Pre-requisite: Successful completion of Algebra I.

PRE-CALCULUS (10 Credits)

Pre-Calculus is designed to prepare the student for college-level Calculus. This course includes the concepts of polynomial, rational, exponential, logarithmic, and trigonometric functions, analytic trigonometry and sequences. Topics are developed both algebraically and graphically. Students will be challenged to write, verbalize, and use critical thinking skills to solve problems.

Pre-requisite: Successful completion of Algebra II and Geometry.

CALCULUS (10 Credits)

This course develops the student's understanding of the fundamental concepts of calculus and provides experiences with its methods and applications. The course emphasizes a multi-representational approach to calculus, with concepts, results and problems being expressed geometrically, numerically, analytically, and verbally. Topics include functions, graphs and limits, derivatives, and integrals. Graphing calculators are used extensively throughout the course.

Pre-requisite: Successful completion of Pre-Calculus.

CALCULUS AB ADVANCED PLACEMENT® (10 Credits)

This course follows the level of theory and rigor prescribed by the Advanced Placement Program of the College Board. Same topics are covered as in the Calculus course with a deeper and more comprehensive understanding of concepts. Additional expectations include completion of practice problems from previously administered Advanced Placement Calculus AB Exams. Students enrolled in Advanced Placement Calculus AB® are prepared to take the Advanced Placement Calculus AB® Exam. This allows students the opportunity to earn college credit or advanced standing at most of the nation's colleges and universities.

Pre-requisite: Successful completion of Pre-Calculus.

Academic Course Offerings

Math Continued

ADVANCED PLACEMENT COMPUTER SCIENCE® (10 Credits)

Understand core aspects of computer science which students can use to create solutions that are understandable, adaptable, and when appropriate, reusable. Students will learn to design and implement computer programs to solve problems involving skills that are fundamental to the study of computer science. This includes the development and analysis of algorithms and fundamental data structures, and the use of logic and formal methods. Students enrolled in Advanced Placement Computer Science® are prepared to take the Advanced Placement Computer Science® Exam. This allows students the opportunity to earn college credit or advanced standing at most of the nation's colleges and universities.

ADVANCED PLACEMENT STATISTICS® (10 Credits)

Learn about the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students will develop analytical and critical thinking skills and learn to describe data patterns and departures from patterns, plan and conduct studies, use probability and simulation to explore random phenomena, estimate population parameters, test hypotheses, and make statistical inferences. Students enrolled in Advanced Placement Statistics® are prepared to take the Advanced Placement Statistics® Exam. This allows students the opportunity to earn college credit or advanced standing at most of the nation's colleges and universities.

Academic Course Offerings

Science

BIOLOGY I (10 Credits)

The Biology I course is designed to explore introductory concepts of life science and health topics. Biology I includes the characteristics of living organisms, the chemistry of life, cell structures and functions, anatomy and body systems along with the scientific inquiry skills to develop appropriate analysis of data and lab safety requirements. Health related themes covered include physical, social, and emotional health. Lab activities, lab reports, and projects will be integrated into the curriculum to reinforce the concepts taught during each section. The Standards are aligned with the Department of Elementary and Secondary Education (DESE) Frameworks for High School Biology which will prepare students for the Biology Massachusetts Comprehensive Assessment System (MCAS) exam. Students will take the MCAS exam at the conclusion of Biology II.

BIOLOGY II (10 Credits)

The Biology II course includes the fundamental concepts of life and life processes. Topics include plant and animal physiology and taxonomy, photosynthesis and cellular respiration, DNA, RNA, and protein synthesis, genetics, principles of evolution, ecology and the environment. Lab activities, lab reports, and projects will be integrated into the curriculum to reinforce concepts and material taught to students. The standards are aligned with the DESE Frameworks for High School Biology. Students will take the MCAS exam upon completion of this course.

BIOLOGY HONORS (10 Credits)

This is an accelerated, one year Biology course. The science concepts taught are aligned with the DESE Frameworks for High School Biology in order to prepare students for the Biology MCAS exam which students will take in grade 9. This course is designed to explore the concepts of the chemistry of life, cell structures and functions, anatomy and physiology along with the scientific inquiry skills to develop appropriate analysis of data and lab safety requirements. Topics will include plant and animal physiology and taxonomy, photosynthesis and cellular respiration, DNA, RNA, and protein synthesis, genetics, principles of evolution, ecology and the environment. Health related themes are integrated into the discussion of the body systems. Lab activities and hands-on projects are used to reinforce concepts in each unit. Students will take the MCAS exam at the end of this course.

CHEMISTRY (10 Credits)

This course is designed to introduce students to chemistry concepts, including the importance and relationship to chemistry to everyday life. Topics include properties of matter, atomic structure, and organization of the periodic table, chemical reactions, properties of acids and bases, stoichiometry, and properties of solutions. Lab activities and projects will be integrated into the curriculum to reinforce the concepts taught. A strong background in Algebra I math is recommended. The standards covered align with the Department of Elementary and Secondary Education chemistry strands.

CHEMISTRY HONORS (10 Credits)

This course is designed to introduce chemistry concepts and prepare students for AP chemistry and college chemistry courses. Topics include properties of matter, atomic structure, organization of the periodic table, chemical and nuclear reactions, properties of acids and bases, rates of reactions and equilibrium, stoichiometry, and properties of solutions. Lab activities, lab reports, and projects will be integrated into the curriculum to reinforce the concepts taught. A strong background in Algebra I math is highly recommended. The standards covered align with the Department of Elementary and Secondary Education chemistry strands.

Academic Course Offerings

Science

PHYSICS, PHYSICS HONORS (10 Credits)

These lab-based courses include the topics of mechanics, motion, matter, heat, light, electricity and magnetism. Students will receive instruction through class demonstrations, lab projects, lab reports, experiments, and lecture. A mathematics background in Algebra I is recommended. Lab activities and projects will be integrated into the curriculum to reinforce the concepts taught. Electrical, Physics, Engineering, and Robotics students will take Physics in grade 10 and take the corresponding Physics MCAS exam at the end of the course.

ADVANCED PLACEMENT BIOLOGY® (10 Credits)

The Advanced Placement Biology course is designed to provide students a conceptual framework for modern biology and an appreciation of science as a process. The class prepares students for college by making demands upon them equivalent to those made by full-year introductory college courses. The primary emphasis in Advanced Placement Biology is on developing an understanding of concepts rather than on memorizing terms and technical details. Essential to this conceptual understanding of Biology is a grasp of science as a process rather than as an accumulation of facts. Students participate in a personal experience of scientific inquiry, allowing for the recognition of unifying themes that integrate the major topics of biology and an application of biological knowledge and critical thinking to environmental and social concerns. General Chemistry as a prerequisite is highly recommended for this course.

ADVANCED PLACEMENT PHYSICS 1® (10 Credits)

AP Physics 1 is an algebra-based, introductory college-level physics course that explores topics such as Newtonian mechanics (including rotational motion); work, energy, and power; mechanical waves and sound; and introductory, simple circuits. Through inquiry-based learning, students will develop scientific critical thinking and reasoning skills.

ADVANCED PLACEMENT CHEMISTRY® (10 Credits)

The AP Chemistry course provides students with a foundation to support future advanced course work in chemistry. Through inquiry-based learning, students develop critical thinking and reasoning skills. Students cultivate their understanding of chemistry and science practices as they explore topics such as: atomic structure, intermolecular forces and bonding, chemical reactions, kinetics, thermodynamics, and equilibrium.

ADVANCED PLACEMENT PHYSICS C: MECHANICS® (10 Credits)

This course is the equivalent to a one-semester, calculus based college-level physics course, especially appropriate for students planning to specialize or major in physical science or engineering. The course explores topics such as kinematics; Newton's laws of motion; work, energy and power; systems of particles and linear momentum; circular motion and rotation; and oscillations and gravitation. Introductory differential and integral Calculus is used throughout the course.

ELECTRICAL CODE (10 Credits)

This course concentrates on the development of industrial and commercial wiring requirements. The operating principles for motors, generators, controllers, and transformers will be emphasized. Preparation for the Massachusetts Journeymen's Electrical Exam will be taught. This course is required for all students enrolled in the Electrical Technology program.

PLUMBING AND HEATING CODE (10 Credits)

Students will receive instruction in the following areas: safety, advanced plumbing theory, blueprint reading, job search skills, advanced plumbing and gas piping math, job estimation, in-depth Massachusetts Plumbing Code Book studies, and advanced preparation for licensing examinations. This course is required for all students enrolled in the Plumbing and Heating program..

Academic Course Offerings

Social Studies

WORLD HISTORY (5 Credits)

Students study the rise of the nation state in Europe, the French Revolution, and the economic and political roots of the modern world. They study the origins and consequences of the Industrial Revolution, 19th century political reform in Western Europe, and imperialism in Africa, Asia, and South America. They will explain the causes and consequences of the great military and economic events of the past century, including World War I, the Great Depression, World War II, the Cold War, and the Russian and Chinese revolutions. Finally, students will study the rise of nationalism and the continuing persistence of political, ethnic, and religious conflict in many parts of the world..

UNITED STATES HISTORY I (5 Credits)

Students examine the historical and intellectual origins of the United States during the Revolutionary and Constitutional eras. They learn about the important political and economic factors that contributed to the outbreak of the Revolution as well as the consequences of the Revolution, including the writing and key ideas of the U.S. Constitution. Students also study the basic framework of American democracy and the concepts of American government such as popular sovereignty, federalism, separation of powers, and individual rights. Students study America's westward expansion, the establishment of political parties, and economic and social change. Students will learn about the growth of sectional conflict, how sectional conflict led to the Civil War, and the consequences of the Civil War, including Reconstruction. Finally, students will analyze the causes and consequences of the Industrial Revolution and America's growing role in diplomatic relations. Students will study the goals and accomplishments of the Progressive movement.

UNITED STATES HISTORY II (5 Credits)

Students will learn about the various factors that led to America's entry into World War II as well as the consequences of World War II on American life. Students will also study the causes and course of the Cold War, important economic and political changes during the Cold War, including the Civil Rights movement, and recent events and trends that have shaped modern-day America, such as 9/11 and the Iraq War.

GOVERNMENT (5 Credits)

This course provides a framework for understanding the purposes, principles, and practices of American Government as established by the United States Constitution. Students are expected to understand their rights and responsibilities as citizens and how to exercise these rights and responsibilities in local, state, and national government. They will also study law and the legal system, economics, forms of government, the Presidential Election, and the rights and responsibilities of citizens.

ADVANCED PLACEMENT UNITED STATES HISTORY® (10 Credits)

Advanced Placement United States History is a survey course designed to provide students with analytical skills and factual knowledge necessary to deal critically with the problems and materials in history. The class prepares students for college by making demands upon them equivalent to those made by full-year introductory college courses.

ADVANCED PLACEMENT U.S. GOVERNMENT AND POLITICS® (10 Credits)

The Advanced Placement U.S. Government and Politics course is intended for qualified students who wish to complete studies in secondary school equivalent to a one-semester college introductory course in United States government and politics. The AP course in United States Government will give students an analytical perspective on government and politics in the United States. This course includes both the study of general concepts used to interpret U.S. government and politics and the analysis of specific examples. It also requires familiarity with the various institutions, groups, beliefs, and ideas that constitute the U.S. government and political system.

Academic Course Offerings

World Languages

Spanish courses at Nashoba Valley Technical School are based on levels of proficiency: Novice, Intermediated A/B, or Advanced. This reflects a nation and statewide push to include proficiency levels in the course names to better reflect how proficient the students are in Spanish, while still allowing for the “traditional” course levels that are accepted by colleges.

Novice level speakers can communicate short messages on highly predictable, everyday topics that affect them directly. They do so primarily through the use of isolated words and phrases that have been encountered, memorized, and recalled. Novice-level speakers may be difficult to understand even by the most sympathetic interlocutors accustomed to non-native speech.

Speakers at the intermediate level are distinguished primarily by their ability to create with the language when talking about familiar topics related to their daily life. They are able to recombine learned material in order to express personal meaning. Intermediate level speakers can ask simple questions and can handle a straightforward survival situation. They produce sentence-level language, ranging from discrete sentences to strings of sentences, typically in present time. Intermediate-level speakers are understood by interlocutors who are accustomed to dealing with non-native learners of the language.

Speakers at the Advanced level engage in conversation in a clearly participatory manner in order to communicate information on autobiographical topics, as well as topics of community, national, or international interest. The topics are handled concretely by means of narration and description in the major time frames of past, present, and future. These speakers can also deal with a social situation with an unexpected complication. The language of Advanced-level speakers is abundant, the oral paragraph being the measure of Advanced-level length and discourse. Advanced-level speakers have sufficient control of basic structures and generic vocabulary to be understood by native speakers of the language, including those unaccustomed to non-native speech.

List of Spanish Courses and Recommended Level of Previous Experience/Proficiency
(All Courses are 5 Credits)

Course Name	Level of Previous Experience/Proficiency (Assumes experience in Middle School and Proficiency Level will be evaluated by Spanish teach prior to placement)
Spanish 1 (Novice)	0-.5 Years
Spanish 2 (Novice)	.5 – 1 Year
Spanish 2 (Intermediate)	1.5 – 2 years
Spanish 3 (Intermediate A)	2 Years & Intermediate Low Proficiency
Spanish 3 (Intermediate B)	2 Years & Intermediate Mid Proficiency
Spanish 4 (Intermediate)	3 years & Intermediate Mid Proficiency
Spanish 4/5 (Advanced)	3-4 Years & Intermediated Mid/High Proficiency
Spanish 5 (Advanced)	4 Years & Intermediated High/Advanced Low Proficiency

Academic Course Offerings

Electives

PHYSICAL EDUCATION (1 Credit)

Physical Education is required for four years. Physical Education provides students with the knowledge, skills and attitude to acquire physical fitness, physical skills and leisure skills necessary to maintain healthful lifestyles. This program consists of required activities to meet the present and future physical and recreational needs of students. Included is the study of intermediate and advanced movement skills related to physical fitness and sport and leisure skills.

The integration of movement patterns in sports, rhythmic and lifelong fitness activities will be taught. Included in this course is the practice of relating exercise to overall health, applying social and safety skills and integrating strategies to respond to stress with intent to enhance student health and wellness.

Life-long learning is a major theme in our Physical Education program. Many of our selected activities are geared toward working together to achieve a common goal. Through team sports, individual sports and various fitness techniques, students will learn the life-management skills necessary for future personal wellness.

MUSIC APPRECIATION (5 Credits)

This course is designed to give students a holistic look at music across cultures and decades. Students will study histories of music from the Americas, Europe, Africa and Asia. Students will understand how culture and music connect to each other and our culture. The concepts of the physics of sound will be introduced. Students will also learn about music's effects on the body. Students will participate in individual and group activities to further their understanding of music.

CONCERT CHOIR* (5 Credits)

Anyone interested in studying vocal technique is invited to join the choir. Concert Choir is the primary chorus of Nashoba Valley Technical High School. Performances of varied repertoire include evening concerts, appearances for community organizations and choral festivals. Singers may also have opportunities to observe professional performances. After school rehearsals and night performances are required.

CONCERT BAND* (5 Credits)

This ensemble is the primary performing band of Nashoba Valley Technical High School. Students are expected to have some previous experience on their instrument. The ensemble will perform a wide range of works from the modern concert band repertoire in a wide range of styles. Basic technical, ensemble and musicianship skills will be emphasized. After school rehearsals and night performances are required.

MUSIC AND MEDIA* (5 Credits)

This course is designed to educate students on the history of media and music. Students will learn about the origins of film itself, starting with the invention of film and tracing the evolution through modern day. Students will additionally have a focus the history and evolution of television music, including commercials and various television shows. Students will focus upon understanding how music alters the way scenes and stories can be portrayed within films and television.

TITLE I ENGLISH AND MATH (5 Credits)

These courses are designed for students in the 9th and 10th grade who need additional assistance in either Math or English. A multi-level criteria is used for placement into these courses.

Academic Course Offerings

Electives *continued*

PSYCHOLOGY AND SOCIOLOGY OF MUSIC* (5 Credits)

This course is designed to offer students an understanding of music and psychology. Students will comprehend how the brain works and study a brief history of psychology including major figures in the field such as B.F. Skinner, Sigmund Freud, and B.A. Watson. The sociology of music including cultural, geographical and socioeconomic differences will be analyzed with interactive projects. The ideas of how music changes the way that individuals think and react to music will be a focus of the curriculum.

FINE ART I* (5 Credits)

Art provides students with an experience in artistic ideas, materials, and techniques. It is a hands-on introduction to the world of creativity with an emphasis on the elements and principles of design. The goal of the course is to offer exposure, to develop creative thinking and problem-solving skills, and to explore students' interests while working in both two-dimensional and three-dimensional forms. Student learning is centered on individual development of creativity and observation to prepare them for problem-solving in the real world. Through this course, students will have a firm foundation for further study in the visual arts as well as an appreciation of the role the arts have played in the development of our civilization and culture.

FINE ART II* (5 Credits)

The Fine Arts 2 course provides an opportunity for students to expand on their drawing and painting concepts that were introduced in Fine Arts 1. Prominence is placed on experiences with design elements and principles, drawing techniques and painting skills that can lead to the expansion of abilities that are necessary for advanced art courses. Students are given more in depth problems to solve creatively while becoming more adept through a wide-ranging exposure to various media. Students will be continually encouraged to expand their creative ideas as well as their technical potential. This is a desired course for any student wishing to develop a portfolio for college.

DANCE* (5 Credits)

This course comprises a survey of dance history, style and technique. Students do not need previous dance training. This studio class provides novice dancers with the fundamentals of strength and conditioning and an introduction to the basic dance genres of ballet, tap, jazz, and contemporary/lyrical.

SOCIOLOGY (5 Credits)

This course is designed to investigate the principles of sociology, the individual in group, social institutions, social control, and the use of research methods to examine social problems. The course provides practice to students in developing critical thinking, decision-making, and social studies skills concerning human relationships. Major themes include deviance and social control, inequalities of gender and age, family and marriage, and social issues surrounding modern sport.

PSYCHOLOGY (5 Credits)

Psychology provides students with a systematic and scientific approach to the study of human behavior and mental processes. This course introduces students to the scientific study of behavior and mental processes of humans and other animals. Topics that may be explored include research methods, biological basis of behavior, psychological disorders and their treatment, sensation and perception, states of consciousness, memory, thinking, language, learning, intelligence, motivation, emotion, personality, human development and social psychology.

*Pending Enrollment

Career and Technical Programs

Nashoba Valley Technical High School provides technical training for young men and women who desire skills required for successful employment with a curriculum that combines safety, theory and practical application in a state of the art facility. All technical programs align with the Career and Technical Education Frameworks and are structured so that students acquire knowledge and skills in occupational safety and health, program specific technical standards, embedded academics, employability, management and entrepreneurship, and technology.

Agricultural & Natural Resources

- Veterinary Assisting

Arts & Communication

- Design and Visual Communications
- Television and Media
Broadcasting/Theatre Arts

Business & Consumer Services

- Banking, Marketing, and Retail
- Cosmetology

Construction

- Carpentry and Cabinetmaking
- Electrical Technology
- Plumbing and Heating

Engineering and Manufacturing

- Engineering Academy
 - Biotechnology
 - Electronics and Robotics
 - Engineering Technology
- Machine Tool Technology

Education

- Early Education and Care

Health Services

- Dental Assisting
- Health Assisting

Hospitality & Tourism

- Culinary Arts
- Hotel Restaurant Management

Information Technology Services

- Programming and Web Development

Transportation

- Automotive Collision Repair and Refinishing
- Automotive Technology

School to Career Program

Through a partnership with local businesses and industries and full approval of the Department of Elementary and Secondary Education, Nashoba Valley Technical High School is able to provide a School to Career Program for eligible juniors and seniors who meet established high standards of achievement, attendance, work readiness and interest. These students will spend their technical training week in a real world career setting in their chosen field. This experience is an extension of their education, and students do receive a grade from their employers based on the competencies they acquire. They then follow their regular academic schedule on the alternate week. Students are eligible for this program during the last trimester of the junior year and throughout the entire senior year.

The following opportunities are available for students in the School to Career Program:

- to work for an approved School to Career employer for pay
- to work in situations that are beyond the scope and variety that can be offered in the typical school setting
- to make contacts for summer and permanent employment

The School to Career Coordinator provides each School to Work placement supervisor with the appropriate educational standards and curriculum to be met and visits the worksite at least once each trimester.

Career and Technical Programs

Exploratory Program

Students entering Nashoba Valley Technical High School may or may not have an idea of the technical program in which they wish to be enrolled. We believe the value of exploration and decision-making is, in itself, a learning experience for all incoming students. Therefore, each freshman is scheduled into a 1-day mini exploratory of all technical programs. This mini-exploratory period enables students to experience the realistic and hands-on applications of each program and get a glimpse of career opportunities found in each profession.

When the mini-exploratory concludes, students will select three programs they wish to explore for a 1-week period of time. The district selects an additional three programs for each student, one that is deemed “non-traditional” to their gender. It will be January when this process ends and students will, at last, choose a technical major. Placement into a “career-path” is based upon the total experience, as well as assessment in career adeptness, aptitude, interest surveys and discussions with parents.

Upperclassmen and late-arriving freshmen, wishing to enroll, also participate in a shortened version of the exploratory program. At least six programs will be explored before making a career-path choice.

Articulation Agreements

An Articulation Agreement is a formal agreement between two participating schools detailing the process by which credits and degrees at one institution may transfer or are equivalent to the other institution. These are designed to help students make a smooth transition from one school to the next educational level without experiencing delays, duplication of courses, or loss of credit. A list of current articulation agreements is included with each program description.

In addition to the articulation agreements in place between Nashoba Valley Technical High School and select post-secondary institutions, the Department of Education has established statewide articulation agreements with the Massachusetts Community College System. Statewide agreements are in place for the following program areas:

- Culinary Arts
- Design & Visual Communications
- Early Childhood Education
- Hospitality (Hotel & Restaurant)
- Programming & Web
- Health Assisting (CNA)
- Carpentry
- Machine Tool Technology
- Automotive

Licenses & Certificates

Each of Nashoba Valley Technical School’s Technical Programs prepare students to meet the requirements for various accreditations that are relevant to that field, and in many cases offer the tests as part of the program. Graduation from a program does not automatically confer these credentials; the students bear responsibility for passing the necessary tests.

Career/Vocational Technical Education (CVTE) Frameworks

The Department of Elementary and Secondary Education (DESE) has created specific frameworks for each Vocational Technical Program to guide curriculum and ensure that career/vocational technical education students across the Commonwealth are taught the most rigorous standards aligned to the needs of business and industry. The Vocational Technical Education Frameworks contain knowledge and skills covering all aspects of industry, reflected in six strands: Safety and Health, Technical, Embedded Academics, Employability, Management and Entrepreneurship, and Technological. To view the specific standards for any program please visit DESE’s website at: <http://www.doe.mass.edu/cte/frameworks/>

Career and Technical Programs

All Vocational-Technical programs at Nashoba Valley Technical High School are strictly aligned to these six frameworks and are taught as part of the vocational technical curriculum for each department.

Strand One: Safety and Health

This strand contains the safety standards that are common to all programs.

Strand Two: Technical Standards Knowledge and Skills

Strand two contains the core knowledge related to each vocational-technical program. Strand Two in each framework begins with safety and health knowledge and skills specific to the particular vocational program.

Strand Three: Embedded Academics

Strand Three correlates academic content that is *embedded* in the knowledge and skills necessary to perform certain technical skills. A crosswalk has been created directly correlating the English Language Arts (2011) and Mathematics (2011) Frameworks, and incorporating the Common Core Standards and the Science and Technology/Engineering Frameworks.

Strand Four: Employability (and Career Readiness)

This strand, common to all programs, provides students with general knowledge and skills to be college and career ready.

Strand Five: Management and Entrepreneurship

Strand Five contains Management and Entrepreneurship Knowledge and Skills that are general for all students.

Strand Six: Technological Skills

Strand Six outlines technology literacy Knowledge and Skills necessary for all students to be successful in their vocational technical area.

Career and Technical Programs

Engineering Academy (Engineering, Robotics & Automation)

Numerous official studies and reports have identified STEM (Science, Technology, Engineering, Mathematics) related careers as being the most competitive and in-demand fields of the near- to mid-future. Entry to these professions requires a strong academic background in science and mathematics—as well as a mind trained for analysis, problem-solving, and design. Nashoba Tech’s unique Engineering Academy is a program that is specifically constructed to be the ideal springboard into the leading edge of a high-tech future; one which has been awarded nearly \$230,000.00 in state grants aimed at advancing STEM education.

Structured on the nationally recognized Project Lead the Way framework, the Engineering Academy operates on an independent schedule and curriculum structure designed to maximize the integration of academic knowledge and technical skills. Freshman students explore the Academy as they do any other program; however, students with interest in the program face an additional, more comprehensive, level of evaluation than with other technical programs.

Freshmen and Sophomore students take a common set of foundational courses centered around core mathematic, scientific, design, and engineering concepts. In the Junior year, students can choose to specialize in a more focused branch of engineering: Aerospace Engineering, Bio-Engineering, Civil Engineering, Geophysical and Environmental Engineering, Electrical and Mechanical Engineering, Architecture or Telecommunications Engineering, Electronics, and Robotics.

Students are expected to take 4 years of English, Social Studies, Math and Science. They are further required to take the most challenging math and science courses available to them. To that end we have placed the Engineering Academy on a different schedule structure, creating a “school within a school”. Students take academic and technical courses on both weeks with an emphasis on practical engineering skills. Students entering Nashoba Valley Technical School as 9th graders will participate in the exploratory program and follow a normal course schedule of academics and their technical program on alternating weeks. Freshmen wishing to enter the Engineering Academy model will need to be prepared for the rigor and expectations. Once students choose the program, they will begin the Principles of Engineering course during their technical week, while continuing in their academic classes on the following week.

Students begin the alternate Academy schedule track beginning with their sophomore year. Academic courses meet for 45 minutes on both the technical and academic weeks. Science courses are taught at the Advanced Placement level and students are expected to take the corresponding AP exam. Additionally, English courses in both the junior and senior year, as well as math in the senior year are also at the AP level. Students who wish to receive AP designation for other courses in the upper grades will need to take the AP exam to receive this designation. Students who enter Nashoba Valley on the Algebra I, non-honors, math track will not be excluded from joining the Engineering academy; however, they will be required to take both Algebra II and Geometry during their sophomore year.

Career and Technical Programs

Engineering Academy Continued

The course of study for sophomore, junior and senior year is as follows:

	English	Math	Science	History	Technical
Grade 10	English 10 Honors	Algebra II: Required of all grade 10 students If students took Algebra I as freshmen, they will also be required to take Geometry	Physics Honors (Students will take the Physics MCAS exam at the end of 10 th grade, unless they were enrolled in Biology Honors in grade 9 and already took the Biology MCAS exam)	US History I	Introduction to Engineering Design
Grade 11	AP English Language	Pre-Calculus AP Calculus*	Chemistry Honors	US History II**	Specialty Courses: Aerospace Engineering, Bio-Engineering, Civil Engineering and Architecture or Telecommunications Engineering
Grade 12	AP English Literature	AP Calculus AP Computer Science*	AP Biology, or AP Physics I (The choice will depend on engineering specialty)	Government**	Specialty Courses: Aerospace Engineering, Bio-Engineering, Civil Engineering and Architecture or Telecommunications Engineering

* Students who wish to take additional AP courses can opt to enroll in the Brigham Young University (BYU) course for pre-calculus at any time prior to the start of their junior year. The student is responsible for the cost of the course.

**Students who wish to receive an AP designation will need to take the corresponding AP exam

Career and Technical Programs

Advanced Manufacturing

Students in the *Advanced Manufacturing* receive entry-level training through hands-on experiences that duplicate the operations utilized in industry. Over the last four decades, the Manufacturing industry has continued to grow and change. Research has projected a dramatic increase in the demand for skilled workers in the manufacturing field. Thanks to a \$500,000 grant through the Massachusetts Skills Capital Equipment program, the program has been completely remodeled and updated to create a truly state of the art training facility for advanced manufacturing.

The course is designed for students to progress from beginning machining, to intermediate level, to advanced manufacturing. The course starts with an introduction to safety. At the beginning level, students learn manual machining. Students then move on to computerized, programmable machines. The programming of these machines provide a solid introduction to machine programming in a user friendly manner, and prepares students for more advanced equipment requiring the use of G-Code.

While students work with actual production materials at the beginner and intermediate level, they will familiarize themselves with G-Code programming in our simulator room. Students practice on both Haas and Fanuc simulators before moving to the advanced machines on the shop floor. Advanced manufacturing machines include a Fanuc Robo Drill, Haas Lathes, and Haas Mills.

At each level students will perform basic machine functions, run production data, test and calibrate inspection instruments, measure and record dimensions of products (both in process and finished), and apply mathematical calculations to ensure accuracy. Students will perform various bench tasks, such as debur, clean, engrave, and coat parts, as well as honing holes, lap parts, polish parts, tap holes and prepare parts for secondary operations. Projects will use plastics, aluminum, CRS steel, and HRS steel, allowing students to master the unique properties of each commonly used material. Finally, students will learn basic machining theory and blueprint reading.

Graduates find employment as machine operators, machine tool salespersons, maintenance machinists, tool inspectors, production machinists, parts inspectors, CNC (Computer Numerical Control) operators, job shop and experimental machinists. With advanced training graduates go on to become CAD/CAM/CNC specialists, tool and die makers, supervisors, instrument makers, and tool designers, or to self-employment.

Students are recommended to take Physics in Grade 11 and Chemistry in Grade 12.

Technical Courses

- Advanced Manufacturing 9 (324) – 25 Credits
- Advanced Manufacturing 10 (313) – 24 Credits
- Advanced Manufacturing Theory 10 (313T) – 5 Credits
- Advanced Manufacturing 11 (316) – 34 Credits
- Advanced Manufacturing 11 Theory (316T) – 5 Credits
- Advanced Manufacturing 12 (319) – 34 Credits
- Advanced Manufacturing 12 Theory (319T) – 5 Credits

Articulation Agreements

- Statewide Articulation Agreement
- Central Maine Community College

Licenses/Certifications

- American heart Association Cardiopulmonary Resuscitation Certification (CPR)
- National Institute of Metal Working Skills (NIMS)
- Occupational Safety & Health Administration (OSHA) General Safety 10 Hour Certification

Career and Technical Programs

Automotive Collision Repair and Refinishing

The *Automotive Collision Repair and Refinishing Program* emphasizes the application of skills in all areas of automotive collision repair and refinishing. Students learn basic repair techniques, conventional and unibody frame straightening, spot repair, and complete refinishing procedures. Cost estimating, parts replacement and welding are additional skills taught in this program. Students enjoy working on cars and trucks and take pride in seeing the results. This program is certified by the National Automotive Technicians Education Foundation (NATEF) and the National Institute for Automotive Service Excellence (ASE) in structural analysis and damage repair, non-structural analysis damage repair, mechanical and electrical components, plastics and adhesives, and painting and refinishing.

Each student gains actual experience on customer vehicles using the current industry standard equipment available such as the Continental Frame Machine and Measuring System, Paint Mixing, DeVilbiss Concept/Cure II Spray Booth, and MIG Electrical Welders.

The Automotive Collision Repair and Refinishing program has gone **Green** by implementing the waterborne paint into the curriculum. This paint system contains less volatile organic compounds than other types of paint and is the latest standard in the industry.

Graduates find employment in new and used car dealerships, independent body shops, or self-employment. With further education, students may pursue specialized occupations such as insurance claims adjusters, auto customizers, and frame specialists.

Students are recommended to take Chemistry in Grade 11 and Physics in Grade 12. Art is also recommended for at least one year.

Technical Courses

- Auto/Col/Rep/Ref 9 (132) – 25 Credits
- Auto/Col/Rep/Ref 10 (123) – 24 Credits
- Auto/Col/Rep/Ref Theory 10 (123T) – 5 Credits
- Auto/Col/Rep/Ref 11 (126) – 34 Credits
- Auto/Col/Rep/Ref 11 Theory (126T) – 5 Credits
- Auto/Col/Rep/Ref 12 (129) – 34 Credits
- Auto/Col/Rep/Ref 12 Theory (129T) – 5 Credits

Articulation Agreements

- New England Institute of Technology
- New Hampshire Community Technical College
- Ohio Technical College
- Universal Technical Institute (UTI)

Licenses/Certifications

- American heart Association Cardiopulmonary Resuscitation Certification (CPR)
- National Automotive Technicians Education Foundation (NATEF)
- Occupational Safety & Health Administration (OSHA) General Safety 10 Hour Certification

Career and Technical Programs

Automotive Technology

Safe, reliable transportation is paramount. Everyone depends on the automobile for transportation, both at work and recreation. With over 265 million motor vehicles in the United States alone, the demand for automotive repair technicians will continue to climb. The increased sophistication and technology has created a need for highly trained automotive repair technicians.

Students in the *Automotive Technology Program* are being trained to diagnose and repair automotive problems in the areas of ignition, fuel systems, brakes, steering, suspension, driveline, and electrical systems. They learn to operate the computerized test equipment used in today's automotive industry to identify and diagnose problems. Areas include, but are not limited to: transmissions, anti-lock brake systems, supplemental inflatable restraints (SIR), and powertrain.

Students gain valuable experience using state-of-the-art equipment including electronic wheel balancer, four wheel aligner, air-conditioning recover/charging system, computerized engine analyzer, hand-held scanners, brake lathe, use of computerized service manuals and electronic billing of customer invoices.

Graduates are able to find employment in automobile dealerships, independent service shops, fleet shops, military fleet shops, automotive part stores, lubrication shops, brake shops, muffler shops, tire and wheel shops and small engine repair shops. Additional education or training leads to jobs such as specialty technician (brakes, steering and suspension, electrical, electronics, electronic ignition, fuel injection), service writer, service manager or shop foreman. Post-secondary placements could lead to mechanical or automotive engineering degrees.

Students are recommended to take Chemistry in Grade 11 and Physics in Grade 12.

Technical Courses

- Automotive Technology 9 (112) -25 Credits
- Automotive Technology 10 (102) – 24 Credits
- Autotech Theory 10 (102T) – 5 Credits
- Automotive Technology 11 (106) – 34 Credits
- Autotech 11 Theory (106T) – 5 Credits
- Automotive Technology 12 (109) – 34 Credits
- Autotech 12 Theory (109T) – 5 Credits

Articulation Agreements

- New England Institute of Technology
- New Hampshire Community Technical College
- University of Northwestern Ohio
- Ben Franklin Institute of Technology
- State wide Articulation Agreement

Licenses/Certifications

- American heart Association Cardiopulmonary Resuscitation Certification (CPR)
- National Automotive Technicians Education Foundation (NATEF)
- Occupational Safety & Health Administration (OSHA) General Safety 10 Hour Certification

Career and Technical Programs

Biotechnology

Biotechnology is the use or manipulation of an organism or the components of an organism. This program is designed to give students a comprehensive introduction to the scientific concepts and laboratory research techniques currently used in the field of biotechnology. Students attain knowledge about the field of biotechnology and deeper understanding of the biological concepts used. In addition, students develop the laboratory, critical thinking, and communication skills currently used in the biotechnology industry. Furthermore, students will explore and evaluate career opportunities in the field of biotechnology through extensive readings, laboratory experiments, class discussions, research projects, guest speakers, and workplace visits.

Students will learn aseptic, instrumentation, and laboratory techniques, as well as good manufacturing and documentation practices. They will study genetics, including DNA analysis, restriction, and PCR. Students will plant tissue cultures and learn the basics of microbiology, molecular biology, and marine biology. FDA regulations and controls, as well as quality control and assurance will be covered, as will statistical process control and writing standard operating procedures (SOP) and batch records.

An Associate's degree provides the required education for entry level industry positions, such as laboratory technicians or Research assistants. A Bachelor's degree is sufficient for some jobs in applied research or product development. A Ph.D. is usually required for independent research in the Biotechnology field.

Students are recommended to take Chemistry in Grade 11 and Physics in Grade 12. Psychology and Sociology are also recommended.

Technical Courses

- Biotechnology 9 (380) -25 Credits
- Biotechnology 10 (381) – 24 Credits
- Biotechnology Theory 10 (381T) – 5 Credits
- Biotechnology 11 (382) – 34 Credits
- Biotechnology 11 Theory (382T) – 5 Credits
- Biotechnology 12 (383) – 34 Credits
- Biotechnology 12 Theory (383T) – 5 Credits

Licenses/Certifications

- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- Occupational Safety and Health Administration (OSHA) General Safety 10 Hour Certification
- Occupational Safety and Health Administration (OSHA) General Industry (Healthcare) 10 Hour Certification

Career and Technical Programs

Carpentry

Students in the *Carpentry* learn both construction and finish cabinetry. Students have the opportunity to work in a variety of settings, on various building projects in the school district. They work in a technical area equipped with the latest machinery and tools, plus on-the-job supervised training at off-campus work sites. Cabinetry constructed in the technical area is transported to job sites and installed. During these projects students learn machine operations and safety procedures. While working on community projects they also gain valuable experience in millwork, cabinetmaking, lamination, renovation, restoration, framing, roofing, door and window installation as well as siding, sheet rocking, and insulation. They enjoy the hands-on experience, creativity, development of talents, and a wide range of career opportunities.

Nashoba Valley Technical High School is proud to announce that the Carpentry program has gone **Green** by integrating new green building guidelines into the curriculum. In addition, a special focus is placed on the value of home insulation and insulation products used to reduce energy costs in residential and commercial properties.

Graduates are able to find employment in residential and commercial construction. Graduates can seek employment in lumber and milling companies, in cabinet-making shops, as well as in roofing and siding contracting. Graduating students can seek further training within the carpenters union as an apprentice. With further job and college training, they may pursue careers as construction managers and engineers.

Students are recommended to take Physics in Grade 11 and Chemistry in Grade 12. Art is also recommended for a year.

Technical Courses

- Carpentry 9 (152) -25 Credits
- Carpentry 10 (143) – 24 Credits
- Carpentry Theory 10 (143T) – 5 Credits
- Carpentry 11 (146) – 34 Credits
- Carpentry 11 Theory (146T) – 5 Credits
- Carpentry 12 (149) – 34 Credits
- Carpentry 12 Theory (149T) – 5 Credits

Articulation Agreements

- Statewide Articulation Agreements with all apprenticeship programs.

Licenses/Certifications

- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- Occupational Safety and Health Administration (OSHA) Construction, Safety, and Health 30 Hour Certification

Approved Vocational Technical Education Programs and apprenticeship programs:

- Boston Carpenters Apprenticeship & Training Fund
- Construction Craft Laborers Apprenticeship Program
- Eastern Massachusetts Carpenters Apprenticeship & Training Fund

Career and Technical Programs

Cosmetology

The *Cosmetology Program* trains students for a variety of career opportunities in the hair, skin and nail industry. Students are instructed to meet the 1000 hours required by the Massachusetts State Board of Cosmetology. Training includes chemical hair services including permanent waving, hair coloring techniques, and Global Keratin. Students learn haircutting and styling, Cinderella Hair extensions, wig instruction, and up-dos. Basic nail techniques including gel polish and nail enhancements are covered, as are skin care and facial treatments, and make-up applications. Cyber Imagining, professional ethics, salon management and State Laws are also part of the course of study. Students have the opportunity to further develop skills in a supervised salon setting which is open to the public.

After the completion of one thousand (1000) required hours, and passing the Massachusetts State Board Exam, students are licensed and may be employed in salons or spas that are operated as independent establishments, chain salons, or in conjunction with hotels, department or specialty stores.

Students are recommended to take Chemistry in Grade 11 and Physics in Grade 12.

Technical Courses

- Cosmetology 9 (161) -25 Credits
- Cosmetology 10 (162) – 24 Credits
- Cosmetology Theory 10 (162T) – 5 Credits
- Cosmetology 11 (163) – 34 Credits
- Cosmetology 11 Theory (163T) – 5 Credits
- Cosmetology 12 (164) – 34 Credits
- Cosmetology 12 Theory (164T) – 5 Credits

Articulation Agreements

- Katherine Hinds, School of Esthetics

Licenses/Certifications

- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- Massachusetts State Board of Cosmetology Operator's License
- Occupational Safety and Health Administration (OSHA) General Safety 10 Hour Certification

Career and Technical Programs

Culinary Arts

The *Culinary Arts Program* offers the student an in-depth involvement in an à la carte and banquet food service operation, including baking. Skills acquired are supplemented with new techniques and methods of cooking practiced on a broad spectrum of items. Students are expected to demonstrate competencies in the following areas: identifying principle characteristics of classical cuisine, expediting, staff management, developing a strong sense of timing and proportion; preparation and presentation of a well balanced selection of classical menu items; sanitation and self-confidence. Students develop skills using a wide range of commercial equipment while working in our Elegant Chef and Bistro restaurant which is open to the public four days a week.

Graduates have found employment opportunities in areas such as sous chef, banquet chef, baker and baker's assistant, front desk supervisors, and managers in area restaurants and hotels. With advanced training careers are available as working chefs, food purchaser, cooks and pastry chef.

Students are recommended to take Chemistry in Grade 11 and Physics in Grade 12.

Technical Courses

- Culinary 9 (182) -25 Credits
- Culinary 10 (173) – 24 Credits
- Culinary Theory 10 (173T) – 5 Credits
- Culinary 11 (176) – 34 Credits
- Culinary 11 Theory (176T) – 5 Credits
- Culinary 12 (179) – 34 Credits
- Culinary 12 Theory (179T) – 5 Credits

Articulation Agreements

- Central Maine Community College
- Newbury College
- Statewide Articulation Agreement
- Designated as a Freshmen Advanced Study Track (FAST) program school by Johnson & Wales University, which allows students to potentially earn up to 9 credits towards their degree

Licenses/Certifications

- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- Occupational Safety and Health Administration (OSHA) General Safety 10 Hour Certification
- National Restaurant Association ServSafe Certification

Affiliated and Certified by the American Culinary Federation (ACF)

Career and Technical Programs

Dental Assisting

Students in the *Dental Assisting Program* are training to become part of a dental team. They acquire a wide range of clinical skills such as maintaining optimal infection control protocol, manipulation of dental materials, exposing and processing x-rays (both traditional and digital), polishing of teeth, taking impressions, fabricating mouth guards and temporary crowns.

Students also learn administrative duties such as inventory control, record keeping and office procedures. Clinical and administrative skills prepare students for many challenging professional employment opportunities in private and group practices.

Placement can also include specialty dental practices, as sales representatives or service technicians for dental distributors. Students are also prepared to continue their education to become dental laboratory technicians, dental hygienists, dental educators and dentists. The dental field is a fun, lucrative and rewarding career path.

Students are recommended to take Chemistry in Grade 11 and Physics or AP Biology in Grade 12.

Technical Courses

- Dental 9 (286) -25 Credits
- Dental 10 (283) – 24 Credits
- Dental Theory 10 (283T) – 5 Credits
- Dental 11 (284) – 34 Credits
- Dental 11 Theory (284T) – 5 Credits
- Dental 12 (285) – 34 Credits
- Dental 12 Theory (285T) – 5 Credits

Licenses/Certifications

- Dental Assisting National Board Exam (DANB) Offered through DANB
- State of Massachusetts Certification in Radiation Health and Safety (RHS) offered through DANB
- Infection Control Exam (ICE) offered through DANB
- Chair-side Dental assisting exam through DANB – after completing hours 3500 hours working
- American Heart Association Cardiopulmonary Resuscitation Certification (CPR) and First Aid
- Occupational Safety and Health Administration (OSHA) General Industry (Healthcare) 10 Hour Certification

Career and Technical Programs

Design and Visual Communications

Whether it's a logo, poster, webpage, magazine cover, or billboard the Visual (or Graphic) designer is the one to bring the initial idea to life. The artistry of visual design can be seen everywhere. For the student who sees the world of creativity as a career, this program is the place to begin.

The *Design and Visual Communications Program* provides training to students in all aspects of digital and visual communications. Students learn the basics of page layout and design, illustration, typography, digital photography, storyboarding, web design and animation. They learn to take an idea from concept to pre-flight, and understand the principles of prepress and outsourcing, as well as the practical aspects of basic printing processes and equipment.

Students have access to the latest industry standard Adobe software and develop practical skills that translate into a solid foundation for employment and higher education. They not only develop techniques in marketing of the products they create, they will learn to market themselves. All of these skills require creativity, technology, communication and the ability to meet tight deadlines.

Graduates find employment in advertising, desktop publishing, illustration, web design, animation, and other graphic related fields. Students also find employment in simple printing and copying facilities. Many Design and Visual Communications students enter college to further their education.

Students are recommended to take Physics in Grade 11 and Chemistry in Grade 12. Art and Psychology are also recommended.

Technical Courses

- Des/Viscomm 9 (282) -25 Credits
- Des/Viscomm 10 (273) – 24 Credits
- Des/Viscomm Theory 10 (273T) – 5 Credits
- Des/Viscomm 11 (276) – 34 Credits
- Des/Viscomm 11 Theory (276T) – 5 Credits
- Des/Viscomm 12 (279)– 34 Credits
- Des/Viscomm 12 Theory (279T) – 5 Credits

Articulation Agreements

- State wide Articulation Agreement

Licenses/Certifications

- Adobe Certified Associate Certification
- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- Occupational Safety and Health Administration (OSHA) General Safety 10 Hour Certification

Career and Technical Programs

Early Education and Care

In the *Early Education and Care Program*, students learn growth & development of young children, responsibilities of the childcare teacher, and the importance of a professional attitude. Students will learn how to incorporate materials and activities that are developmentally and interest appropriate into the daily curriculum of a daycare center.

Students learn the responsibilities of child care, the importance of communication with others, and the need to project a professional appearance. They will gain an understanding of prenatal care, birth, and the developmental milestones in the early years of life.

Areas of concentration include: physical, cognitive, social and emotional development, an overview of major theorists and theories used in early childhood education, writing and implementing a basic lesson plan, emergent curriculum, observation as an assessment tool, the types of early childhood education programs, and an understanding of professional organizations such as the National Association of the Education of Young Children (NAEYC).

Theory and practical experience combine to make up the Early Education and Care experience at NVTHS. The students gain valuable practical experience in our on-campus child care center.

Students are recommended to take Chemistry in Grade 11 and Physics in Grade 12. Art, Sociology, and Psychology are also recommended.

Technical Courses

- Early Childhood 9 (291) -25 Credits
- Early Childhood 10 (288) – 24 Credits
- Early Childhood Theory 10 (288T) – 5 Credits
- Early Childhood 11 (289) – 34 Credits
- Early Childhood 11 Theory (289T) – 5 Credits
- Early Childhood 12 (290)– 34 Credits
- Early Childhood 12 Theory (290T) – 5 Credits

Articulation Agreements

- Bay Path College
- Fisher College
- Rivier University
- State wide Articulation Agreement

Licenses/Certifications

- Massachusetts Department of Early Education and Care, Preschool Teaching License.
- Child Development Associate National Certification (CDA)
- Massachusetts Department of Early Education and Care, Infant Toddler Teaching License.
- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- First Aid Certification
- Occupational Safety and Health Administration (OSHA) General Safety 10 Hour Certification
- Car Seat Safety Training Certificate
- Hand Writing Without Tears Training/Certificate

National Organizations

- National Association for the Education of Young Children (NAEYC: Available to Seniors only)

Career and Technical Programs

Electrical Technology

In the *Electrical Technology Program* students learn to install electrical equipment for lighting, heating and power applications in commercial, industrial, and residential buildings according to the Massachusetts Electrical Code. Freshmen begin with basic wiring, switches, and lighting, sophomores and juniors work on the next level while seniors work on industrial wiring and motor controls, and relays. Students apply their skills at off-campus work sites. New programs being integrated into the program are Fire/Home Alarm, Fiber optics card access and security. The goal is to stay current with the new technology and as well as old ways. Hours earned in class are credited toward the Massachusetts licensing requirements.

Learning to use blueprints, schematics, and wiring diagrams are also part of the course. Class instruction emphasizes safety. Students use commercial equipment and tools and work in a large, well-ventilated shop with simulated residential and industrial work areas.

The Electrical Technology program has gone **Green** by implementing renewable energy systems into the curriculum. Students learn concepts and installation methods of several renewable energy systems including wind turbines, solar photovoltaic technology and fuel cells as alternatives for producing residential and commercial electricity.

Graduates find employment readily available in factories, power plants, institutional plants, residences, construction sites, and communication installations; all work toward their journeyman's license while employed. They work as fire and security alarm technicians, electrical equipment sales staff, maintenance electricians, lineman, motor repairman, and self-employed individuals.

Students take Physics in Grade 10, Chemistry in Grade 11, and Electrical Code in Grade 12.

Technical Courses

- Electrical 9 (242) -25 Credits
- Electrical 10 (233) – 24 Credits
- Electrical Theory 10 (233T) – 5 Credits
- Electrical 11 (236) – 34 Credits
- Electrical 11 Theory (236T) – 5 Credits
- Electrical 12 (290)– 34 Credits
- Electrical 12 Theory (290T) – 5 Credits

Articulation Agreements

- Benjamin Franklin Institute

Licenses/Certifications

- 1500 hours of practical experience toward licensure
- 300 hours of theory and code towards licensure
- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- Occupational Safety and Health Administration (OSHA) Construction, Safety, and Health 30 Hour Certification
- Powder Actuated Tool

Career and Technical Programs

Engineering Technology

Students in the Engineering Technology program are part of the Engineering Academy (see pg. 29). They combine advanced academic study with a solid foundation of engineering skills, before choosing an engineering specialty. Each year launches skills and knowledge in several basic engineering subjects including Aerospace Engineering, Bio-Engineering, Civil Engineering, Geophysical and Environmental Engineering, Electrical and Mechanical Engineering, Electronics, Robotics, and Architecture. Students use Autodesk inventor and Revit, as well as Solidworks and MatLab. Finally, students work with Boston College to analyze data from our onsite seismograph.

Recommended Academic Course of Study – See Pg. 26

Technical Courses

Designed to mirror college level courses of study for Engineering, the program consists of three distinct courses per year; one per trimester:

Trimester	Grade 9	Grade 10	Grade 11	Grade 12
1	Exploratory	Principles of Engineering (374T1) – 13 Credits	Digital Electronics (375T1) – 13 Credits	Fanuc Operator Certification 9376T2) – 13 Credits
2	Exploratory	Civil Engineering (374T2) – 13 Credits	Computer Integrated Manufacturing (375T2) – 13 Credits	Engineering Design & Development (276T1) – 13 Credits
3	Introduction to Engineering I (377) - 25 Credits	Solid Modeling (374T3) – 12 Credits	3 rd Year Elective Engineering Design (375T3) – 12 Credits	4 th Year Elective Engineering Design (376T3) – 12 Credits

Articulation Agreements

- Statewide Articulation Agreement

Licenses/Certifications

- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- Occupational Safety and Health Administration (OSHA) General Safety 10 Hour Certification
- Autodesk Inventor Certification
- Fanuc Operator Certification

Colleges recognizing Project Lead the Way and granting course credits:

- | | |
|---|--|
| <ul style="list-style-type: none"> • Arkansas Tech University • Dunwoody Institute of Technology • Indian University-Purdue University Indianapolis • Iowa State University • Milwaukee School of Engineering • Minnesota State University • Northern Illinois University • Oregon Institute of Technology • Purdue University | <ul style="list-style-type: none"> • San Diego State University • St. Cloud University • University of Iowa • University of Minnesota • University of New Haven • University of Northern Iowa • Worcester Polytechnic Institute |
|---|--|

Career and Technical Programs

Health Assisting

The Health Care is a growing industry. Excellent employment opportunities exist for candidates with the desire to care for others. Students in the *Health Assisting Program* learn about human behavior and development, geriatrics, nursing assistant skills, medical terminology, nutrition, and computerized record keeping. The student can earn up to seven certifications upon graduation from this technical area in addition to his/her diploma. Each year of this program has a unique goal. In the freshman year students will learn basic nursing skills, communication skills, and restorative services, safety and emergency care issues. Ethical manners, ethnic sensitivity, codes of mental health and patient/resident rights are introduced in the sophomore year, as well as the pre-care certification portion of the program. In the junior year the goal is to prepare students to perform the fundamental skills of a nurse's aide. The program includes knowledge and principles of asepsis, OSHA and HIPAA regulations. Ethical behaviors, cultural sensitivity and principles of mental health are addressed as well as patient/resident rights. Students sit for the Certified Nurse's Assistant (CNA) exam at the end of their junior year. Successful completion of the exam earns students an industry recognized credential and the opportunity to be employed as a CNA. Senior year the student is eligible for co-operative placement, externship or hands on training on medication training and more. Our students train at the school in the clinical lab and in the classroom with the most up to date equipment available including hospital beds and computer labs. Students continue their training in long term care/rehabilitation centers, assisted living facilities and daytrips to memory impaired units and acute care hospitals.

Health Assisting graduates are able to find employment as nursing assistants, (certification is mandatory for those working in long term care in the US) home-health aides, or medical office assistants. The program provides an excellent foundation for students who wish to pursue post-secondary education in nursing, physical therapy, occupational therapy, medical records, radiology, medical assisting, phlebotomy, and emergency medical services. They can work in hospitals, nursing homes, ambulance services, private homes, assisted living facilities, medical walk-in clinics, private practice and physician's offices.

Students take Chemistry in Grade 11, and Physics or AP Biology in Grade 12. Psychology and Sociology are also recommended.

Technical Courses

- Heal Assisting 9 (298) -25 Credits
- Heal Assisting 10 (387) – 24 Credits
- Heal Assisting Theory 10 (287T) – 5 Credits
- Heal Assisting 11 (292) – 34 Credits
- Heal Assisting 11 Theory (292T) – 5 Credits
- Heal Assisting 12 (295)– 34 Credits
- Heal Assisting 12 Theory (295T) – 5 Credits

Articulation Agreements

- Statewide Articulation Agreement

Licenses/Certifications (Students must sit for required exams)

- Red Cross Certified Nursing Assistant (CNA)
- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- American Heart First Aid Certification
- Paid Feeder Certification
- Home Health Aide Training
- Babysitting Training (growth & development) American Red Cross
- Alzheimer's Training
- Occupational Safety and Health Administration (OSHA) General Industry (Healthcare) 10 Hour Certification

Career and Technical Programs

Hospitality Management

The *Hospitality Management Program* provides students with knowledge and training into the world of hospitality. The program is composed of hands on dining room service in the schools Elegant Chef restaurant, classroom theory and cooperative education. The Elegant Chef is a full service restaurant where students get training in food service management, guest service, hosting, and event planning, catering and other positions covered in food service. The hospitality industry provides services to people away from home. These services include food service, lodging, travel, tourism, and recreation.

The hospitality industry is a very large, diverse industry with lots of career opportunities. It is one of the largest employers in the United States and is very important to the economy. Our hospitality management students can develop skills to enter the professional workforce. There are many careers to pursue, such as hotel management, food service director, event planning, restaurant entrepreneurship, and many other career paths.

Students take Chemistry in Grade 11, and Physics Code in Grade 12. Psychology and Sociology are also recommended.

Technical Courses

- Hospitality 9 (186) -25 Credits
- Hospitality 10 (183) – 24 Credits
- Hospitality Theory 10 (183T) – 5 Credits
- Hospitality 11 (184) – 34 Credits
- Hospitality 11 Theory (184T) – 5 Credits
- Hospitality 12 (185)– 34 Credits
- Hospitality 12 Theory (185T) – 5 Credits

Articulation Agreements

- Statewide Articulation Agreement

Licenses/Certifications

- American Culinary Federation (ACF) Certified
- National Restaurant Association ServSafe Certification
- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- Occupational Safety and Health Administration (OSHA) General Safety 10 Hour Certification

Career and Technical Programs

Marketing

In the *Marketing Program*, students develop the fundamental skills necessary for employment in the financial, marketing, or customer service sector and for entrance into post-secondary education programs. Students engage in actual banking transactions and assist customers at the Lowell Five Cents Savings Bank located on campus. Students also receive training in marketing and retail in the area of sales, advertising, consumer relations, product planning, visual merchandising, inventory management, and pricing strategies while working in Nashoba's school store, The Viking Village Mall, which is open to the public.

The curriculum is designed to prepare students to handle a variety of real-life situations and to deal effectively with people within the business field. As a component of marketing, instruction will focus on the marketing process, business management, entrepreneurship and emerging trends in business and finance. Students are expected to apply the concepts they learn through an assortment of class projects utilizing a variety of tools and technologies.

Students completing this course of study are able to seek employment as customer service representatives, retail sales associates, and bank tellers or pursue additional education in business and marketing in two-year and four-year college programs.

Students take Physics in Grade 11, Chemistry in Grade 12. Psychology and Sociology are also recommended.

Technical Courses

- Hospitality 9 (186) -25 Credits
- Hospitality 10 (183) – 24 Credits
- Hospitality Theory 10 (183T) – 5 Credits
- Hospitality 11 (184) – 34 Credits
- Hospitality 11 Theory (184T) – 5 Credits
- Hospitality 12 (185)– 34 Credits
- Hospitality 12 Theory (185T) – 5 Credits

Articulation Agreements

- Statewide Articulation Agreement

Licenses/Certifications

- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- Financial Literacy Certificate through the National Endowment for Financial Education (NEFE)
- Occupational Safety and Health Administration (OSHA) General Safety 10 Hour Certification
- DECA/Delta Epsilon Chi – An Association of Marketing Students
- Customer Service certification through the National Retail Federation Foundation (NRFF)
- Financial Literacy Certificate through Working in Support of Education (W!SE)

Career and Technical Programs

Plumbing and Heating

Students in the *Plumbing and Heating Program* receive both practical and theoretical training in order to offer the student a clear understanding of the materials presented.

The plumbing and heating student becomes knowledgeable in all aspects of Massachusetts plumbing code, Massachusetts gas fuel code, blueprint reading, natural and propane gas piping, water and heat piping, drainage, and various types of gas hydronic heating systems. Additional skills include soldering, and the use of steel, cast-iron and plastic piping. This hands-on program enables the student to assemble components of a plumbing and heating system in a supervised laboratory atmosphere and participate in supervised off campus projects.

The Plumbing Technology program has gone **Green** by implementing renewable energy systems into the curriculum. Students learn concepts and installation methods of renewable energy systems including geothermal and solar thermal technology for heating and hot water in residential and commercial properties.

Upon graduation, students can prepare to obtain a license from the Massachusetts State Board of Examiners for Plumbers and Gas Fitters. Career opportunities include: plumbing and heating maintenance, apprentice gas fitters, apprentice plumbers, journeyman plumbers, estimators, plumbing tool and supply sales positions, plumbing inspectors, pipe fitters and gas fitters, and future master plumbers.

Students take Physics in Grade 10, Chemistry in Grade 11, and Plumbing Code in Grade 12.

Technical Courses

- Plumbing 9 (362) -25 Credits
- Plumbing 10 (367) – 24 Credits
- Plumbing Theory 10 (367T) – 5 Credits
- Plumbing 11 (370) – 34 Credits
- Plumbing 11 Theory (370T) – 5 Credits
- Plumbing 12 (373)– 34 Credits
- Plumbing 12 Theory (373T) – 5 Credits

Licenses/Certifications

- 1500 hours of practical experience toward licensure
- 300 hours of theory and code towards licensure
- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- Occupational Safety and Health Administration (OSHA) Construction, Safety, and Health 30 Hour Certification

Career and Technical Programs

Programming and Web Development

Students in the *Programming and Web Development Program* are training to become computer programmers, web developers, and information technology specialists. The program is designed to enable students to succeed in a highly technical, global environment. Students create and understand the technical details and implementation of computer software, applications, and networks. Creating programs and applications and building interactive web pages are just examples of the myriad of projects that students complete in this program.

Students become proficient with popular software packages including Eclipse, Notepad++, and Adobe Dreamweaver, used to create Java, JavaScript, HTML and CSS projects. Introduction to discrete graphics and game design focuses on both design and development concepts. Students study gaming on multiple levels, including but not limited to game play, graphics, controls, difficulty levels and storyline.

Students master the skills necessary to create software for personal computers, in addition to gaining an understanding of network design and computer administration. Students plan and write programs that provide computer users with different applications. Web sites are designed with a student's inspiration to create graphics and animation while presenting information to the user. Business communications and management procedures are a vital part of this course. Students have the opportunity to earn the IC³ (Internet and Computing Core Certification).

Graduates of this program are prepared for positions in the fields of computer software development, such as telecommunications, gaming, and networking. Other positions that include web and application developer. Students who successfully complete this program easily continue on into an Associate or Bachelor degree programs at many colleges or universities.

Students take Physics in Grade 11, Chemistry in Grade 12. Art is also recommended.

Technical Courses

- Programming & Web Development 9 - 25 Credits
- Programming & Web Development 10 (193) – 24 Credits
- Programming & Web Development Theory 10 (193T) – 5 Credits
- Programming & Web Development 11 (196) – 34 Credits
- Programming & Web Development 11 Theory (196T) – 5 Credits
- Programming & Web Development 12 (199)– 34 Credits
- Programming & Web Development 12 Theory (199T) – 5 Credits

Articulation Agreements

- Ben Franklin Institute of Technology

Licenses/Certifications

- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- Occupational Safety and Health Administration (OSHA) General Safety 10 Hour Certification
- Internet and Computing Core Certification (IC³)

Career and Technical Programs

Robotics & Automation

Students in our *Robotics & Automation Program* are part of our Engineering Academy (see pg. 29). Students study engineering principles fundamental to robotics technology, and develop knowledge of electronic circuitry and the operation of motors, sensors, control systems, and programmable logic controllers. They work with software, wiring, integrated circuits, and embedded controllers. Students work with several robot platforms, with significant projects both in-class and with regional competitions as part of the FIRST Robotics organization.

Recommended Academic Course of Study – See Pg. 26

Technical Courses

Designed to mirror college level courses of study for Engineering, the program consists of three distinct courses per year; one per trimester:

Trimester	Grade 9	Grade 10	Grade 11	Grade 12
1	Exploratory	Principles of Engineering (374T1) – 13 Credits	Digital Electronics (375T1) – 13 Credits	Fanuc Operator Certification 9376T2) – 13 Credits
2	Exploratory	Mechatronics (253T2) – 13 Credits	Computer Integrated Manufacturing (375T2) – 13 Credits	Engineering Design & Development (276T1) – 13 Credits
3	Introduction to Engineering I (377) - 25 Credits	Solid Modeling (374T3) – 12 Credits	Plc Program & Control (256T3) – 12 Credits	4 th Year Elective Engineering Design (376T3) – 12 Credits

Articulation Agreements

- Statewide Articulation Agreement
- New England Institute of Technology

Licenses/Certifications

- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- Occupational Safety and Health Administration (OSHA) General Safety 10 Hour Certification
- Autodesk Inventor Certification
- Fanuc Operator Certification

Colleges recognizing Project Lead the Way and granting course credits:

- Arkansas Tech University
- Dunwoody Institute of Technology
- Indian University-Purdue University Indianapolis
- Iowa State University
- Milwaukee School of Engineering
- Minnesota State University
- Northern Illinois University
- Oregon Institute of Technology
- Purdue University
- San Diego State University
- St. Cloud University
- University of Iowa
- University of Minnesota
- University of New Haven
- University of Northern Iowa
- Worcester Polytechnic Institute

Career and Technical Programs

Television and Media Broadcasting/Theatre Arts

The *Television & Media Broadcasting* aspect of the program is designed for students interested in pursuing employment and post-secondary education in the fields of Television and Media Production. The curriculum will integrate academic and technical content emphasizing research, writing, storyboarding, troubleshooting and producing content for a multiple of media outlets. Hands-on activities include the production of actual television cablecast material. Students learn conceptualizing treatment and scriptwriting, basic and advanced video production, field and live studio production, and remote newsgathering. Students completing this course of study can pursue additional education in two and four-year college communications-related programs.

The *Theatre Arts* aspect of the program is designed for students interested in pursuing employment and post-secondary education in the field of the professional theater industry. Students create stage sets and backdrops, design lighting and sound layouts, design and create costumes, and produce and direct performances. Scripts are written and transformed into fully staged theatre productions. *Theatre Arts* combines educational, artistic and cultural resources for its students. The students are offered a course of study designed to provide them with a comprehensive theater education resulting in a diverse array of career opportunities available to them.

Students take Physics in Grade 11, Chemistry in Grade 12. Art is also recommended.

Technical Courses

- TV media/Theater Arts 9 (400) -25 Credits
- TV media/Theater Arts 10 (401) – 24 Credits
- TV media/Theater Arts Theory 10 (401T) – 5 Credits
- TV media/Theater Arts 11 (402) – 34 Credits
- TV media/Theater Arts 11 Theory (402T) – 5 Credits
- TV media/Theater Arts 12 (403)– 34 Credits
- TV media/Theater Arts 12 Theory (403T) – 5 Credits

Articulation Agreements

- Mount Wachusett Community College

Licenses/Certifications

- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- Occupational Safety and Health Administration (OSHA) General Safety 10 Hour Certification
- Avid Media Composer Certified User Exam
- Adobe Certified Expert (ACE) Exam/Adobe Premiere
- Final Cut Pro X Certified Pro Level One

Career and Technical Programs

Veterinary Assisting

Due to above average growth of the veterinary industry and the need for high quality care of companion animals, there is a growing demand for well-trained veterinary assistants and technicians at the national level. Additionally, according to the Bureau of Labor Statistics, Massachusetts is among the top paying states for veterinary assistants and technician in the country. Students in the Veterinary Assisting Program will learn valuable skills and gain knowledge of applied animal science alongside specialized training in animal health, care and management. They will then be able to further their training or find employment in a variety of related industries such as veterinary hospitals and practices, research and academic institutions, shelters, laboratories, public health organizations and zoos.

Students will master essential skills for veterinary assistants. Their training will include office and hospital procedures, communication and client relations, pharmacy and pharmacology, examination room procedures, small and large animal nursing, surgical preparation and assisting, laboratory procedures, and radiology and ultrasound imaging. Students put their theory into practice in our onsite veterinary clinic run by our business partner MSPCA-Angell. Through partnerships with local farms and veterinary hospitals students will have the opportunity to work with horses and other large animals, and will be able to participate in a more complex surgical veterinary procedures.

Students take Chemistry in Grade 11, Anatomy & Physiology or AP Biology in Grade 12. Psychology is also recommended.

Technical Courses

- Veterinary Assisting 9 (429) -25 Credits
- Veterinary Assisting 10 (430) – 24 Credits
- Veterinary Assisting Theory 10 (430T) – 5 Credits
- Veterinary Assisting 11 (431) – 34 Credits
- Veterinary Assisting 11 Theory (431T) – 5 Credits
- Veterinary Assisting 12 (432)– 34 Credits
- Veterinary Assisting 12 Theory (432T) – 5 Credits

Licenses/Certifications

- American Heart Association Cardiopulmonary Resuscitation Certification (CPR)
- Occupational Safety and Health Administration (OSHA) General Industry (Healthcare) 10 Hour Certification

For more information regarding admissions and program offerings at Nashoba Valley Technical High School, please call or visit our website:

(978) 692 – 4711 ext. 1123

www.nashobatech.net

