2018-2019

Program of Studies

A Caring Community Striving for Personal Growth and Academic Excellence

Needham High School • Needham, Massachusetts

NOTICE OF NON-DISCRIMINATION

Every person shall have a right to attend the public schools of the town where s/he actually resides. No person shall be excluded from or discriminated against in admission to the Needham Public Schools or in obtaining the advantages, privileges and courses of study of the Needham Public School on account of race, color, sex, gender identity, religion, national origin, sexual orientation, disability, homelessness, or limited English-speaking ability.

The following person has been designated to handle inquiries regarding the school district's non-discrimination policy:

Name and Title:	Tom Denton, Director of Guidance
Address:	609 Webster Street, Needham, MA 02492
Telephone No.:	781-455-0800 x 2144
TTY:	781-455-0434
FAX:	781-449-5111

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Pressman, Vice Chair
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INTRODUCTION

I am pleased to present to you the Needham High School Program of Studies for the 2018-2019 academic year. The Program of Studies provides essential information including course offerings, descriptions, and diploma requirements for all Needham High students. The booklet is designed to guide the course selection process and should be consulted whenever academic information is needed.

The program is reviewed each year in late fall. The high school administration forwards recommendations for changes to the Needham School Committee, which has the final approval for the Program of Studies. Our *Core Values, Beliefs and Learning Expectations* guide the development of our program. I urge you to become familiar with the information. It includes both a philosophy and a list of expectations explaining our goals. We believe the breadth and depth of our course offerings allow these goals to be reached. Questions regarding the Program of Studies should be directed to the program director/department chair or to me.

Students and parents need to select courses carefully. The staffing at Needham High School is based on the courses students select in February/March of the preceding year. **It is important to note that due to increased enrollment for the 2018-2019 academic year, it is highly unlikely that course change requests will be honored once the school year has begun.** Therefore, parents and students should seek the advice of teachers, department directors/chairpersons and counselors in preparing an academic program for next year. Students and parents new to Needham will meet with a counselor before selecting courses. Final responsibility for course selection decisions rests with students and their parents. Students should elect the equivalent of seven full periods of instruction each semester including monitored study time. As in the past, final course offerings will be based on enrollment, budgetary considerations, and the impact on the required curriculum.

Thank you for your attention to this very important process. I wish you all the best for a successful 2018-2019 school year.

Aaron Sicotte
Principal

NEEDHAM HIGH SCHOOL

Core Values, Beliefs, and Learning Expectations

Core Values Statement:

A Caring Community Striving for Personal Growth and Academic Excellence

Needham High School draws from the strengths of the community to create partnerships between faculty, parents, and students, both on an individual level and in groups, in order to provide a high quality education. Teaching and learning are central to our mission, as is integrity.

The school offers students a variety of opportunities to excel and diversity of perspectives from which to learn in an environment that is both nurturing and challenging.

The balanced student is able to participate actively in school and society, be creative, and self-advocate while determining his or her unique path to fulfillment.

Expectations for Student Learning:

ACADEMIC, SOCIAL, AND CIVIC EXPECTATIONS

COMMUNICATION
(written, visual, oral)

RESEARCH

ANALYSIS
(mathematical/scientific, textual, problem solving)

PERSONAL RESPONSIBILITY
(collaboration, social/emotional health, problem solving, self-advocacy)

CIVIC RESPONSIBILITY
(cultural proficiency, digital citizenship, self-direction, collaboration)

Diploma Requirements

A. To be eligible for a diploma from Needham High School, a person must complete these standards prescribed by the Needham School Committee:

1. Successfully complete courses in this Program of Studies described as follows:
    a. Four full years of English
    b. Three full years of Mathematics
    c. Three full years of History and Social Sciences including one year of United States History
    d. Three full years of Science
    e. Two full years of the same World Language
    f. Two full years of Fine & Performing Arts; a maximum of one semester of Media/Technology may be substituted
    g. One semester of Health/Physical Education for each year enrolled at Needham High School
    h. Two credits in Community Service Learning

2. Successfully complete the equivalent of an additional five full year courses or its equivalent as described in the Program of Studies.

3. Earn a minimum total of ninety-two credits in the course of study outlined above or in credits earned with the prior written approval of the Principal.

4. Complete all state-mandated requirements.

B. The Principal may suitably recognize students who have completed all Needham High School requirements but not the state mandated diploma requirements.

C. Students may complete these requirements in less than four years upon prior written application and the approval of the High School Principal.

D. The Principal may make changes in requirements when, in his/her opinion, the best interest of the student will be served.

All 9th grade students must take a minimum of 24 credits and a maximum of 26 (the 26 credit max may only be exceeded if a student requests Skills Center, PLC, or an after school class); Grade 10 and 11 students must take at least 24 credits with a maximum of 28; and seniors must have a minimum of 22 credits and a maximum of 28 (** For grades 10, 11, and 12, the 28 credit maximum may be exceeded if a student selects an after school course in addition to the full schedule).**

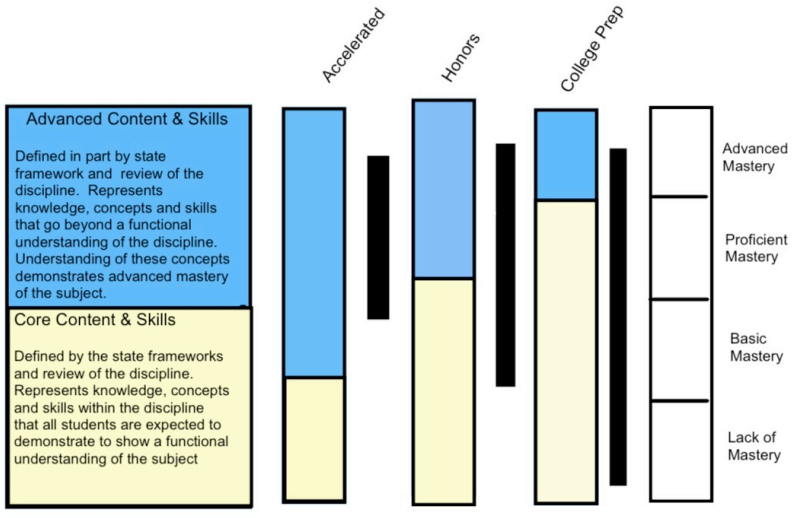
Course Level Descriptions

Needham High School offers courses at the College Prep, Honors, and Accelerated levels. Prior to course selection each year, teachers will recommend students for courses at these levels based upon the descriptions provided below. All courses are rigorous, address the Massachusetts State Frameworks, and are designed to appropriately challenge all students. Students and families are encouraged to consider balancing their academic interests, co-curricular activities, and other commitments when reviewing teacher course recommendations for the upcoming year.

College Prep - *Students who are recommended for courses at this level will build on a strong foundation of content and skills. Courses are rigorous, and require consistent effort and work for students to achieve at the highest level. Class time will be spent on mastery of core content and skills with some exposure to advanced content and skills. Students are expected to synthesize and analyze content with active teacher-directed support. Outside coursework is designed to reinforce the content and skills learned in class. Students will develop the organization needed to balance both short-term and long-term assignments throughout these courses.*

Honors - *Students who are recommended for courses at this level have strong academic skills. These courses are fast paced, rigorous, and require consistent effort and work for students to achieve at the highest level. In addition to developing core content and skills, class time will be spent working on advanced content and skills. Students are expected to synthesize and analyze content with teacher-directed support. Outside coursework is designed to advance the curriculum and provide skill development. Students should possess the strong organizational skills needed to balance both short-term and long-term assignments throughout the course.*

Accelerated - *Students who are recommended for courses at this level will build upon a strong foundation* of content and skills. These classes will spend a significant amount of time working with advanced concepts *and skills at an accelerated pace. Students are expected to synthesize and analyze content independently with limited teacher-directed support. Outside coursework is designed to advance the curriculum and provide skill development. Students will need to balance both short-term and long-term assignments throughout the course.*



The black bars represent areas where teacher-directed support is provided. For example, in the Accelerated level, students are expected to develop understanding of the core content largely independently, with little active teacher-directed support and monitoring. In the Honors level, active teacher-directed support and monitoring is provided for all but the basic components of the core content (many of which will have been learned previously by the student). In the College Prep level, active teacher-directed support and monitoring will be provided for all aspects of the core and advanced curriculum.

Course Change Procedures and Add/Drop Policy

Prior to the school year, counselors will see students in the following prioritized order:
• Seniors who need to meet graduation requirements;
• Students who passed summer school requiring a course change;
• New students;
• Students who do not have the minimum required number of credits scheduled (24 for freshmen, juniors and seniors, and 22 for seniors);
• Students whose request for a course change has been approved by the department head (See below.) Given our emphasis on the course selection process and our priority of keeping class size reasonable and of maintaining an appropriate student/teacher ratio, all program change requests will be evaluated before any request can be honored.

Philosophy behind the Add/Drop policy

At Needham High School we encourage all students to make thoughtful decisions in selecting courses, to challenge themselves appropriately, to persevere and develop resilience when presented with growth opportunities, and to balance their academic responsibilities with their extra-curricular activities and life outside of school.

The partnership between students, families and teachers begins with the course selection process. Students and families are expected to very carefully choose courses for the following year. The high school follows a specific procedure at course selection time that requires input from teachers and students and encourages input from families. Students and families with questions at that time should consult teachers, counselors and other staff to assist in making appropriate choices regarding courses. Student course selection is the first step in crafting the high school master schedule, a process that takes months, and creating course sections based on student enrollment.

There can be times when, despite everyone's best efforts, a particular course placement may not meet the student's needs. In those cases a student's options are:
- drop the course;
- drop the course and replace it with a different course;
- or change the level (College Prep, honors or accelerated) of the course.

These course changes can be characterized as either 'add/drop' or 'level change'. In both cases there is a specific process and timeline to be followed. All course changes require the approval of the appropriate Department Chair/Director. The Department Chair/Director must balance the needs of an individual student with the needs of all students impacted by the proposed change.

Drop/Add

A student may request to drop a course at any time during the school year. If a student drops a course after term 1 the course will be represented on the permanent high school transcript with a grade of 'W'. There is no guarantee that if a student drops a course there will be room for the student in another course. Most often the only option for a student's schedule is a study hall. A student should be cautious when dropping a course that they are still carrying the required minimum number of credits for the school year and that they are still on track to fulfill all the graduation requirements.

A student who wishes to add a course must make that request by the end of the first two instructional cycles of either the school year for a full year course or the semester for a semester course (usually the third week of the first or third term). No student will be allowed to enter a new course after that time unless there are extenuating circumstances.

Level changes

A student may request to change the level of a course up until the end of Term 1. Level changes after that time will be considered only under extenuating circumstances.

Transfer of grade: If a level change takes place before the last two weeks of Term 1, the teachers of the two courses will consult regarding the student's term grade. Within two weeks of the end of Term 1, the student's grade for Term 1 will be the grade for the first term and the student will not be moved into the new class until the beginning of Term 2.

Grade Point Average (G.P.A.)

Grade Point Average is tabulated according to utilization of a 5 point weighting system. This system is in compliance with the Massachusetts Board of Regents guidelines for computing weighted grade point averages. Courses at Needham High School are grouped in four levels and will be given differing weights in the computation of grade point average.

1. All leveled courses (a course where the last digit ends in #1, 2, 3, or 4 such as #2003 Algebra I) in grades 9, 10, and 11 will be included in the GPA computation procedure.

2. Grade Point Average is computed by adding the total number of quality points earned and dividing by the number of credits earned.

3. Only full year courses are used in computing GPA.

Point Table Value for Weighted GPA

Grade	Level 1	Level 2	Level 3	Level 4
A	5.0	4.5	4.0	3.5
A-	4.7	4.2	3.7	3.2
B+	4.5	4.0	3.5	3.0
B	4.3	3.8	3.3	2.8
B-	4.0	3.5	3.0	2.5
C+	3.7	3.2	2.7	2.2
C	3.4	2.9	2.4	1.9
C-	3.0	2.5	2.0	1.5
D+	2.7	2.2	1.7	1.2
D	2.4	1.9	1.4	0.9
D-	2.0	1.5	1.0	0.5
F	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0
R	0.0	0.0	0.0	0.0
X	0.0	0.0	0.0	0.0

Summer School

All summer school work must be approved IN ADVANCE by the principal or director/chairperson of the department. A form for this purpose is available in all department offices.

Credit received in summer school does not automatically entitle the student to elect the next higher course in a sequence. No more than three courses repeated in summer school and/or by tutoring will be allowed for credit toward a diploma. Only one course in a sequential subject may be made up in summer school or by tutoring. Additional credits will not be granted for a repeated course. The director must approve remedial courses prior to registration.

In any case, the original grade recorded by a Needham High School teacher is not to be changed as a result of summer study. The grade received from summer school will be recorded on the permanent record card in addition to the original grade.

Remedial and Make-up Courses

1. The student who does not complete a course satisfactorily and receives an F grade (of at least a 50) may:
   A. Receive credit for the subject by repeating the course successfully in an accredited summer school.
   B. Repeat the subject as an additional course and attain a satisfactory grade.
   C. A student who fails English must make up the course in an approved summer school or repeat the course the following year. Two years of English cannot be taken simultaneously in grades 9 and 10.
2. The student who does not attain a necessary prerequisite grade for continuation in a sequential course may:
   A. Repeat the course in an accredited summer school.
   B. If no accredited summer school is available, have tutoring approved by the appropriate director/chairperson. Tutoring must be taken at the rate of one hour a day for a minimum of thirty days. The student must then pass a qualifying examination if appropriate.
   C. Repeat the course and obtain a qualifying grade.

Enrichment Programs

Needham High School encourages students to participate in enrichment programs. There are programs offered in the Needham Summer School, through the TEC collaborative, and in various public and private schools. Participation in such programs may be recorded on your official transcript, may be awarded credit, and may fulfill core requirements. Students must receive prior approval from the Principal for enrichment courses to be recorded on the transcript and to receive credit.

Course Offerings

The Program of Studies booklet is divided by departments. Course descriptions are written by Department Heads/ Chairpersons and are approved by the Needham School Committee.

Course Numbers

The first digit defines department.
The second and third digits are for scheduling purposes.
The fourth digit of the course number indicates the level of difficulty.
1=AP or Acc; 2=Honors; 3=College Preparatory
0, 5, 6, 7, 8, 9 are unleveled or independent study.

Length/Credits

F/4 = A full year course meeting every scheduled block earning four credits
F/2 = A full year course meeting only half the scheduled blocks earning two credits
S/2 = A one semester course meeting every scheduled block earning two credits
/4 or /2 = Course not regularly scheduled earning four or two credits

 Star indicates new course offering for 2018-2019

INTERDISCIPLINARY COURSES

Due to the collaborative initiative between the Needham Public Schools and the Needham Education Foundation, "The Interdisciplinary Learning Initiative," the work of the Interdisciplinary Learning Team, and the commitment of the Needham High School staff, we are able to offer several interdisciplinary courses and opportunities for the 2018-2019 school year. These experiences are developed and/or taught collaboratively and integrate knowledge and skills from two or more disciplines. The intent of each course/offering is to help students develop 21st Century skills, such as: problem solving, collaboration, communication, and self-direction.

African American Studies and Contemporary Issues Hon (4462): This course will serve as an introduction to the study of African American life from the end of the Civil War to the present. Using a chronological framework, students will explore a wide range of themes involving politics, culture, and the arts, while emphasizing the dynamic role played by African Americans in U.S. culture. Students will engage in lectures, debates, research projects and discussions, examining the African American experience through documents, music, film, and digital resources.

AP Computer Science (2481): AP Computer Science is comparable to a first year college course in computer science, and is designed to prepare the student for the AP Computer Science exam. The Java programming language will be used. The course will focus on algorithm development, using concepts such as classes, linked lists, stacks, recursion, queues, trees, searching, hashing, and inheritance. It is recommended that students have access to a computer at home when taking this course. Priority will be given to students in their junior and senior year. (Prerequisites: A- or better in Introduction to Computer Science or a B or better in Pre-Calculus and Department Chair approval, or concurrent enrollment in Pre-Calculus and Department Chair approval)

AP Computer Science Principles (2488): AP Computer Science Principles provides an introduction to programming and the basic principles that underlie the field of computer science. The programming portion of the course focuses on algorithms, abstraction,and the logic behind programming languages The principles portion of the course focuses on how computers and the internet work and how technological advances are affecting society, culture, and the economy. The AP test consists of a multiple choice exam as well as a portfolio component. For the portfolio tasks, students design their own program, often with a socially useful purpose, and research and report on the benefits and potential drawbacks of a new technological advance. (Prerequisites: B or better in Introduction to Computer Science and Math 9/Algebra 2 or Department Chair approval. Please note: priority to enroll in this course will be given to juniors and seniors)

Be the Change (2 credits), Full Year (9800): This course will focus on preparing students to be future leaders, open to students in grades 10, 11, & 12. Students will learn skills to lead, organize, and manage groups such as freshman orientation, clubs, athletic teams, and/ or service groups. Students will focus on gaining multiple skills that can be translated into classrooms, future studies, and the workplace and will complete the class with the skills and knowledge-base to motivate and organize their peers. Course topics will include: substance abuse prevention; resiliency skills; negotiations and peer mediation skills; leadership skills to address teen issues; and how to create and facilitate discussion groups. Students will create a capstone proposal and presentation, exemplifying their new skills and strategies, that they will present to their peers, while changing their school and/or community. Guest speakers from the Needham community will also be involved in the course over the year. Be the Change is a course offered before school hours for 1-hour per week with an online component. (Prerequisite: Recommendation by an Assistant Principal)

Computer Aided Design and Manufacturing (2467) Computer Aided Design and Manufacturing is a semester course in which students will learn the basics of Computer Aided Design using modern design software packages. Students will learn how to model ideas for parts and assemblies on the computer similar to the way this is done in industry. Students will learn about additive and subtractive manufacturing processes, and practice creating their designs using equipment in the Da Vinci Workshop, such as a 3D printer, laser cutter, or milling machine. Students will be expected to create a culminating project. This course may require a materials fee. (Prerequisite: B or better in Math 9 or Algebra 2 and a B or better in Physics)

Computer Programming Fundamentals (2476) Computer Programming Fundamentals is a semester course. Students will expand the computer science knowledge acquired in Introduction to Computer Science (course 2482) as well as develop or expand their computer programming skills. The course will use a contemporary programming language for students to grow their computer programming skills. (Prerequisite: 2482:Intro to Computer Science or Mathematics Department Chair approval)

Digital Game History & Design (8498): This course is designed to give students an overview of digital games and game development. Students will learn about gaming history, game design, storytelling, and the psychological and sociological aspects of games and gaming. The technology behind consoles, computers, arcades, and mobile gaming platforms will be covered as well. Students will use this knowledge to examine trends to provide their own answer to the question, "What is the future of digital games and how do emerging technologies fit in?" The culminating project of this class will be creating a choose your own adventure computer game using Twine and components of HMTL, CSS, and Javascript. Prior videogame experience and coding is recommended but not required. Topics covered include, history of video game creation, basic video game design process, storytelling and world building, gaming technology, sociology, and trends, student created games.

Digital Portfolio (7156) This semester course is designed to allow advanced art students who have successfully completed Photo 3, or Graphic Design, or Commercial Production, to use their digital art skills and accumulated works to create a portfolio of expressive works suitable for submission to college, and/or possibly for AP submission. Interested students should consult their Art teacher and/or the Director of Fine & Performing Arts to ensure they are qualified for this course. (prereqs: Photo 3, Graphic Design 2, Commercial Production, or permission of the instructor)

Engineering Design 101 (2466) Engineering Design 101 is a semester course. This course is for students who are thinking about pursuing career in Engineering or related area. Students will learn about the tools, methods, materials, and processes used by engineers. This class will simulate the university engineering experience by giving students exposure with various aspects the engineering profession. This course will proceed as a project based learning class involving several different engineering disciplines including aerospace, civil, electrical, environmental, mechanical and structural. As students advance through the different units they will learn problem solving, critical thinking, design skills, 3D modeling as well as other skills that are vital to becoming a successful engineer. (Prerequisite: Successful completion of Physics and Algebra 2)

Environmental Science: This interdisciplinary course will examine the relationship between humans and the environment through significant field work. Students will explore topics of ecology, natural resources, populations, forestry, fisheries, climatology, environmental health & toxicology, environmental engineering & modeling, production & consumption of energy, and environmental policy, law, & planning. Students will be involved in a variety of citizen science initiative and green technologies with a focus on local impact. Students will be expected to collect data using environmental field techniques, interpret this data, and propose solutions to environmental problems indicated by data. A major focus of this course is to increase students' scientific literacy to evaluate the validity and accuracy of information from media and other sources through the investigation of case studies.
Suggested Math Prerequisites:
Accelerated Level (3531): Advanced math skills (strong foundation from accelerated or honors pre-calculus)
Honors Level (3532): Proficient math skills (basic understanding of pre-calculus)
College Prep Level (3533): Comfortable with algebraic manipulations

Integrated Senior Studies Acc: The Greater Boston Project (0491): This course explores how individuals and groups have worked throughout history to effect change in Greater Boston. Students will look at various historical moments through a variety of different lenses - population, government, economy, education, and arts & leisure - and consider how these have molded what Greater Boston has become today. The course of study is expressly interdisciplinary, as skills from the disciplines of English, history, and mathematics are brought together to explore Greater Boston's past and present. The course culminates in the Community Action Project, which entails collaborative exploration into and analysis of at least one area of study from the course; the project allows students to become agents of change as they work to develop, propose, present, and possibly implement their resolutions to existing real-world problems. **This is a** double block, eight credit course that fulfills the senior year English requirement.

Introduction to Computer Science (2482): Introduction to Computer Science uses the nationally recognized Exploring Computer Science (ECS) Curriculum. This semester course is designed to introduce students to the breadth of the field computer science through an exploration of engaging and accessible topics. Rather than focusing the entire course on learning particular software tools or programming languages, the course is designed to focus on the conceptual ideas of computing and help students understand why certain tools or languages might be utilized to solve particular problems. The goal of Exploring Computer Science is to develop in students computational practices of algorithm development, problem solving and programming within the context of problems that are relevant to the lives of today's students. The course covers the first four units of the ECS curriculum: Unit 1 Human Interaction, Unit 2 Problem Solving, Unit 3 Web Design, and Unit 4 Introduction to Programming and requires the students to complete capstone project. (Prerequisite: B- or better in Math 8)math

Junior/Senior STEM Capstone (2490) or Junior/Senior STEM Capstone 2 credi**t (2496)** Junior/Senior STEM Capstone is independent Study course and is designed to give the self-motivated student or a small group of students the opportunity to work on a significant project of their design during school hours. Students will utilize the Da Vinci Workshop and will be expected to perform work beyond the school day. Options for learning range from scientific research and engineering projects, to work as part of scientific competitions and service learning community action projects, to other approved projects. In this course, students will write a proposal for their work, produce their results and present their work publicly in a manner agreed upon with the instructor. Prerequisites: Two teacher references that support the student's ability to work independently. Please Note: It is recommended/strongly encouraged that students do group projects. Any junior or senior is encouraged to take this course even if you are undecided about a project. Students can meet with the instructor to generate some project ideas.

Peer Tutoring (1 credit), Semester (1260): This volunteer program is available for juniors and seniors who are interested in using their academic talents to support their peers in academic support classes. After training, peer tutors will be able to provide numerous supports to students including: assistance with reading, support with note taking and test prep, guidance with editing and revising papers, support with organization. Participating students will attend the support class a minimum of three of the five class meeting days each rotation.

Personal Finance (2615): Personal Finance is designed to provide students with the confidence and knowledge to successfully navigate the financial decisions they will face as young adults after high school graduation. Topics include budgeting, banking, credit and loans, taxes, insurance, and investing. Assignments aim to prepare students to identify and evaluate trade offs in financial decisions such as choosing a college, car, or apartment. Students will also visit local businesses to enhance their learning through meetings with professionals. Priority to enroll in this one-semester course will be given to seniors.

Product Design and Development (7258): In this two credit semester course students will develop and design products, focusing on toys, board games, and musical instruments. They will use the Design Thinking process while creating, testing, and refining the product. Students will explore the design development process in the fields of Product and Toy Design from conceptualizing/ problem solving, drawing, creating presentation boards, models, prototyping etc. The course will cover the importance of functionality, ergonomics, preserved value, play patterns, and demographic needs. The history of product, toy and instrument design will be

incorporated to inform student design decisions. They will use simulations and statistics to predict game flow/outcomes; study the physics behind the instruments/sound to inform their design. Instruction includes lectures, literature, design critiques and hands on modeling & utilizing the tools in Studio 605 and The DaVinci Workshop.
Pre-requisites: This course is primarily for students in grades 10-12, who will benefit from having taken Digital Art & Animation; Commercial Design & Production 1; or Engineering Design 101 courses offered at NHS.

Robotics (2489): Robotics I is a one-semester hands-on course that will introduce students to the engineering design process through robotics. Students will be assigned challenges that will be solved by building robots to perform given tasks. Students will learn about mechanical design, software design, and electrical components. Students will also learn about actuators and sensors, and how to effectively use them when building a robot. The equipment used for the course will remain in the classroom and as such students may need to complete some of their work after school. No programming or engineering background is required. When the schedule allows, students in Robotics 1 will collaborate with students in Introduction to Sculpture for an interdisciplinary Kinetic Sculpture Unit. (2482 or equivalent). (Prerequisite: B or better in Math 9 or Algebra 2 and Physics, or instructor permission)

Storytelling with Numbers (8595): Storytelling with Numbers teaches students the fundamentals of data visualization, spreadsheets, and how to communicate effectively with data. Students will learn how to use data to create an engaging, informative, compelling story. They will create their own surveys, explore survey bias, and analyze the resulting data. Students will be able to evaluate graphic representations of data and identify the purpose behind the graphic. Utilizing these skills, the class culminates in a final project with the presentation of data in what the student deems the most effective method. Topics Covered include, basics of spreadsheets, analyzing data and graphs, designing and analyzing surveys, importance of context, models of visual data, basics of visual design, using data to tell a story.

TEC Internship (9899): Internships are structured, supervised learning experiences allowing students the opportunity to explore a career. Needham is a member of The Educational Cooperative (TEC). The TEC internship program offers students the opportunity, for a fee, to be placed with an organization or business in a career area of interest. Students and families will be responsible, at least in part, for the internship fee. Interested seniors must have a minimum of 74 credits at the end of junior year. More information is available at www.tec-coop.org.

Technology Leaders (8455): This course will give students a background in technical support at Needham High School. Students will respond to real problems and develop solutions in the following areas of technology: computer software, hardware, television production, audiovisual hardware and software, website design, and more. Technology Leaders will assist staff and students by addressing individual technology-related problems and challenges. When not assisting staff or students at the help desk, participating students will explore independent technology-related learning. Because of the nature of the experience it will be limited to two students per period. This opportunity is available for the full year or a semester only. Prior to course selection, a technology specialist must interview interested students.

Television Production (8486): This course is designed to enhance television production skills in a real world setting. Students should have a background in how to use studio equipment, and will be focusing on increasing skills and creativity to design a more involved production. Students will act as a high school television production house, creating television episodes to air on The Needham Channel. Students will investigate series television and create their own ideas for an ongoing series. Students will pitch their concepts to the rest of the class and a show will be selected for production. After pitching a show idea to the teacher and to a representative from the Needham Channel, students will work to produce a total of six 30-minute episodes. The class will operate under professional procedures to get their shows ready for air at The Needham Channel. (Prerequisite: Television Communication I)

Work Study - full year, 4 credits (2 Math credits) (9898) The Work Study class is designed to provide the skills needed to be successful in a work environment, as well as, provide the opportunity to earn credit for valuable work experience under school supervision. The class will meet outside of the regular school day to provide more flexibility for the students. The in-class time will focus on the skills, interactions, and knowledge needed to be successful in any job setting. Students will also acquire and apply practical math skills in order to gain a deeper understanding of how a business manages its operation, as well as, understand how to manage their own finances. Students will be required to have a job prior to enrolling and will be expected to work a minimum of 15 hours per week during the year. The class instructors will complete periodic visits to each job site and maintain contact with employers throughout the year to assess how the in-class lessons are translating to the work environment. Participation in the class is limited and must be approved by the student's parent, counselor and assistant principal. The class will be graded on a Pass/Fail scale, based on fulfillment of the classroom requirements and satisfactory performance on the job.

ENGLISH

Num	Length	Credit	Course
0101	F	4	English 9 Acc
0102	F	4	English 9 Hon
0103	F	4	English 9 CP
0201	F	4	English 10 Acc
0202	F	4	English 10 Hon
0203	F	4	English 10 CP
0311	F	4	AP Language & Composition

Num	Length	Credit	Course
0301	F	4	English 11 Acc
0302	F	4	English 11 Hon
0303	F	4	English 11 CP
0421	F	4	AP Literature & Composition
0431	F	4	English 12 Acc
0432	F	4	English 12 Hon
0433	F	4	English 12 CP
0491	F	8	Greater Boston Project Acc

The following elective courses are available to all students in addition to the required full year course:

0510	S	2	Public Speaking
0520	S	2	Experimental Writing
0530	S	2	Film Studies
0547	F	4	Journalism 1 - *The Hilltopper*
0548	S	2	Journalism 1 - *The Hilltopper* 2 credit

The goal of the English curriculum is to strengthen communication skills and to encourage an appreciation of literature. Accelerated and Advanced Placement courses are designed for students who demand especially challenging academic experiences and who are comfortable working with advanced materials. Although the course essentials at each grade are consistent, the pace and depth are different at each level. Nightly reading and writing assignments are progressively defined according to grade level and depend upon the complexity of a given text and corresponding class assignments.

Ninth Grade English

English 9 (0101; 0102; 0103): Ninth grade English includes the study of literary forms in conjunction with the development of foundational language arts skills. Students examine characteristics and critical elements of Fiction, Poetry, Nonfiction and Drama. Students will develop and refine organization and clarity of expression in critical writing and personal essays, practice effective speaking and listening skills and study vocabulary, usage and writing mechanics. All ninth grade students will complete a comprehensive research assignment, the Freshman Research Paper, as a course requirement. Representative texts include Harper Lee's *To Kill a Mockingbird*, Marjane Satrapi's Persepolis, John Steinbeck's Of Mice and Men, James McBride's The Color of Water, George Orwell's Animal Farm, Lorraine Hansberry's A Raisin in the Sun, William Shakespeare's Romeo and Juliet, Sue Monk Kidd's The Secret Life of Bees, Elie Wiesel's Night and a collection of core poems.

Students enrolling in 9 Accelerated should be prepared for nightly reading assignments of 30-35 pages; in 9 Honors 20-25 pages; in 9 College Prep 10-15 pages. Similarly, writing amounts vary by level.

Tenth Grade English

English 10 (0201; 0202; 0203): Tenth grade English offers a detailed examination of archetypes within the literary genres of Romance, Tragedy, Comedy and Satire & Irony. Students continue to explore a variety of literary forms and develop and refine their understanding of critical writing, with particular focus on conventions, organization, analysis, interpretation and style. Additionally, students learn and practice skills emphasized in the Massachusetts State Frameworks and the Common Core Curriculum, particularly those assessed by standardized tests. All tenth grade students will complete a comprehensive research project, the Sophomore Oral Presentation, as a course requirement. Representative Texts include J.D. Salinger's *The Catcher in the Rye*, Sherman Alexie's The Absolutely True Diary of a Part-Time Indian, William Shakespeare's Macbeth, Maya Angelou's I Know Why the Caged Bird Sings, Benh Zeitlin's Beasts of the Southern Wild (film), Ken Kesey's One Flew Over the Cuckoo's Nest, Barbara Kingsolver's The Bean Trees, George Orwell's 1984 and Sophocles' Oedipus the King.

Students enrolling in 10 Accelerated should be prepared for nightly reading assignments of 35-40 pages; in 10 Honors 25-30 pages; in 9 College Prep 15-20 pages. Similarly, writing amounts vary by level.

Eleventh Grade English

AP Language & Composition (0311): AP Language and Composition is designed to augment advanced students' critical reading and writing skills through the exploration of a wide variety of rhetorical contexts. Units are based upon a common eleventh grade core curriculum, consisting of American nonfiction and fiction selections, and organized by the following unit themes: "Romanticism and the Early American Tradition;" "Regionalism and Marginalized Voices: Gender;" "Regionalism and Marginalized Voices: Race and Ethnicity;" and "Modernism, Post-Modernism and The New America: The American Dream 2.0." Each theme is explored through a variety of texts, critical lenses and multimedia including fiction, historical nonfiction, contemporary nonfiction, visual texts and poetry. Writing in this course will include critical, persuasive, formal, informal and personal narrative essays, and students will compose a series of short research pieces for each of the aforementioned units as well as a comprehensive research paper and culminating assessment during the final marking period. Students will also conduct a comprehensive review of usage, grammar and compositional mechanics, conduct extensive outside reading and examine/analyze visual documents. upon completion of the course, students are prepared to take the Advanced Placement Exam in Language and Composition offered by the CEEB.

English 11 (0301; 0302; 0303): Eleventh grade English offers a detailed examination of American literature and thought, focusing on the ways in which the various literary movements have shaped the idea of America. Students will think critically about how American Literature constructs and reflects shifting beliefs about religion, government, race, gender, morality, beauty and truth itself. In addition to developing critical insight into the works of major American writers and an awareness of the historical context of these writings, students identify and analyze how literary elements enhance meaning and review/refine usage, grammar and mechanics. All eleventh grade students must complete a comprehensive research project, the Junior Research Paper, as a course requirement. Representative texts include Arthur Miller's *The Crucible*, Nathaniel Hawthorne's *The Scarlet Letter*, essays by Henry David Thoreau and Ralph Waldo Emerson, Charlotte Perkins Gilman's "The Yellow Wallpaper," T*he Narrative Life of Frederick Douglass*, Mark Twain's The Adventures of *Huckleberry Finn*, F. Scott Fitzgerald's *The Great Gatsby*, Arthur Miller's *Death of a Salesman* and Kurt Vonnegut's *Slaughterhouse-5*.

Students enrolling in 11 Accelerated should be prepared for nightly reading assignments of 40-45 pages; in 11 Honors 30-35 pages; in 11 College Prep 20-25 pages. Similarly, writing amounts vary by level.

Twelfth Grade English Courses

AP Literature & Composition (0421): Advanced Placement Literature and Composition is designed to enable advanced students to gain freshman college mastery of writing and literature. Units on nonfiction, drama, fiction and poetry review the elements and terms of each genre and require students to demonstrate their analytical and expository skills in writing and discussion. Students practice for the AP Literature and Composition exam, assume major responsibility for small group presentations and conduct extensive research. Continuous outside reading is assigned. Upon completion of the course, students are expected to take the AP Exam in Composition and Literature offered by the CEEB.

English 12 (0431; 0432; 0433): Twelfth grade English offers students an intricate examination of critical literary lenses through diverse, dynamic and didactic artifacts. Students will explore the purpose, assumptions, strategies and critical vocabulary that define Formalist Criticism, Biographical Criticism, Historical Criticism, Psychoanalytical Criticism, Postcolonial Criticism (Honors & Accelerated only) Feminist Criticism (Honors & Accelerated only) and Marxist Criticism (Accelerated only). In addition to demonstrating an understanding of critical lenses and applying their strategies to analyze and interpret literature, students will demonstrate through close textual analysis and interpretation of fiction, poetry, nonfiction and drama an understanding of the relationship between the form of a literary work and its meaning. The course offers students regular opportunities to refine creative, personal and critical essay writing skills, employing various strategies to generate and organize their ideas, draft and revise clear, focused, and coherent compositions and evaluate their own writing. All twelfth grade students must complete a comprehensive research project, the Senior Paper, as a course requirement. Representative texts include William Shakespeare's Hamlet, Toni Morrison's Song of Solomon, Jhumpa Lahiri's Interpreter of Maladies, William Golding's Lord of the Flies, Albert Camus' The Stranger, Margaret Atwood's The Handmaid's Tale, Ta Nehisi Coates' Between the World and Me, Ryan Coogler's Fruitvale Station, David Mamet's Oleanna.

Students enrolling in 12 Accelerated should expect to read 50 pages per night; in 12 Honors 40 pages; in 12 College Prep 25 pages. Similarly, writing amounts vary by level.

Integrated Senior Studies Acc: The Greater Boston Project Acc (0491): This course explores how individuals and groups have worked throughout history to effect change in Greater Boston. Students will look at various historical moments through a variety of different lenses - population, government, economy, education, and arts and leisure - and consider how these have molded what Greater Boston has become today. The course of study is expressly interdisciplinary, as skills from the disciplines of English, history, and mathematics are brought together to explore Greater Boston's past and present. The course culminates in the Community Action Project, which entails collaborative exploration into and analysis of a least one area of study from the course; the project allows students to become agents of change as they work to develop, propose, present, and possibly implement their resolutions to existing real-world problems. **This is a double block, eight credit course that fulfills the senior year English requirement.**

Semester English Electives

Experimental Writing (0520): Experimental writing is an elective course designed to enable students to approach writing with a sense of freedom. Students have experiences in a variety of forms such as letters, personal narratives, journals, short stories, dramatic monologues, dialogues and one-act plays. They write poetry and experiment with different voices and styles. They have opportunities to discuss ideas and to share their writing with other students. Students are expected to complete reading and writing exercises for classroom discussion and evaluation. They are required to respond to both teacher and peer evaluation of their work and to complete the process of writing by editing their work carefully and precisely. Class time is given for individual conferences and evaluations of students' progress.

Public Speaking (0510): Public speaking is designed to enhance students' oral communication skills and to help students develop poise and confidence in public speaking situations. The course provides an opportunity to explore personal attitudes toward public speaking, the verbal and nonverbal dynamics of communication, listening skills, the speech-making process, various delivery styles and techniques and speech evaluation.

Film Studies (0530): In this course, students consider the medium of film both as audience and creator. Extensive film viewing and analysis are essential course components as students assess films both in and outside of class to develop their own aesthetic values. Students need to be able to think and write critically about film. Students study the history of film and film theory, learn to analyze their experience as an audience and place themselves within the position of director, cinematographer, editor and screenwriter by creating all elements of a film.

Journalism 1 - *The Hilltopper* (0547) or Journalism 1 - *The Hilltopper* **2 credit (0548):** This semester and full year course will focus on writing for publication and critical consumption and analysis of news media. Students will interact with a variety of article types, including news articles, features, columns, editorials and reviews. The primary emphasis of the course will be the development of all phases of our school-based newspaper, *The Hilltopper*. Students will research and write pieces, edit and layout the paper. Students who have taken the previously titled Journalism and Media class are eligible to enroll in this new offering, though it is not a prerequisite.

ENGLISH LANGUAGE LEARNERS

The English Learner (EL) Program provides ELs with systematic, explicit, and sustained English language development and meaningful participation in the Needham's general educational program. English Language Development (ELD) happens in SEI classrooms as ELs learn grade-level content along with their proficient English-speaking peers.

English language development also happens in ESL classes, when ELs are grouped together and licensed ESL teachers guide students in a systematic, dedicated, and sustained study time to develop various aspects of the English Language that proficient English-speakers already know. The goal of ESL instruction is to advance English language development and to promote academic achievement. ESL instruction includes social and academic language in all four domains including listening, speaking, reading, and writing.

Effective ESL instruction supports student success in school, including improvement of ACCESS scores and acceleration of academic achievement. Effective ESL instruction also supports long term goals such as college and career readiness.

FINE AND PERFORMING ARTS

All Visual Arts and Performing Arts courses offered may be used to meet the NHS arts requirement of 8 credits for graduation.

Visual Art Courses

Num	Length	Credit	Course	Num	Length	Credit	Course
7010	F	4	Art 1	7158	S	2	Introduction to Sculpture
7022	F	4	Art 2 Hon	7159	S	2	Digital Art and Animation
7041	F	4	Art 3 Acc	7170	S	2	Photography 1 (grades 10, 11, 12)
7031	F	4	AP Art 3 Porfolio	7175	S	2	Photography 2
7141	F	4	Art 4 Senior Studios Acc	7180	S	2	Photography 3
				7156	S	2	Digital Portfolio
7100	S	2	Ceramics 1	7193	S	2	Drafting and Linear Perspective 1
7105	S	2	Ceramics 2	7196	S	2	Drafting and Linear Perspective 2
7106	S	2	Ceramics 3	7249	S	2	Commercial Design and Production 1
7120	S	2	Crafts 1	7250	S	2	Commercial Design and Production 2
7128	S	2	Drawing & Painting 1	7257	S	2	Commercial Design and Production 3
7136	S	2	Drawing & Painting 2	7246	S	2	Motion Design
				7258	S	2	★ Product Design & Development

The Art curriculum consists of tracks: 1.) Full Year Art 1 through Art 4 sequence and semester long art courses ranging in focus and discipline. Critiques, which are class discussions of student artwork aimed at providing feedback as part of the design process, are an integral part of all Art courses. Homework is assigned on a continuing basis for all courses, and students will experience a variety of strategies dealing with personal artistic assessment. Courses are designed to enable students to meet the National Standards, the Massachusetts Frameworks in Arts Education, and the Fine and Performing Arts Processes: Creating, Responding and Presenting/ Performing. Students will also further develop Social-Emotional and 21st Century Skills in all of the Visual Art Courses.

Full Year Art Courses

Designed as a sequential curriculum and increasingly challenging curriculum, students enrolled in Art 1 through Art 4 explore the Fine Arts and create a portfolio of work which can be used to enhance the college application process, apply for College Board AP Credit (in Art 4), or to pursue careers in art and design. These courses develop a student's ability to communicate visually, an understanding of the arts historically, development of design vocabulary, creativity and problem solving skills. Homework is assigned regularly, and students become familiar with various art media, techniques, tools, and concepts to gain a broad awareness of the visual arts. Each full year art course earns four credits.

Art 1 (7010): This is the foundation course in the full year art course sequence and is open to all students. This course is required in order to be able to continue with the yearlong Art sequence. In it, students experiment with a variety of materials and processes. They learn basic visual arts concepts and vocabulary in both two and three-dimensional design. Students will draw, paint, sculpt, and work with printmaking. They will work with the elements and principles of design that constitute a language common to all the visual arts. In this course, homework is assigned on a continuing basis.

Art 2 Hon (7022): Art 2 Honors builds upon the fundamentals developed in Art 1 at a more complex, meaningful level. Art 2 challenges the student to begin a personal investigation of how and why people make art while still learning to see and grow as an artist. As the bridge that connects Art 1 to Art 3 Advanced Placement and Accelerated courses, a greater time commitment and level of investment is required. Activities, homework assignments, and in class pieces will continue improving technical and conceptual skills. Students

will be required to make artistic decisions independently as they begin to develop a personal voice and style. Assignments include both two- and three-dimensional media, such as drawing, painting, printmaking, design, and sculpture. Students are also introduced to a variety of artists and their work, in order to connect art history and aesthetics with contemporary practice. In-class critiques, reviews, and self-assessments take place on a regular basis. Weekly homework completion, sketchbook assignments, and the development of a second year portfolio are basic expectations of Art 2 Honors. Successful completion of Art 2 Honors will result in a portfolio of works that may be included as a portion of a student's "breadth section" portfolio in Art 3 Advanced Placement or Accelerated. (Prerequisite: Art 1 or both Drawing & Painting 1 and 2, or permission of the department with a portfolio review)

Art 3 Acc (7041): Expanding upon skills developed in Art 1 and 2, Art 3 students work towards mastery of technical skills in a range of two and three-dimensional media. Students focus on their personal growth and strive to develop a personal voice in their work. A high level of competence will be expected with project development and problem solving, as these skills enable students to push the boundaries of visual concepts and thematic focus. Students must have a strong grasp of the Elements of Art, the Principles of Design, and participate in critical analysis of their work. There will be a heavy homework obligation. A portfolio will be assembled for students to use during college interviews. (Prerequisite: Art 2)

AP Art 3 Portfolio (7031): This course will enable students to produce a large portfolio of artwork to apply for AP college credit and/or college/art school admission. Work must show evidence of a high level of competence in project development, visual problem solving, technical skill, personal expression and understanding of the elements and principles of design. This advanced placement course carries a heavy homework obligation. It challenges students to experiment with many materials, techniques and ideas. Critical analysis and assessment are important components of the course. This analysis will aid students in creating quality works demonstrating both breadth and thematic concentration. The course is open to juniors and seniors. (Prerequisite: Art 2 and teacher recommendation)

Art 4 Senior Studio Acc (7141): This is a challenging course that is intended for students who are working toward a sense of mastery and personal growth in their work. This course is for students who are willing to take risks to develop personal ideas and to refine them into skillfully and finely crafted statements. Students will continue preparing and assembling a portfolio that may be used for college admissions and/or scholarships, whether or not they are art-school bound. Part of the class time is devoted to critical analysis of student work and individual assessments. Throughout the year, students participate in curating exhibits at various locations. (Prerequisite: Art 3 Accelerated or AP Art 3 Portfolio, or departmental permission)

Semester Art Courses

The Fine Arts program includes a variety of semester length two credit courses. These courses are open to all students. Please note the sequential nature of courses, and be sure to register for the proper level. All students should register for the first level as the entry into a specific course sequence, unless they have Department permission to do otherwise. Homework is assigned on a regular basis.

Ceramics 1 (7100): This semester course introduces students to the use of clay as a medium for art expression. Students will have the opportunity to explore the properties of clay, the history of clay, and create functional and sculptural pieces. Each student will experience the three basic hand building methods (pinch, coil, slab), the basics of the wheel, various surface decoration techniques, and the glazing and firing of all completed pieces.

Ceramics 2 (7105): A continuation of Ceramics 1, this advanced course will engage students in more sophisticated techniques using clay and glazes. Students will learn more complex hand building and wheel throwing techniques, with emphasis on developing personal styles of expression and design concepts. Students will learn and participate in the complete cycle of processing a ceramic work from the recycling of clay to the firing process. (Prerequisite: Ceramics 1)

Ceramics 3 (7106): A continuation of Ceramics 2, this course is designed for students who want to challenge themselves and master the medium of clay. Building on the skills and techniques developed in Ceramics 1 and 2, students will be presented with complex visual challenges that will require them to develop, design, and create solutions through hand building and the potter's wheel. A main focus of the course will be for students to design their own unit to explore individual interest and style in depth. (Prerequisite: Ceramics 2)

Commercial Design & Production 1 (7249): This semester course, formerly Graphic Design 1, presents a broad range of assignments based on the principles of design and typography. Students learn by progressing through a series of hands-on projects using Adobe Illustrator and Adobe InDesign. Digital cameras and scanners are used for some of the projects. Students will be constantly challenged to stretch their creative and critical sensibilities through design.

Commercial Design & Production 2 (7250): This is an advanced course, formerly Graphic Design 2, that provides students with computer based graphic design and production experience through teacher assigned layout and printing projects. It builds upon the skills developed in Commercial Design & Production 1, with an increased focus on real world applications of these skills. Students work extensively with the Adobe Illustrator program, as well beginning to use some of the Production equipment to create t-shirts, programs, posters and other media. Class assignments require the independent application of design principles and the use of the Production Lab to complete a final product. Field trips and class speakers expose students to both college and career opportunities in the field of graphic arts and design. (Prerequisite: Commercial Design & Production 1 or permission of the department).

Commercial Design & Production 3 (7257): This semester course, which utilizes the Graphics Production Lab, is for students who wish to gain skills in graphics production. Students interface with customers and are involved in all aspects of job production, including interviewing clients, designing, estimating cost, planning, purchasing materials, and the production of the final product. Examples of projects include concert programs, posters and event T-Shirts which are used by the school and community. Due to client requirements, students may need to work beyond the school day to meet deadlines. Successful students may have the opportunity to become paid interns in the summer Graphics Production program. (Prerequisite: Commercial Design & Production 2 or permission of the department)

Crafts 1 (7120): Students design and create utilitarian and non-functional works using a variety of techniques and materials. A wide variety of crafts media, forms and techniques from diverse cultures are explored. Assignments emphasize the fundamentals of good design, visual creativity, technical skill, and craftsmanship.) Students compare and contrast 'Crafts' with other forms of visual art.

Digital Art & Animation (7159): This course, open to all students, engages students with the world of computer generated art including digital painting and animation. This course takes place in the Fine and Performing Arts Computer lab. Students learn Photoshop, Flash, and other appropriate software to create works of art. Upon successful completion of this course, students will be ready for more advanced creative work in the areas of Photography, Graphic Design, and other arts media that utilize the potentials of 21st Century digital tools.

Motion Design (7246): This semester course is for students wishing to take the skills they have obtained through Digital Art, Design and Animation, and expand and utilize them in the study and creation of 3D renderings and more complex animation. A variety of digital creating tools will be used, such as Maya, as well as, non-digital animation techniques, such as stop motion. (Prerequisite: Digital Art and Animation)

Digital Portfolio (7156) This semester course is designed to allow advanced art students who have successfully completed Photo 3, or Commercial Production 2, to use their digital art skills and accumulated works to create a portfolio of expressive works suitable for submission to college, and/or possibly for AP submission. Interested students should consult their Art teacher and/or the Director of Fine & Performing Arts to ensure they are qualified for this course. (prereqs: Photo 3, Graphic Design 2, Commercial Production, or permission of the Department)

Drafting & Linear Perspective 1 (7193): This semester course, open to all students, is ideal for those who enjoy a more mathematical and technical approach to drawing. Students will be introduced to the fundamentals of drafting, and the representation of three dimensions on a two dimensional plane by using 1 and 2 point perspective. Students will design and draw from observation and imagination, applying the elements and principles of design. A 3D construction unit will give students the opportunity to articulate design decisions in real space, as determined by a specific challenge and set of criteria. Students will be expected to participate in mini-lectures, coursework critiques and reflections.

Drafting & Linear Perspective 2 (7196): This semester course develops and builds upon the content explored in Drafting and Linear Perspective 1. During this class, students will work from observation and imagination, finding new applications for rendering in 2 point perspective and will also undertake a drawing that uses three vanishing points. As with Drafting and Linear Perspective 1, there will be at least one 3D challenge. Reference will be made to specific historical architectural styles and developments , to enrich and inform the student's aesthetic and design decisions. (Prerequisite: Drafting & Linear Perspective 1, or permission of the department)

Drawing & Painting 1 (7128): This semester course develops and refines fundamental drawing and painting skills as a vehicle for thinking, seeing, and communicating. Using a wide variety of tools and techniques, students learn to develop, thoughtful and well-crafted pieces drawing from a broad range of subjects. Students produce imaginative and inventive works and explore the many ways of creating the illusion of space. Painting media may include water, collage, tempera, and acrylic. Students will complete visual journals and study color theory, value and rendering, positive and negative space, and qualities of line and shape. This course is designed to provide a solid foundation for students interested in the fields of art, architecture, graphic design and aesthetic appreciation. Upon successful completion of both Drawing and Painting 1 and Drawing and Painting 2, students may present their portfolio to the department to determine eligibility for Art 2 Honors.

Drawing & Painting 2 (7136): This course is a continuation of Drawing & Painting 1. Students will expand and refine their drawing and painting skills and utilize a wide variety of tools and techniques to communicate visually. Journals, self-analysis, and daily critiques are an important part of the course. Upon successful completion of both Drawing & Painting 1 and Drawing & Painting 2, students may present their portfolio to the department to determine eligibility for Art 2 Honors. (Prerequisite: Drawing & Painting 1 or permission of the department)

Introduction to Sculpture (7158) This introductory semester art course is suitable for all levels, as students discover the many forms that sculpture can take. Through hands-on explorations of various 3D media, such as wire, wood, plaster, cardboard, fabric and found objects, students will create complex and personally expressive sculpture. They will explore the physical and social contexts in which traditional and modern sculpture is created, as well as consider the historical meaning, function, and style of past and current three-dimensional art. A wide range sculptural disciplines will be touched upon, which may include realistic, figurative, abstract, kinetic and site specific/public works. Although there is a minimal amount of homework, students will be expected to incorporate the principles and elements of design, demonstrate skills that build off of each other, conduct research, create models, and participate in critiques and

proposals during their studio time. Please note: Though all sculpture students will be involved in a kinetic sculpture unit, when the schedule allows, interdisciplinary collaboration with the robotics class will take place for this particular unit.

Photography 1 (7170): This course gives students an introduction to shooting, processing, printing black and white photographs, as well as digital photography and computer enhancing/manipulation techniques. Students learn the fundamentals, including how manual cameras work and understanding exposure. Skills in the darkroom and Adobe Photoshop are also developed. Students engage in creating a series of photographs that require them to manipulate the camera to solve specific challenges. When not shooting, processing, or in the darkroom, in class assignments strengthen students' design and conceptual skills. The work of several photographers will be introduced throughout the course. A daily journal and sign out of equipment is required. Since this course will include outside of class photo shooting, students must have access to a digital camera for their personal use. **This course is only open to students entering grades 10, 11 or 12.**

Photography 2 (7175): This course is a continuation of Photography 1 and provides the student with increased experiences in producing high quality black and white photographs. Students progress through a series of incrementally challenging assignments using traditional photography techniques. Advanced techniques are designed to help students develop the skills necessary to translate creative ideas into more personal and compelling images. Since this course requires outside of class photo shooting, students must have access to a digital single lens reflex (DSLR) camera for their personal use. (Prerequisite: Photography 1)

Photography 3 (7180): This course is designed for the student who has successfully completed Photography 1 and 2. Students will intensify their use of photography, both traditional and digital, as a means of self-discovery and personal expression while expanding and refining technical control of the medium. Students will learn to identify and articulate a personal response to the environment. The course emphasizes visual problem solving through in-depth photo essays. Since this is an advanced course and requires outside of class photo shooting, students must have access to a digital single lens reflex (DSLR) camera for their personal use. (Prerequisite: Photography 2)

 **Product Design and Development (7258):** In this two credit semester course students will develop and design products, focusing on toys, board games, and musical instruments. They will use the Design Thinking process while creating, testing, and refining the product. Students will explore the design development process in the fields of Product and Toy Design from conceptualizing/ problem solving, drawing, creating presentation boards, models, prototyping etc. The course will cover the importance of functionality, ergonomics, preserved value, play patterns, and demographic needs. The history of product, toy and instrument design will be incorporated to inform student design decisions. They will use simulations and statistics to predict game flow/outcomes; study the physics behind the instruments/sound to inform their design. Instruction includes lectures, literature, design critiques and hands on modeling & utilizing the tools in Studio 605 and The DaVinci Workshop.

Pre-requisites: This course is primarily for students in grades 10-12, who will benefit from having taken Digital Art & Animation; Commercial Design & Production 1; or Engineering Design 101 courses offered at NHS.

Performing Art Courses

Num	Length	Credit	Course	Num	Length	Credit	Course
8020/ 8029	F	4	Concert/Symphonic Band	8100	S	2	Technical Theater
8011	F	4	Symphonic Band Acc	8150	S	2	Theater Arts 1
8036	F	4	★Jazz Ensemble (after school)	8157	S	2	Theater Arts 2
8040	S	2	Jazz Improvisation	8116	S	2	Music Studio 1: Song Writing
8060	F	4	String Orchestra	8117	S	2	Music Studio 2: Production and Film Scoring
8061	F	4	String Orchestra Acc	8075	S	2	AP Music Theory 2
8085	F	2	After School Chorus	8070		2	Music Theory 1
8080/ 8077	S	2	Chorus/Bella Voce Chorus	8123	S	2	Contemporary Music Ensemble (after school)
8081/ 8041	F	4	Chorus Acc/ Bella Voce Chorus Acc	8125	S	2	Guitar Class 1
8074	F	4	Concert Chorale	8126	S	2	Guitar Class 2
8051	F	4	Concert Choral Acc	8127	S	2	★Guitar Ensemble
8055	S	2	★Chamber Music	8135	S	2	★Piano Lab 1

All Performing Arts courses are designed to meet the National Standards and Massachusetts Frameworks in Music or Theater Education and the Fine and Performing Arts Domains: Creating, Responding and Performing. Performing Arts courses are divided into two categories: Performance Courses and Semester Classroom Courses. Performance Courses require students to continually refine their performance skills and to participate in public performances outside of the regular school day. Semester classroom courses do not require public performance.

PERFORMANCE COURSES

Concert/Symphonic Band (8020/8029) The High School Band is a full year, 4 credit performance course open to students in grades 9 through 12 who have previously or are currently studying a band instrument (e.g., Woodwind, Brass, or Percussion) at an intermediate to advanced level. The band program is divided into two groups, the Concert Band and the Symphonic Band, based upon playing ability (auditions), teacher recommendation, and balanced instrumentation between the bands. In both ensembles students will study music of a variety of styles and time periods in preparation for concert performance. Rehearsals will include section and/or small ensemble development in addition to the large ensemble playing. The Concert and Symphonic Bands perform in high school concerts, evaluation festivals, and community events throughout the year. Band is a four-credit course. Public concerts are part of each band's formal curricula and attendance at them is mandatory. (Prerequisite: Previous experience playing a traditional band instrument in an ensemble. Membership in Concert or Symphonic Band is required to audition for Jazz Ensemble, District and All-State Festivals)

Symphonic Band Acc (8011): Students enrolled in Symphonic Band may elect to take Symphonic Band Accelerated to receive academic credit for advanced study and performance on their chosen instrument. Students enrolled in this course must meet all of the Symphonic Band requirements, study their instrument with an approved private instructor, audition for District/Honors groups, perform in an additional ensemble beyond the regular school day, and present a formal solo for their instrument in a recital once each semester. In addition, Symphonic Band Accelerated students are expected to attend one non-Needham formal concert each marking period and complete a written review of the event. (Prerequisite: a minimum of one year's previous experience in high school band or department permission)

★**Jazz Ensemble (8036):** This year long, 4 credit performance class is open to students by audition only. Instrumentation is for standard Big Band (i.e. saxophones, trumpets, trombones, piano, guitar, bass and drums). The Jazz Ensemble studies and performs a wide range

of music, including Swing, Latin, Funk, and contemporary Jazz. Rehearsals emphasize understanding and playing the various styles, as well as balancing and blending within sections and the entire ensemble. Students also work on improvisation, scales, modes and chord construction. Auditions are held in the spring and the ensemble meets after school throughout the school year. The Jazz Ensemble performs at school concerts, an evaluation festival, and various school and community functions; these public concerts are part of the formal curricula and attendance at them is mandatory. (Prerequisite: Students must be members of Concert Band, Symphonic Band, or Marching Band to be eligible for Jazz Ensemble)

Jazz Improvisation (8040): The purpose of this one semester, 2 credit course is for students to develop confidence in independent playing and in the art of spontaneous composition in a jazz style. Students start by learning blues progressions, followed by other typical chord changes and progressions. Additionally, students engage in considerable study of scales, chords, and combo playing. Students are placed in groups according to their ability. (Prerequisite: At least two years successful performance in a middle or high school performing ensemble, or permission of the instructor)

String Orchestra (8060): The String Orchestra is a full year, 4 credit performance course open to students in grades 9 through 12 who have previously or are currently studying an orchestral string instrument. Students pursue the development of instrumental technique and musicianship through the study of orchestral works from various stylistic periods. Students receive coaching in sight-reading, ear training, and theory. There is opportunity for interested students to explore the art of conducting. Solo literature and chamber music are explored as well. The Orchestra performs at school concerts and at various evaluation festivals and community events throughout the year. Public concerts are a formal part of the orchestra's formal curricula and attendance at them is mandatory. (Prerequisite: Previous playing experience in an orchestral style ensemble or department permission. Membership is required to audition for District and All-State Festival Orchestras.)

String Orchestra Acc (8061): Students enrolled in String Orchestra may elect to take String Orchestra Accelerated to receive academic credit for advanced study and performance on their chosen instrument. Students enrolled in this course must meet all the classroom and performance requirements of the String Orchestra, along with studying their instrument with an approved private instructor, auditioning for District/Honors groups, performing in an additional ensemble beyond the regular school day, and presenting a formal solo for their instrument in recital once each semester. In addition, Accelerated students are expected to attend one non-Needham formal concert each marking period and complete a written review of the event. (Prerequisite: a minimum of one year previous experience in high school String Orchestra or department permission)

After-School Chorus (8085): This two credit year long course (known as "Vocale" when performing) is specifically for those students who wish to continue to have a formal choral singing experience, and are not able to enroll in the major choral classes, such as Chorus or Bella Voce due to scheduling conflicts. The After-School Chorus meets on Tuesdays and Thursdays from 2:45 to 3:45 pm. Attendance at these after school classes is required as with any other credit bearing course. After School Chorus students take part in all major concerts that the other choruses perform in, with the students sometimes singing as a separate ensemble, while also joining the other choral groups for a large choral ensemble experience. These concerts are a formal part of the curriculum and attendance at them is mandatory. After-School Chorus students are eligible to audition for District and All-state groups. As the class only meets for half the time of the daytime choral classes, students will experience and learn fewer selections. As a result, successful After-School Chorus students are encouraged to enroll in the full time daytime choruses when possible.

Chorus (8080)/Bella Voce Chorus (8077): The High School Chorus is a full year, 4 credit performance course open to all students in grades 9-12. No previous formal vocal experience is needed. Chorus students sing a wide variety of choral literature representative of different styles by contemporary and historical composers. Students perform four and eight-part music, both accompanied and a cappella. When there is a large number of soprano/alto voices, a separate treble voice only chorus (Bella Voce Chorus) may be scheduled in order to provide appropriate instruction. In addition to selections performed by the entire group, students are provided with opportunities to form smaller groups within the chorus. Student conductors and accompanists have opportunities to develop their skills when appropriate. All students participate in class voice activities and develop poise and listening skills. The chorus performs for high school concerts and community programs throughout the year. Public concerts are a formal part of each chorus' curricula and attendance at them is mandatory. The student must be a member of chorus in order to audition for District and All-State Festivals.

Chorus Acc (8081)/Bella Voce Chorus Acc (8041): Students enrolled in Chorus or Bella Voce Chorus may elect to take the Accelerated option to receive academic credit for advanced formal vocal study and performance. In addition to meeting all of the classroom and performance requirements of the Chorus, students enrolled in this course must study privately with an approved vocal instructor, audition for District/Honors groups, perform in an additional vocal ensemble outside of Chorus on a regular basis, and present a formal vocal solo in a recital once a semester. Chorus Accelerated students are expected to attend one non-Needham formal concert each marking period and complete a written review of the event. (Prerequisite: a minimum of one year of previous experience in high school chorus or department permission)

Concert Chorale (8074): Concert Chorale is a full year 4 credit performance course open to students in grades 9-12 by audition. It is an advanced mixed vocal ensemble usually numbering between 24 - 30 students. Auditions for the group take place in the spring. Music studied/performed ranges from the Renaissance period through contemporary genres and is meant to challenge the most serious, advanced student singers. Chorale students may audition for District and All-State Festivals. The Chorale performs a minimum of two

public performances each year, as well as at a variety of community events and regional festivals. Public concerts are a formal part of the chorale's formal curricula and attendance at them is mandatory. (Prerequisite: Successful completion of the audition)

Concert Chorale Acc (8051): Students enrolled in Concert Chorale may elect to take the Accelerated option to receive academic credit for advanced formal vocal study and performance. In addition to meeting all of the classroom and performance requirements of the Chorus, students enrolled in this course must study privately with an approved vocal instructor, audition for District/Honors groups, perform in an additional vocal ensemble outside of Chorus on a regular basis, and present a formal vocal solo in a recital once a semester. Chorus Accelerated students are expected to attend one non-Needham formal concert each marking period and complete a written review of the event. Public concerts are a part of the chorale's formal curricula and attendance at them is mandatory. (Prerequisite: a minimum of one year of previous experience in high school chorus or department permission)

Chamber Music (8055): This semester long, 2 credit performance class is open to students by audition only. Students will be placed into small Chamber Music groups. In this class students will further develop their range of musical skills through a vast and varied chamber music repertoire. They will also further develop interpersonal and collaboration skills, and their individual artistry. Class meetings will be split between coachings, student led rehearsals, masterclass performances, and training in score study and rehearsal techniques. Prerequisite: Previous experience playing in an ensemble and completion of a successful audition.

Contemporary Music Ensemble (8123): This year-long, 2 credit performance course is open to students interested in studying and performing contemporary music. The course will cover song styles, forms, and techniques in genres ranging from blues, folk, rock and roll, rhythm & blues, pop, and hip-hop. The goal is to provide students with the tools to evaluate and create music by working with each other, and to use critical thinking and teamwork beyond the traditional classroom. Due to the nature of the ensemble, enrollment may be limited with preference given to students with demonstrated contemporary performance skills or experience. This course will meet regularly for the school year outside of the normal school day. The actual schedule of meetings will be established in the spring for the following year with enrolled students notified in advance. Students unable to commit to the course meeting requirements will not be able to remain enrolled. Interested students should contact the Fine & Performing Arts Director for more information.

Guitar Ensemble (8127): Guitar Ensemble is a full year, 2 credit class that gives students the opportunity to play classical guitar in a performing ensemble. The majority of instruction will be in classical music. This course emphasizes skill-based knowledge such as reading music notation, classical guitar finger technique, strummed and plucked chords, learning dynamics and articulations, and playing two, three, and four-part pieces in an ensemble. Students will learn left and right-hand fingerings, major and minor scales, and playing in position. Students will play on classical nylon string guitars and have a foot stand. Students will participate in school concerts.

Theater Arts 1 (8150): This semester, 2 credit course, open to all students, provides practice for the beginning/intermediate actor in voice, movement, and performance using scenes from a variety of plays, as well as improvisation and mime. Students learn the skills of projection and characterization by performing and critiquing scenes from plays and by developing original characters in specific settings. Class activities will culminate in at least one formal production in front of an audience. Preparation for this performance may require additional instructional time beyond the normal school day. No prior theatrical experience is necessary.

Theater Arts 2 (8157): This advanced theater 2 cedit course builds upon and extends the skills developed in Theater Arts I. Emphasis in this course is on presentational acting techniques, scene analysis, and directing principles. Students will refine their skills by studying, analyzing, and performing a wide variety of scenes representing multiple genres of theatrical style and craft. Class activities will culminate in at least one formal production or presentation in front of an audience. Preparation for this performance may require instructional time beyond the normal school day. (Prerequisite: Theater Arts I or permission of the instructor. Students who have successfully completed both Theater Arts I and II may re-enroll in Theater Arts II for added credit with permission of the Department.)

SEMESTER CLASSROOM COURSES

Music Studio 1: Song-Writing (8116): This one semester 2 credit course teaches students the skills and concepts needed for song-writing. They will compose original music using computers, software, and cloud based applications. Students will learn the same processes and tools that today's composers and recording artists use. Students will learn the basics of music technology, computer usage, music notation, composition, arranging, and theory to help them as they go through this process. This course has no prerequisite and is designed for students to be successful without having any previous formal musical training.

Music Studio 2: Production & Film Scoring (8117): This one semester 2 credit course builds upon the skills and concepts taught in Music Studio 1. Students will expand their use of technology and software to explore music production, including film scoring, in greater detail. By the end of this course, students will feel comfortable creating original music and bringing it to a level suitable for recording and public performance. When possible students may have the opportunity to create musical scores for visual art animations and film clips. (Prerequisite: Music Studio I or permission of the instructor)

Music Theory 1 (8070): This one semester course covers the basics of music theory and ear training, including scales and modes, intervals, triads and seventh chords, harmony, non-harmonic tones, part-writing, and form and analysis. Students will use the music

Piano Lab 1 (8135): Piano Lab 1 is a 2 credit semester class that gives students the opportunity to learn the basics of piano playing. This class is open to all students. Students will learn about melody, accompaniment, scales, chords, proper fingering technique, music reading, and performance skills including recognizing key signatures, meter signs, rhythmic patterns, dynamic markings, music on the grand staff, and common chord progressions. Students will play on electric keyboards. Students will participate in classroom recitals and performance assessments.

Technical Theater (8100): Technical Theater is a 2 credit semester class which provides an opportunity for students to explore and create the design for a theatrical set. Students will engage in the process of both designing and building a set, often using one of the high school theatrical productions as the working example. Lighting and sound design may also be included.

technology lab for ear training, music writing assignments, and drill and practice programs. Any student interested in pursuing formal music instruction at the college level should enroll in this course, in addition to their performing ensemble course. (Prerequisite: the ability to read traditional music notation)

AP Music Theory 2 (8075): In this one semester 2 credit course, students build aural and written music skills through intensive study in ear training, sight singing, melodic and harmonic dictation, part writing, form and analysis, and score reading. Further harmonic study will focus on seventh chords, non-chord tones, secondary dominant and leading tone chords, and modulation. The emphasis in the class is on developing written and listening skills; there is much drill and practice on scales, intervals, and chords, as well as utilizing harmonic, melodic, and rhythmic dictation. Students use the music computer lab throughout the class. This course is designed to enhance preparation for the College Board's Advanced Placement Music Theory Exam given in the Spring. (Prerequisite: Music Theory I or permission of the instructor)

Guitar Class 1 (8125): This 2 credit semester course is an introduction and exploration of the guitar as a personal performance instrument for life-long enjoyment and pleasure. Focus will be on learning the basics of playing the guitar. Daily warm ups, chords, scales, song forms, voice leading, note reading, and accompanying with a steady beat will be taught. The majority of music taught will be folk music, classic rock, some classical repertoire, and contemporary hits. Beginning Guitar students and students with previous guitar experience will find the course essential to establishing a strong foundation in their development of Guitar Technique and overall musicality.

Guitar Class 2 (8126): This 2 credit semester course builds upon skills acquired in Guitar Class 1. Continuation of daily warm ups, chords, scales, song forms, voice leading, note reading, and accompanying with a steady beat will be taught. Students will develop more complex performance skills such as finger style picking, solos, accompaniments. The majority of music taught will be classic rock, classical repertoire, and contemporary hits. (Prerequisite: Guitar Class 1 or permission of the department)

MATHEMATICS

Num	Length	Credit	Course	Num	Length	Credit	Course
2023	F	4	Integrated Math 9	2332	F	4	Statistics Hon
2033	F	4	Math 9	2333	F	4	Fundamentals of Calculus and Statistics
2022	F	4	Math 9 Hon	2475	S	2	Critical Thinking in Math
2021	F	4	Math 9 Acc	2613	S	2	Principles of Accounting
2031	F	4	Advanced Math 9 Acc	2615	S	2	Personal Finance
2113	F	4	Algebra 2	2489	S	2	Robotics
2122	F	4	Algebra 2 Hon	2466	S	2	Engineering Design 101
2013	F	4	Geometry	2467	S	2	Computer Aided Design and Manufacturing
2082	F	4	Geometry Hon	2482	S	2	Introduction to Computer Science
2091	F	4	Geometry Acc	2476	S	2	Computer Programming Fundamentals
2043	F	4	★Integrated Math 10	2488	S	2	AP Computer Science Principles
2133	F	4	Advanced Algebra and Trig	2490 2496	F S	4 2	Junior/Senior STEM Capstone/Junior/Senior STEM Capstone 2cr
2203	F	4	Pre-calculus	9898	F	4	Work Study
2212	F	4	Pre-calculus Hon	2311	F	4	AP Calculus AB
2221	F	4	Pre-calculus Acc AB	2321	F	4	AP Calculus BC
2231	F	4	Pre-calculus Acc BC	2331	F	4	AP Statistics
2302	F	4	Calculus Hon	2481	F	4	AP Computer Science
				0491	F	8	The Greater Boston Proj Acc

The mathematics program at Needham High School provides a comprehensive curriculum offering all students a rich and engaging experience. The main focus of the program is on teaching important and essential mathematics skills necessary for problem solving. The program's aim is to allow all students to reach their fullest potential as a critical and logical thinker. The program's balanced approach works on developing skills necessary for success in today's society. Accelerated and Advanced Placement courses are designed for students who demand especially challenging academic experiences and who are comfortable working with advanced materials. Although the course content at each grade are consistent, the pace and depth are different at each level.

Students will learn and practice skills emphasized in the Massachusetts State Frameworks and the Common Core Curriculum. Additionally, throughout our curriculum, emphasis will be given to these eight Mathematical Practices identified in the Massachusetts State Frameworks and Common Core curriculum:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Graphing calculators are an essential everyday tool for learning mathematics, so students in every mathematics course will need to have a graphing calculator. The NHS Mathematics Department requires that all of our students to acquire a graphing calculator on their own. The Needham High School Mathematics department uses the TI-84, TI-84 silver edition and the TI-84 color edition. A calculator purchased at the start of a student's high school career will be useful for class work, homework, and assessments in math and science classes through all four years of high school. Additionally, students will be allowed to use a graphing calculator on MCAS, SAT, and AP exams. The Mathematics Department has a limited supply of graphing calculators that we are able to loan out to students who request one (in person) at the start of the school year.

Mathematics courses at NHS also make use of a variety of computer programs and web-based applications where relevant to the curriculum. Some of these programs and applications include algebra and geometry software, spreadsheets and programming environments.

MCAS Math Review: Students who score within the needs improvement range or below on the grade 8 MCAS exam will be invited to enroll in this small group instructional program. The intent of the course is to help students bring their math up to an appropriate level. This course is taken in addition to a regular math course. The course relies on grant funds and will run provided adequate funding is received. The school will assign students to this course.

Integrated Math 9 (2023) Integrated Math 9 will take an integrated approach to the study of Algebra and Geometry. This course supports all students as they develop and strengthen computational fluency and develop conceptual understanding of the connections between algebra and geometry. Students will learn through discovery and application, developing and reinforcing the skills they will need to break down complex problems. Topics in this course include yet are not limited to: number sense and operations, graphing linear functions, linear equations and their application, and coordinate geometry. Graphing Calculators will be used throughout the course.

Math 9 (2033, 2022, 2021) Math 9 will formalize and extend the mathematics that students learned in Math 8. The approach to the units of study in this course will deepen and extend students' understanding of linear and exponential relationships, contrast linear and exponential relationships and engage in methods for analyzing, solving, and using quadratic functions. Students will extend their knowledge of the laws of exponents to square and cube roots. Other units of study include the study of absolute value functions, piecewise-defined functions, polynomial functions, exponential functions, logarithmic functions, and rational functions. Students will explore their study of functions using a graphical, numerical and algebraic approach. Circles and other conic sections will be studied from algebraic and geometric perspectives. Students will also use descriptive statistics to summarize, represent, and interpret one-variable and two variable data involving categorical or quantitative variables, with an emphasis on linear modeling and regression. Students enrolled in Math 9 Accelerated should gain the foundation necessary to be recommended for the Pre-Calculus Accelerated-AB. Graphing Calculators will be used throughout the course. Students who take and pass Math 8 Accelerated will be placed in Advanced Math 9 Accelerated (2031) or Geometry Accelerated (2091)

Advanced Math 9 Acc (2031) Advanced Math 9 Accelerated will formalize and extend the mathematics that students learned in Math 8 Accelerated by reviewing the essential topics from Math 8 Accelerated, and finish any remaining topics which are taught in Math 9 Accelerated but not covered in Math 8 Acc. Other units of study include but not limited to are: matrices, conic sections, and statistics and probability. Throughout the course, students will engage in problem-based learning projects as a means to demonstrate mastery and application of all mathematical concepts. Additional topics covered will be drawn from the Model Advanced Quantitative Reasoning Common Core standards. Graphing Calculators will be used throughout the course.

Algebra 2 (2122 and 2113) Algebra 2 takes a graphing, algebraic and numerical approach to the study of functions. This course will study concepts associated with different types of functions such as linear, quadratic, polynomial, exponential, logarithmic, radical, and rational. Other concepts in the course will also include sequences and series and selected topics in probability and statistics. Graphing Calculators will be used throughout the course.

Integrated Math 10 CP (2043) Math 10 Integrated blends the study of Algebra and Geometry and is a continuation of Math 9 Integrated. This course is aligned to the Massachusetts Curriculum Frameworks in order to prepare students for the Grade 10 MCAS Mathematics Exam. Math 10 Integrated will extend students' geometric knowledge and introduce students to quadratic expressions, equations, and functions, while exploring their relationships. Students will learn the skills they need to break down multistep problems and demonstrate their knowledge in various algebraic and geometric situations. Throughout the course, connections between algebra and geometry will be emphasized. Course topics include extending the number system; further study of linear relationships, descriptive statistics, quadratic functions, expressions and equations; factoring as well as area, volume, congruence, similarity, quadrilaterals, coordinate geometry and circles.

Geometry (2091, 2082, 2013) Geometry uses both an investigative and a deductive reasoning approach to the study of plane, solid, and coordinate geometry. Students at all levels will study straight-line figures, circles, transformations, right triangle trigonometry, area, volume, similarity, and proof. The emphasis on proof will vary by level. Geometry software is used throughout the year to allow students to investigate geometric principles.

Advanced Algebra and Trigonometry (2133): Advanced Algebra and Trigonometry allows students to further strengthen their algebra skills while studying new algebraic concepts and trigonometry before enrolling in a Pre-Calculus course. Students are required to have a graphing calculator as they will be used throughout the course (Prerequisite: Algebra II)

Pre-Calculus (2203 and 2212): Pre-Calculus is an extension of topics introduced in Algebra II is designed to strengthen and broaden students' mathematical skills in order to prepare them for a course in calculus. Units of study in this course will allow students to develop their understanding of general functions concepts. Students will also expand their knowledge of Trigonometry and elementary Analysis. Students are required to have a graphing calculator as they will be used throughout the course. This course is recommended for students who have achieved a B- or better in Algebra II and Geometry.

Pre-Calculus Acc-AB (2221): Pre-Calculus Accelerated-AB includes units of study required to prepare students to take AP Calculus AB. Units of study in this course include, analysis of functions, discrete mathematics, operations with complex numbers, coordinate geometry and conic sections, and an extensive study of trigonometry. Beginning topics in calculus are also covered including limits and an introduction to the derivative. Students are required to have a graphing calculator as they will be used throughout the course. (Prerequisite: B- or better in Accelerated Algebra II and a B+ or better in Accelerated Geometry.)

Pre-Calculus Acc-BC (2231): Pre-Calculus Accelerated-BC includes units of study required to prepare students to take AP Calculus BC. Units of study in this course include, analysis of functions, discrete mathematics, operations with complex numbers, coordinate geometry and conic sections, and an extensive study of trigonometry. Beginning topics in calculus are also covered including limits and techniques of differentiation. Students are required to have a graphing calculator as they will be used throughout the course. (Prerequisite: A- or better in Accelerated Algebra II and Accelerated Geometry or teacher recommendation)

Fundamentals of Calculus and Statistics (2333): Fundamentals of Calculus and Statistics focuses on introducting students to essential concepts of Calculus and introducing students to central topics in Statistics. Units of study in this course include limits, derivatives, anti-derivatives and their applications. This course will also serve as an introductory course to statistics, which provides students the opportunity to learn statistical concepts, explore statistical properties, and apply statistical techniques in a real-world setting. Students are required to have a graphing calculator as they will be used throughout the course (Prerequisite: B- or better in Pre-Calculus College Prep or completion of Pre-Calculus Honors)

Calculus Hon (2302): Calculus Honors focuses on the understanding of Calculus using numeric, algebraic and graphical approaches. Units from differential and integral calculus provide the main themes, however some time will be taken to master topics not adequately studied in pre-calculus. Included are topics of differentiation techniques, integration techniques and differential equations. Along with the theoretical aspects of Calculus, practical applications such as business, the behavioral sciences, the social sciences, Biology, Chemistry and Physics will be emphasized. Students are required to have a graphing calculator as they will be used throughout the course (Prerequisite: B- or better in Honors Pre-Calculus, C- or better in Pre-Calculus Accelerated AB or teacher recommendation.)

AP Calculus AB (2311): AP Calculus AB includes differential and integral calculus. The course closely follows the curriculum set by the College Board. Students are expected to take the AP-AB exam and may place out of or receive college credit for one semester of Calculus. Students are required to have a graphing calculator as they will be used throughout the course (Prerequisite: B- or better in Pre-Calculus Accelerated AB, completion of Pre-Calculus Accelerated BC or A in Pre-Calculus Honors with teacher recommendation.) *Additional summer work may be required for students who have not taken Accelerated Pre- Calculus.

AP Calculus BC (2321): AP Calculus BC includes a rigorous and extensive treatment of Calculus and Analytic geometry. It parallels the year's course now given in many colleges. Students are expected to take the AP-Calculus exam and may be able to place out of or receive college credit for a year of Calculus. Students are required to have a graphing calculator as they will be used throughout the course (Prerequisite: B- or better in Pre-Calculus Accelerated BC or A in Pre-Calculus AB* with teacher recommendation.) *Additional summer work may be required for students who have not taken Accelerated Pre-Calculus BC.

Statistics Hon (2332): Statistics Honors is an introduction to data collection and data analysis. The course will expose students to statistical applications that they will likely see in other classes in the high school and in future college courses. Specific topics include data collection and display, regression, probability, statistical inference, and an introduction to the most common distributions and statistical tests. Students are required to have a graphing calculator as they will be used throughout the course. (Prerequisite: C- or better in Algebra II Accelerated, C+ or better in Algebra II Honors or successful completion of Pre-Calculus)

AP Statistics (2331): AP Statistics serves as an introduction to the major concepts and tools for collecting, analyzing and drawing conclusions from data. Students will be exposed to four broad conceptual themes: 1) Exploring Data: Observing patterns and departures from patterns; 2) Planning a Study: Deciding what and how to study; 3) Anticipating Patterns: Producing models using probability and simulation and 4) Statistical Inference: Confirming models. Students who successfully complete the course and the advanced placement examination may receive credit and/or advanced placement for a one-semester introductory college statistics course. Students completing this course are expected to take the Advanced Placement examination. Students are required to have a graphing calculator as they will be used throughout the course. (Prerequisite: B+ or better in Algebra II Accelerated, A or better in Algebra II Honors, B+ in Pre-Calculus Honors, B- or better in Pre-Calculus Accelerated AB, C- or better in Pre-Calculus Accelerated BC or teacher recommendation.)

Critical Thinking in Math (2475): Critical Thinking is an open-ended one-semester math course. It is designed to explore a wide variety of topics in mathematics with students who have completed three years of mathematics. This is a "hands-on" course, incorporating group projects using manipulatives, the calculator, and the computer. (Prerequisite: 3 years of high school math)

Introduction to Computer Science (2482): Introduction to Computer Science uses the nationally recognized Exploring Computer Science (ECS) Curriculum. This semester course is designed to introduce students to the breadth of the field computer science through an exploration of engaging and accessible topics. Rather than focusing the entire course on learning particular software tools or programming languages, the course is designed to focus on the conceptual ideas of computing and help students understand why certain tools or languages might be utilized to solve particular problems. The goal of Exploring Computer Science is to develop in students computational practices of algorithm development, problem solving and programming within the context of problems that are relevant to the lives of today's students. The course covers the first four units of the ECS curriculum: Unit 1 Human Interaction, Unit 2 Problem Solving, Unit 3 Web Design, and Unit 4 Introduction to Programming and requires the students to complete capstone project. (Prerequisite: B- or better in Math 8)

AP Computer Science (2481): AP Computer Science is comparable to a first year college course in computer science, and is designed

to prepare the student for the AP Computer Science exam. The Java programming language will be used. The course will focus on algorithm development, using concepts such as classes, linked lists, stacks, recursion, queues, trees, searching, hashing, and inheritance. It is recommended that students have access to a computer at home when taking this course. Priority will be given to students in their junior and senior year. (Prerequisites: A- or better in Introduction to Computer Science or a B or better in Pre-Calculus and Department Chair approval, or concurrent enrollment in Pre-Calculus and Department Chair approval)

AP Computer Science Principles (2488): AP Computer Science Principles provides an introduction to programming and the basic principles that underlie the field of computer science. The programming portion of the course focuses on algorithms, abstraction,and the logic behind programming languages The principles portion of the course focuses on how computers and the internet work and how technological advances are affecting society, culture, and the economy. The AP test consists of a multiple choice exam as well as a portfolio component. For the portfolio tasks, students design their own program, often with a socially useful purpose,
and research and report on the benefits and potential drawbacks of a new technological advance.(Prerequisites: B or better in Introduction to Computer Science and Math 9/Algebra 2 or Department Chair approval. Please note: priority to enroll in this course will be given to juniors and seniors)

Robotics I (2489): Robotics I is a one-semester hands-on course that will introduce students to the engineering design process through robotics. Students will be assigned challenges that will be solved by building robots to perform given tasks. Students will learn about mechanical design, software design, and electrical components. Students will also learn about actuators and sensors, and how to effectively use them when building a robot. The equipment used for the course will remain in the classroom and as such students may need to complete some of their work after school. No programming or engineering background is required. When the schedule allows, students in Robotics 1 will collaborate with students in Introduction to Sculpture for an interdisciplinary Kinetic Sculpture Unit.
(2482 or equivalent). (Prerequisite: B or better in Math 9 or Algebra 2 and Physics, or instructor permission)

Personal Finance (2615): Personal Finance is designed to provide students with the confidence and knowledge to successfully navigate the financial decisions they will face as young adults after high school graduation. Topics include budgeting, banking, credit and loans, taxes, insurance, and investing. Assignments aim to prepare students to identify and evaluate trade offs in financial decisions such as choosing a college, car, or apartment. Students will also visit local businesses to enhance their learning through meetings with professionals. Priority to enroll in this one-semester course will be given to seniors.

Principles of Accounting (2613): Principles of Accounting is a one-semester course that presents the principles of financial accounting and gives students the insight of "the language of business". The course content covers the accounting cycle as it applies to both service and merchandising businesses organized as corporations. Students will analyze and interpret various financial data and will have the opportunity to process accounting data using computers. (Prerequisite: C or better in prior mathematics courses.)

Integrated Senior Studies Acc: The Greater Boston Project (0491): This course explores how individuals and groups have worked throughout history to effect change in Greater Boston. Students will look at various historical moments through a variety of different lenses - population, government, economy, education, and arts & leisure - and consider how these have molded what Greater Boston has become today. The course of study is expressly interdisciplinary, as skills from the disciplines of English, history, and mathematics are brought together to explore Greater Boston's past and present. The course culminates in the Community Action Project, which entails collaborative exploration into and analysis of at least one area of study from the course; the project allows students to become agents of change as they work to develop, propose, present, and possibly implement their resolutions to existing real-world problems. This is a double block, eight credit course that fulfills the senior year English requirement.

Junior/Senior STEM Capstone (2490) or Junior/Senior STEM Capstone 2 credi**t (2496)** Junior/Senior STEM Capstone is independent Study course and is designed to give the self-motivated student or a small group of students the opportunity to work on a significant project of their design during school hours. Students will utilize the Da Vinci Workshop and will be expected to perform work beyond the school day. Options for learning range from scientific research and engineering projects, to work as part of scientific competitions and service learning community action projects, to other approved projects. In this course, students will write a proposal for their work, produce their results and present their work publicly in a manner agreed upon with the instructor. Prerequisites: Two teacher references that support the student's ability to work independently. Please Note: It is recommended/strongly encouraged that students do group projects. Any junior or senior is encouraged to take this course even if you are undecided about a project. Students can meet with the instructor to generate some project ideas.

Work Study - full year, 4 credits (2 Math credits) (9898) The Work Study class is designed to provide the skills needed to be successful in a work environment, as well as, provide the opportunity to earn credit for valuable work experience under school supervision. The class will meet outside of the regular school day to provide more flexibility for the students. The in-class time will focus on the skills, interactions, and knowledge needed to be successful in any job setting. Students will also acquire and apply practical math skills in order to gain a deeper understanding of how a business manages its operation, as well as, understand how to manage their own finances. Students will be required to have a job prior to enrolling and will be expected to work a minimum of 15 hours per week during the year. The class instructors will complete periodic visits to each job site and maintain contact with employers throughout the year to assess how the in-class lessons are translating to the work environment. Participation in the class is limited and must be approved by the student's parent, counselor and assistant principal. The class will be graded on a Pass/Fail scale, based on fulfillment of the classroom requirements and satisfactory performance on the job.

Computer Aided Design and Manufacturing (2467) Computer Aided Design and Manufacturing is a semester course in which students will learn the basics of Computer Aided Design using modern design software packages. Students will learn how to model

ideas for parts and assemblies on the computer similar to the way this is done in industry. Students will learn about additive and subtractive manufacturing processes, and practice creating their designs using equipment in the Da Vinci Workshop, such as a 3D printer, laser cutter, or milling machine. Students will be expected to create a culminating project. This course may require a materials fee. (Prerequisite: B or better in Math 9 or Algebra 2 and a B or better in Physics)

Engineering Design 101 (2466) Engineering Design 101 is a semester course. This course is for students who are thinking about pursuing a career in Engineering or related area. Students will learn about the tools, methods, materials, and processes used by engineers. This class will simulate the university engineering experience by giving students exposure with various aspects of the engineering profession. This course will proceed as a project based learning class involving several different engineering disciplines including aerospace, civil, electrical, environmental, mechanical and structural. As students advance through the different units they will learn problem solving, critical thinking, design skills, 3D modeling as well as other skills that are vital to becoming a successful engineer. (Prerequisite: Successful completion of Physics and Algebra 2)

Computer Programming Fundamentals (2476) Computer Programming Fundamentals is a semester course. Students will expand the computer science knowledge acquired in Introduction to Computer Science (course 2482) as well as develop or expand their computer programming skills. The course will use a contemporary programming language for students to grow their computer programming skills. (Prerequisite: 2482:Intro to Computer Science or Mathematics Department Chair approval)

MEDIA

Num	Length	Credit	Course
8455	S	2	Technology Leaders
8490	S	2	Television Communications 1
8495	S	2	Television Communications 2
8486	S	2	★Television Production
8497	S	2	News and the Web
8595	S	2	★Storytelling with Numbers
8498	S	2	★ Digital Game History & Design

Technology Leaders (8455): This help desk model course will give students a background in technical support at Needham High School. Students will be introduced to common tech problems and develop solutions in the following areas: computer software, hardware, television production, audiovisual hardware and software, and web design. Technology Leaders will assist staff and students with troubleshooting and other supports as needed. When not assisting students and staff, tech leaders will work on their independent learning project of their choosing. They will also be actively contributing to an educational technology blog. Because of the nature of the experience it will be limited to 2 students per period. This opportunity is available for the full year or a semester. Prior to course selection, a technology specialist must interview interested students.

Television Communications 1 (8490): This course is designed to enable students to learn television production skills in a hands-on team environment. Students will learn to use video as an effective form of communication and look critically at television productions to critique the medium. This includes learning to operate equipment in the television studio, working as a member of a team and serveing as a crew member for productions. Students will write scripts and direct individual and team projects. The course will provide an opportunity for you to create a variety of video productions (newscasts, public service announcements, advertisements, etc.), while developing the ability to form story ideas and effectively translate these ideas into videos using Final Cut. This course may also be used for two of the FPA graduation credits, provided the student's body of work in the course shows evidence of meeting at a satisfactory level the Creating, Responding and Performing Standards of the FPA Department.

Television Communications 2 (8495): This course is designed to enhance television production skills. Students should have a background in how to use studio/field equipment, and will be focusing on increasing skills and creativity to design a more involved production. In addition to using Final Cut as an editing tool, you will learn to create graphics using Motion. The course will also focus on students creating a mini-documentary that adheres to television industry standard guidelines of digital citizenship and fair use. This course may also be used for two of the FPA graduation credits, provided the student's body of work in the course shows evidence of meeting at a satisfactory level the Creating, Responding and Performing Standards of the FPA Department. (Prerequisite: Television Communication 1)

News and the Web (8497): This course is designed for students who wish to examine web design through the lens of news. During this class, students will learn how to critically examine news sources, further their own understanding of what news is, and tell stories through words, images, and sounds. Students will learn to apply the basics of web design, including basic graphics, layout, animation, and video production. Students will also examine their ethical role as a creator throughout this course. The course level is beginner to intermediate. This course may also be used for two of the FPA graduation credits, provided the student's body of work in the course shows evidence of meeting at a satisfactory level the Creating, Responding and Performing Standards of the FPA Department.

★**Storytelling with Numbers (8595):** Storytelling with Numbers teaches students the fundamentals of data visualization, spreadsheets, and how to communicate effectively with data. Students will learn how to use data to create an engaging, informative, compelling story. They will create their own surveys, explore survey bias, and analyze the resulting data. Students will be able to evaluate graphic representations of data and identify the purpose behind the graphic. Utilizing these skills, the class culminates in a final project with the presentation of data in what the student deems the most effective method. Included in this course are topics such as basics of spreadsheets, analyzing data and graphs, designing and analyzing surveys, importance of context, models of visual data, basics of visual design, using data to tell a story.

★**Digital Game History & Design (8498)**: This course is designed to give students an overview of digital games and game development. Students will learn about gaming history, game design, storytelling, and the psychological and sociological aspects of games and gaming. The technology behind consoles, computers, arcades, and mobile gaming platforms will be covered as well. Students will use

this knowledge to examine trends to provide their own answer to the question, "What is the future of digital games and how do emerging technologies fit in?" The culminating project of this class will be creating a choose your own adventure computer game using Twine and components of HMTL, CSS, and Javascript. Prior videogame experience and coding is recommended but not required. Topics covered include, history of video game creation, basic video game design process, storytelling and world building, gaming technology, sociology, and trends, student created games.

Television Production (8486): This course is designed to enhance television production skills in a real world setting. Students should have a background in how to use studio equipment, and will be focusing on increasing skills and creativity to design a more involved production. Students will act as a high school television production house, creating television episodes to air on The Needham Channel. Students will investigate series television and create their own ideas for an ongoing series. Students will pitch their concepts to the rest of the class and a show will be selected for production. After pitching a show idea to the teacher and to a representative from the Needham Channel, students will work to produce a total of six 30-minute episodes. The class will operate under professional procedures to get their shows ready for air at The Needham Channel. (Prerequisite: Television Communication I)

Media Facilities

Students and staff have many resources available, both physical and virtual. Teachers schedule their classes to work on projects in the Library, Multimedia Lab (409), Television Studio, or two computer labs. Students may work independently in the Library before and after school or during study periods. The NHS Library web page offers many tools for research, including the web catalog, databases, citation help, and pathfinders for class projects. NHS has a wireless network, available to students who have signed the Responsible Use Policy. Please refer to the Student Handbook for more information.

SCIENCE

Num	Length	Credit	Course	Num	Length	Credit	Course
3001	F	4	Biology Acc	3502	F	4	Modern Physics Hon
3012	F	4	Biology Hon	3542	F	4	Experiencing Chemistry Hon
3023	F	4	Biology	3531	F	4	Environmental Science Acc
3101	F	4	Physics Acc	3532	F	4	Environmental Science Hon
3112	F	4	Physics Hon	3533	F	4	Environmental Science CP
3123	F	4	Physics	3610	S	2	Introduction to Astronomy
3201	F	4	Chemistry Acc	3640	F	4	Marine Science
3212	F	4	Chemistry Hon	3701	F	8	AP Biology
3223	F	4	Chemistry	3801	F	8	AP Physics
3401	F	4	Physiology Acc	3901	F	8	AP Chemistry
3412	F	4	Physiology Hon	2490	F	4	Junior/Senior STEM Capstone
				2496	S	2	Junior/Senior STEM Capstone- 2 cr

The aim of the Science program is to ensure students develop a scientific perspective with which to observe, analyze, and make decisions about the world around them. In order to realize this goal, the department offers a carefully sequenced curriculum that provides knowledge and skills in experimental scientific methods, life sciences, physical sciences, and chemical sciences. Science offerings in grades 9, 10, and 11 provide foundational content in Biology, Physics, and Chemistry while building hands-on laboratory practices and technical communication skills. Each of the disciplines seek to present core content through common thematic concepts across the physical and life sciences. Senior elective offerings provide a wide range of opportunities for students to integrate and deepen their understanding of science within and across the major disciplines, including Advanced Placement courses. Assignments in all courses work to develop data analysis and presentation skills, the ability to apply theories and methods to real world situations, engineering practices and technical writing skills. Content in each course aligns with the Massachusetts Science and Technology/Engineering standards (http://www.doe.mass.edu/stem/standards/StandardsDraft.pdf) and prepares students for MCAS testing. Twelve credits, 3 years, of science are required for graduation.

Science Department Course Expectations (Broken down by Level)			
	Accelerated	Honors	College Prep
Differentiation among levels	Can conduct research in scientific topics and find appropriate supporting resources independently. Can synthesize multiple sources of data and research in formulating an argument.	Can analyze multiple sources of data and research in formulating an argument.	Can apply multiple sources of data and research in formulating an argument.
Time Management	Ability to manage time independently.	With assistance, is guided toward independent time management.	Curriculum is structured to provide support for time management.
Homework Expectations (on average)	2 - 4 hours per week.	1 - 2 hours per week.	30 minutes to 1 hour per week.

Notice to Parents of Students Taking Biology or Physiology: Biology and Physiology courses include issues of human sexuality.

Under Massachusetts law and Needham School Committee policy, you may exempt your child from any portion of the curriculum that involves human sexual education or human sexuality issues. To receive an exemption, simply send a letter addressed to your building principal requesting an exemption for your child. Any student who is exempted will be excused from those lessons that cover topics on human sexuality and will be provided with an alternative assignment. A student who is exempted from this portion of the curriculum will not be penalized in any way.

Biology

Accelerated, Honors, College Prep (3001, 3012, 3023): The Biology curriculum focuses on topics related to living organisms including structures and processes from a molecular level to the level of a complete organism, ecosystem dynamics and interactions, inheritance and variation of traits, and unity and diversity of biological evolution. The curriculum is aligned with the Massachusetts High School Life standards and practices. Detailed descriptions of the learning standards can be found at http://www.doe.mass.edu/stem/standards/StandardsDraft.pdf. Thematic links are used to introduce and weave the concepts of Biology together. These themes include: Homeostasis, Organization, Unity and Diversity, Structure meets Function, and Transfer of Energy and Matter. The curriculum incorporates a significant emphasis on the practices of science including an introduction to laboratory equipment, procedures, and science writing skills. All levels of the ninth grade curriculum serve to prep our students for the MCAS exam in June while incorporating real world applications of Biological concepts.

Physics

Accelerated, Honors, College Prep (3101, 3112, 3123): Physics is the study of the behavior of matter and energy. The physics program uses "hands on" science practices to introduce and support the physical laws of nature including motion, forces, energy, momentum, sound, light, electricity, magnetism, and atomic structure. Understanding of concepts is reinforced through modelling of physical and natural phenomenon, investigations and problem solving. Using 21st century technology and equipment, students will gather and analyze data related to real world situations including sports, technology, and the environment. While mathematical skills are the foundation of application within the physics program, students work to utilize, discuss, and explain physical concepts and problems with scientific fluency . The accelerated level uses algebra and trigonometry in multi-step problem solving, the honors level uses algebra to develop problem solving skills, and the college prep level will utilize a problem-based curriculum focussed on developing 21st century skills.

Chemistry

Accelerated, Honors, College Prep (3201, 3212, 3223): Chemistry examines the structure of matter, its properties, and the changes it undergoes. The major topics of chemistry include atomic structure, reactivity and bonding, energy in chemical processes, as well as the physical characteristics of chemicals. These topics are related to the essential themes of conservation, structure and function, stability and change, equilibrium, and the scientific method. Through quantitative and qualitative analysis, students will acquire an understanding of chemistry and use its concepts to explain phenomena seen in and out of the classroom. The curriculum further develops the practices of science by providing opportunities for students to design experiments to investigate chemical phenomena and scientific claims, support their findings with data, and analyze the impact of error on their conclusions.

Suggested Math Prerequisites:

Chemistry Accelerated (3201) - Students should be simultaneously enrolled in either Accelerated or Honors Pre-Calculus and have earned either an A in Honors Algebra II or a C or higher in Accelerated Algebra II.
Chemistry Honors (3212) - Students should be simultaneously enrolled in Honors Pre-Calculus and have earned a C or higher in Hon Algebra II.
Chemistry College Prep (3223) - Students should be simultaneously enrolled in Algebra II or higher.

Senior Electives - Full Year

Anatomy and Physiology: The accelerated and honors A&P courses investigate the major concepts and ideas of human physiology. Major body systems are studied as they relate to the themes of Structure meets Function, Homeostasis, Communication and Plasticity. Understanding is built by comparing and analyzing the effects of disorders on the body. These courses are experimentally based with a strong laboratory component that incorporate aspects of Biology, Physics, Chemistry and statistical techniques. Both levels work to prepare students for the independent nature of college academics.

Physiology Acc (3401): Students will design and implement experiments to study essential structures and functions of the body. The class is largely built upon written expression of knowledge, but includes presentations building oration skills. Students are expected to work independently outside of class and within groups inside class to actively unravel the mysteries of the human body as applied to real world situations. This course is designed to mimic a college level physiology course and prepare students for the rigors of self directed study.

Physiology Hon (3412): Students will perform experiments to study essential structures and functions of the human body. This class incorporates written assignments and also provides alternative ways of demonstrating understanding and knowledge. It involves both independent and group work within the classroom, while making connections and applying understanding to real-world medical situations. This course is designed to build the foundation of skills to succeed at college level courses.

Modern Physics Hon (3502): A course designed to introduce students to the major developments in physics over the past 150 years. The course covers the development of the photon model of light, special and general relativity, the fundamentals of quantum mechanics, nuclear physics, particle physics and cosmology. The course will emphasize an understanding of the experiments that shaped these new developments. Students will be doing hands on lab work, article analysis, problem solving, and presentations in addition to the standard lectures on the topics. Prerequisite: Students must have earned a passing grade in 10th grade physics to enroll in this course.

Chemistry In The Real World Hon (3542): This course takes the basic concepts learned in chemistry and biology and applies them to real-world situations such as food chemistry and nutrition, forensic chemistry, biochemistry, materials chemistry, and environmental chemistry. The course is designed to engage students in the hands-on exploration of career-relevant concepts and practices such as crime scene investigation, process development, experimental design, and hazardous and nuclear waste management. To follow up on specific interests, students will also have the opportunity to plan field trips and invite guest speakers to gain a firsthand perspective of working and living in the scientific community.

Environmental Science: This interdisciplinary course will examine the relationship between humans and the environment through significant field work. Students will explore topics of ecology, natural resources, populations, forestry, fisheries, climatology, environmental health & toxicology, environmental engineering & modeling, production & consumption of energy, and environmental policy, law, & planning. Students will be involved in a variety of citizen science initiative and green technologies with a focus on local impact. Students will be expected to collect data using environmental field techniques, interpret this data, and propose solutions to environmental problems indicated by data. A major focus of this course is to increase students' scientific literacy to evaluate the validity and accuracy of information from media and other sources through the investigation of case studies.

Suggested Math Prerequisites:
Accelerated Level (3531): Advanced math skills (strong foundation from accelerated or honors pre-calculus)
Honors Level (3532): Proficient math skills (basic understanding of pre-calculus)
College Preparatory Level (3533): Comfortable with algebraic manipulations

Marine Science (3640): Marine Science is a full year course integrating the biological and physical aspects of ocean study (a holistic approach to understanding and experiencing the marine environment). Topics include marine food chains and ecosystems, the physical factors that influence productivity in the oceans, plankton, marine plants and animals (invertebrates and vertebrates), sea water, waves, tides, ocean currents and circulation, and the geology of the ocean bottoms. Also included will be a consideration of the biological and physical resources of the oceans as they relate to humans. This course will be laboratory oriented and will include several field trips as an important means of appreciating the marine environment.

Introduction to Astronomy (3610): This course highlights an introductory survey of the universe. Some of the topics covered include the solar system (the earth, moon, planets and their motion); comets, meteors, eclipses and tides; the evolution of stars, the formation of red giants, black holes, pulsars, etc.; galaxies, cosmology and extraterrestrial life. Telescopic observations on certain evenings will be available but not mandatory.

Junior/Senior STEM Capstone (2490) or Junior/Senior STEM Capstone 2 credi**t (2496)** Junior/Senior STEM Capstone is independent Study course and is designed to give the self-motivated student or a small group of students the opportunity to work on a significant project of their design during school hours. Students will utilize the Da Vinci Workshop and will be expected to perform work beyond the school day. Options for learning range from scientific research and engineering projects, to work as part of scientific competitions and service learning community action projects, to other approved projects. In this course, students will write a proposal for their work, produce their results and present their work publicly in a manner agreed upon with the instructor. Prerequisites: Two teacher references that support the student's ability to work independently. Please Note: It is recommended/strongly encouraged that students do group projects. Any junior or senior is encouraged to take this course even if you are undecided about a project. Students can meet with the instructor to generate some project ideas.

Advanced Placement Courses

AP Biology (3701): This is a second year course in biology that is the equivalent of a two semester introductory course taught at most colleges and universities. This course uses a College Board approved syllabus and prepares students for the May AP Exam. The content is taught thematically with unit topics all incorporating the following Big Ideas: Evolution, Cellular Processes, Genetics and Information Transfer, Interactions. The Science Practices are an essential part of the course. Students continue to design experiments to answer questions and continue their use of data analysis by incorporating various statistical measures and using spreadsheets to analyze large data sets. The connections between Science, Technology and Society are also explored as learn to read and discuss journal articles and relate current research to the topics learned throughout the course. AP Biology is an 8 credit course and will meet 10 periods per cycle.

AP Physics (3801): This is a second year course in physics. This course is designed to prepare students for the Advanced Placement Physics C exam. Mechanics, electricity, and magnetism are covered in great depth, utilizing calculus wherever appropriate. This is an intensive course comparable to a college course for students majoring in the physical sciences or engineering. Students who have completed calculus or are currently enrolled in the calculus program may elect Physics AP. AP Physics is an 8 credit course and will meet 10 periods per cycle.

AP Chemistry (3901): This is a second year course in chemistry. AP Chemistry is the equivalent of the introductory chemistry course taught at most colleges and universities. This course will prepare the student for the Advanced Placement Chemistry Exam. The laboratory section of this course is rigorous, and independent laboratory experiments will be stressed. It is assumed that students have retained a firm understanding of what they learned in their first year of chemistry, and group work, focused around complex or applied chemical concepts illustrates the course's style. AP Chemistry is an 8-credit course and will meet 10 periods per cycle.

HISTORY AND SOCIAL SCIENCES

Num	Length	Credit	Course	Num	Length	Credit	Course
4101	F	4	World History Acc	4212	F	4	The World Since 1945 Hon
4102	F	4	World History Hon	4402	F	4	American Legal System Hon
4103	F	4	World History	4412	F	4	Economics Hon
4201	F	4	The World and America Acc	4421	F	4	AP Psychology
4202	F	4	The World and America Hon	4422	F	4	Psychology and Sociology Hon
4203	F	4	The World and America	4423	F	4	Psychology and Sociology
4301	F	4	AP U.S. History	4462	F	4	African American Studies and Contemporary Issues Hon
4302	F	4	United States History Hon	4441	F	4	AP United States Government
4303	F	4	United States History	4445	F	4	Debate and Argument
4311	F	4	United States History Acc	0491	F	8	The Greater Boston Project

The aim of the History and Social Sciences program is to prepare students for intelligent participation in our democratic society. In order to realize that goal, the department offers a carefully sequenced curriculum that provides knowledge and skills in history, geography, political science, psychology, sociology, and economics. Students are encouraged to take a two year World History sequence and one year of United States History is required for graduation. History course offerings in grades 9, 10, and 11 examine the heritage of major cultures and societies, and the development of the American identity. The curriculum investigates the responsibilities of citizenship in American society in an era of increasing globalization. Assignments in all courses work to develop analytical thinking and writing skills, research, and verbal presentation skills. The electives program allows students to study in greater depth a variety of courses in history and the social sciences.

Grade Nine

World History, Middle Ages to the Nineteenth Century (4101; 4102; 4103): The purpose of this course is to have students learn about the historical development of the major cultures and societies from the Middle Ages to the nineteenth century. The emphasis is placed upon both European and non-Western societies. Geographical knowledge of our world, historical analysis and comparison of different cultures, and political and economic development of societies that have contributed to our modern global community, are areas of focus.

Grade Ten

The World and America - Accelerated, Honors, and College Prep **(4201; 4202; 4203):** This course examines key themes in World and American History from the Age of Revolution until the present day. Themes studied include Imperialism, the World Wars, the rise of communism and fascism, the Cold War, Post-Imperialism, and modern China. As well as looking at the main events, the course analyzes the US perspective and America's role in the world. In addition, the course includes a unit, Facing History and Ourselves, that asks students to study the Holocaust and genocide and connect themes from history to the world today. Current events and geography are integrated throughout. The course places emphasis on research, debate and presentation skills and analytical writing. Accelerated students have the opportunity to participate in National History Day or an alternative long-term project.

Grade Eleven

AP U.S. History (4301): This course provides a thorough survey of America from the period of sectionalism to contemporary times. Supplementary readings and research papers will be required. In addition, the course is designed to prepare students for the Advanced Placement Examination in United States History.

Accelerated United States History (4311) Accelerated United States History is an upper level American studies class that is similar to the AP course in level of difficulty but different in terms of its focus and methodology. The course is focused on encouraging students to think about and discuss many of the large scale issues and themes that frame American history, including the tension between majority rule and minority rights, the role of individuals and groups in making history, the role of government in American society, the challenges of a multicultural society, and the effects of economic growth and technological development on everyday Americans. Supplementary readings and research papers will be required on a similar level to those in AP US History.

United States History - Honors and College Prep (4302; 4303): This course surveys American history and civilizations with an emphasis on the nineteenth century through the twentieth century. The focus will include developing skills in the areas of historical inquiry and critical thinking, primary source and data analyses, historical research and writing, and oral expression.

Electives

Debate and Argument (4445): OPEN TO ALL GRADES- Debate and Argument enables students to develop speaking, listening, critical thinking, and research skills. Through participation in several distinct debate formats, students will work towards being able to understand, analyze, and explain the controversies underlying a wide variety of subjects. The crucial role of debate and critical thinking in both a democratic society and one's personal life will be emphasized. Several social, political, and philosophical topics will also be examined in the course. No prior speech or debate experience is necessary.

The following Electives are open to Seniors and Juniors:

The American Legal System Hon (4402): This course will examine the practical and theoretical aspects of law in American society. Students will investigate the many facets of our legal system including criminal, and civil. In addition law enforcement, incarceration, and the American courts will be examined. A variety of experiences will be provided to students. Among those are mock trials, guest speakers, court visits and a visit to the Massachusetts Correctional Institute. The main objective of the course is to acquaint the student with an understanding of the rights and responsibilities of citizens in a democratic society.

Economics Honors (4412): Economics is the study of how individuals and societies decide how to use scarce resources in order to satisfy their unlimited wants. The course focuses upon concepts and principles that include supply and demand, marketing, money and banking, the stock market, fiscal and monetary policies, as well as international trade. Comparing different types of economic systems is part of this introductory course. Economics should assist students in becoming informed decision makers through economic analysis of data, issues, trends and theories.

Psychology and Sociology Honors and Standard (4422, 4423): The focus of this course will be upon the various theories of human behavior, the study of the brain, the senses and perception, motivation and emotion, the factors that influence personality development, the dynamics of group behavior, the unique nature of adolescence, gender differences, scientific methodology, and the historical significance of psychology. Field experiences, guest speakers and simulations will augment instruction.

African American Studies and Contemporary Issues Hon (4462): This course will serve as an introduction to the study of African American life from the end of the Civil War to the present. Using a chronological framework, students will explore a wide range of themes involving politics, culture, and the arts, while emphasizing the dynamic role played by African Americans in U.S. culture. Students will engage in lectures, debates, research projects and discussions, examining the African American experience through documents, music, film, and digital resources.

The World Since 1945 Hon(4212): This course examines cultural, political, economic, military, and social developments throughout the World since the end of World War II. The aim of the course is to enhance cultural literacy and familiarize students with the world's most significant issues and regions in recent history. Political issues highlighted include the Arab-Israeli conflict, India and China as emerging world powers, contemporary mechanisms for the prevention of genocide, and the status of democracy around the globe. Students are expected to be well versed in current events.

The following Electives are open to Seniors only:

AP Psychology (4421): This fast paced course is designed to introduce students to the systematic and scientific study of behavior and mental processes. Units include: research methods and ethics, intelligence, the physiological basis of behavior, motivation and emotion, learning theory, memory and thinking, sensation and perception, stress and frustration, social psychology, human growth and development, personality theory, abnormal psychology, and psychotherapy. The varied format uses a college level text, outside reading books, case study analyses, class discussion, experiments, demonstrations and labs. Activities are offered for each student to explore his/her own self-awareness. Additionally there is a small amount of required summer reading. Students are expected to contribute to class discussions and complete a project each term. Students will also design and conduct original research putting theory into practice. Students who elect to enroll should be highly motivated independent learners.

AP United States Government (4441): United States Government is designed to give students a critical perspective on government and politics in the United States. Students enrolled in this course will investigate the constitution, federalism, civil rights and civil liberties, the presidency, congress, and political interest groups. The course also examines U.S. political culture and its evolution, as well as public policy. This course's main focus is U.S. politics since 1980, with a special focus on political themes played out through current events and elections. Students are encouraged to develop their own theories through readings, role plays, discussions and term projects. (Prerequisite: A full year of US History)

Integrated Senior Studies Accelerated: The Greater Boston Project (0491) This course explores how individuals and groups have worked throughout history to effect change in Greater Boston. Students will look at various historical moments through a variety of different lenses - population, government, economy, education, and arts & leisure - and consider how these have molded what Greater Boston has become today. The course of study is expressly interdisciplinary, as skills from the disciplines of English, history, and mathematics are brought together to explore Greater Boston's past and present. The course culminates in the Community Action Project, which entails collaborative exploration into and analysis of at least one area of study from the course; the project allows students to become agents of change as they work to develop, propose, present, and possibly implement their resolutions to existing real-world problems. This is a double block, eight credit course that fulfills the senior year English requirement.

WELLNESS (HEALTH / PHYSICAL EDUCATION)

Num	Length	Credit	Course
8605	S	2	Wellness 9
8615	S	2	Wellness 10
8625	S	2	Wellness 11
8635	S	2	Wellness 12

All high school students are required to take one semester of Wellness (Health/Physical Education) each year while at Needham High School. Students must pass all (4) years of Wellness (8 credits) in order to meet their requirements for graduation. Students should sign up for the Wellness number that pertains to their grade level (as listed above). Sophomore and senior classes will meet during the fall semester while Freshman and Junior classes will meet during the spring semester.

Failure Policies: A student who fails to successfully complete a required health/physical education course in any given semester, and/or is dropped from a course, must make up the deficiency prior to the receipt of a diploma from Needham High School. It is expected that students will make up their Wellness requirement by repeating the course they have failed or by attending a summer school program approved by the Principal. Participation in additional semesters of Wellness can be done in extreme situations but only with the approval of the Director of the Wellness Department. Students should make up courses as soon as possible after failing a course.

Notice to Parents of students in grades 9 & 11 about Sex Education: Health Classes in grades 9 and 11 include issues of human sexuality.

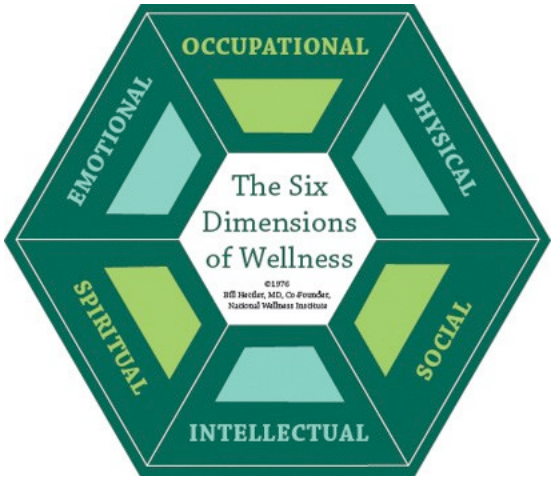
During the second semester of **grade 9**, sexuality education will be taught within a larger unit called "Freshmen Health". The overall program is designed to teach students to make responsible decisions about alcohol and other drugs, tobacco, and sexual behaviors. The sexuality component of this course views sexual behavior as an adult behavior that occurs within the context of a committed, respectful, physically and emotionally healthy relationship.

Also during the second semester, **grade 11** students will take a traditional health education class that addresses a wide range of teenage health issues (including sex and sexuality) and challenges teens to consider the risks and consequences (to self and others) behind their decisions. Students reflect upon their role in creating healthy relationships (peer/collegial, friendships, family relationships, romantic relationships) and think about the importance of negotiating roles and responsibilities (regardless of gender).

Detailed information about our sexuality education curriculum can be viewed on the Needham Public Schools website: http://rwd1.needham.k12.ma.us/wellness/Sexuality

Under Massachusetts law and Needham School Committee policy, you may exempt your child from any portion of the curriculum that involves human sexual education or human sexuality issues. To receive an exemption, simply send a letter addressed to your building principal requesting an exemption for your child. Any student who is exempted will be excused from those lessons that cover topics on human sexuality and will be provided with an alternative assignment. A student who is exempted from this portion of the curriculum will not be penalized in any way.

Program Description: At Needham High School, Health Education content and Physical Education content are combined to make up our wellness curriculum. Each individual course offers students a combination of "health" concepts and related "activities " designed to build the skills, knowledge and attitudes needed to participate in an active healthy lifestyle. The wellness curriculum is designed to emphasize the student's responsibility for his/her own health and well-being based on a six dimensional wellness model (see wellness hexagon below). This model explores human health as a multidimensional phenomenon that requires the individual student to take care of and nurture himself or herself in all the areas identified within the wellness hexagon.



The high school curriculum is part of a comprehensive K-12 Health and Physical Education sequence which enables the high school teachers to plan courses that build upon the knowledge, skills, and behaviors learned throughout the K-8 program. Because of this, high school classes focus more on encouraging each individual to evaluate his/her own wellness and set specific goals that will result in self improvement. As a result, high school wellness courses provide students with information, skills, and opportunities to carefully examine their current health status and challenge them to make appropriate adjustments towards healthier living.

The design of the high school wellness program includes a thematic focus for each grade level. Throughout the semester, this theme is integrated into 3 - 4 units of study (a required wellness unit, a required activity unit, and one or two additional activity units). As students experience this sequence of units, they learn wellness concepts in the classroom and then learn to apply them through specific activities in the fitness center, wellness studio, gymnasium, tennis courts and playing fields.

9th Grade Thematic Focus ~ Mind-Body Awareness

This theme is used to help students understand the important relationship between a strong mind and a strong body. Students will learn about the developing teenage brain and how it affects their ability to make decisions. They will be challenged to think about the many decisions they will have to make in high school and learn ways to develop and maintain a healthy mind and body. Decision-making - particularly decisions about the use of alcohol and other drugs, and delaying participation in sexual behaviors will be stressed. Students will also be introduced to the Needham High School fitness center and learn practical ways to improve muscular endurance and strength. In addition students will learn about the many benefits of physical activity (physical, social, emotional, intellectual).

10th Grade Thematic Focus ~ Exploring Individual & Community Wellness

In this course, students are taught to use the wellness hexagon as a tool for thinking more broadly about their health and wellbeing and the wellbeing of others. This model expands their thinking about health beyond the typical absence of disease to a more holistic understanding of health as interdependent parts (dimensions) that work in concert with one another. Each dimension is continually affecting and/or responding to the others which results in a dynamic and ever changing sense of well being. By becoming more conscious of each of the dimensions of wellness, and working to nurture them, students learn ways to affect their overall sense of well-being (regardless of their current health condition). We refer to this process as becoming an active participant in our own wellness journey. In addition to self -- students will also explore ideas and ways to improve community wellness.

11th Grade Thematic Focus ~ Understanding and Assessing Personal Risk and Consequences

This theme is used to guide students as they examine and assess the positive and negative personal risks and consequences they may face as young adults. Participation on our indoor ropes course will illustrate the importance of building trust in relationships and demonstrate how stepping outside one's comfort zone can lead to positive risk taking (growth). In their health class, students will continue to explore characteristics of healthy and unhealthy relationships and will reexamine the negative risks and consequence of sexual activity and the use of alcohol and other drugs. Students will reexamine the development of the teenage brain and explore the potentially dangerous role that alcohol and other drugs play in poor decision-making.

12th Grade Thematic Focus ~ In Pursuit of a Healthy Balance

This theme is used in the culminating year of our program to help students reflect upon their past knowledge and experience in wellness classes and to explore and develop their own role and responsibilities in the ongoing pursuit of maintaining a healthy balance in their young adult lives. Students are challenged to explore their nutritional practices and think about ways to adopt healthy eating habits. Students learn strategies for managing stress and participate in both mindfulness and yoga practices. All students take CPR (those interested can receive a CPR card) and study health and wellness opportunities in the community and on college campuses.

CONTENT DESCRIPTION FOR CORE WELLNESS CLASSES: At each grade level, all students take two wellness units that are required and one or two others that are assigned based on space and time of year (some units can only be offered when certain spaces are available or when classes can be held outside). The required curriculum units have been carefully chosen to address health and wellness issues that are important to high school age students and that address school and community issues and concerns. State and national guidelines and The Metrowest Adolescent Health Survey (MWAHS) results guide decisions made about content that should be required for all students.

Freshmen Wellness

Freshmen Health: Information about alcohol, drugs and sexuality will be taught within the context of a larger unit called freshmen health. This unit begins by explaining the process of adolescent brain development. Research has shown that the brain continues to grow and develop into the early-to-mid 20's. It is the frontal lobe that is responsible for reasoning, problem-solving, and ultimately responsible decision-making that develops last. The frontal lobe also helps in the ability to control emotions and impulses. As a result, teenagers are at risk for making impulsive decisions. This course, is therefore, designed to help teens understand this risk and provides skills and strategies for good responsible decision-making in relation to alcohol, drugs, and sexual behavior. Towards this end, all freshmen will take Sexuality Education, AlcoholEdu for High School, and HEADS UP: Real News About Drugs and Your Body. In addition, they will be introduced to our fitness center and participate in a variety of games and activities designed to improve fitness, develop skills, and promote positive social interactions among peers

Fundamentals of Fitness: This course provides students with the basic facts concerning fitness by addressing three questions: (1) What is fitness? (2) Why is it important? (3) How do I attain fitness? Students learn about the many benefits of exercise (physical, social, emotional and intellectual). They are introduced to the Needham High School fitness center and taught how to use all the equipment safely and appropriately. Each student sets personal fitness goals and learns how to develop an exercise plan to meet their goals.

Sexuality Education is a course that has been adapted from Get Real, which is a comprehensive sex education curriculum developed by Planned Parenthood of Massachusetts. Get Real emphasizes social and emotional skills as a key component of healthy relationships and responsible decision-making and emphasizes the important role that parents play in educating their children about sex and sexuality. Information provided is medically accurate and age-appropriate. In this course students will develop agreements and expectations for creating a safe and comfortable class climate, identify a parent/guardian or other trusted adult from whom they can obtain information about sex and sexuality, understand the meaning of the terms sex, sexuality and sexual health, identify and analyze the reliability of the different sources where teens get information about sex and sexuality, analyze the difference between adult readiness for sexual behavior and teen readiness, talk with a parent/guardian or other trusted adult about dating rules, review proper vocabulary and explain the structure and function of the male and female reproductive systems, review the process of human conception, review what we know about the teenage brain, review the decision-making model and discuss the role that values play in supporting good decision-making, understand how emotions and the use of substances (alcohol and other drugs) can interfere with responsible decision-making, talk to a parent/guardian or other trusted adult about one's family's values, identify characteristics of a healthy and unhealthy relationship, assess whether behaviors between two dating partners are healthy or unhealthy, identify the risks of dating a significantly older partner, assess behaviors as being acceptable or unacceptable in a relationship, talk with a parent/guardian or other trusted adult about healthy and unhealthy relationships, assess one's attitudes and beliefs about gender norms in relationships, talk with peers about their attitudes and beliefs about gender norms in relationships, explain why both males and females are responsible for the possible consequences of sexual behavior and unprotected sex, identify ways that both partners (same sex and opposite sex) can take responsibility for their own sexual health within a relationship, identify ways that both partners can support the sexual health of their partner within a relationship, identify STIs and how they are transmitted and prevented, learn names of STIs and whether they are curable or treatable, reflect on one's feelings about learning about STIs, understand the importance of being totally honest with the doctor when s/he asks questions about sexual behavior, identify important future goals, understand how an unplanned pregnancy will alter all future plans and goals, name and describe popular methods for pregnancy prevention, understand that abstinence is the only way to prevent pregnancy and STIs/HIV, understand that a condom will protect against pregnancy & STIs most of the time (a condom is not 100% guaranteed), observe a teacher demonstration on the correct steps for condom use, identify all the steps of correct condom use, identify risky situations and ways to lower the risk of sexual intimacy, learn to make responsible decisions in sexual relationships and practice effective assertive communication and refusal skills, identify ways to negotiate postponement and protection within relationships, identify and maintain boundaries.

AlcoholEdu for High School is an evidence-based, online alcohol prevention course proven to reduce negative consequences associated with underage drinking. Five online modules are designed to help students address difficult alcohol-related decisions and scenarios. Students learn how to leverage their personal values and goals, resist peer pressure, and step in when they see someone who may be in trouble. Students will be able to define a standard drink of beer, wine, and liquor, assess personal values and goals, challenge common myths and misconceptions and learn where they come from, recognize the influence of advertising on people's drinking-related attitudes and behaviors, identify reasons for abstaining from drinking, describe the dangers of drinking from communal sources, assess personal background risks for drinking-related problems, explain the basic facts concerning "blood alcohol content - BAC", recognize how parts of the brain are affected by alcohol use, list effective strategies to help someone who may have alcohol poisoning, analyze internal and external factors that may impact decisions, identify positive examples of refusing a drink and resisting peer pressure, list strategies for staying safe if choosing not to drink, identify options for handling a situation involving someone who might drive under the influence, understand the laws surrounding underage drinking, explain positive techniques for approaching difficult alcohol-related conversations, reassess personal goals and values, and create an action plan for future alcohol-related behaviors.AlcoholEdu offers a version for parents which can be accessed on the Needham Public Schools Website - wellness department page.

HEADS UP: Real News About Drugs and Your Body is a science-based education series that honors our 9th grade theme which is Mind-Body Awareness. The series is a product of a partnership between the National Institute for Drug Abuse (NIDA) and Scholastic, Inc. and presents easy to understand information about a variety of different drugs and their effects on the teenage brain and body. This site covers a wide range of different drugs, introduces both the scientific name and street names, describes what the drugs look like and how they are presented for sale, and covers the effects of the drugs on the human brain and body. Teachers will create a series of questions that will require students to navigate their way through the site to respond. They will encourage students to share information they learned from the site and review the skills of decision-making related to substance use. Examples of drugs discussed include alcohol, anabolic steroids, bath salts, cocaine, cough and cold medicine, heroin, inhalants, marijuana, MDMA (ecstasy or molly), methamphetamines (meth), prescription drugs (opioids, depressants and stimulants), salvia, and spice. Materials are updated every year so information will remain current.

NIDA offers information for parents on its website which can be accessed on the Needham Public Schools Website - wellness department page.
NIDA for TEENS: https://teens.drugabuse.gov/
NIDA for TEACHERS: https://teens.drugabuse.gov/teachers
NIDA for PARENTS: https://teens.drugabuse.gov/parents

Sophomore Wellness

Introduction to Wellness: Students will assess their physical, social, emotional, spiritual, and intellectual well-being and learn strategies for nurturing their health in each of these areas. Students will acquire knowledge about wellness principles, human needs, life patterns, and risk-taking behaviors and look at ways in which they affect (and are affected by) illness and wellness. After learning more about each of the six domains of wellness (physical, social, emotional, spiritual, intellectual, occupational), students will define a healthy human being, look at how healthy and unhealthy behaviors affect well-being, explore attributes of internal and external locus of control, and internal and external motivation, look at ways cultural norms affect healthy and unhealthy choices, assess their current well-being in each of the six dimensions of wellness, explore potential reasons why some people follow lifestyles that are unhealthy, and develop a wellness creed outlining their commitment to their own wellness journey. Students will also assess their relationship with their school community and determine ways to enhance overall community well-being.

Group Dynamics: This course provides a unique opportunity for students to understand the importance and dynamics of group development. Class sessions consist of both mental and physical challenges that require students to work together to find solutions. Students learn the characteristics of five different stages of group development (forming, storming, norming, performing, adjourning) ((Bruce Tuckman in 1965) and practice skills to help move their group through these stages. Students learn the effect that an individual's actions can have on the attitudes and performance of others. Other areas of learning include the ability to listen and express oneself, group cooperation, concern and respect for others, and exploring ways to share one's strengths with others. Students also look at ways group dynamics (peer pressure) can lead people to make decisions that they might not make on their own.

Understanding Games: Students will play and analyze games and identify those characteristics that are similar among like activities (invasion games, net games, target games, etc.). Emphasis will be placed on the application of skills, understanding movement concepts, the joy of play, and creating new games that can be shared with classmates.

Junior Wellness

Critical Health Issues: This health class explores the potential risks and consequences associated with the teen and young adult social scene. Students reexamine the teenage brain to learn more about their propensity to take risks and practice skills to prepare them to make healthy decisions. Students analyze scenarios to explore how different decisions could lead to various possible outcomes. They explore how decisions can be influenced by their relationships with others in both positive and negative ways and learn the role that values play in making healthy and safe decisions. Students reflect upon their own personality and explore traits and behaviors they want to bring to a relationship as well as traits and behaviors they'd like to have in a relationship. They define the characteristics of healthy and unhealthy relationships and identify signs of abusive relationships. Students explore different communication styles (confrontational/aggressive, passive, assertive), and learn effective ways to communicate within a relationship. Terms and issues related to sexual diversity (gender identity, gender expression, sexual orientation, etc.) are discussed. Students learn about the biology of sexual desire and discuss ways to negotiate intimacy while remaining committed to abstinence/postponement of sexual behaviors. Students study the effect that alcohol and other drug use can have on relationships and on decisions to participate in sexual behaviors. They study current events in which substance use affected one's ability to make good decisions about sexual behaviors and brainstorm strategies that could have prevented the situation. Issues of sexual harassment, sexual assault, dating violence, and signs and symptoms of an unhealthy relationship and/or an abusive relationship are included.

Ropes Challenges: Through preparation and participation on our indoor ropes course, students learn the importance of trust, teamwork, communication, personal awareness, courage, support, and problem-solving. In small teams, students support one another as they learn the skills required to safely participate on a challenge course. Students learn to tie safety knots, wear safety gear correctly, run a pre-climb safety check, spot (support) climbers, communicate clearly, and climb the various initiatives that make up the challenge course. No student is required to climb. We want students to choose to climb only when they feel safe and ready. All students learn the skills and expectations for each role of a belay team (belayer, back-up belayer, anchor, and rope attendant) so that they can better work as a team to support climbers.

Senior Wellness

Nutrition: Students learn why healthy eating is important in preventing major diseases, and in maximizing mental and physical energy and performance. Students learn basic food facts and study the US Dietary Guidelines recommended for all Americans. Students will learn the difference between calorie dense foods and nutrient dense foods, learn to read food labels, calculate personal caloric and nutrient needs, explore personal eating habits, understand the difference between safe and unsafe ways to lose and gain weight, identify healthy options in a grocery store (field trip to Sudbury Farms) and plan a healthy meal for themselves and their families.

Yoga: This course covers the basic knowledge, attitudes and concentration necessary to benefit from a Yoga practice. Flexibility, balance, and body alignment, as well as breathing, relaxation techniques and stress management strategies are part of each exercise session. Students also learn the benefits of mindfulness. Students practice yoga skills and mindfulness skills throughout the unit.

First Aid/CPR: The American Heart Saver First Aid and CPR course is taught to all seniors and includes information and skills to provide first aid, cardiopulmonary resuscitation (CPR), and automated external defibrillator (AED) use in a safe, timely, and effective manner. The course goals include content knowledge and physical skills. In addition to learning CPR and AED skills, students also learn how to assess an emergency situation, help a choking adult or child, stop severe bleeding, use an epinephrine pen, and respond to a adult opioid-associated life-threatening emergency. Students learn about Naloxone and how it can be administered in an emergency situation. Upon completion of the course, students may be certified to administer CPR to infants, children, and adults.

Senior Project: Students create and/or design a "virtual tour" of a prospective college, university, military branch, or other "real-life scenario to activity seek information about resources that will support wellness (e.g., fitness center, mental health services, meal plans, security for walking on campus at night, HELP numbers for emergency situations, clubs and teams, data on sexual assaults on campus, etc.). This is designed to help students look ahead and discover different ways their new community can support their safety and well-being.

WORLD LANGUAGES

Num	Length	Credit	Course	Num	Length	Credit	Course
1112	F	4	French 1 Hon	1522	F	4	Spanish 2 Hon
1121	F	4	French 2 Acc	1523	F	4	Spanish 2
1122	F	4	French 2 Hon	1531	F	4	Spanish 3 Acc
1131	F	4	French 3 Acc	1532	F	4	Spanish 3 Hon
1132	F	4	French 3 Hon	1533	F	4	Spanish 3
1141	F	4	French 4 Acc	1541	F	4	Spanish 4 Acc
1142	F	4	French 4 Hon	1542	F	4	Spanish 4 Hon
1161	F	4	French 5 Acc	1563	F	4	Spanish 4
1171	F	4	AP French Language and Culture	1581	F	4	AP Spanish Language and Culture
1311	F	4	Latin 1 Acc	1561	F	4	Spanish 5 Acc
1312	F	4	Latin 1 Hon	1602	F	4	Mandarin 1 Hon
1321	F	4	Latin 2 Acc	1612	F	4	Mandarin 2 Hon
1322	F	4	Latin 2 Hon	1621	F	4	Mandarin 2 Acc
1331	F	4	Latin 3 Acc	1631	F	4	Mandarin 3 Acc
1332	F	4	Latin 3 Hon	1622	F	4	Mandarin 3 Hon
1341	F	4	Latin 4 Acc	1641	F	4	Mandarin 4 Acc
1342	F	4	Latin 4 Hon	1632	F	4	Mandarin 4 Hon
1513	F	4	Spanish 1	1681	F	4	Mandarin 5 Acc
1512	F	4	Spanish 1 Hon	1691	F	4	AP Mandarin Chinese Language and Culture
1521	F	4	Spanish 2 Acc	1719	F	4	INDEX World Language

The World Languages Department offers language sequences in four different languages: French, Spanish, Mandarin and Latin. Each language sequence develops students' skills in reading, writing, listening and speaking. All modern language courses focus on communicative proficiency, cultural understanding and making linguistic connections. Modern language courses above the introductory level are taught in the target language and students are expected to use only the target language during class.

The NHS high school graduation requirement is two years of study in the same world language. Students who want to become proficient in a particular language by graduation should study the same world language for four years in high school.

Guidelines for Selecting the Most Appropriate Course:
Students may continue studying the language they studied in middle school or they may begin learning a new language.
If a student wants to begin studying a new language at Needham High, the student should elect one of the first year courses (Examples: Latin 1 or Mandarin 1)

If a student studied French, Spanish or Mandarin in middle school and wants to continue studying that language at Needham High, then the student should select French II, Spanish II or Mandarin II.

Guidelines for Selecting the Most Appropriate Level:
When selecting a language "level" students are encouraged to consider the following level descriptions.
Please note: It is easier to change levels earlier in one's language sequence than later.

College Preparatory (Spanish only): College Preparatory World Language classes are paced to ensure students have ample in-class practice with essential linguistic structures and high frequency vocabulary. There is extensive guided practice provided in class. Homework emphasizes skills practice and structured application.

Honors (All languages): Honors World Language classes are taught at a moderate pace and require moderate amounts of preparation outside of the classroom. Instruction focuses on essential linguistic structures, high frequency and enrichment vocabulary, and there is a some repetition. Homework blends skills practice with skills application.

Accelerated (All languages): Accelerated World Language classes are taught at a fast pace and require a significant amount of preparation outside of the classroom. Instruction integrates complex linguistic structures, extensive vocabulary, and there is a limited amount of in-class guided practice and limited repetition. Accelerated courses are excellent preparation for the Advanced Placement course. Homework generally focuses on students' application of skills (reading, writing, speaking, listening).

Current NHS students should make their course level selection in consultation with their current world language teacher.

French

French 1 (1112): This honors level course is an introduction to French, to its pronunciation and intonation, to its basic grammar and idioms, and to an elementary vocabulary. The aim is to develop the listening and speaking skills and also includes the reading of simple texts. The student will be introduced to France and the Francophone world.

French 2 (1121, 1122): This course if for students who began their study of French in middle school and are entering grade 9. The course builds upon the core content found in the textbook. Students may be expected to maintain an oral and/or written journal, to write several compositions, to make oral presentations, to use the language lab, and to read cultural and/or literary selections.

French 3 (1131, 1132): This course builds on French 2, expanding the use of all four language skills with more complex use of language and comprehension of more sophisticated texts and other materials.

French 4 (1141, 1142): This course builds on French 2 and 3 as students read and/or view selected works of literature and culture of the Francophone world that deal with issues such as emigration, immigration, cross-cultural adaptation, and current events. Emphasis will be placed on the further development and practice of the four language skills. The honors level focuses more on practical vocabulary in a variety of daily situations and studies cultures of the Francophone world through adapted literature. In general, the accelerated level goes deeply into grammar, verb tenses, and vocabulary with a focus on analytical and creative writing.

French 5 Acc (1161): This is a course based on the principles of project-based learning. Students will reinforce communicative functions learned in French 4 and will continue to develop their proficiency through investigations, debates, performances and products of film, art, literature, cuisine and cultural/historical studies of French and the Francophone world.

Advanced Placement French Language and Culture (1171): This course is designed to develop the four language skills at a high level of proficiency and accuracy and to prepare the students for the French Language and Culture Advanced Placement examination in May. Those students who are successful on the AP exam may receive college standing and/or credits for their outstanding high school performance. Students will read selected works, classic and modern, to discuss various themes and social issues.

Spanish

Spanish 1 (1512, 1513): This course is an introduction to Spanish, its pronunciation and intonation, basic vocabulary, and basic grammar and idioms. The emphasis of the course is on listening and speaking with some beginning reading and writing. 1512 is an honors level course designed for students who have had previous successful experience with another world language. 1513 is a College Prep level course designed for those students who are just beginning their study of a world language.

Spanish 2 (1521, 1522, 1523): This is the course for students who began their study of Spanish in middle school and are entering grade 9; or for students entering grade 10, who are continuing with their Spanish studies after completing Spanish 1. In this course, students expand their knowledge and use of the present and past tenses, write several compositions, make oral presentations, use the language lab, and read cultural and/or literary selections.

Spanish 3 (1531, 1532, 1533): This course builds on Spanish 2, expanding the use of all four language skills with more complex use of language and comprehension of more sophisticated texts and other materials. Particular grammar-related topics include formal and informal commands, reflexive verbs in all tenses, pronouns, and the use of the subjunctive.

Spanish 4 (1541, 1542. 1563): This course builds on Spanish 2 and 3 as students read and/or view selected works of literature and culture of the Hispanic world which deal with issues such as emigration, immigration, cross-cultural adaptation and current events.

Emphasis will be placed on the further development and practice of all four language skills. The College Prep and honors level courses focus on practical vocabulary in a variety of daily situations when living or traveling in a Spanish-speaking country. The accelerated level goes deeply into grammar, verb tenses, and vocabulary with a focus on analytical and creative writing. Spanish 4 Accelerated is excellent preparation for the AP Spanish course.

Spanish 5 (1561): This course continues the work of Spanish 4 honors and 4 accelerated. In this course students examine the various cultures of the Spanish-speaking world from different perspectives: through authentic readings, songs, poetry, art, technology, films and cultural/historical projects. Students will complete projects and present them to the class as a way of participation and assessment. Advanced grammar will be reviewed and practiced within classroom discussions and debates as well as in written products.

Advanced Placement Spanish Language and Culture (1581): This course is designed to develop the four language skills at a high level of proficiency and accuracy and to prepare the students for the Spanish Language and Culture Advanced Placement examination in May. Students will deepen their knowledge not only of the Spanish language, but also the culture of countries where Spanish is spoken. Those students who are successful on the AP exam may receive college standing and/or credits for their outstanding high school performance.

Mandarin (Chinese)

Mandarin 1 (1602): This course is an introduction to Mandarin and the Chinese-speaking world. Students study pronunciation, intonation, basic grammar and idioms, and develop an elementary vocabulary. The aim is to develop students' listening and speaking skills and for students to acquire a basic level of fluency. The course also includes the reading and writing of simple texts.

Mandarin 2 (1612, 1621): This is the course for students who began their study of Mandarin in middle school and are entering grade 9; or for students entering grade 10, who are continuing with their Mandarin studies after completing Mandarin 1. This course builds on Mandarin 1 and is designed to develop the four language skills. In addition to the core content found in the textbook, students will read selected works from Rhythm & Rhyme and do hands-on projects. Students will also learn about the culture of China and Chinese speaking countries.

Mandarin 3 (1631, 1622): This course is a continuation of Mandarin 2, and is designed to further develop the four language skills. Students will achieve greater proficiency through reading more complex Mandarin, reporting on news from the Chinese-speaking world, and carrying out projects. Students also learn how to type Chinese characters in good speed.

Mandarin 4 (1641, 1632): This course builds on Mandarin 3 as students further develop the four language skills. Students will read more complex Mandarin texts and students' will further develop their writing skills through journals, compositions and/or short essays. Students will also report on news from the Chinese-speaking world and regularly type in Chinese characters.

Mandarin 5 Acc (1681): This course is designed to develop the four language skills at a high level of proficiency and accuracy. Students will read works from classic and contemporary authors and will develop their writing skill. Students will also engage actively in listening and speaking activities. Finally, students will study Chinese culture through articles, newspaper, films, and short stories.

AP Mandarin Chinese Language and Culture (1691): This course is designed to develop the four language skills at a high level of proficiency and accuracy and to prepare the students for the Chinese Language and Culture Advanced Placement examination in May. Those students who are successful on the AP exam may receive college standing and/or credits for their outstanding high school performance. Students will read works from classic and contemporary authors and will develop their writing skill. Students will also engage actively in listening and speaking activities. Finally, students will study Chinese culture through articles, newspaper, films, and short stories.

Latin

The Latin program focuses on three major areas: the development of reading skills so that students will be able to read authentic Latin upon completion of the Latin 4 course; an understanding of the impact of Latin on English and the modern Romance languages through study of roots, prefixes, suffixes; and an understanding of the impact of Roman culture on modern art, architecture, literature, and political and cultural institutions. Writing skills are developed through periodic English-to-Latin translation work. Speaking skills are not a focus of this program, though they may be introduced to support greater reading fluency. Because speaking is not a focus of the program, Latin students will be expected to understand grammar and read Latin at a more advanced level than modern language students at a comparable course level.

Latin 1 (1311, 1312): This course is an introduction to the Latin language and the world of ancient Rome. Students learn to see Latin and elements of ancient culture as an important part of their world, and to view that world through the lens of Latin. Emphasis is placed on the elements of the language: alphabet, pronunciation, parts of speech, word-formation, vocabulary (including English derivatives), and grammatical rules. Students will use the Ecce Romani textbook, which uses an intuitive "reading based" method of learning. Through these readings about an aristocratic Roman family, students will begin to learn the geography of the ancient Roman world, Roman

mythology, an outline of Roman history, and important aspects of Roman private and public life. Because this course is the foundation for the continuing study of Latin, it is vital that students develop the necessary habits of memorization, attention to detail, preparation of daily work, and organization. Memorization of word-forms, vocabulary and grammatical rules is essential at this level.

Latin 2 (1321, 1322): This continuation of Latin 1 further develops the student's Latin vocabulary and involves the study of more advanced aspects of the Latin language. Students continue using the Ecce Romani texts to read continuous passages of increasing difficulty. Students also study various aspects of Roman transportation and travel. At this stage in the Latin sequence, students begin to apply their Latin language skills in context and transition away from memorization. To prepare for Latin 3, students in Latin 2 will develop a solid knowledge of subordinate sentence structures, the architecture of a complex Latin sentence, and skills for dealing with variable Latin word order.

Latin 3 (1331, 1332): During the first part of the year students will continue to learn the grammar and syntax of Latin that is important for translating original texts, again using the Ecce Romani text. Students will also continue to study English derivatives and Roman civilization forms of entertainment, such as the Circus Maximus and comissatio - the Roman dinner party. In this course, students make their first leap to connected reading in authentic Latin. The course requires students to engage in strong study habits in preparation for Latin 4.

Latin 4 (1341, 1342): During the first part of the year students will continue to learn the grammar and syntax of Latin that is important for translating original texts. Students will finish reading the Ecce Romani texts, as well. The inclusion of authentic Latin will be more consistent and more challenging than what students experienced in Latin 3. Students will explore authors from Aesop to Caesar to Horace.

Electives

INDEX World Language (1719): INDEX World Language study may be elected as a full-year course for students who want to study a language that is not currently taught at Needham High School (examples are German, Italian, and Arabic). Similarly, a student may want to study French, Spanish or Latin at a level that is not offered (either Latin 5, or a sixth year of French or Spanish). INDEX is available to students who have already met their world language high school graduation requirement or have achieved an advanced level in another world language.

The term INDEX stands for "independent exploration". Thus, students must:
Present a study plan for approval by the Director of World Languages. Acceptance into the INDEX Program and registration for INDEX as a course are contingent upon such approval.
Commit to carrying out study that is self-directed and carried out with minimal supervision and guidance.

INDEX study will be graded 'pass/fail', carry full academic credit, and will not be weighted.

STUDENT SUPPORT SERVICES

PLC and SKILLS classes are graded on a Pass/Fail basis. A passing grade is earned by students who engage in regular attendance, have a willingness to work, and accept support and assistance from teachers. Students earn credit for these classes. PLC and SKILLS classes are considered "major" classes and can be considered toward athletic eligibility.

GRADE LEVEL SKILLS CLASSES are designed to serve students who are registered into general education College Prep, Honors or Accelerated level academic classes and who require supportive instruction to help them access the general curriculum. Students in the Skills Center utilize academic support and develop strategies to learn how to use their strengths to compensate for area(s) of difficulty or challenge, to develop self awareness, self advocacy, and to gain independence in managing their academic responsibilities. Recommendations for Skills classes and frequency are made by the student's IEP team.

FRESMAN ACADEMY provides support for students who require a language-based approach to learning. Students participate in College Prep Level general education classes where small class sizes and consistency of practices and routines are infused into their academic program through a variety of staffing supports so students can internalize these practices and make educational progress. This is open to all students enrolling in college prep level 9th grade classes.

SKILLS CLASS in the **CONNECTIONS PROGRAM** provides organizational support, academic and therapeutic interventions including individual and group counseling. Students learn coping skills in order to become successful students. Recommendations for Skills classes and frequency are made by the student's IEP team.

SKILLS CLASS in the **INSIGHT PROGRAM** provides targeted support in the area of executive function and social pragmatics. Students take part in social skills/ social pragmatic groups with the Speech and Language Pathologist at least once a cycle as part of the program. Recommendations for Skills classes and frequency are made by the student's IEP team.

FOUNDATIONS SUBJECT AREA CLASSES (in English, Social Studies, Math, and Science) are special education classes that provide a modified curriculum and are delivered in a small group environment. The curriculum follows the Common Core Standards in each subject. Recommendations for Skills classes and frequency are made by the student's IEP team.

The SKILLS AND CAREER DEVELOPMENT PROGRAM is a community based model of instruction for students who require transition services as designated by their IEP's. The program is designed to promote a seamless transition from High School to the demands of adulthood. "Undergraduate students" complete a combination of mainstream and specialized academic classes within NHS. Internships are developed at an early age to introduce work skills and expanded upon in a meaningful and age-appropriate manner. Additional services include (but are not limited to): travel training, shopping, meal planning, cooking, budgeting, self -advocacy instruction, social skill development and accessing community resources, as the academic schedule allows. Following completion of the academic portion of their program, students participate in the NHS graduation ceremony and move on to manage an individualized schedule comprised of some or all of the following components: internships/ competitive employment, post-secondary education, functional academics taught in natural contexts, community based recreation, travel using multiple modes of transportation, independent living skill development and self-determination (planning for the future). The program duration and intensity of supports provided is determined by the individual and his or her Team. Individuals and their families are supported as they evaluate and select adult service providers and community resources following their exit from the school system.

THE PATHWAYS PROGRAM is a sub separate program located within Needham High School providing students with an academic curriculum aligned with the Massachusetts Curriculum Frameworks and high level of therapeutic support. Recommendations for Pathways are made by the student's IEP team and each student's program is unique to their learning and emotional needs.

***PERSONALIZED LEARNING CENTER (PLC)** is a structured general education program designed to assist students in need of academic support. Students enrolled in the PLC work to complete assignments, and improve study skills, organization and test taking strategies. Referrals for PLC are made by the student's school counselor to the Student Support Team (SST).

*PLC is overseen by the special education department but if not a special education service.

GUIDANCE DEPARTMENT SERVICES

The School Counselors in the Guidance Department at Needham High School provide comprehensive social/emotional, academic, and postsecondary counseling, as well as career and community service exploration, to all students at Needham High School. The following services are available to all students:

The School Counselors work to help all students achieve academic success, balance in their lives, help in times of crisis, and to assist in developing a meaningful plan for life after high school. All School Counselors can be accessed by appointment or on a drop in basis. Regardless of the severity of an issue, all students are encouraged to meet with and establish a working relationship with their School Counselors as early as possible. If an emergency situation arises, any available School Counselor will meet the needs of student(s) if the assigned School Counselor is not available.

Guidance Department Website: https://sites.google.com/a/needham.k12.ma.us/nhs-guidance-department/home

Social and Emotional Support

Students may face challenges during their time at Needham High School. School and Personal Counselors collaborate to support students and their families during these difficult times.

Personal Counselors provide a continuum of services to students in need. They support students to help them navigate the disappointments and frustrations that may occur during the high school years. They also help students manage more serious emotional or behavioral concerns and high risk behaviors. They provide crisis intervention for any student or family in need, assisting with locating the appropriate resources. Students can be seen individually or in group counseling sessions.

Besides the counseling and case management functions, the personal counselors' responsibilities include the oversight of the Mediation Program and facilitate student re-entry meetings after hospitalizations with the Transition Program Social Worker.

While students often initiate the contact with their School or Personal Counselor, another student, parent, guardian, teacher, or administrator who is concerned may reach out to the School or Personal Counselor directly. Counselors will also reach out to students to help establish a relationship or to address a personal issue as the need for this is identified to them. Please note that conversations with Counselors are considered confidential, and are not part of the school record, although there are limits to the bounds of confidentiality with situations that pertain to safety.

Every student is assigned to one of eight School Counselors (divided alphabetically) for four years. Each student is assigned one of two Personal Counselors (divided alphabetically) for four years.

Personal Counselor Assignments 2018-2019

Counselor	Jennifer Roberts, LICSW	Amanda Katz, LICSW
Phone	781-455-0800 x2150	781-455-0800, x2106
E-mail	Jennifer_Roberts@needham.k12.ma.us	Amanda_Katz@needham.k12.ma.us
Class of 2019	A-L	L-Z
Class of 2020	A-L	L-Z
Class of 2021	A-L	L-Z
Class of 2022	A-L	L-Z

School Adjustment Counselors / Transition Program Social Worker
The school adjustment counselors work with students who have a specific social-emotional goal within an Individualized Education Plan (IEP). The Transition Program Social Worker works with students returning back to school after a mental health crisis or significant medical event.

Michelle Brenhiser, LICSW
Michell_Brenhiser@needham.k12.ma.us

Heather Harris, LMCH
Heather_Harris@needham.k12.ma.us

TBD, LICSW

Academic Planning Support

The School Counselor is the student's main resource each year for academic planning, scheduling, and for accessing academic support. The classroom teacher is the main resource for content support and is the primary resource for extra help (note: the classroom teacher also makes the official recommendation of course level for the following year). The School Counselor will help the student track his/her progress toward academic goals and towards meeting all graduation requirements. Students are encouraged to meet with their School Counselor to discuss academic concerns and questions. School Counselors reach out to students on a scheduled and as needed basis.

School Counselor Assignments 2018-2019

Counselor	Grade 12 (2019)	Grade 11 (2020)	Grade 10 (2021)	Grade 9 (2022)
Will Grannan (x2149)	A-Charter	A-Chen	A-Cavallo	TBD
ReneeVasquez (x2107)	Child-Fitzgerald	Choi-Feng	Celado-E	TBD
Matthew Howard (x2303)	Flagan-Hem	Fernandes-Hud	F-Hawkom	TBD
Katrina Martyn (x2517)	Herman-Lamb	Humph-Lobel	Hebert-K	TBD
Mary Jane Walker (x2502)	Lavine-Miller	Lockhart-Naw	L-McGrath	TBD
James Ash (x2101)	Milstein-Putprush	Neal-Ross	McGroddy-Pizzuto	TBD
Meridith Welch (x2553)	Quinn-Sprogis	Rubin-Supin	Potagal-Spruill	TBD
Shannon Mastropoalo (x2148)	Stedman-Z	Suresha-Z	St. Peter's-Z	TBD

Contact Information:

Tom Denton, Director of Guidance, ext. 2130 or Tom_Denton@needham.k12.ma.us
Jean McDavitt, Guidance Secretary, ext. 2144 or Jean_McDavitt@needham.k12.ma.us

Email addresses:

James_Ash_needham.k12.ma.us
Renee_Vasquez_Soliz@needham.k12.ma.us
Will_Grannan@needham.k12.ma.us
Matthew_Howard@needham.k12.ma.us
Shannon_Mastropaolo@needham.k12.ma.us
Katrina_Martyn@needham.k12.ma.us
Mary_Jane_Walker@needham.k12.ma.us
Meridith_Welch@needham.k12.ma.us

Seminars (9th and 10th Grade)

The Guidance Department has developed a series of seminars/meetings for freshmen and sophomore students. School Counselors lead the seminars in an effort to meet the students and deliver important information on a variety of topics. It is also the goal of the Guidance Department to get to know students through these programs, so that students will feel more comfortable accessing the many services and resources that are available to them.

In grade nine, the counselors present four seminars during the first half of freshman year. The topics include: Orientation to Resources and Services, Time Management and Study Skills, Social Emotional Skills, and 10th Grade Course Selection.

In grade 10, students participate in a Career Exploration Seminar, presented by the Guidance and Health and Wellness Departments.

Community Service Learning (CSL) Program/Volunteer Service

Each student's School Counselor is his/her contact person for participation in Needham High School's CSL Program.

The Community Service Learning Program is an important part of the educational experience offered at Needham High School. All students are required to complete two community service learning credits (60 hours) as part of their graduation requirement. Each credit equals 30 hours of volunteer or internship service. A minimum of 30 hours must be done with the same organization. Students may complete the entire 60 hours with one organization if they choose, or they may do 30 hours each with two different organizations. Students may earn up to 2 credits per year with a maximum of 8 credits over four years. Those who earn 8 credits will be acknowledged at Senior Class Day.

The mission of the Community Service Learning Program is to broaden students' experiences beyond the traditional classroom by providing opportunities to become involved in volunteerism, service learning, and career exploration. By engaging in such activities, students learn more about themselves, their interests, and the privileges and responsibilities of being a member of a school, local, and global community.

Students may complete their community service learning requirements through volunteer work, an unpaid internship, or a combination of both. Specific requirements for each of these two options are listed below. Students may start their community service learning hours beginning in their freshman year. Hours earned prior to that year, including the summer, may not be used. Students may volunteer for a minimum of 30 hours at a non-profit organization of their choosing, or one suggested by their school counselor. Students may not be supervised by a parent or other relative. Students who participate in one week service trips through a non-profit organization, such as Habitat for Humanity or a local church or temple, are eligible to receive one credit for successful completion of a trip. Volunteering without pay at a business, unless it is a pre-approved internship, cannot be used for community service.

We strongly recommend that students receive approval prior to beginning their community service by completing a student proposal form and turning this into their school counselor in the guidance office. This is the best way to insure that a student's volunteer hours will meet the requirements. With the exception of the TEC internship program, no internship credit can be given without prior approval. The Community Service Learning forms are available in the guidance office and can also be downloaded from the guidance web site or the Career and Community Service Learning page.

Community service opportunities are also posted in the weekly News From the Hill. Students are also welcome to check in with their school counselor to discuss additional ideas, to propose their own project, or to find out more information about a particular organization.

Students receive a grade of "P" (Pass) on their transcript when they have completed their community service requirements. All community service credits should be completed by January of the student's senior year. Students are encouraged, however, to begin fulfilling this requirement early on in their high school years. Our experience has shown us that many students who actively engage in volunteer service from the beginning of high school sustain their involvement and participate in additional service activities. Additionally, volunteer work can help students begin the process of career exploration.

Regional High School Relationships

Needham is a member of Minuteman Vocational Regional Technical High School in Lexington, MA and Norfolk County Agricultural High School in Walpole, MA. Students most often attend these high schools starting in 9th grade. Needham High School students and families who are interested in learning more about these schools are encouraged to review the websites and speak with their guidance counselors as well.

Minuteman Regional Vocational Technical High School: http://www.minuteman.org

Norfolk County Agricultural High School: http://www.norfolkaggie.org

Post-secondary Planning

The school counselor is the main school resource for a student's postsecondary planning. Although the bulk of the postsecondary

planning commences with a comprehensive program in the Spring of Junior year, there are other aspects, which occur as early as grade 9. From self-assessments, interest inventories, career discovery, and some standardized testing, the school counselors, in conjunction with the Personal Counselors, address issues related to healthy development throughout high school. With the resulting personal growth and self-discovery, students are able to enter the postsecondary planning process during junior year in a more meaningful and directed fashion.

In grade 11 the school counselors meet with all students in small groups in February to start the postsecondary planning process. Subsequently, the school counselors have at least two individual meetings with their students prior to the close of junior year. By the end of grade 11, the juniors will have written college essays (through English class), will have asked two teachers for confidential recommendations, and will have an initial list of colleges and programs to explore, which is all monitored by the school counselor. Additionally, the Guidance Department offers three parent nights during junior year to address the Postsecondary Planning Process, Visiting and Touring Colleges, and Financial Aid. Junior families also receive two newsletters during junior year.

In grade 12 the school counselors meet with all students in small groups in September to continue the postsecondary planning process. Subsequently, the school counselors have individual meetings with their students in the fall to track their progress and to support them in their application submissions. In September the school counselors offer a parent evening with three Directors of Admissions from local colleges. School counselors write a confidential letter of recommendation for each student. Counselors also coordinate visits from over 150 college admissions officers to the high school in the fall of senior year.

All students and families have access to the comprehensive Guidance Database in Naviance throughout the Postsecondary Planning Process. They also have access to Guidance Department's Postsecondary website: http://nhs.needham.k12.ma.us/college/default.htm

Post-Secondary College/University Requirements

For those considering college, admission requirements should be strongly considered when students plan their programs. Because these requirements vary widely, the best sources of information are the individual school catalogs or individual college and university websites. Students should sample a few catalogs and websites for the types of schools they are considering to make sure that they are covering the requirements. It is better to have more than is needed than to be short a required or recommended course. Resources and direct links to college and university websites can be found on the Guidance Department website.

Typical requirements for the different types of post-secondary schools to which many Needham High School students apply are:

Four-Year State and Private Schools: English: 4 years Social Studies: 2-3 years Mathematics: 3-4 years Sciences: 3 years (two of which must be lab sciences) World Language: 2-4 years

In addition to a student's having taken required and recommended courses, admissions' personnel place significant weight on the level of courses taken, grades and grade point average.

Two-Year State and Private Colleges: Associate degree program (two-year) requirements vary widely from a high school diploma to requirements similar to the four-year schools. If a student completes a two-year program, a student may transfer to a four-year school.

Business and Secretarial Schools: A high school diploma is required with courses related to the intended major recommended.

Technical Institutes: Requirements vary widely from a high school diploma to physics and four years of college preparatory mathematics.

Serious consideration is given by college admission officers and by employers to character, personality, work experience and extracurricular activities both in and out of school.

College and University Visits

Each year approximately one hundred and fifty representatives of colleges, universities, juinor colleges, community colleges, technical schools and other specialized schools visit Needham High School. A schedule of these visits is posted on the Senior Bulletin on the NHS homepage: http://nhs.needham.k12.ma.us/guidance/sb. Students and parents are strongly urged to check this each week beginning in September. In addition, our school participates in two TEC College Fairs, in October and April. These fairs provide an opportunity for students to compare one institution with another.

Many schools and colleges conduct Open House sessions. Visiting Days, and area interviews, which are publicized through the daily notices, the weekly Senior Bulletin, and the Guidance Office bulletin board. Please check individual schools' and colleges' web sites for additional information about such events.

For much more comprehensive information on options and considerations regarding post-secondary plans, you are urged to consult the

Post-Secondary Counseling website http://nhs.needham.k12.ma.us/guidance/Postsecondary.

United States Armed Services Visits

Each branch of the Armed Services visit Needham High School to meet with interested students. These visits are set up and advertised by the Guidance Department.

College Testing Program

Booklets describing the following testing programs are available in the Counseling Center: PSAT/NMSQT (Preliminary SAT/National Merit Scholarship Qualifying Test), the SAT Program, which includes the SAT - Reasoning Tests (Critical Reading, Mathematics, and Writing) and the Subject Tests, the Advanced Placement Exams and the ACT Program. For students who speak English as a second language, the TOEFL (Test of English as a Foreign Language) may also be necessary. Students should consult college catalogs to determine which tests are required or recommended.

A typical testing pattern for students is as follows:

Freshman/ Sophomore Year

For students in accelerated math and science who are earning a B or better, it may be beneficial to take an SAT - Subject Test in a terminal subject in June of the freshman or sophomore year. Refer to the chart below and consult subject area teachers and School counselors for more information.

Grade 9: Biology, Grade 10: Physics, World History, Math I

Junior Year

The PSAT/NMSQT is administered in October and is comparable to the SAT. This test is designed primarily for juniors. The colleges do not recognize PSAT/NMSQT for admission requirements. The results, however, are valuable to both the student and counselor when discussing possible choices of colleges. Students whose scores are high enough (typically 1% of population) become semifinalists for National Merit Scholarships by taking this examination. The SAT and Subject tests are usually taken by juniors in the spring of the junior year. Subject tests should be taken in terminal subjects if they are required or recommended for admission to colleges. AP Exams will be administered in the spring of a student's Junior or Senior year to those students desiring advanced placement or college credits upon being admitted to the college of their choice.

Senior Year

Students may wish to retake SAT and Subject Tests during the fall and winter of their senior year. The ACT (with writing) is another test used by colleges for admission and is as widely accepted as the SAT. Needham High School participates in the Advanced Placement Program (AP) of the College Entrance Examination Board. Advanced Placement Courses are the equivalent of college courses. Students who select AP courses should plan to take the AP examinations. Although Needham High School grants credit towards graduation for AP courses, college credit for AP courses may be granted individually to students by colleges participating in the College Entrance Examination Board. AP Exams will be administered in the spring of the senior year to those students desiring advanced placement or college credits upon being admitted to the college of their choice. If a student's results meets the minimum standard as set by the College Board and a participating college, students may be able earn college credit. The college a student is planning on attending makes this decision regarding awarding college credit based on AP scores. Most colleges do participate in the Advanced Placement Program.

Refer to collegeboard.com and actstudent.org for exact test dates.

Standardized Testing and the Student Receiving Special Education Services

Students who have a documented disability may be eligible for accommodations on College Board tests such as the PSAT, SAT, AP, Subject Tests and the ACT. More information can be found at http://sat.collegeboard.org/register/for-students-with-disabilities. Students should work with their guidance counselor or special education liaison to ensure the disability documentation required for the application is complete and substantiates the need for the accommodations being requested. Applications may be completed online or on paper. It takes about 7 weeks from the College Board's receipt of all documentation for a determination to be made. Students are encouraged to make application for accommodations for College Board tests during freshman year if possible. Students who receive accommodations can use them throughout their high school careers. Once approved, a student does not need to reapply.