

Wellesley High School

**Program of Studies**  
**2014-2015**

50 Rice Street • Wellesley • MA 02481

## **879 Drawing/Painting Intensive 10 H**

*6 credits. Year course.*

This is a rigorous honors-level course that will count in the computation of the Grade Point Average. The objective of this course is to provide challenging, intensive art instruction and study for the student who is seriously committed to art and who may be considering further arts education as a major or minor at the college level. This course is open to sophomores, juniors and seniors and may be elected for three years. Specific assignments change annually to permit for individual challenge and growth.

This course is designed to help students assemble not only a classic visual arts portfolio but, through the completion of other requirements, demonstrate arts-related proficiencies in writing, critical thinking, and presentation of one's work. Class work will focus on mastering a variety of mediums as well as new materials and processes in the completion of assignments. Students will be especially encouraged to use creative and imaginative approaches in the execution of their work. In addition, students will be accountable for: 1) a series of outside studio assignments agreed upon by the student and instructor; 2) the establishment of a sketch book/journal with two reviews per quarter; 3) the submission of a one-page review of a gallery/museum show pending the approval of the instructor; 4) a classroom presentation highlighting the work of an artist and one's artistic response to it; and 5) participation in a year's end group show.

Sophomores, juniors and seniors desiring to enroll in this class must consult with their guidance counselor and obtain the recommendation of the instructor. There is a materials fee for this course.

## **826-827L The Artist Journal 9**

*1.5 credits. Semester course; may be elected for two semesters, or with department head permission.*

Artist journaling is a way to artistically explore and express our inner worlds. In this semester-long course, students will work with themes such as relationships, cultural reflection, adolescent issues and coping with life transitions to elicit personal imagery. This course will explore two-dimensional media exploration in a blank sketchbook in addition to working sculpturally with new materials. Through exercises, assignments, personal observations and individual conferences, each student will learn to use art tools for expressing their personal journey. There is a materials fee for this course.

## **824-825L Art Studio 9**

*1.5 credits. Semester course; may be elected for ONE semester.*

*Art Studio* is a one-semester course designed to provide the student with experience in drawing, painting, printmaking, and three-dimensional design. The understanding and use of the elements and principles of design will be emphasized in all areas. *Art Studio* provides the student with a strong foundation for more advanced levels of study within the visual arts. Ideas of aesthetics, art criticism and art history will be introduced. There is a materials fee for this course.

## **872-873 Digital Art and Design 9**

*1.5 credits. Semester course; offered both semesters; may be elected for ONE semester.*

*Digital Art and Design 9* is a focused, hands-on exploration of fundamental tools and techniques using Adobe® *Photoshop*™, the current world standard in image modification software. The course will focus on image as art and the unique qualities of this software. After learning basic image manipulation techniques such as selecting, color correction, photo retouching, etc., students will develop skills in digital montage and collage and learn to incorporate layers, masks, colorizing, duotones, and other image enhancements. Image inputting to include scanning reflective art, negatives, and slides, and using a digital camera will also be covered. There is a materials fee for this course.

## **874 Digital Art and Graphic Design II 10**

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*1.5 credits. Semester course; may be for ONE semester...*

**PREREQUISITE:** *Digital Art and Design 9*

Building upon the skills learned in *Digital Art and Design 9*, this course will explore more advanced Adobe® *Photoshop*™ tools that utilize vector based graphics (drawing) in the creation of digital art and graphic design. In addition, the course will focus on learning the fundamentals of Adobe® *Illustrator* while working on projects which employ both programs. Students will also be encouraged to experiment with mixed media and alternative printmaking processes that utilize digital images. There is a materials fee for this course.

### **341 Advanced Placement Calculus 12 AB H**

This is a demanding college-level calculus course. Many colleges grant one semester's advanced placement credit to students who successfully complete the course and who score sufficiently high on the AB Advanced Placement Examination. This course covers all topics in the AB syllabus and fully integrates the content of previous math courses. It builds on the foundations of those courses, and students taking Advanced Placement Calculus will be expected to have fully mastered that content. Graphing calculators will be used.

Students enrolling in Advanced Placement Calculus AB must have successfully completed WHS' Pre-Calculus course at the honors level and should have a clearly demonstrated, high level of interest, motivation and achievement in all previous math courses. The ability to work independently and to learn math by reading and experimenting on one's own are expected of students in this course.

### **351 Advanced Placement Calculus BC 12 H**

This is a rigorous college-level calculus course. The topics covered in this course are the equivalent of a full year of college calculus. Many colleges grant two semester's advanced placement credit to students who successfully complete the course and who score sufficiently high on the BC Advanced Placement Examination. This course covers all topics taught in Calculus AB plus additional topics in the BC syllabus. Details on the content are contained in the course description booklet published by the CEEB and ETS. Extensive use of graphing calculators will be made. Students taking this course will be expected to have successfully completed WHS' Pre-Calculus course at the honors level. The ability to work independently and to learn math by reading and experimenting on one's own are expected of students in this course.

### **361 Advanced Placement Statistics 12 H**

This course is intended for students who have completed Analysis and have the interest and skill level to take an Advanced Placement course. Topics may include, but are not limited to: observing patterns and departures from patterns using exploratory data analysis; using random samples, blocks and stratification to plan a study; modeling using probability and simulation; and using statistical inference to confirm models. Students who take this course will be prepared to take the Advanced Placement Examination in statistics. Extensive use of graphing calculators will be made throughout the course. Students taking this course will be expected to have mastered fully the content of previous mathematics courses, especially Algebra and Advanced Algebra. This course is limited to seniors.

### **352 Discrete Mathematics 12 ACP**

This course is intended for students who have completed Analysis or Pre-Calculus and is designed to supplement previous learning in mathematics. Topics may include but are not limited to: operations research through graph theory (network analysis), statistics (both producing and exploring data), combinatorics, probability, social choice mathematics (voting systems and apportionment), modular arithmetic, codes and check digits and consumer finance. There is a consistent emphasis on how math informs decision-making daily for the operations of organizations, businesses, and individuals. Students often use graphing calculators to aid in solving real world problems and are frequently asked to explain their solutions and ideas within the context of these real world problems.

### **371 Introduction to Calculus 12 H**

This course provides an introduction to both differential and integral calculus. Applications of the derivative include related rates, optimization problems, and the calculus of rectilinear motion. The integral calculus includes applications to area, rectilinear motion, the accumulation of quantities given their rate function. Proficiency in calculating derivatives and integrals will also be emphasized. Students taking this course will be expected to have mastered fully the content of previous mathematics courses, especially Advanced Algebra and Pre-Calculus.

### **362-362L Introduction to Computer Programming 9**

*1.5 credits. Semester course, offered both semesters. Offered 2015-2016.*

This course is for students who enjoy interacting with computers and are interested in learning some big ideas in computer science. No prior computer programming experience is required. Students must have a sound mathematical background and be capable of working independently and cooperatively. This course prepares students for the Advanced Placement Computer Science course that is based on the Java programming language.

### **363 Advanced Placement Computer Science 10 H**

6 credits. Year course. Offered 2014-2015.

The goals of this course are comparable to those of a first-year course offered in college and university computer science departments. The course prepares students to take the Advanced Placement Examination, the results of which may result in advanced standing in college computer science courses. This course will be taught using the Java programming language and will include topics such as: class design, objects, methods, arrays, strings, sorting and searching algorithms.

### **367 Exploring Computer Science**

3 credits, semester course.

This course is for students interested in investigating the many uses and effects of modern computing technology. Students work on projects and activities on topics including human-computer interaction, problem solving and computational thinking, web design, programming, data analysis, and robotics. Throughout the course, we will discuss the way computer science has impacted our society. The course assumes no background in computer science. *Pending Budget Approval and Staff Availability*

## **METCO PROGRAM**

### **1090 METCO College Prep**

METCO College Prep is designed to complement the Senior Guidance Seminar. The students are able to receive individual attention to further pursue their plans for college or other post-secondary endeavors.

## **PERFORMING ARTS DEPARTMENT**

The Performing Arts Department provides experiences in the three allied arts; Music, Drama, and Dance. Through classroom, rehearsal and performance, students develop skills, techniques and knowledge that foster their intellectual, emotional and physical growth and development. Students of all levels are encouraged to participate. Students who have a serious vocational interest in music or drama can gain a solid foundation of pre-professional training through four years of study in the program area as well as through the intensive opportunity. Course meeting patterns and credits vary.

### **Required Concert Attire for Music Ensembles**

Members of *Symphonia*, *Advanced Honors Ensemble*, *Concert Choir*, *Song Sisters*, *Brooks Brothers*, *Keynote Singers*, and *Rice Street Singers* are required to purchase standardized uniforms or dresses. These articles can be purchased as needed from POPS (Parents of Performing Students). Standardized tuxedo jackets (boys) will be provided by the department for a school year's usage. In addition, members of *Keynote Singers* and *Rice Street Singers* are required to purchase separate performance attire. *Concert Band* members wear department-issued red blazers with personally-owned black bow ties, black slacks, and white collared shirts in all public performances. Black dress shoes are required for all performers in all ensembles. A user fee is charged for tuxedo and band jackets to cover the cost of dry cleaning upon the return of these items after the final concert of the year. Fee subsidy is available in cases of need. *Jazz Band* members will wear uniform concert attire consisting of personally owned black dress shirt and black dress slacks.

### **“Intensive” Courses**

Seniors who wish to experience more in depth study can apply and audition for admission into “Intensive” versions of selected courses offered by the department. Grades awarded for “Intensive” courses will be averaged into the student's Grade Point Average at Honors Level. Music seniors who have taken the prerequisite course, *901 The Complete Musician*, or its equivalent, who achieve a score of 75 or higher on the *Complete Musician* final exam, and who meet standards assessed by a pre-entry audition, exam, and interview will complete enrichment projects designed with the teacher in addition to the regular course assignments. Drama seniors desiring admittance to *Intensive Acting 12 H* must complete *Acting II* and interview/audition with the instructor. Intensive students who elect to do a Senior Project must continue to attend the meetings of the Intensive course and participate in public performances required for that course during the Senior Project term.

N.B. Course numbers ending in “A” indicate that an audition or interview is prerequisite to admission. Course numbers ending with other letters indicate combined ensemble options.

## Interdisciplinary Courses

### 900 Critic's Guide to the Performing Arts 9

*1.5 credits. Second semester course.*

This course is designed to help students to become thoughtful and perceptive consumers of the Performing Arts. Course content will be linked to the arts calendar of the Greater Boston area. A minimum of five professional, semi-professional, and community performing arts events will be booked for students to attend as a group. Students will be prepared for these performances by in-class discussions and research on the genres and periods included in the event. Seminar-style discussions and critical writing subsequent to the events will heighten students' awareness of the characteristics inherent in a variety of performing art forms. Students will be expected to keep a portfolio of their research and critical reviews. Personal outlay for tickets (\$100 maximum) and transportation will be incurred. Subsidy is available in cases of need. This course may be taken more than once.

## Music Courses

### 901 The Complete Musician 9

*3 credits. Year course.*

This course helps students develop into well-rounded musicians through study of the fundamentals of music theory, sight singing, ear training, conducting, and composition. Students in this course should be interested in serious study of music. This course, or equivalent studies, is a prerequisite for all senior music "Intensive" courses. The content of this course provides a core body of knowledge and skills for those intending to minor or major in music in college.

### 902 History of Jazz 9

*1.5 credits. First semester course.*

This course offers a complete historical perspective of the evolution of jazz beginning in the early days of blues and ragtime to contemporary modern jazz. Students will analyze authentic historical jazz performances and closely examine the social contexts from which each style emanated. Course work will include listening to primary sources of jazz performances, viewing videotapes of jazz masters in performance, attending and critiquing live performances, and hearing guest lecturers. Students will prepare and present Power Point presentations on two significant jazz composers.

### 903 Beginning Music Technology 9

*3 credits. Year course.*

This course will give students an introduction to MIDI sequencing and recording techniques. Students will learn to operate a modern synthesizer and to setup and operate a MIDI connection between a computer and a synthesizer. They will also learn about current digital recording techniques, making and mixing techniques, and how these pertain to current careers in music such as "recording engineering" and "studio production." While employing technology, students will simultaneously gain song writing skills in the style(s) of their choosing. By the end of this course, students will have completed approximately ten original songs using the technology and composition skills introduced in class. There is no prerequisite coursework or musical experience needed for this course. All are welcome!

### 904 Advanced Music Technology 10

*3 credits. Year course.*

**PREREQUISITE:** Successful completion of *903 Beginning Music Technology*.

This course will explore MIDI sequencing and recording in depth. Students will learn advanced techniques employed by music engineers and producers including digital recording and editing, microphone choice and placement, software-based effects, mixing and CD mastering. Students will design their own projects and may collaborate with others in the class. Students will gain deeper understanding of the song writing process through the study and analysis of professionally recorded songs by artists of their choosing. Students are highly encouraged to collaborate with colleagues taking TV/video courses to create soundtrack music for films. Advanced seniors may apply for the Intensive version (905) of this course.

### 905A Music Technology Intensive 12 H

*3 credits. Year course.*

**PREREQUISITE:** Successful completion of *901 the Complete Musician* (or equivalent studies), and *904 Advanced Music Technology*, audition, interview, and private voice lessons. Juniors desiring to enroll in this Senior Intensive must consult with the instructor the prior spring.

## TECHNOLOGY/ENGINEERING DEPARTMENT

The Wellesley High School technology/engineering program is designed to prepare students for the future in an increasingly technological world and for collegiate engineering and advanced vocational/technology programs. Students will apply basic scientific and mathematical principles and solve a myriad of technological and engineering problems. They will develop an appreciation for technology in our society while learning the proper safe use of tools, machines and materials. Students will develop problem-solving skills and cultivate their own creative talents as they use techniques associated with engineering principles. Lab Fees offset higher prices for supplies and materials. Because the design and engineering process is an essential component of applying any form or technology, all students entering the Technology Program at WHS will be required to take Introduction to Engineering Technology. Following this course, students may choose to further their understanding of the engineering process by taking Engineering Technology, or use their planning and design skills in a specific area of technology such as woodworking, robotics, mechanical and architectural drawing or automotive.

**741 Introduction to Design & Technology 10** *1.5 credits. Semester course; may be elected both semesters.*

**771 Introduction to Design & Technology 9** *1.5 credits. Second semester course.*

**PREREQUISITE:** *Introduction to Engineering Technology.*

This is the exploration of modern drafting technology. The students will learn proper techniques of layout and dimensioning. Various projects will guide the students through aspects of plane geometry, descriptive geometry and solids. Students will examine practical architectural and engineering applications both through paper and through the use of computer assisted drafting and design software. There is a materials fee for this course.

**751 Design & Technology 10** *1.5 credits. Semester course; may be elected both semesters.*

**PREREQUISITE:** *Introduction to Design & Technology.*

Design technology builds upon the principles and concepts developed in Introduction to Design Technology 9. Student projects will focus on geometric functions, solids, modeling and rendering in areas of engineering design and mechanical drawing. Computer aided design programs will be the primary computer application used by the students. Professional standards and quality will be stressed through the course to prepare the students for related career considerations. There is a materials fee for this course.

**742 Introduction to Engineering Technology 9** *1.5 credits. First semester course; may be elected both semesters.*

**742L Introduction to Engineering Technology 9** *1.5 credits. Second semester course.*

This introductory course provides students with the opportunity to learn the engineering and design process. Students apply science, mathematics, communication and problem solving skills to evaluate a problem and then propose, design and execute solutions. Students will engage in a number of group projects that allow them to develop and apply the engineering process. Projects may involve work in technology areas such as woodworking, technical drawing, robotics, mechanics, and electronics and computers. This course is a prerequisite for the more advanced Engineering and Technology, Drafting and Architecture, Woodworking and Robotics courses. There is a materials fee for this course.

**744L Engineering Technology 9**

*1.5 credits. Second semester course.*

**PREREQUISITE:** *Introduction to Engineering Technology.*

This course affords students the opportunity to apply science, math, and communication skills in the design, testing, and construction of a major project. The course is designed as a continuation of Introduction to Engineering Technology where students will expand and refine their problem-solving skills, as well as explore more complex aspects of engineering. Students work in multidisciplinary teams on activities that develop problem solving and creative thinking skills. Representative activities may include: designing, building, programming and testing robotic devices; designing and building machines to compete against each other in competitions; and opportunities to work with industry professionals on advanced projects. There is a materials fee for this course.

**743 Robotics 10** 1.5 credits. Semester course; may be elected both semesters.

**773 Robotics 9** 1.5 credits. Second semester course.

**PREREQUISITE:** *Introduction to Engineering Technology.*

The course is designed to give the student exposure to the engineering of computers and robotics. The course emphasizes the application of science and math skills in the design and construction of electronic and computer controlled mechanical robots to perform complex tasks. Students work in a lab environment and learn the safe and proper use of tools, as well as the basic concepts of electronics and computer assisted design. Students have an opportunity to participate in Botball and US FIRST, and other competitions both locally and nationally. There is a materials fee for this course.

**755 Wood Manufacturing 10** 1.5 credits. Semester course; may be elected both semesters

**785 Wood Manufacturing 9** 1.5 credits. Second semester course.

**PREREQUISITE:** *Introduction to Engineering Technology* or by permission of instructor.

This course will allow students to design and construct individual projects using the principles of good design, sound construction and safety. Students will learn to operate power machinery and proper construction procedures. Emphasis will be on quality, craftsmanship, good work ethic, and proper use of tools. A lab fee will be assessed based on types and quantities of materials used in projects. There is a materials fee for this course.

### **ADDITIONAL COURSES AND PROGRAMS**

**944 VHS On-line course 9**

**947 MOOC On-line course 9**

*3 credits. Semester course, offered both semesters.*

There are two options for on-line courses: Virtual High School (VHS) and massive open online course (MOOC) offered through organizations such as Coursera and EdX.

VHS is a consortium of schools from around the US and around the world that provide online instruction in a variety of subjects to students at the middle and high school level. Many of the VHS offerings are unique and represent an opportunity for WHS students to take courses beyond what is offered in the WHS curriculum. As a member school, Wellesley High School can enroll 25 students a semester in VHS courses. Students interested in taking an online course through VHS should be prepared to spend 6-8 hours a week working on class material. Much of that time will be spent online reading and writing assignments, posting to discussion boards and contributing to online discussions.

Although there are no set class times, assignments and discussions are required on a weekly basis. WHS students participating in VHS are required to reserve 5 blocks a cycle in their schedule for VHS class time, during which they must participate in VHS online. As the course progresses, the requirement to spend school time on VHS will be reduced as appropriate.

Students interested in taking a course through VHS can go to WHS@VHS read the WHS requirements and to download the application. The application must be submitted to the VHS coordinator for approval. Students wishing to take courses already offered at WHS must also get the approval of the appropriate department head. Once students are accepted, they will be given login information and be invited to an orientation session to learn how to access VHS.

A massive open online course (MOOC) is a typically free, college-level, online course that provides access to university education to any student around the world. Students are expected to work independently and keep up with all course work. Students who wish to take a MOOC must demonstrate that they meet all course prerequisites and obtain approval from the appropriate department head.