

## TABLE OF CONTENTS

<b>I.</b>	<b>ACADEMIC INFORMATION</b>	<b>1</b>
<b>II.</b>	<b>ACADEMIC PROGRAM</b>	<b>10</b>
	Humanities Division	10
	English	11
	Foreign Languages	16
	Classics	16
	Chinese	19
	French	20
	Spanish	22
	STEM Division	24
	Mathematics	25
	Science	29
	Computer Science	35
	Social Science Division	37
	History	38
	Economics	42
	Psychology	42
	Political Science	43
	Religious Studies	43
	Arts Division	44
	Elements of Style	45
	Visual Art	46
	Music	50
	Theatre	52

**Karlyn McNall**, *Assistant Head for Faculty and Academic Affairs*  
978-371-6545 [kmcnall@mxschool.edu](mailto:kmcnall@mxschool.edu)

**Michael Schaeberle**, *Director of Studies*  
978-371-6049 [mschaeberle@mxschool.edu](mailto:mschaeberle@mxschool.edu)

**Najah Alford**, *Academic Affairs Assistant*  
978-371-6595 [nalford@mxschool.edu](mailto:nalford@mxschool.edu)

**Leanne Winkler**, *Registrar*  
978-371-6541 [lwinkler@mxschool.edu](mailto:lwinkler@mxschool.edu)



**MIDDLESEX SCHOOL**  
**DESCRIPTION OF COURSES**  
*2016-2017*

**ACADEMIC INFORMATION**

**ACADEMIC PHILOSOPHY**

The purpose of the Middlesex academic program is to instill a love of learning and develop the skills that are essential to education in the liberal arts, the fine arts, and the sciences. Toward this end, the School provides its students with small classes; a talented, dedicated, and accessible faculty; and the rich and varied curriculum described in the pages that follow.

**COURSE SELECTION**

Middlesex School encourages its students to think carefully about course selection and to create each year a course of study consistent with their interests, strengths, and background.

Each year, students will receive a *Curriculum* book along with instructions from the Academic Office for creating a course of study.

In planning their program for the coming academic year, current students must meet with their advisors to submit electronically their course requests. Entering students receive information from the Academic Office regarding appropriate course requests and placement.

Department heads play an active role in the course selection process. In some departments, such as Mathematics, Science and in each of the languages, the department heads place students in the appropriate courses and levels each semester.

Courses at Middlesex are scheduled by time blocks, lettered A through H, and L (these blocks are subject to change as students' schedules are configured). Each block represents a number of class periods a week. Some courses may include an extra period; others may meet only three periods a week.

The course descriptions in this book are accurate at the time of publication. However, the information listed is subject to revision and change at the discretion of the School and updated course descriptions are available on the School's website. Although we hope to offer the courses described in this catalogue, courses that do not directly fulfill a diploma requirement will not be taught if enrollment is insufficient. It is the hope of the School to schedule each student into the courses he or she has requested. However, for a variety of reasons it is not always possible to schedule each particular student into every course requested.

**YEAR AND SEMESTER COURSES**

A course listed as *Year* **must** be taken both semesters in succession. Only in an extraordinary circumstance may a student drop a yearlong course at the end of the first semester with the permission of the Department and the Academic Office. A course listed as either *Fall* or *Spring* may be elected only in that semester. A course listed as *Fall*, *Spring* may be taken in either, but not both, semesters.

## **DROP/ADD PERIOD**

Once a student has finalized a course of study and submitted his or her program to the Academic Office, he or she may drop or add courses only with the approval of his or her advisor and permission of the Academic Office. Normally, students will not be allowed to drop or add courses later than the second week of each semester. A course listed as *Year* may only be added or dropped during the period of the fall semester when changes are allowed.

## **CREDIT AND REQUIREMENT SPECIFICATIONS**

Courses at the School are offered by academic departments, such as English and Mathematics, and the departments are in turn grouped into divisions: Humanities; Science, Technology, Engineering and Mathematics (STEM); Social Sciences; and Arts. Students are expected to meet requirements set by the departments and within the four divisions.

All students are expected to take a minimum of five-and-a-half courses each semester during their Class IV (Grade 9) and Class III (Grade 10) years, and five courses each semester during their Class II (Grade 11) and Class I (Grade 12) years, unless the faculty has made a special exception. Students in Classes I and II should elect their five courses within the limits set by the distributional requirements. Exceptions to the distributional requirements may be granted by the Academic Office.

After his or her first semester at Middlesex, a student may elect to take an additional half-credit or full-credit course with the permission of his or her advisor and the Academic Office and the approval of the Studies Committee. If a student taking an extra course fails one of the courses in his or her program, that student owes the School a credit to be made up in summer school. No student will be allowed to add for credit or audit a second extra course.

At an absolute minimum, Middlesex requires a student to attend 80% of the scheduled classes per course to be eligible to receive credit for the course based on the student's graded performance. If attendance is below 80%, a vote of the faculty is required for course credit.

A student may not advance to the next school year without successfully acquiring the minimum credits required for the previous academic year. No more than two course credits may be made up through summer work.

To graduate from Middlesex School, a student must fulfill the School's academic requirements, as outlined by grade, department, and number and distribution of credits, in the *Curriculum*; carve a plaque that is acceptable to the faculty member overseeing the plaques; and meet all other School obligations, such as class attendance and athletic and arts requirements. Given our commitment to senior leadership and presence in the community, graduation also requires on-campus completion of the year in which the student is enrolled as a member of Class I.

Students who fulfill these requirements are eligible for a diploma. All Middlesex diplomas are awarded by a vote of the Middlesex faculty, with academic honors acknowledged as outlined in the *Curriculum*. Middlesex does not grant diplomas to students who have already graduated from a secondary school or the international equivalent; such students may be eligible for a certificate of attendance, which is also awarded by vote of the faculty.

## **DEPARTMENTAL REQUIREMENTS**

Departmental requirements consist of specific courses which aim to develop in all students such fundamental skills as insightful reading, critical thinking, coherent writing, and accurate calculating – skills that will enable students to do sophisticated work at Middlesex School and

beyond. Because Middlesex School promotes both breadth and depth of study, a student in his or her Class IV, Class III, or Class II year will not normally be permitted to suspend study in one department in order to take two courses in another.

In most cases, students are given credit for departmental requirements if they have previously taken courses at the high school level which are the equivalent of these requirements. For example, an entering member of Class III would not be required to take Math 22 if he or she had completed geometry before coming to Middlesex.

### ***English***

All students must take an English course each semester. Students in Class IV must take English 10 and 11, students in Class III, English 20 and 21 and the Writing Workshop, and students in Class II, English 30 and 31. Students in Class I must select one course offered by the English Department each semester.

### ***Mathematics***

All students must take math through the level of Math 32 (*Pre-calculus: Trigonometry*) and they are expected to continue the study of mathematics through their Class I year.

### ***Science***

All students must take at least two full years of laboratory science and they are strongly advised to take three years of laboratory science. For the purpose of this requirement, Biology, Chemistry, Physics, and Environmental Science are considered laboratory sciences. **Students hoping to take particular AP sciences during their time at Middlesex must pay careful attention to the prerequisites paired with each course and plan their science sequence accordingly.**

### ***Foreign Languages***

All students must study a single foreign language through Middlesex's third-year level or continue the study of a single foreign language through the conclusion of their Class I year. Students may not satisfy this requirement by completing two years in one language and an additional year in another. The School will support the efforts of native and heritage speakers to take appropriate national standardized tests. Middlesex will not allow a member of Class III or IV who enrolls with skills sufficient to take the AP test in a language to meet the School's language requirement in that language. Students are encouraged to continue their language study through the Class I year. A student may study two foreign languages simultaneously only if he or she has reached Middlesex's second year of study in one of the languages.

### ***History***

All students must take at least four semesters of history (any course designated as History). It is recommended that students in Class IV take *The Ancient World* (History 10) and one of the *Topics in World History* courses (History 12, 13, 14 or 15). It is **strongly recommended that students in Class III take *Early Modern World History* (History 20) and *Modern World History* (History 21).** Students who wish to take the Advanced Placement examination in World History should enroll in both History 20 and History 21 and attend the exam preparation workshop offered by the Department during the spring semester. All students in Class II are required to complete a full-year course in *United States History*. **Students may only request Advanced Placement United States History (History 41) if they have completed both *Early Modern World History* (History 20) and *Modern World History* (History 21).**

### ***Art***

All students entering Class IV must take four *Elements of Style* courses (Art 11, 12, 13, and 14), one each semester. New students entering Class III must take two *Elements of Style*

courses, Art 11 during one semester and Art 12, 13, or 14 during the other. Returning students in Class III will take those *Elements of Style* courses not covered the preceding year.

## DISTRIBUTIONAL REQUIREMENTS

In addition to the departmental requirements, students are expected to meet distributional requirements during their Class II and Class I years. These are designed to provide students with a balanced exposure to the Humanities; Science, Technology, Engineering and Math (STEM); Social Sciences; and Arts. Students are expected to elect courses among the four divisions in the following ratio of semester-length courses:

HUMANITIES	7	ARTS	1
STEM	5	UNRESTRICTED	5
SOCIAL SCIENCES	2		

Exceptions to these requirements may be granted by the Academic Office to students pursuing advanced academic programs, although no more than one credit will be waived. The Arts requirement will not be waived. This requirement may be fulfilled through arts courses or active participation in music lessons, chorus, or drama. Students having questions about the suitability of a particular course in meeting these requirements should seek advice from the Academic Office.

## CURRICULAR MODELS

**All four years of a student’s academic program are important. Students should take the most demanding courses consistent with their abilities and interests. The School advises that all students take four years of mathematics, four years of foreign language, and three years of laboratory science.**

In planning an academic program, the following curricular models for each class will be useful:

### ***Class IV (Grade 9)***

English 10 and 11; Mathematics (the level will be determined by the Department); a foreign language (the level will be determined by the Department); one course each semester from *Elements of Style* (Art 11, 12, 13, or 14); a semester course in Mindfulness; and any two other full-credit courses each semester offered to Class IV in History, Biology, Chemistry, or Computer Science. A student in Class IV may take a second foreign language only if he or she has reached Middlesex’s second year of study in one of the languages.

### ***Class III (Grade 10)***

English 20 and 21 and the Writing Workshop; Mathematics (the level will be determined by the Department); a foreign language (the level will be determined by the Department); *Modern World History* in the second semester and either *Early Modern World History* or *The Ancient World* in the first semester. Returning members of Class III must complete the requirements in *Elements of Style* (Art 11, 12, 13, or 14). Entering members of Class III must take Art 11 during one semester and Art 12, 13, or 14 during the other semester. In addition, students in Class III must elect an additional full-credit course each semester offered in Biology, Chemistry, or Computer Science to complete their schedule. A student in Class III may take a second foreign language only if he or she has reached Middlesex’s second year of study in one of the languages.

### ***Class II (Grade 11)***

English 30 and 31; Mathematics at the appropriate level; United States History (History 30 or History 41); a foreign language; and one additional full-credit course each semester from those open to members of Class II. Juniors are strongly encouraged to elect Physics, or if Biology, Chemistry and Physics have been completed, an Advanced Topics or Advanced Placement science course. In determining the suitability of a particular course or courses, students are required to consult with their advisors and are encouraged to seek advice from Department Heads, the College Counselors, and the Academic Office. Students should be aware of distributional requirements for Class II and Class I when planning their schedules and should consider their program for their Class II year in light of a possible program for their Class I year.

### ***Class I (Grade 12)***

An English elective each semester. In addition, each student must take four more full-credit courses each semester. It is strongly recommended that students continue mathematics through their Class I year. In choosing all of their courses, students are responsible for fulfilling both the departmental and the distributional requirements of the School for graduation. Once again, students are required to consult with their advisors and are encouraged to seek advice from Department Heads, the College Counselors, and the Academic Office.

## **ADVANCED PLACEMENT**

Preparation for Advanced Placement examinations is offered in more than 20 subject areas. The requirements for admission to AP courses vary from department to department. For instance, admission to AP Economics is based on performance in both United States History and previous courses in mathematics; and admission to AP Art History is based on performance in Art 11, United States History and English 30 and 31. Admission to all Advanced Placement courses depends on demonstrated mastery of the subject in preceding courses as well as permission of the specific Department. Students will not be allowed to audit Advanced Placement courses. Any exception to this rule must be approved by the Academic Office.

## **INDEPENDENT STUDY**

Any student wishing to pursue a course of study not specifically offered in this course book may petition the Academic Office for permission to undertake a semester-length independent study option.

The Independent Study Program includes both Independent Courses and Independent Projects. In any semester, a student may only have one Independent Course or Independent Project as part of his or her academic program. Applications may be obtained from the Academic Office and must be submitted by the announced deadline; late applications will not normally be considered. Since the Independent Study Program is intended to allow a student to engage in study that is independent, the School will not normally allow more than two students to participate in a given Independent Course or Independent Project. (A member of the faculty may only sponsor one Independent Course or Independent Project in a semester). A student applying to the Independent Study Program must provide a written plan that clearly indicates a) how he or she will spend his or her time, b) a clear objective for the Program, and c) an explanation of what will be produced during the Program (journals, papers, reports, presentations, etc.). This plan must demonstrate that the amount of time invested in the Program is the equivalent to the amount of time spent in the class(es) dropped. In consultation

with advisors and the Academic Office, the Studies Committee will evaluate and approve all petitions to the Independent Study Program.

An ***Independent Course*** is a course of study not specifically offered in this curriculum book and sponsored by teaching members of the Middlesex faculty. In addition to independent work, a student is expected to meet no fewer than two academic periods per week with his or her faculty sponsor and to produce regular papers, reports or other suitable academic materials. While Independent Courses are usually taken for a grade, members of Class I may take an Independent Course under the PASS/GRADE system.

For the spring semester, a member of Class I may pursue a part-time or full-time ***Independent Project***, on or off campus. Independent Projects, unlike Independent Courses, do not confer academic credit, even though they may involve academic or intellectual activity, and they do not receive a grade. An Independent Project may stand in lieu of one or more courses. Independent Projects may serve in lieu of distributional requirements, but not departmental ones.

## **AUDITING COURSES**

Any student may audit an academic course, but only with the permission of the instructor. No vote of the Studies Committee is required. Course audit forms are available in the Academic Office. A student may not audit any course that is fully enrolled, and students wishing to take a course for credit will be enrolled prior to students planning to audit. Regular attendance and completion of a minimum of 80% of the work is required before the School will note the audit on a student's transcript. The student must join the class during the drop/add period at the beginning of the semester and continue through the end of the semester in order to be granted formal recognition of the audit. A student enrolled in an extra course may not audit an additional course. The student or instructor may end the audit at any point during the semester by instructing the Academic Office to remove the course from the student's transcript. A student who audits a course for the complete semester will be included on class lists and will receive written quarterly comments and a notation of "audit" on his or her transcript. A student may not request an audit after completion of a course, nor use an audit to fulfill a department or distribution requirement, nor receive a grade or credit for the course.

## **RESTRICTED ASSESSMENT WEEKS (Test Blocks)**

Designated restricted assessment weeks are in effect several times during the academic year. Full-period tests (and the submission of major papers) are restricted during the weeks that conclude the four marking periods or occur just prior to long vacations. Teaching faculty will make every effort to observe both the letter and the spirit of this protocol. Major graded work should be assigned, and tests announced, well in advance (5 days) of the due date. Tests spread over two blocks, or double assignments – a paper and a test – should be avoided during restricted assessment weeks.

During restricted assessment weeks, any teacher planning to use more than one block for an assessment must get prior approval from the Academic Office. Any teacher assigning work outside a test block that takes longer than a regular night of homework or is worth more than a regular night of homework in a student's grade must get prior approval from the Academic Office.

## **HOMEWORK OVER VACATIONS**

Academic assignments over the Thanksgiving break, winter holiday and spring vacation are limited to one regular (nightly) homework assignment due on the first day of classes following the break.

## **EXAMINATIONS**

Comprehensive exams are administered during two weeklong periods in the fall and spring: preceding the December break and at the end of the second semester. Students in Class I will only be required to take a spring exam in a departmental required course outside of English and in Latin 62. A comprehensive exam counts 25% of the corresponding class' final semester average.

A student may not receive a numerical grade for a course in which he or she does not take the comprehensive exam. Absent extraordinary mitigating circumstances, all comprehensive exams must be taken on the Middlesex School campus.

In the case of a comprehensive exam that is postponed for reasons of prolonged illness or injury, a student will be expected to make up the exam as soon as he or she is physically able. In the case of the fall semester, comprehensive exams must be completed before the end of the first week of the School's March Break and in the case of the spring semester, comprehensive exams must be completed prior to the first day of classes in September.

## **THE GRADING SYSTEM**

Letter grades are given to all students at the end of each quarter, and numerical grades are given for examinations and at the end of each semester using the following format:

A+ = 97-100	A = 93-96	A- = 90-92
B+ = 87-89	B = 83-86	B- = 80-82
C+ = 77-79	C = 73-76	C- = 70-72
D+ = 67-69	D = 63-66	D- = 60-62
	F = 50-59	

A passing grade is D- (60) or above. A semester grade lower than 60 constitutes a failure and must be made up by taking an approved course of study over the summer in the area of the failed course. The Academic Office approves courses for summer study.

Once grades have been entered at the conclusion of a quarter, these grades will be computed in determining final semester averages, even if the student switches sections before the end of the semester.

Academic credits are awarded by semester, and not by the year. Therefore, a failing grade in a fall semester course cannot be averaged against a passing grade in the spring semester of the same course.

Grades and academic comments will be published four times a year. Advisors will review grades with their advisees and will publish a letter each semester. Once grades have been reviewed by teachers and advisors and shared with parents, they will not normally be subject to change.

## **HONORS**

Academic honors are awarded in the following two categories according to grade point average:

Honors	85.00 – 89.99
High Honors	90.00 and above

Upon completion of each semester, students achieving Honors receive a certificate; students earning High Honors are presented with a certificate and an engraved bowl which remains on display while the student is at Middlesex. Any student who receives more than one P as a semester grade or who has taken fewer than the usual credits in any given semester will be ineligible to receive honors or high honors during that semester.

A regular Middlesex Diploma is awarded to each student whose lifetime average at Middlesex School is below 85.00.

A Middlesex Diploma with Credit is awarded to each student whose lifetime average at Middlesex School is between 85.00 and 89.99.

A Middlesex Diploma with High Credit is awarded to each student whose lifetime average at Middlesex School is between 90.00 and 92.99.

A Middlesex Diploma with Highest Credit is awarded to each student whose lifetime average at Middlesex School is 93.00 or above. A student on whose transcript more than one P shows in a semester or who has taken fewer than the usual credits in any given semester is not eligible to receive a Diploma with Highest Credit.

## **IMPROVEMENT AWARDS**

In addition to honors, students in Classes I, II, and III are eligible to receive improvement awards if their semester averages are substantially above their previous best achievements while at Middlesex. The faculty has devised a formula which compares each student's current average with his or her previous best average. If the increase is substantial enough, an improvement award is given.

## **ACADEMIC PROBATION**

A student is placed on Academic Probation if, at the end of any semester except the first semester of the Class IV year, the student's grades include one of the following:

1. a failing grade in any course;
2. two or more courses with final semester averages below 70;
3. an overall semester average below 75.

If a student falls into any of these three situations, the School feels there is substantial cause for concern.

When a student is placed on Academic Probation for the first time, the Academic Office will send a letter to the parents expressing concern. In addition, the student will consult with his or her advisor and meet with the Director of Studies. An appropriate set of remedial measures, such as tutorials, regular counseling, study hall attendance both during the class day and in the evenings, a reduction in extracurricular commitments, and changes in living and study habits will be implemented, to be supervised by the student's advisor. While a member of Class IV in

his or her first semester will not be placed formally on Academic Probation, he or she will be subject to similar supportive measures.

Should a student be placed on Academic Probation two consecutive semesters, he or she will then meet with the Director of Studies and the student's advisor to review the student's academic situation in depth. This meeting is intended to reinforce, in the mind of both student and parents, the increasing seriousness of the situation. At this time a student may be asked to leave the School if it is determined that the student has failed to adhere to the recommendations of the School concerning action necessary to improve his or her academic standing.

Any student who is placed on Academic Probation for three consecutive semesters will not be permitted to return to School the following semester, subject to Academic Council review and recommendation and with the approval of the Head of School.

A student who is removed from Academic Probation after a single semester reverts to the status of all other students. However, a student who sustains two consecutive semesters on Academic Probation and whose performance the third semester improves enough to remove that student from Academic Probation may still be dismissed at the conclusion of the following semester if his or her performance falls back into the Academic Probation category. This does not apply, however, to seniors in their last semester at the School.

A student, who accumulates three academic failures, either at the conclusion of the first semester or by the end of the academic year, cannot be promoted to the next semester. For that reason, the student will be dismissed from the School, subject to the approval of the Head of School.

## **SENIOR PASS/GRADE OPTION**

During the fall and spring semesters of a student's Class I year, the Director of College Counseling in consultation with the Director of Studies may determine whether to place a number grade or a P on the report card and transcript of a member of Class I based on which grade best represents the student and the School in the college process.

A P may be substituted for a grade subject to the following conditions:

- No course taken to fulfill a specific departmental requirement may be selected.
- Advanced Placement courses cannot be taken PASS/GRADE.
- If the final grade in the course is *below* 70, the numerical grade stands and is counted in the student's semester average.
- Except when an approved Senior Project takes the place of more than one academic course, a minimum of four grades must appear on a transcript. That is, absent extraordinary mitigating circumstances, a member of Class I's transcript will report no more than one P in each semester.
- The Director of College Counseling in consultation with the Director of Studies will determine whether to place a number grade or a P on a member of Class I's report card and transcript based on which grade best represents the student and the School in the college process (a grade of 80 or higher is almost never replaced by a P). A grade of P will not be used solely to inflate a student's grade point average for Middlesex School academic honors and awards.

## **EXTRA HELP, TUTORING, STUDY SKILLS, AND TESTING**

All teachers expect to see students outside class for extra help sessions – both those who are succeeding and those who are struggling with class material. After attending regular extra help

with his or her teacher and taking advantage of the School's Peer Tutors, any student who is still experiencing academic difficulty in a course may arrange for tutoring with permission of the Academic Office. The student's advisor, after consulting with parents, the teacher, the Head of the Department, and the Academic Office, works with the student and the tutor to schedule meetings.

If a student and his or her advisor feel that additional help is needed in study skills, organizational skills, time management, reading comprehension, or language skills, the advisor should contact the Academic Office after a conversation with the parents of the advisee. The Academic Office will help coordinate arrangements as appropriate.

All tutoring sessions must be arranged so as not to conflict with the School's evening study hours.

**As a matter of law, all persons who work with students on the Middlesex campus must be subject to a Criminal Office Records Investigation (CORI) background check.**

When it is necessary, Middlesex may suggest that a family contact a neuropsychologist for diagnostic testing. The advisor and the parents engage this process along with the Academic Office. The Academic Office can advise families of the types of testing available and can recommend professional testers. Student academic testing is kept on file in the Academic Office. The Testing Committee reviews all academic testing and distributes recommendations to a student's teachers as appropriate. Middlesex School's internal review of testing is independent from any national testing board's determination regarding accommodation.

## **ACADEMIC HONESTY**

Middlesex expects honesty of all its students at all times. It is assumed that each Middlesex student will be responsible for his or her own work in accordance with the principles teachers establish for each course. Students must understand that, should they hand in work that is for any reason not substantially their own, they may be accused of academic dishonesty.

**Any Middlesex student who is guilty of academic dishonesty (that is, plagiarism or cheating) places his or her Middlesex career in jeopardy and may be dismissed.**

## **HUMANITIES DIVISION**

[Head of the Division: John Hirsch]

The Humanities Division includes English, Latin, Greek, Chinese, French, and Spanish. While these subjects may differ in the material studied and the methods used, they have their common ground in the mastery of language. Our interest in language is two-fold. We want students to be well aware of the ideas and values embodied in literature, and we want their own writing and speaking to be as effective as possible. While students at all levels are held to correct usage of the language, the overall emphasis gradually shifts from practice on fundamentals to work with literature itself as the student moves through to the upper levels.

All courses in the Humanities Division taken in the Class II and Class I years confer distributional credit in the Humanities Division as well as appropriate departmental credit.

# ENGLISH

[Head of the Department: John Hirsch]

The English Department presents a series of courses which aims to accomplish two main goals: to cultivate students' understanding of and pleasure in literature and to develop their ability to express their ideas fully, accurately, and convincingly in writing. We study in depth a wide range of texts from different genres, texts carefully chosen to provide students a rich exposure to great literature. We also ask students to write frequently throughout their careers, moving from shorter to longer writing assignments as the students mature. Wide-ranging Harkness-table discussions play an integral role in students' intellectual development during all four years, as we believe that students' ability to speak articulately about their ideas reinforces their ability to write clearly and precisely about them.

To reach these goals, the Department has established a three-year reading and writing program in which all students follow the same curriculum. The sophomore curriculum, with its Writing Workshop, is at the heart of the program: in this year students master the essential skills of both cogent analytical writing and correct and efficient style. The freshman year—with its emphasis on literature in different genres, short writing assignments, and fundamentals of grammar and style—prepares students for the sophomore year. The junior year provides students with a chance to hone their analytical skills, and polish their critical writing, as they continue to study challenging literary texts. All juniors then take the AP English Literature and Composition and the AP English Language and Composition Examinations at the end of the year.

The English curriculum for the senior year consists of a variety of semester-long elective courses, which allow students (and faculty) to pursue areas of particular intellectual interest.

ENGLISH 10. *Elements of Fiction. Fall. The Department. 5 meetings weekly. Required of all members of Class IV. **Writing intensive course.** Freshman English fall semester.* This course provides students with the fundamentals necessary for their future work in English. During the fall, students investigate the techniques of fiction, reading and analyzing short stories and a novel. Formal instruction in writing is an integral part of this course, and students write frequently. In each semester, they are expected to master the writing of a unified paragraph and a unified essay. Throughout the year, students study essential points of grammar, usage, and punctuation. The course aims, above all, to help students acquire a clear and confident voice in speaking and writing about fiction, poetry, and drama.

ENGLISH 11. *Elements of Poetry and Drama. Spring. The Department. 5 meetings weekly. Required of all members of Class IV. **Writing intensive course.** Freshman English spring semester.* For description see English 10. [During the spring, students study the fundamentals of poetry, reading and analyzing a variety of poems from different periods and a Shakespeare play.]

ENGLISH 20. *Literature and Composition I. Fall. The Department. 5 meetings weekly. Required of all members of Class III. **Writing intensive course.** Sophomore English fall semester.* This course introduces students to great works in the Western literary tradition; the focus is on close reading and the critical essay. The course seeks to develop in students the ability to convert their intuitions about the meaning of these complex texts into organized, coherent, articulate assertions. While encouraging students to recognize that these texts are ultimately inexhaustible and irreducible, the course demands that students make clear and forceful general assertions, both in speech and in writing, and support these general assertions with a wealth of detail. Writing assignments are frequent and closely coordinated

with the topics covered in Sophomore Writing Workshop. By year's end, all students are expected to demonstrate a mastery of the protocols of the formal essay.

ENGLISH 21. *Literature and Composition II. Spring. The Department. 5 meetings weekly. Required of all members of Class III. Writing intensive course. Sophomore English spring semester.* For description see English 20.

ENGLISH 20W. *Sophomore Writing Workshop. Year. The Department. 1 meeting weekly. Required of all members of Class III.* Weekly workshops on the craft of writing with particular emphasis on the analytical writing done in the disciplines of English and History. These workshops analyze and develop, one by one, the elements that constitute effective expository/analytical writing. The workshops begin with an analysis of the function of the paragraph and the topic sentence; they move on to techniques for subordinating evidence, strengthening coherence and logical flow, revising paragraphs, and introducing and concluding essays. The workshops finish by addressing the finer details, presenting a variety of sentence structures, and offering rules for the use of all forms of punctuation. Along the way, students study how to make good writing better, how to make their ideas more distinct, and, above all, how and why writing is a process of reformulation and revision. The workshops conclude with a writing test and a grammar and punctuation test. Students continue in the course until they have passed these tests.

ENGLISH 30. *Advanced Placement English Literature and Composition I. Fall. The Department. 5 meetings weekly. Required of all members of Class II. Writing intensive course. Junior English fall semester.* This course focuses on the techniques of textual criticism appropriate to each of the major genres. Mastering these techniques provides preparation for the Advanced Placement Examination in English Literature and Composition. Most members of Class II are encouraged to take the exam at the end of the academic year. Formal instruction in writing reinforces and expands the work of the *Sophomore Writing Workshop*. During the fall, the course concentrates on the writing of out-of-class essays. Students review the essay skills emphasized in English 20 and 21 and apply these skills to writing critical essays that demand further sophistication of approach and discernment.

ENGLISH 31. *Advanced Placement English Literature and Composition II. Spring. The Department. 5 meetings weekly. Required of all members of Class II. Writing intensive course. Junior English spring semester.* For description see English 30. [In the spring, the course focuses on the writing of timed, in-class essays on works in a variety of genres.]

The following courses are open during the **fall semester** to all members of Classes I and II. In the case of over enrollment, preference will be given to members of Class I.

ENGLISH 41. *Studies in Medieval Literature. Fall. Ms. Van Norden. 4 meetings weekly.* In this course, we will most likely read three of the following four classics of medieval literature: the Old English epic *Beowulf*, Dante's *Inferno*, Chaucer's *Canterbury Tales*, and the Middle English romance *Sir Gawain and the Green Knight*. In any given year, however, we may decide to focus exclusively on the "Matter of Britain," i.e., those texts, literary, historical, and quasi-historical, pertaining to King Arthur and the Knights of the Round Table. In any case, we are sure to encounter dragons, monsters, giants, knights, and loathly ladies.

ENGLISH 42. *Narratives of Nationhood. Fall. Mr. Koelz. 4 meetings weekly.* This course will explore the rich and complex relationship between literature and the idea of the nation. How does imaginative writing help to create and sustain national identities? How can the stories we tell shape our sense of who belongs within a national body? Beginning with Walt Whitman's exuberant celebrations of American democracy, we will study literature

that interrogates and reimagines the concept of nationhood at critical turning points in history. Readings will likely include Willa Cather's *The Professor's House*, Kazuo Ishiguro's *The Remains of the Day*, and Joseph O'Neill's *Netherland*.

ENGLISH 43. *Forms of Poetry*. Fall. Ms. Ferguson. 4 meetings weekly. The aim of this course is to delve more deeply into various poetic forms, including the sonnet, the sestina, the ballad, the villanelle, and the poem sequence. We will read, deconstruct, analyze, write and rewrite poems in each of these forms, and as we do so we will discuss issues of technique, interpretation, tradition and performance.

ENGLISH 45. *Postcolonial Literature*. Fall. Ms. Jones. 4 meetings weekly. In this course, we will explore and engage with voices beyond the Western literary canon. We will read fiction and non-fiction by a diverse group of writers, including Chile's Isabel Allende, Kenya's Ngũgĩ wa Thiong'o, India's Salman Rushdie and Arundhati Roy, Haiti's Edwidge Danticat, and Antigua's Jamaica Kincaid. We will consider how these writers attempt, through language and storytelling, to reclaim their own home spaces and places in a post-colonial era. We will reflect on the ways in which geography, history, and culture shape and define the fictional experiences and characters we encounter, and perhaps most importantly, we will consider how our own cultural perspectives inform our understandings of what we read.

ENGLISH 46. *The Personal Essay*. Fall. Mr. Hirsch. 4 meetings weekly. In this course, we will read and write personal essays. A personal essay can be about almost anything, but whatever the subject—whether personal experience, family history, or musings about the world—the writer's own voice and personality are central. For some classes, we will read and analyze the personal essays of master craftsmen such as Virginia Woolf, E. B. White, James Baldwin, George Orwell, Joan Didion, Mark Twain, and Adam Gopnik; in other classes, students will read and discuss the essays of their classmates. Each week students will write or revise some part of a personal essay; by the end of the course, students will complete a portfolio of six or seven personal essays. Every second or third week, there will be student-teacher conferences about students' ongoing work.

ENGLISH 47. *The Novel After Modernism*. Fall. Ms. Hutcheson. 4 meetings weekly. Innovations in form, genre, style, and subject matter continue to alter the landscape of contemporary fiction. In the 21st century, novelists push at the boundaries of genre, with increasing willingness to write fantasy, new historical novels, speculative fiction, and graphic novels. In the wake of postmodernism, the novel continues to adapt in form and to wrestle with the concept of fiction itself. We will read what is being written now, and those authors may include J. M. Coetzee, Cormac McCarthy, Ali Smith, Jennifer Egan, Junot Diaz, Toni Morrison, Chimamanda Ngozi Adichie, Adam Johnson, Kazuo Ishiguro, and Emily St. John Mandel.

ENGLISH 48. *British Romantic Literature*. Fall Ms. Baldwin. 4 meetings weekly. We will study British Romantic literature in its historical setting: the American and French Revolutions, the Napoleonic Wars, the rapid expansion of trade and industry, dramatic shifts in population. We will examine these common cultural factors that shaped the development of so many fiercely individual and revolutionary thinkers. Readings may include excerpts from *A Vindication of the Rights of Woman* by Mary Wollstonecraft, *Castle Rackrent* by Maria Edgeworth, *Northanger Abbey* by Jane Austen, and poetry by Robert Burns, William Blake, William Wordsworth, S.T. Coleridge, John Keats, Byron, P.B. Shelley, and more.

ENGLISH 49. *Utopias and Dystopias*. Fall. Mr. Cronin. 4 meetings weekly. The word "utopia" is derived from a Greek term meaning "no place" or "nowhere," an etymology

emphasizing that the perfection one imagines in such a place is hard to find. Men and women, however, are inclined to conceive of such ideal places anyway and even seek to create them in real life. Moreover, with the rise of nations and the Industrial Revolution, writers began to create narratives set in dystopias to reflect the negative aspects of humanity in the modern age. This course will survey utopias and dystopias in literature, from Thomas More's first *Utopia* in the 16th century to the futuristic dystopias of Orwell, Vonnegut, and Burgess in the 20th century.

The following courses are open in the **spring semester** to all members of Classes I and II. In the case of over-enrollment, preference will be given to members of Class I.

ENGLISH 51. *From "The Dream of the Rood" to Harry Potter: Fantasy Literature in English.* Spring. Ms. Van Norden. 4 meetings weekly. In this course we will read a sampling of the literature of the imagination from the Middle Ages to the present day. Texts will vary from year to year, but they will surely include at least one medieval dream-vision allegory; one of Shakespeare's comedies or romances (most likely *A Midsummer Night's Dream* or *The Tempest*); some Romantic poetry (especially of John Keats); and at least two modern novels (for example, Barrie's *Peter Pan*, Tolkien's *Hobbit* or *The Lord of the Rings*, or a novel from Lewis' *Narnia* series, Jacques' *Redwall* series, Pratchett's *Discworld* series, Rowling's *Harry Potter* series, or Pullman's *His Dark Materials* series). Simply bring your own imaginations with you (with respect to both determining the syllabus and reading the texts themselves) and we should all have an experience at once enjoyable and edifying.

ENGLISH 52. *Modern American Poetry.* Spring. Mr. Koelz. 4 meetings weekly. The early twentieth century saw radical shifts in all of the fine arts, and poetry was no exception. Inspired by Ezra Pound's motto "Make it new," American poets produced some of the most exciting and durable literature of the twentieth century. In this course, we will study a wide selection of twentieth-century poets who reconceived and reinvigorated their art form. Readings may include works by T.S. Eliot, Ezra Pound, William Carlos Williams, Marianne Moore, Wallace Stevens, Langston Hughes, and H.D.

ENGLISH 53. *Fairy Tales and Their Adaptations.* Spring. Ms. Ferguson. 4 meetings weekly. With one well-placed kiss a frog becomes a prince. Imps spin straw into gold. Wolves, dressed in the right pajamas, become indistinguishable from grandmothers. Like their characters, fairy tales are subject to intriguing transformations. In this course, we will trace the oral sources of several fairy tales, read the much celebrated and reproduced versions by Jacob and Wilhelm Grimm, and analyze literary adaptations from a number of contexts and genres. Our conversations will be guided by a consideration of transformation itself. What strategies do storytellers use to translate their tales from oral to written media? What features do writers choose to develop and expand, and what features do they leave out? How do adaptations reflect the perspectives of their adapters? The adaptations that we cover may include Philip Pullman's versions of Grimm's Fairy Tales, Anne Sexton's *Transformations*, Angela Carter's *The Bloody Chamber: And Other Stories*, Helen Oyeyemi's *Boy, Snow, Bird*, and Robert Coover's *Briar Rose*.

ENGLISH 54. *The Hero in 20th Century American Literature.* Spring. Mr. Bynum. 4 meetings weekly. This course will ask students to consider the construction of the American hero in twentieth-century American art and literature. Exploring novels, poetry, visual art, and film, students will engage with works that offer a variety of perspectives on how people select their heroes. In addition to thinking about traditional and mainstream heroes, students will create their own definitions of the hero. Texts studied may include Horatio Alger's *Ragged Dick*, Ernest Hemingway's *A Farewell to Arms*, James Baldwin's *Go Tell It on the Mountain*, Kurt Vonnegut's *Slaughterhouse-Five*, and the film *Cool Hand Luke*.

- ENGLISH 55. *Nature Writing: Thoreau and Emerson. Spring. Ms. Jones. 4 meetings weekly.* We will begin this introduction to environmental literature and nature writing by reading excerpts from works emerging out of our local surroundings in Concord, MA--namely Henry David Thoreau's *Walden* and Ralph Waldo Emerson's *Nature and Other Essays*. We will look at a wide range of non-fiction and fictional works that examine the natural world and our human role within it. Additional readings may include those by John Muir, Rachel Carson, Annie Dillard, and Wendell Berry. In addition to writing critically about the texts we read, we will experiment with a nature writing practice of our own.
- ENGLISH 56. *The Modern Bildungsroman. Spring. Mr. Kester. 4 meetings weekly.* A Bildungsroman is typically thought of as a coming-of-age story, but the German term's literal meaning—"a novel of formation"—better describes the lens through which we'll examine the genre's adolescent protagonists. At its heart, a Bildungsroman is a story about a young adult who forms an identity while experiencing a profound moral change. In this course we'll follow several teenagers on their quests to better understand their place in the world. And while each protagonist's internal transformation occurs in vastly different circumstances, we'll be sure to keep an investigative eye on the universal truths of adolescence that has made the Bildungsroman one of the world's most popular forms of storytelling. Our texts may include Toni Morrison's *The Bluest Eye*, David Mitchell's *Black Swan Green*, Sylvia Plath's *The Bell Jar*, Junot Diaz's *The Brief Wondrous Life of Oscar Wao*, Cormac McCarthy's *All the Pretty Horses*, and Mark Haddon's *The Curious Incident of the Dog in the Night-Time*.
- ENGLISH 57. *Fiction Writing. Spring. Ms. Hutcheson. 4 meetings weekly.* This course is for students interested in writing short stories and studying what makes successful fiction. We will read widely from a diverse group of writers, and we will talk extensively about the art of writing. We will also study the basic elements of good fiction: plot, dialogue, character development, etc. This course is run as a workshop, so your stories will be read by your classmates, and you will develop your own skills as a peer editor and critic.
- ENGLISH 58. *Jane Austen. Spring. Ms. Baldwin. 4 meetings weekly.* Many readers have argued that Austen's novels cultivate a narrow and self-enclosed world-view. For some, this creates an ideally limited space for the author to experiment with the novel form and to represent individual psychological experience. Others consider the social world of her novels to be claustrophobic and limiting. As we read, we will question the underlying assumption of this view of Austen's novels. In our study of Austen's major completed novels, we will discuss the relationships between irony, shame, satire, social manners, and the novel form.
- ENGLISH 59. *The American Romantic Tradition. Spring. Mr. Cronin. 4 meetings weekly.* The 19th century was a time when America developed as a young nation—physically, economically, and ideologically—and writers of the time period reflected such growing pains in their literature. These writers had a fascination with not only the ever-expanding frontier that pushed further west, but also the growing urban landscape and the issues associated with such growth. This course will explore the American Romantic tradition and the ways writers envisioned the national identity, the relationship between man and his fellow man, and the interaction between "civilized" man and the wild unknown. Readings may include short stories by Hawthorne and Melville; essays by Emerson and Thoreau; poetry by Longfellow; a novel by Mark Twain, James Fenimore Cooper, or Henry James; and a contemporary Western novel.

## FOREIGN LANGUAGES

All students must study a single foreign language through the third-year level or continue the study of a single foreign language through the conclusion of their Class I year. Students may not satisfy this requirement by completing two years in one language and an additional year in another. Students are encouraged to continue their language study through the Class I year. A student may begin the study of two foreign languages simultaneously only with the permission of the Academic Office. An incoming student is placed according to his or her level and experience in the language, based upon the student's performance on the departmental placement evaluation.

Advancement in language courses is based on mastery of the material in a course. Any student who achieves a grade below 70 in a particular course must remain at that level and repeat the course. A department may recommend that a student repeat a level after receiving a semester grade between 70 and 73. Note that a specific course may be repeated only once. Any student taking a repeat course who fails to make satisfactory progress in the repeat course will be required to take a summer school course approved by the School. It is also possible for a student to advance to a higher section if, according to the judgment of the department, he or she is capable of handling the more advanced work.

## CLASSICS

[Head of the Department: Daniel Barber]

The Middlesex Classics Department aspires to make the long and rich tradition of classical scholarship useful and appealing to students of all backgrounds. Ancient Greece and Rome exerted a formative influence on the emerging United States of America, and their language and literature are rich resources for understanding our cultural identity. These subjects are naturally interdisciplinary, intersecting vitally with the study of history, philosophy, literature, rhetoric, art, mathematics and science. Equally, we regard the classical disciplines as inherently multicultural and diverse, in view of the vast geographic and cultural range they span. By their broad representation of human experience the classical literatures provoke a wealth of questions, and impel us to examine their values and assumptions, whether to confirm or contest our own cultural biases.

We aim to provide a sound and comprehensive knowledge of grammar and vocabulary, such as to facilitate both fluency in Latin or Greek and versatility in the pursuit of other languages. Etymological study should open a vista on the tradition of and connections between the Indo-European languages. We hope to foster appreciation of the expressive richness and power of language in the various literary genres, again, broadly enough to contribute to literary analysis in whatever language. Students should acquire an understanding of the history and culture of the ancient Mediterranean and its influence through subsequent centuries. Middlesex courses should equip students for further classical study in college as desired; should foster curiosity, critical thinking, and self-confidence; and through membership in a close-knit department should affirm the pleasures of intellectual camaraderie.

**LATIN 10.** *Latin. Year. The Department. 5 meetings weekly.* This introductory course is designed to present the essentials of Latin grammar in a streamlined and economical fashion. Our text, written and revised by Middlesex teachers, helps students absorb linguistic forms by emphasizing the logic and simplicity of Latin structure. Grammatical presentations are reinforced by practical exercises in translation, and readings in mythology and history are introduced as early as possible.

LATIN 20. *Latin Literature. Year. The Department. 5 meetings weekly. Prerequisite: Latin 10 or its equivalent.* This course provides a comprehensive review of Latin grammar and syntax, in preparation for the transition to authentic Roman literature. Readings may include excerpts from Livy's *History of Rome* (adapted), Caesar's *Commentaries on the Gallic Wars*, and Ovid's *Art of Love*.

LATIN 30. *Advanced Latin Literature. Year. The Department. 5 meetings weekly. Prerequisite: Latin 20 or its equivalent.* This course will explore some of the principal genres of Roman literature. It may include orations by Cicero, historical writings by Sallust, letters of the younger Pliny and poetry by Ovid. The study of literature is supplemented by continued attention to grammar and syntax, and by regular practice at sight translation.

The following Latin courses are open to students who have completed Latin 30 or its equivalent.

LATIN 41. *Satire. Fall. The Department. 4 meetings weekly.* This course focuses on satire as it is presented and perceived by some of Rome's great literary figures. Authors include Horace, Juvenal, and Petronius. THIS COURSE WILL NOT BE OFFERED IN 2016-2017.

LATIN 42. *Roman Comedy. Fall. The Department. 4 meetings weekly.* Students will read selections from Plautus' *Curculio*, and study the art of comedy in part through some modern descendants, examining how Plautus's situational comedy and caricatures have filtered down to our own day. THIS COURSE WILL NOT BE OFFERED IN 2016-2017.

LATIN 43. *Lovers and Heroines. Spring. The Department. 4 meetings weekly.* Students in this course read selections from both the epic and elegiac traditions, and focus on the various roles women play in Latin poetry. Selections from Vergil, Ovid, Tibullus, Sulpicia and Propertius provide students with an opportunity to translate a variety of poetic styles and explore the range of ways in which women are portrayed: as lovers, as warriors, and as leaders.

LATIN 44. *Philosophy and Friendship: Roman Letters. Fall. The Department. 4 meetings weekly.* This course will explore the rich tradition of written correspondence in Latin by a wide range of classical and post-classical authors, including Cicero, Horace, Pliny, Seneca, and Petrarch. Students will examine individual letters in their historical and societal contexts, and explore the linguistic differences between classical and vulgate Latin.

LATIN 45. *Vergil, Poet Laureate of Augustus. Fall. The Department. 4 meetings weekly.* Written on commission to commemorate Augustus's victory over Antony and Cleopatra, the *Aeneid* has as much to say about inner struggle and conflict as about war and glory. We shall study his messages about "arms and man" – and woman. THIS COURSE WILL NOT BE OFFERED IN 2016-2017.

LATIN 46. *Ad hominem: the not-so-subtle art of invective. Spring. The Department. 4 meetings weekly.* This course will mine the extensive Roman literature of personal attack, drawing from prosecutorial rhetoric, historical narrative, lyric poetry and graffiti, from the Republic through the later Empire. THIS COURSE WILL NOT BE OFFERED IN 2016-2017.

LATIN 47. *Imperial Literature. Spring. The Department. 4 meetings weekly.* The empire of Rome under the Julio-Claudian and Flavian emperors stretched from the shores of the Atlantic to the headwaters of the Euphrates, holding much of the known world in its sway; yet the imperial capital, though gathering to itself tribute from the corners of the earth, was roiled in turn by intrigue, sedition, persecutions, assassinations, conflagrations and the infamous decadence of the emperors and their household. In this course, students will examine the philosophical and historical works of Seneca and Tacitus, two authors who rose to prominence during this tumultuous period and who best illuminate its pleasures and its discontents. THIS COURSE WILL NOT BE OFFERED IN 2016-2017.

LATIN 60. *Advanced Placement Caesar and Vergil. Year. The Department. 5 meetings weekly. Prerequisite: Permission of the Department.* The new AP syllabus pairs readings from Julius Caesar's *Commentaries on the Gallic War* and Vergil's *Aeneid*, for a detailed examination of some different conceptions of war and peace, heroism and endurance, courage and mercy. The readings are Roman but the concepts are timeless. THIS COURSE WILL NOT BE OFFERED IN 2016-2017.

LATIN 61. *Advanced Studies in Latin Poetry. Year. The Department. 5 meetings weekly. Prerequisite: Permission of the Department.* In this advanced-level course, students will read representative selections from the works of Catullus and Horace, the two most influential lyric poets of classical Rome. Of central concern will be the nature and origin of the genre of Latin lyric and these two poets' engagement with (or disengagement from) the political and social upheavals of their day. The innovative meters of ancient lyric, as well as its intertextuality, manuscript traditions and abiding influence on modern poetry will also be covered in detail.

LATIN 62. *Advanced Studies in Latin Literature. Year. The Department. 5 meetings weekly. Prerequisite: Permission of the Department.* This advanced-level course will consider the nature and function of friendship by examining Cicero's *treatise De Amicitia* and selected poems of Rome's most distinguished lyricists, Catullus and Horace. The course will challenge the students to define "friendship" and to understand the complexity of this relationship both for themselves and for the Romans. Students will evaluate the philosophic tradition of discussing friendship and consider how this personal relationship compares with other forms of social affiliation among the Romans and their attitudes regarding public and private life. THIS COURSE WILL NOT BE OFFERED IN 2016-2017.

GREEK 10. *Greek. Year. The Department. 5 meetings weekly.* This course introduces the syntax and grammar of Attic Greek. Emphasis is placed from the beginning on the acquisition of vocabulary, composition of sentences, translation of passages, and mastery of inflected forms. In the latter half of the course, selections from Homer, Herodotus, and Xenophon are read in conjunction with grammatical topics.

GREEK 20. *Greek Literature. Year. The Department. 5 meetings weekly. Prerequisite: Greek 10 or its equivalent.* The second year of Greek encompasses the review and completion of Attic Greek grammar in order to focus as soon as possible on literature. Students will read selections from Homer's *Iliad* for the remainder of the course, learning Homeric dialect and its relationship to Attic Greek.

GREEK 30. *Advanced Greek Literature. Year. The Department. 5 meetings weekly. Prerequisite: Greek 20 or its equivalent.* The third-year course in Greek continues the exploration of Greek literature, with greater emphasis on the prose and poetry of classical Athens. Works by authors such as Plato, Herodotus, Thucydides, Sophocles and Euripides will be studied in the context of Athenian history and culture; contemporary issues of justice, education, civil unrest, piety and gender will also be discussed.

## MODERN LANGUAGES

Middlesex School offers courses in Chinese, French and Spanish. The study of a foreign language provides the student the opportunity to become a more versatile member of the world community. It also gives the student a unique perception of his or her culture as distinct from another way of life and thought.

All classes are conducted primarily in the language studied. The skills of listening, speaking, reading, and writing are taught simultaneously. Courses use a full range of materials: texts, periodicals, literature, recordings, films, videos, and the language laboratory. Throughout his or her career every student is called upon to demonstrate listening, speaking, reading, and writing competence. A variety of techniques are employed to encourage advanced students to approach the competence of a native speaker of the same age: extensive vocabulary study, thorough grammatical review, readings in modern literature and periodicals, digital recordings, films, and guests. Advanced Placement courses are offered in Chinese, French, and Spanish.

The School encourages Middlesex students to participate in foreign travel and family-stay experiences. Departments offer trips during spring break and summer vacation when there are enough interested students and teachers.

## CHINESE

[Head of the Department: Annie Ku]

The Chinese Department prepares students linguistically and culturally to interact in a modern Chinese context. The objective is to cultivate a level of competency in Chinese through which students can communicate in a variety of settings. This ability will encourage students to look beyond their customary borders, to develop insight into the Chinese language and culture, and to interact more fully in a global community and marketplace.

**CHINESE 10.** *Introduction to Chinese. Year. The Department. 5 meetings weekly. For students with no previous or limited experience with Chinese.* Mandarin Chinese is the language of instruction, and English is only used to help in the explanation of grammar. Simplified characters are taught in most lessons but traditional characters are also introduced. Pinyin, the standard Romanization pronunciation system, is used. This course develops listening, speaking, reading, and writing skills. Materials include textbook, workbook, audio CDs, DVDs, periodicals, websites, and language computer programs. Students have access to iPads as their virtual language lab tools.

**CHINESE 20.** *Intermediate Chinese. Year. The Department. 5 meetings weekly. Prerequisite: Chinese 10 or its equivalent.* Like Chinese 10, this class is taught in Chinese, and English is used only for grammatical explanations. This course continues to develop listening, speaking, reading, and writing skills. Typing will be added into the curriculum. Materials include textbook, workbook, audio CDs, DVDs, periodicals, websites, and language computer programs. Students have access to iPads as their virtual language lab tools.

**CHINESE 30.** *Advanced Chinese Part I. Year. The Department. 5 meetings weekly. Prerequisite: Chinese 20 or its equivalent.* Like Chinese 10 and 20, this course is taught in Chinese, and English is used only for grammatical explanations. Students learn more complex sentence patterns and vocabulary through conversation on a range of practical topics. This course continues to develop listening, speaking, reading, writing and typing skills. The students routinely converse with teachers and classmates, create oral presentations, and write dialogues and compositions on what they have learned. Materials include textbook, workbook, audio CDs, DVDs, periodicals, websites, online programs, and language computer programs. Students have access to iPads as their virtual language lab tools.

**CHINESE 41.** *Advanced Chinese Part IIa. Fall. Mrs. Ku. 4 meetings weekly. Prerequisite: Chinese 30 or its equivalent.* This course is taught almost entirely in Mandarin Chinese and interweaves the study of Chinese language and culture. Students learn more complex

sentence patterns and vocabulary through the use of a wide range of primary resources. The course addresses themes of contemporary and historical Chinese culture in sport, fashion, cuisine, ceremony, festivals and travel. Students have access to iPads as their virtual language lab tools.

CHINESE 42. *Advanced Chinese Part IIB. Spring. Mrs. Ku. 4 meetings weekly. Prerequisite: Chinese 41 or Permission of the Department.* This course is taught almost entirely in Mandarin Chinese and develops the students' awareness of social and environmental issues, including societal changes brought about by China's economic development, the origin and evolution of Chinese characters, famous people and their contributions to society, and Chinese literature and arts. Students have access to iPads as their virtual language lab tools.

CHINESE 60. *Advanced Placement Chinese Language and Culture. Year. Mrs. Ku. 5 meetings weekly. Prerequisite: Chinese 30 and Permission of the Department.* This course provides students with ongoing and varied opportunities to further develop their proficiencies across the full range of language skills. This course is designed for those students who are interested in deepening their immersion into the language and culture of the Chinese speaking world. Students have access to iPads as their virtual language lab tools. The course prepares students for the Advanced Placement Examination in Chinese Language and Culture.

## FRENCH

[Head of the Department: Chantal Jordan]

As a general objective, the French Department incorporates the study of the Francophone world and its culture at all levels of study. Additionally, the French Department does its best to uphold the Standards of Foreign Language Learning in the 21<sup>st</sup> century known as "The Five Cs": Communication, Cultures, Connections, Comparisons, Communities. We practice the four skills (reading, writing, listening and speaking) through the three modes of communication (interpersonal, interpretive and presentational). Each student's voice is important, therefore, the Department expects every student to share his or her work and thoughts orally on a daily basis.

FRENCH 11. *French. Fall. The Department. 5 meetings weekly. For students with no previous or limited experience with French.* From the beginning, the students will learn to speak, write, and read French. Materials used include text, workbook and audio program. Students work on their pronunciation, vocabulary, and grammar and are exposed to the Francophone culture. This course teaches both conversational and written skills.

FRENCH 12. *French Grammar. Fall, Spring. The Department. 5 meetings weekly. Prerequisite: French 11 or Permission of the Department.* The student further develops his/her pronunciation, vocabulary, reading, writing, and elementary conversation skills. The course is a continuation of French 11. The study of grammar and Francophone culture continue to be an integral part of the course.

FRENCH 21. *Intermediate French Part I. Fall, Spring. The Department. 5 meetings weekly. Prerequisite: French 12 or Permission of the Department.* Assuming previous experience with French, this course reviews the basic grammar of the first year. Simple readings and a grammar text stimulate questions and answers, and communication among students also instills listening and speaking skills. Structured, but increasingly free compositions are required. The study of Francophone culture continues to be an integral part of the course.

- FRENCH 22. *Intermediate French Part II. Fall, Spring. The Department. 5 meetings weekly. Prerequisite: French 21 or Permission of the Department.* A continuation of French 21. Original compositions required. In class, emphasis is placed on communication in French to develop oral comprehension and speaking skills. A higher level of fluency is the goal. The study of Francophone culture continues to be an integral part of the course.
- FRENCH 31. *Advanced French Part I. Fall, Spring. The Department. 5 meetings weekly. Prerequisite: French 22 or Permission of the Department.* This course stresses improvement in the basic language skills with an extensive review of verb forms and grammatical structures. Cultural readings of moderate difficulty are introduced for oral discussion and written appreciation. Speaking skills are developed in recitations, oral presentations, and classroom discussions.
- FRENCH 32. *Advanced French Part II. Fall, Spring. The Department. 5 meetings weekly. Prerequisite: French 31 or Permission of the Department.* A continuation of French 31, this course further studies the essentials of French grammar. Additionally the course is largely oriented toward reading works of nineteenth, twentieth and twenty-first century authors. Regular compositions, tests, and oral presentations required.
- FRENCH 41. *Literature, Film, Culture of the Francophone World in the Caribbean Islands and America. Part I. Fall, Spring. The Department. 4 meetings weekly. Prerequisite: French 32 or Permission of the Department.* In addition to a review of the essentials of language structure, this course includes selected readings and film presentations of nineteenth, twentieth and twenty-first century authors from around the Francophone world. This course will examine the literature (prose, poetry and plays) and cultures of the Francophone world, beginning with the study of the Francophone islands in the Caribbean as well as the province of Quebec and the state of Louisiana. Additionally, the course will discuss current events and issues in these areas and their connections with France. Analytical papers, vocabulary, comprehension, grammatical structure and correct oral expression will serve as the basis for each student's grade. THIS COURSE WILL NOT BE OFFERED IN 2016-2017.
- FRENCH 42. *Literature, Film, Culture of the Francophone World in the Caribbean Islands and America. Part II. Spring. The Department. 4 meetings weekly. Prerequisite: French 32 or Permission of the Department.* For description see French 41. THIS COURSE WILL NOT BE OFFERED IN 2016-2017.
- FRENCH 43. *Literature, Film, Culture of the Francophone World in Africa, Asia, Europe and the Islands of the Pacific and Indian Oceans. Part I. Fall, Spring. The Department. 4 meetings weekly. Prerequisite: French 32 or Permission of the Department.* In addition to a review of the essentials of language structure, this course includes selected readings and film presentations of nineteenth, twentieth and twenty-first century authors from around the Francophone world. This course will examine the literature (prose, poetry and plays) and cultures of the Francophone world, and will explore the Francophone countries in Africa, Asia, Europe and the islands of the Pacific and Indian Oceans. Additionally, the course will discuss current events and issues in these areas and their connections with France. Analytical papers, vocabulary, comprehension, grammatical structure and correct oral expression will serve as the basis for each student's grade.
- FRENCH 44. *Literature, Film, Culture of the Francophone World in Africa, Asia, Europe and the Islands of the Pacific and Indian Oceans. Part II. Spring. The Department. 4 meetings weekly. Prerequisite: French 32 or Permission of the Department.* For description see French 43.

FRENCH 60. *Advanced Placement French Language and Culture. Year. The Department. 5 meetings weekly. Prerequisite: Permission of the Department.* This course is designed to prepare the students for the Advanced Placement examination of Language and Culture. The course will incorporate interdisciplinary topics addressing six basic themes: Global Challenges, Sciences and Technology, Contemporary Life, Personal and Public Identities, Families and Communities, and Beauty and Aesthetics. We will work on authentic non-literary, literary and audio texts. This course also prepares the students to be grammatically proficient, fluent and accurate when speaking and writing. Students are trained to be, “au courant”, well-versed in the various cultures, literatures and languages of not only France and the Francophone world, but also the world at large.

FRENCH 70. *Advanced French – The Francophone World through Film, Arts, Current Events and Literature. Fall, Spring. The Department. 4 meetings weekly. Prerequisite: French 60 or Permission of the Department.* This course is designed to introduce students to the history of French literature and French literature in the Francophone world. The course will help students have a better understanding of the literature, culture, history and art of the Francophone world through films, TV programs, and various authentic literary texts. We will also address issues related to colonization and contemporary post-colonization. The course aims to develop verbal and written communication abilities as well as analytical and critical skills. Students are expected to engage, contribute and interact actively.

## SPANISH

[Head of the Department: Eduardo Fagundo Becerra]

The Spanish Department incorporates the study of Spanish speaking countries’ culture and literature to enhance communication and interaction in Spanish. All levels’ classes are conducted in Spanish in order to create a learning environment where students develop interpersonal, interpretive and presentational modes of communication. The course contents are structured to promote exploration of Spanish in context and develop students’ understanding of the language. Students are required to demonstrate knowledge of Spanish language and be able to use it in real-life settings.

SPANISH 11. *Spanish. Fall. The Department. 5 meetings weekly. For students with no previous or limited experience with Spanish.* This is the foundation course in Spanish, stressing both the oral and grammatical functions of the language. The language in the classroom is Spanish; English is used only to help in the explanation of grammar. Emphasis is placed upon comprehension, pronunciation, and self-expression. Materials include textbook, workbook, audio programs linked to the text, web exercises and iPad language laboratory sessions.

SPANISH 12. *Spanish Grammar. Fall, Spring. The Department. 5 meetings weekly. Prerequisite: Spanish 11 or Permission of the Department.* This course is the continuation of the foundation course. Its goals are to introduce new tenses and grammar points, amplify vocabulary and increase written expression. Materials include textbook, workbook, audio programs linked to the text, web exercises and iPad language laboratory sessions.

SPANISH 21. *Intermediate Spanish - Part I. Fall, Spring. The Department. 5 meetings weekly. Prerequisite: Spanish 12 or Permission of the Department.* Grammar skills are reinforced with writing assignments and in-class conversation. Other tenses are introduced, including compound tenses. Vocabulary and idiomatic expressions are expanded. Materials include textbook, workbook, audio programs linked to the text, web exercises, outside readings and iPad language laboratory sessions.

- SPANISH 22. *Intermediate Spanish - Part II. Fall, Spring. The Department. 5 meetings weekly. Prerequisite: Spanish 21 or Permission of the Department.* This course is a continuation of Spanish 21, emphasizing self-expression, conversational skills, and grammar. Materials include textbook, workbook, audio programs linked to the text, web exercises, outside readings and iPad language laboratory sessions.
- SPANISH 31. *Advanced Spanish - Part I. Fall, Spring. The Department. 5 meetings weekly. Prerequisite: Spanish 22 or Permission of the Department.* This course combines an amplified grammar review with acquisition of vocabulary and idiomatic expression in a context of readings from both Spain and Latin America. Remaining tenses and compound structures are introduced and used in both writing and speaking. Readings of moderate difficulty provide the subject matter for short compositions and oral discussions.
- SPANISH 32. *Advanced Spanish - Part II. Fall, Spring. The Department. 5 meetings weekly. Prerequisite: Spanish 31 or Permission of the Department.* The continuation of Spanish 31, this course concentrates on the development of skills in reading, writing, speaking, and listening. Though there is grammar review of topics covered at earlier levels of Spanish, this course is oriented towards reading lengthier works of popular Spanish and Latin American writers. The course requires regular compositions, oral presentations, and class discussion.
- SPANISH 42. *Conversation and Controversy. Fall. The Department. 4 meetings weekly. Prerequisite: Spanish 32 or Permission of the Department.* In this course students will be learning about current controversial topics through readings, research, art, conversation, film and debate. An emphasis will be placed on students' oral competence in fluently and persuasively expressing the facts and their opinions surrounding the various topics to be presented. Topics to be discussed may include immigration, Hispanic culture, Latino identity in the United States, human rights and issues of social justice. While fluency is of utmost importance, students are expected to be precise in their use of grammar and vocabulary. Students will be expected to apply the new words and grammatical concepts in their oral and written work. To meet the course objectives, the class will draw upon Spanish-language movies, radio programming, telenovelas, and many other sources. The main texts include, but are not limited to, *Conversación y controversia* and *La casa de Mango Street*. THIS COURSE WILL NOT BE OFFERED IN 2016-2017.
- SPANISH 43. *Spanish and Latin American Film. Fall. The Department. 4 meetings weekly. Prerequisite: Spanish 32 or Permission of the Department.* This course uses Spanish language cinema to highlight cultural issues in the Spanish-speaking world. By way of carefully chosen films from a variety of Spanish-speaking countries, students will examine a wide variety of geographic, cultural, and historical settings. For example, in *Como agua para chocolate* students will learn about the Mexican Revolution, in *Fresa y chocolate* they will learn about Castro's Cuba, and in *Diarios de una motocicleta* they will see issues of poverty, justice and exploitation of labor in 1950s South America. The class will be taught entirely in Spanish. The development of vocabulary and grammatical sophistication will also be cornerstones of the course, thus giving students the opportunity to continue on to the AP level.
- SPANISH 44. *Spanish Play. Spring. The Department. 4 meetings weekly. Prerequisite: Spanish 32 or Permission of the Department.* The rich offering of theater of Spain and Latin America over the past century are explored in this course. Students will read and analyze important works by playwrights such as Antonio Buero Vallejo, Wilberto Canton, Federico Garcia Lorca and Alejandro Casona. In addition, students will participate in the

creative process of a playwright, writing their own one-act plays. If possible, the students will have the opportunity to watch a live Spanish-language theater production. The development of vocabulary and grammatical sophistication will also be cornerstones of the course, thus giving students the opportunity to continue on to the AP level. THIS COURSE WILL NOT BE OFFERED IN 2016-2017.

SPANISH 45. *Spanish and Latin American Literature. Spring. The Department. 4 meetings weekly. Prerequisite: Spanish 32 or Permission of the Department.* In this course students will read a mix of novel, short story, and poetry, with the goal of furthering their analytical ability, vocabulary, and cultural understanding. It is a student-centered course with heavy emphasis on in-class discussion, oral presentations and written analysis of works studied. The class will be taught entirely in Spanish. The development of vocabulary and grammatical sophistication will also be cornerstones of the course, thus giving students the opportunity to continue on to the Advanced Placement level. Works studied may include *Crónica de una muerte anunciada* by Gabriel García Márquez, *El laberinto de soledad* by Octavio Paz, and *¿Qué me quieres, amor?* by Manuel Rivas.

SPANISH 60. *Advanced Placement Spanish Language and Culture. Year. The Department. 5 meetings weekly. Prerequisite: Permission of the Department.* Many materials are utilized, including audio and video programs as well as a lengthy reading list including works of many Spanish and Latin American authors. The class also makes use of many current Spanish newspapers and periodicals. This course provides preparation for the Advanced Placement Examination in Spanish Language.

SPANISH 70. *Advanced Placement Spanish Literature and Culture. Year. The Department. 5 meetings weekly. Prerequisite: Permission of the Department and successful completion of Spanish 60.* This course is intended for students with special interest and ability in Spanish language and literature who wish to prepare for the Advanced Placement Examination in Spanish and Latin American Literature. This course is a survey literature course beginning with works such as *Cantar de Mio Cid* and *Lazarillo de Tormes* and ending with the works of Gabriel García Marquéz.

## STEM DIVISION

[Head of the Division: Michael Schaeberle]

The Science, Technology, Engineering and Math (STEM) Division is made up of the Mathematics, Science, and Computer Science departments. These departments have in common an approach to the solution of problems through mathematical analysis and an emphasis on the scientific method, i.e. empirical observation leading to the formulation of general mathematical laws which can be used to predict new observations.

In the classroom, STEM courses at Middlesex emphasize not only subject-specific knowledge, but also critical thinking, problem solving, and effective communication of scientific and mathematical ideas. Hands-on activities and laboratory investigations illustrate both the concepts and process of problem solving. Students use technology to see principles in action and to learn to make conclusions about the world based on evidence. We expect students to be prepared for and engaged in classroom activities. While the challenge of learning may vary among our students, we believe that a student's understanding is strengthened by both independent and collaborative contemplation of and grappling with new concepts and problems. Teachers work with students to develop their skills and individual interests.

These tools attain their greatest power when students learn how to approach problems by integrating mathematical modeling, creative thought, previous mathematical experience and scientific inquiry, to clearly see their way to a solution that might be generalized to all problems of that nature. Technology has an important part to play in both the presentation of material and the students' ability to solve problems.

The STEM Division is committed to developing students' abilities to investigate and solve 21st century problems. Students in Class I or Class II may earn a certificate for completing an Experience with Problem-solving, Reasoning, and Technology (ExPRT) through designated ExPRT courses in the Division or through approved extra-curricular projects or contests. Each ExPRT consists of open-ended problems that require the equivalent of several course periods of work. These problems require students to perform research and analyze data, and they provide students with a variety of opportunities to incorporate technology. Each ExPRT requires collaboration and culminates with students presenting their solutions in both oral and written form. Extra-curricular endeavors through which an ExPRT Certificate can be earned should be undertaken in consultation with the ExPRT Committee.

All courses offered in this Division confer distributional credit to members of Classes I and II, but only those courses so designated in the descriptions confer credit toward departmental requirements in laboratory science or mathematics. Advanced Placement courses are available to students in Class I or Class II or with the permission of the Department.

## MATHEMATICS

[Head of the Department: Kelly Marchand]

The Mathematics Department holds several related aspirations for our students. First, the course offerings are designed to provide our students with a deep and thorough knowledge of the essential framework of mathematics. Students are encouraged to think in a quantitative fashion in order to model aspects of their experience and the world around them. The essentials of algebra, geometry, and elementary functions provide some of the tools which allow them to think in informed ways about aspects of life such as: growth and decay, periodic phenomena, change, and chance.

Our intention is to have students assume responsibility for the mathematics they explore—to understand theorems that are developed, to be able to use techniques appropriately, to know how to test results for reasonability, to learn to use technology appropriately, and to welcome new challenges whose outcomes are unknown.

Through support and encouragement, teachers at Middlesex seek to expose and develop the potential of each student. To this end we aim to support where needed, challenge when appropriate, inculcate sound reasoning skills and encourage articulate communication of mathematical ideas. We hope our students will experience success and satisfaction in mastering a body of knowledge that is fundamental to their education. Beyond this, we very much wish to impart a sense of the utility, beauty and power of mathematics.

The Mathematics Department assumes new students will arrive having studied some algebra. To help the department determine the appropriate course, a placement test will be sent to all entering students. Students who will benefit from a review of first year algebra will be placed in Math 12; those with stronger algebra backgrounds will be placed in Math 21 or higher.

Courses 12 through 32 comprise the core of the mathematics curriculum. Middlesex uses a variety of approaches in its mathematics courses with a particular focus on problem solving. We expect that, by the end of the core courses, a student will have a full grasp of the

fundamental tools of algebra, and complete confidence in tackling problems which are both challenging and original. Technology is used extensively throughout our curriculum and is a tool we expect students to use effectively.

Advancement in math courses is based on mastery of the material in a course. Any student who achieves a grade below 70 in Math 21, 31 or 32 must remain at that level and repeat the course. The department may recommend that a student repeat a level after receiving a semester grade between 70 and 73. Note that a specific course may be repeated only once. Any student taking a repeat course who fails to make satisfactory progress in the repeat course will be required to take a summer school course approved by the School. It is also possible for a student to advance to a higher section if, according to the judgment of the department, he or she is capable of handling the more advanced work.

Middlesex offers a rich variety of math courses beyond the required sequence. It is our belief that students are well served by seeing branches of mathematics other than the purely algebraic. These 40 – level courses may be taken in any order at any time after completion of Math 32.

Each of the statistics courses heavily utilizes technology, projects, cooperative group work and writing. Both the non-AP and AP courses are good choices for a student anticipating a college major in the social or natural sciences.

**MATH 12. *Intermediate Algebra. Fall. The Department. 5 meetings weekly.*** This course is primarily a review of the topics of a first year algebra course. It is designed for those students who have had an introduction to algebra and who would benefit from a review of the material. Topics covered include linear equations and their graphs, polynomials, factoring, exponents and roots, inequalities, quadratic functions, and systems of equations.

**MATH 21. *Algebra and its Functions. Fall, Spring. The Department. 5 meetings weekly.*** This course is designed to strengthen and extend first year algebraic knowledge. Topics will include a review of linear functions, absolute value, inequalities, and quadratic functions. Students will use graphing calculators to explore concepts.

**MATH 22. *Geometry. Fall, Spring. The Department. 5 meetings weekly and a lab. Prerequisite: The equivalent of a full year of algebra.*** The course will consist of an inductive study of the principles and properties of Euclidean geometry. Definitions will be established and theorems will be developed, verified, and proved. The treatment of proof will center on congruence of triangles and properties of quadrilaterals. Geometric software will be used to help explore and amplify concepts. **Note: New students who have not yet studied geometry will be placed into geometry in the SPRING semester.**

**MATH 31. *Advanced Algebra. Fall, Spring. The Department. 5 meetings weekly.*** This course extends knowledge of algebra and functions to include the graphs, behaviors, applications and properties of a variety of functions. Students will work extensively with exponential and logarithmic functions. Students will investigate transformations, compositions, and the inverses of function.

**MATH 32. *Pre-calculus: Trigonometry. Fall, Spring. The Department. 5 meetings weekly.*** The circular functions will be examined in depth in this course, which includes trigonometric functions, identities, inverse trigonometric functions, applications to triangles and vectors.

**The following courses are open to all students who have completed their mathematics requirements through the level of Math 32.**

**MATH 40. *Advanced Topics in Mathematics – Finite Mathematics. Fall, Spring. The Department. 4 meetings weekly.*** This course will cover topics in mathematics which do not

depend upon concepts of infinity, such as limits and derivatives. Topics which naturally fall into this category and will be considered in this course are Linear programming, matrix algebra, sets and counting, probability and the mathematics of finance.

MATH 41. *Advanced Topics in Mathematics – Mathematical Modeling. Spring. The Department. 4 meetings weekly. **ExPRT Certificate eligible.*** In this project-based course, students will work individually and collaboratively to formulate and analyze mathematical models used to solve complex problems. Examples might include: developing best use of elevators in a high-rise building, or using data to determine distinctions between two similar insect species. Solutions and results of students' work will be summarized in written reports and presentations.

MATH 43. *Advanced Topics in Mathematics – Analysis: Finance and Math. Spring. Mr. Pandolfini. 4 meetings weekly. **ExPRT Certificate eligible.*** This course teaches students the principles of programming spreadsheet applications, financial modeling, and securities valuation. The first part of the course focuses on the basics of programming spreadsheets, building a three-statement operating model of a company, and discounted cash flow valuation. The second part of the course focuses on financial ratios, public and acquisition comparables, the leveraged buyout model, and an introduction to equity options valuation and graphs. The course concludes with students presenting a detailed valuation of a public company and a buy/sell recommendation.

MATH 44. *Advanced Topics in Mathematics – Problem Solving. Fall. The Department. 4 meetings weekly. **ExPRT Certificate eligible.*** This course focuses on mathematical problem solving. Everyday situations can lead an inquisitive problem solver to profound and far-reaching mathematical principles. Discussions accompanying the problems reinforce important techniques in discrete mathematics, and the solutions - which require verbal arguments - show that proofs and careful reasoning are at the core of doing mathematics. In addition, we will learn that asking good questions is just as important to the progress of mathematics as answering questions. This course will serve interested students seeking to improve their problem-solving knowledge and know-how.

MATH 45. *Advanced Topics in Mathematics – Algorithms: Web Design. Spring. The Department. 4 meetings weekly. **Students who are enrolled in or have completed any Computer Science course may not enroll in this course. ExPRT Certificate eligible.*** Today's greatest websites are dynamic, allowing users to input and create on the spot. This course will explore the various aspects of web applications through problem solving and mathematical reasoning. Students will collaborate and establish the foundations for the creation of a web application through web and scripting languages.

MATH 46. *Advanced Topics in Mathematics – Calculus. Fall, Spring. The Department. 4 meetings weekly.* This one-semester course is designed to give an intuitive introduction to the techniques of calculus and to the sorts of problems with which elementary calculus deals. It is hoped that this less formal presentation will attract students interested in continuing mathematical study short of the Advanced Placement sequence in calculus. **Note: Students who have completed Math 46 may not take Math 50 or Math 52**

MATH 47. *Advanced Topics in Mathematics – Graph Theory. Fall. Mr. Harrington. 4 meetings weekly. **ExPRT Certificate eligible.*** How can you visualize your social network to learn about the way information travels among your friends and family? How can you model disease transmission, cell phone networks, the Internet itself, the way a rumor spreads, or the relevance of a celebrity? The one-word answer to all of these questions is graphs. Beginning with a simple set of definitions, students will learn what it feels like to

build a mathematical structure from the ground up as they collaboratively piece together some of the fundamental cornerstones of this young branch of mathematics. As the course develops the language and ideas behind graphs, students will practice reading, writing, and critiquing mathematical arguments along the way, fostering skills that can be readily applied to other branches of mathematics.

MATH 48. *Advanced Topics in Mathematics – Statistics. Fall, Year. The Department. 4 meetings weekly. ExPRT Certificate eligible if taken for the full year.* This course covers many of the major topics of descriptive statistics. In the fall, topics covered will include displays of sample data, measures of center and spread, probability, discrete random variables and normal distributions. A student may elect to take only the fall class or they may continue the study throughout the year. The emphasis of the spring semester will be inferential statistics. The topics will be partially determined by the interests of the class or instructor.

MATH 49. *Advanced Topics in Mathematics - Pre-calculus. Fall, Spring. The Department. 5 meetings weekly.* This course is designed to prepare students for calculus, and the focus will be on problem solving using mathematical models to represent real world situations. After a review of elementary functions, with particular attention to polynomial and rational functions, students will investigate conic sections by way of parametric equations and, finally, examine sequences and series. **This course is a prerequisite for ALL AP level math courses.**

MATH 50. *Differential Calculus. Spring. The Department. 5 meetings weekly. Prerequisite: Math 49 and Permission of the Department. Students may not take Math 50 concurrent with or subsequent to Math 46.* This in-depth course in calculus will develop and explore the concept of limit and then progress to the development of the derivative. Derivatives of polynomial, trigonometric, and exponential functions and their applications to graphing, velocity, acceleration, max-min problems, and related rates will be studied.

MATH 51. *Advanced Placement Statistics. Year. The Department. 5 meetings weekly. Prerequisite: Math 49 and Permission of the Department. Students may not take Math 51 concurrent with or subsequent to Math 48.* During the first semester, data descriptive statistics, data collection and probability are the foci of this course. During the second semester, the emphasis is on inferential statistics. Topics include confidence intervals and tests of significance for means and proportions, power and error, chi-squared tests and inference for regression. This course prepares students for the Advanced Placement Examination in Statistics.

MATH 52. *Advanced Placement Calculus AB. Year. The Department. 5 meetings weekly. Prerequisite: Math 49 and Permission of the Department. Students may not take Math 52 concurrent with or subsequent to Math 46.* This is a yearlong course in both differential and integral calculus which covers the syllabus of the AB Advanced Placement Examination. From the development of the definition of derivative, to its application to a series of related problems, this investigation of differential calculus will cover all topics in which the rate of change of a function is the primary interest. The second semester will then begin an extensive investigation in integral calculus, focused primarily on assorted techniques of integration. The tool of integration will then help the student think about assorted questions of area, length, volume and related physical problems.

MATH 55. *Advanced Placement Calculus BC. Year. The Department. 5 meetings weekly. Prerequisite: Math 50 and Permission of the Department. Students may not take Math 55 after taking Math 52.* This year-long course covers the syllabus associated with the BC Advanced Placement Examination. The development of the idea of accumulation and the

closely associated topic of the area will motivate much of the discussion in the first semester of this course. After the development of the integral and various techniques of integration we will investigate a series of related physical problems dealing with growth, decay, volume, and length. The course will conclude with a study of analytic geometry, polar coordinates, differential equations and infinite series.

**MATH 60.** *Multivariable Calculus. Fall. The Department. 4 meetings weekly. Prerequisite: Completion of the BC syllabus.* After a brief review of the topics in analytic geometry, polar coordinates, and parametric equations, we will study vectors in 2-space and 3-space. The topics will include tangent and normal vectors, curvature, dot product, cross product, curves and planes in 3-space, and quadric surfaces.

**MATH 65.** *Vector Calculus. Spring. The Department. 4 meetings weekly. Prerequisite: Math 60.* This course will be a study of multi-variable calculus with attention paid to partial derivatives, multiple integrals and their applications, Stokes' and Green's theorems, and the related underpinnings of vector theory.

**MATH 70.** *Seminar in Advanced Mathematics. Fall, Year. The Department. 4 meetings weekly. Prerequisite: Math 65. ExPRT Certificate eligible.* This open-ended course will focus on topics of interest to students who have completed mathematics through Math 65. Possible areas of study might include linear algebra, differential equations, number theory, or applications of vector theory, to name a few.

## SCIENCE

[Head of the Department: Kerry Magee]

The goals of the Science Department at Middlesex are to promote in our students an understanding of the natural world and to develop in them the ability to engage in scientific inquiry. We aim to prepare future scientists, engineers, and medical professionals for the next phase of their training, while also providing non-scientists with skills and habits that will serve them well regardless of their field of study. We expect that our students, after studying science at Middlesex, are informed citizens, critical consumers of scientific data, and savvy users of technology.

We value both depth and breadth in our courses; we believe that a complete science education includes both understanding of the fundamentals of current scientific thought as well as detailed exploration and comprehensive mastery of particular concepts of interest. To that end, we encourage students at Middlesex to progress through introductory courses in all three major disciplines of science, biology, chemistry, and physics, before exploring further areas of interest in Applied Science or Advanced Placement courses.

Students are encouraged to take Biology, or in some instances Chemistry, in Class IV; Chemistry, or in some instances Physics, in Class III; and Physics in Class II. The department offers a variety of advanced topics courses for students who have met the lab science requirement. Advanced Placement courses are available to qualified students in Class II or Class I who have completed the appropriate prerequisite courses and with the permission of the Department.

Biology, Chemistry, Physics and Environmental Science are full-year courses. These courses completed in a single academic year confer credit for laboratory science. Semester long advanced science courses confer distributional credit, but do not confer credit for laboratory science.

**BIOLOGY 10.** *Biology. Fall. The Department. 5 meetings weekly. Open to all classes.* Biology 10 and Biology 11/12 constitute a full year course. An introductory course which attempts to develop an understanding of the basic principles governing the living world, to instill in

the student a perspective of himself or herself as a living organism, and to develop skills in experimental technique and scientific reasoning. Students continue on to Biology 11 or Biology 12 in the spring semester.

**BIOLOGY 11.** *Biology. Spring. The Department. 5 meetings weekly. Open to all classes. Prerequisite: Biology 10.* A continuation of Biology 10, with an emphasis on the concepts of evolutionary theory, ecology, and the major regulatory and locomotive systems of the body.

**BIOLOGY 12.** *Honors Biology. Spring. The Department. 5 meetings weekly. Open to all classes. Prerequisite: Biology 10 and Permission of the Department.* Intended for students with a strong record of accomplishment in Biology 10. This course will more rigorously approach and develop the topics offered in Biology 11 and will cover additional material. Topics include evolution, ecology, and major body systems. Together with Biology 10, prepares students for the SAT Subject Test in Biology.

**BIOLOGY 20.** *Advanced Placement Biology. Year. Dr. Magee. 5 meetings weekly. Prerequisite: Biology, Chemistry, and Permission of the Department.* Students will be ranked and admitted to the course based on their performance in previous science courses (biology, chemistry). Preference will be given to members of Class I and II and students who have completed physics. This challenging full year, college-level biology course is offered as a second-year course in biology for extraordinary science students, especially those who have an interest in the fields of medicine or research. The two main goals of the course are to help students develop a conceptual framework for modern biology and an appreciation of science as a process. The ongoing knowledge explosion in biology makes these goals even more challenging. This course follows the AP Biology syllabus published by the College Board and covers major topics in the fields of biochemistry, cellular and molecular biology, classical and modern genetics, development, animal systems, ecology and evolution. Inquiry based labs are an integral part of this course, as are nightly reading assignments and homework assignments that are designed to have the students apply the concepts learned in class. This course uses an eBook as a primary resource as well as several websites and iPad apps to further explore the topics. Prepares students for the Advanced Placement Examination in Biology.

**CHEMISTRY 10.** *Chemistry. Fall. The Department. 5 meetings weekly. Open to all classes.* Chemistry 10 and Chemistry 11/12 constitute a full year course. **Students must have completed or be concurrently enrolled in Math 31 in the spring semester in order to complete a year of chemistry.** This course explores a core of principles that organizes the whole of chemistry. Coverage will include topics such as atoms and molecules, prototypical reactions, periodic properties of the elements, bonding and the mole. Emphasis will be placed on progressing from the general to the specific and from the simple to the complex as we explore current understanding in the field of chemistry. Instruction will include both lecture and laboratory, and effort will be made to engage the student in the learning process. In addition to reading and problem sets, there will be in-class collaborative learning assignments, computer-based tutorials, and topically oriented writing assignments.

**CHEMISTRY 11.** *Chemistry. Spring. The Department. 5 meetings weekly. Open to all classes. Prerequisite: Chemistry 10 and concurrent enrollment in Math 31.* This course is a continuation of Chemistry 10 and will cover stoichiometry, gas laws, chemical kinetics, chemical equilibrium, acid base chemistry, and oxidation reduction reactions.

**CHEMISTRY 12.** *Honors Chemistry. Spring. The Department. 5 meetings weekly. Open to all classes. Prerequisite: Chemistry 10, concurrent enrollment in Math 31 or higher and Permission of the Department.* This course is a continuation of Chemistry 10 and will

cover stoichiometry, gas laws, chemical kinetics, chemical equilibrium, acid base chemistry, oxidation reduction reactions, electrochemistry, and nuclear chemistry. This course is designed for students with a strong record of accomplishment in Chemistry 10, who are prepared for a mathematically more rigorous approach to the study of chemistry. Together with Chemistry 10, prepares students for the SAT Subject Test in Chemistry.

CHEMISTRY 20. *Advanced Placement Chemistry. Year. Dr. Schaeberle. 5 meetings weekly. Prerequisite: Chemistry, Physics, Math 49 and Permission of the Department. Students will be ranked and admitted to the course based on their performance in previous science courses (chemistry, physics) and Math 49. Preference will be given to members of Class I and II and students who have completed biology, chemistry and physics.* Equivalent to first year college chemistry, this course is designed for students intending to concentrate their studies in science, engineering, or medicine. This course follows the AP Chemistry syllabus published by the College Board and covers the advanced topics include quantum theory and atomic structure, organic and biochemistry, chemical equilibria, kinetics, thermodynamics, electrochemistry, spectroscopy, and nuclear chemistry. Inquiry based labs are an integral part of this course and will include quantitative and qualitative analysis. Prepares students for the Advanced Placement Examination in Chemistry.

PHYSICS 10. *Physics. Fall. The Department. 5 meetings weekly. Open to Classes I, II, and III. Prerequisite: completion or concurrent enrollment in Math 31.* Physics 10 and Physics 11/12 constitute a full year course. This course introduces the fundamental ideas of physics, emphasizing conceptual explanations and basic algebraic problem solving. The course starts with a study of waves and sound and then transitions to the basics of the electromagnetic spectrum and the behavior of light. It then examines electrostatics, electricity and simple circuits. Finally, the course will investigate forces as it prepares students to examine the objects in motion around them.

PHYSICS 11. *Physics. Spring. The Department. 5 meetings weekly. Open to Classes I, II, and III. Prerequisite: Physics 10.* This course is a continuation of Physics 10 and will employ hands-on activities and projects to study the concepts of motion, free fall, forces, vectors, projectiles and energy. Problem solving and conceptual explanations continue to be emphasized. If time allows the topics of universal gravity, magnetism and electromagnetism will be explored.

PHYSICS 12. *Honors Physics. Spring. The Department. 5 meetings weekly. Open to Classes I, II, and III. Prerequisite: Physics 10 and Permission of the Department.* This course is a continuation of Physics 10 and uses the tools of algebra and basic trigonometry to enhance conceptually rigorous analyses. The course starts with a description of motion (kinematics and vectors). Using these tools, the concepts of forces, conservation laws, energy, momentum, and rotation are applied to real world problems. After mechanics, the class turns to topics of electricity and magnetism. Other topics such as modern physics (nuclear physics, atomic physics and special relativity), fluid dynamics, and thermodynamics may be included depending on the pace and interests of the class.

PHYSICS 20. *Advanced Placement Physics 1: Algebra-Based. Year. The Department. 5 meetings weekly. Open to Classes I, II, and III. Prerequisite: completion or concurrent enrollment in Math 32 and a semester average of 90 or better in Chemistry 11 or a semester average of 86 or better in Chemistry 12. Preference will be given to members of Class I and Class II. In the case of over enrollment students will be ranked and admitted into the course based on their performance in chemistry and Math 31.* This challenging college-level introductory physics course is offered as a first-year course in physics for extraordinary science students. The emphasis is both conceptual understanding and

mathematical problem solving. This course follows the AP Physics 1 syllabus published by the College Board, covering topics of Newtonian mechanics (including rotational dynamics and angular momentum); work, energy, and power and mechanical waves and sound. It will also introduce electric circuits. Inquiry based labs are an integral part of this course and will include quantitative and qualitative analysis. Prepares students for the Advanced Placement Examination in Physics 1: Algebra-Based.

PHYSICS 25. *Advanced Placement Physics 2: Algebra-Based. Year. The Department. 5 meetings weekly. Open to Classes I, II, and III. Prerequisite: Biology, Chemistry, Physics 12 or higher and Permission of the Department.* This challenging college-level introductory physics course is offered as a second-year course in physics and covers fluid mechanics; thermodynamics; electricity and magnetism; optics and atomic and nuclear physics. Inquiry based labs are an integral part of this course and will include quantitative and qualitative analysis. Prepares students for Advanced Placement Examinations in Physics 2: Algebra-Based. THIS COURSE WILL NOT BE OFFERED IN 2016-2017.

PHYSICS 30. *Advanced Placement Physics C. Year. Ms. May. 5 meetings weekly. Open to Classes I and II. Prerequisite: Successful completion of Physics 20, and either completion of Math 52 or completion or concurrent enrollment in Math 55 and Permission of the Department. In the case of over enrollment, students will be ranked and admitted into the course based on their performance in Physics 20 and Math 50 courses.* This calculus-based physics course is a challenging and detailed examination of two central parts of classical physics: mechanics and electricity and magnetism. The course is intended for students with a strong interest in science and mathematics. AP Physics C aims to instill a deeper understanding of major topics in first-year physics in students, with more derivations, more difficult problems, and more sophisticated mathematics. Prepares students for both (*Mechanics and Electricity and Magnetism*) Advanced Placement Examinations in Physics C.

ENVIRONMENTAL SCIENCE 20. *Advanced Placement Environmental Science. Year. Mr. Hutcheson. 5 meetings weekly. Prerequisite: Biology, Chemistry, and Permission of the Department. Students will be ranked and admitted to the course based on their performance in previous science courses (biology, chemistry). Preference will be given to members of Class I and II and students who have completed physics.* This course provides a conceptual basis for understanding the environment by presenting the principles of ecology and using them to analyze environmental issues. Environmental science is interdisciplinary in terms of science and in terms of its consideration of the role of social, cultural and economic factors. The relationship of environmental problems to resources, population, pollution, and policy making will be investigated and opposing views of major issues and policies will be discussed and evaluated. Some field work in the Estabrook Woods and at Bateman's Pond will be part of the course. Students will use a textbook and current reading in newspapers and periodicals will also be required. Prepares students for the Advanced Placement Examination in Environmental Science.

The following courses are open during the **fall semester**. In the case of over enrollment, preference will be given to members of Class I.

SCIENCE 41. *Applied Science: Astronomical Tools for Answering Really Big Questions. Fall. Ms. May. 4 meetings and 1 evening observation session weekly. Open to Class II and III.* This course will study the necessary requirements for life beyond Earth, the possibility of extraterrestrials, and the size, scope, and formation of the universe. The tools for these conversations will be those of astronomy, and students will be expected to participate in evening laboratory exercises. Students will study astronomical instruments (telescopes, satellites), astronomical information (electromagnetic waves), and astronomical principles.

Students should expect to use their algebra skills at times in this class. They should also expect to do presentations on their knowledge, as well as take tests and quizzes, including a final exam.

SCIENCE 42. *Applied Science: CSI: Middlesex – An Introduction to Forensic Science. Fall. Mr. Bishop. 3 meetings weekly. Preference given to Class I and II. ExPRT Certificate eligible.* This course examines the science and practical techniques behind crime scene investigation. Judging by the numerous TV shows about solving mysteries through careful analysis of material clues, forensics is a hot topic. This interdisciplinary course will incorporate a basic understanding of principles of chemistry, physics, biology, geometry, and physiology with a practical use of the scientific method to help reconstruct criminal events. Topics to be covered include fingerprinting, toxicology, serology, blood spatter, and hair, fiber, and DNA analysis. Lab activities will accompany each topic. Students will be evaluated by lab reports, semester long projects, and class attendance and participation.

SCIENCE 43. *Applied Science: Brain and Behavior. Fall. Mrs. Sheff. 4 meetings weekly. Preference given to Class I and II.* This semester-long course concentrates on an introduction to the nervous system with an emphasis on the neural mechanisms underlying human and animal behavior. We will focus on the relationship between biology and behavior paying attention to the biological basis of sensory and motor systems such as vision and voluntary movements, and higher mental processes such as memory, learning, language, and attention. Finally the course will look at the consequences that disorders of the nervous system have on behavior and discuss methods of treatment for these disorders. Those taking the course should have an interest in the constantly growing field of neuroscience. Students will be evaluated by examinations, papers, and class participation.

SCIENCE 44. *Applied Science: Aerospace Design and Mechanics. Fall. Dr. Erickson. 4 meetings weekly. Preference given to Class I and II. ExPRT Certificate eligible.* In this engineering based course, students will be designing and building spacecraft with a specific set of building requirements, much like a professional aerospace engineers. Students will learn about the physics of projectile motion, rocket propulsion, drag force, viewed within the scope of a problem based learning platform using an iterative design process. Students will start with rough designs built in a flight-simulation computer program to evaluate design possibilities against launch parameters, such as an exact combination of weight, rocket engine, and flight time duration. The course will incorporate team-based hands-on design challenges to solidify foundations in spaceflight engineering, as well as problem solving and the design process.

The following courses are open during the **spring semester**. In the case of over enrollment, preference will be given to members of Class I.

SCIENCE 45. *Applied Science: Advanced Astronomy. Spring. Ms. May. 4 meetings and 1 evening observation session weekly. Preference given to Class I and II. ExPRT Certificate eligible.* This semester-long astronomy course begins with a survey of the night sky. We will then move on to describe and explain astronomical phenomena on both the scale of the very near and the very, very far. Exact topics will depend on the interests of the class and the celestial objects visible during the semester. Possible areas of exploration include tides, lunar phases, the space program, our solar system (including planets and our Sun), stellar evolution (including red giants, supernovae, neutron stars, and black holes), galaxy formation, cosmology (including the big bang and fate of the universe), and extraterrestrial life. In every topic of study, students are expected to write about their understanding and present their knowledge to their classmates. Frequent class presentations should be

expected. Students in this course will, through required weekly nighttime observing sessions, learn the basics of naked-eye astronomy and become proficient in the use of our rooftop telescopes in the Middlesex Observatory. Opportunities to use the 18-inch Centurion telescope housed in the dome will also be provided.

SCIENCE 46. *Applied Science: Ecology: Life on Earth. Spring. Mr. Hutcheson. 4 meetings weekly. Open to Class II and III.* This course serves as an expansion of ecological concepts introduced in previous biology or life science courses. Students will become familiar with the requirements for life on our planet and explore the biotic and abiotic components of living systems. Energy flow, food webs, population dynamics, major biomes and ecosystems are some of the major topics to be covered. Also of interest will be the mechanisms by which life exists at the extremes, in the harshest conditions on earth. The class will have multiple opportunities to take advantage of outdoor resources and engage in field research on or near the Middlesex campus as part of our regular laboratory schedule.

SCIENCE 47. *Applied Science: Biomedical Ethics. Spring. Mrs. Sheff. 4 meetings weekly. Preference given to Class I and II. **Distributional credit in STEM or the Humanities.*** The twenty-first century promises to be filled with medical and technological advances that not only will enhance the quality of life, but will also generate a myriad of ethical questions and controversies. Our present definitions and qualities of life from beginning to end will be sorely tested and debated. The overlap between science and religion, science and ethics, and science and the legal system will become even more blurry, and it is important as future consumers, patients, and citizens of the world that we be as informed as possible. This course will examine as many of the issues as possible: pre-natal technology, stem-cell research, genetic screening, organ cloning, gene therapy, regenerative medicine, animal and crop experimentation, assisted suicide, hospice, patients' rights, immortality research, among others. Current readings on a technical level as well as readings regarding legal, ethical, and religious commentaries will be a staple of the course. Research papers and a major project will be the primary forms of student evaluation.

SCIENCE 48. *Applied Science: Engineering. Spring. The Department. 4 meetings weekly. Preference given to Class I and II. **ExpRT Certificate eligible.*** This hands-on course will consist of a series of projects that survey the major fields of engineering: structural, chemical, electrical, mechanical, and biomedical. Students will form teams for each unit and will work together to design, build, and test functional prototypes in order to solve various real-world problems. Each project will challenge the teams to think critically and creatively in order to develop their unique solution to the task. Likely challenges will include: developing the farthest traveling wind up car, capturing the most solar energy, launching a water balloon the farthest over Eliot, and designing the most practical surgical tool. Additional challenges will be determined based on the interests of the class. By examining the process by which products are engineered, students will develop their own methods for solving problems and will learn to allocate scarce resources among competing priorities. Students will be assessed by the success of their prototypes, their analysis of each problem, their reflections on their process and product performance, and on their mastery of each scientific topic being leveraged in each challenge. By the end of the course students will have gained valuable insights into their own style for solving problems, new confidence in their ability to overcome obstacles, and will have a personal portfolio of developed products.

SCIENCE 49. *Applied Science: Robotics. Spring. Dr. McDonald. 4 meetings weekly. Preference given to Class I and II. **ExpRT Certificate eligible.*** Robots take many forms and help us every day with simple jobs around the house as well as more complex tasks in manufacturing. Robots do menial work in factories and disarm explosives at crime scenes and explore Mars searching for life. This hands-on, semester-long course introduces the

fields of robotics and mechanical engineering and explores the decisions we make designing, building and communicating with robots to perform manual labor, collect data and solve problems. Student teams will collaborate in their study, planning, design and implementation of robotic solutions to problems drawing from these domains of applied robotics. These challenges will take place in a virtual world setting, a real world context and a competitive arena. Student teams will be challenged to think creatively and critically as they design, build and implement solutions. We will use a simplified form of coding to command robots to move and do our bidding. Students will be assessed on their contributions, successes and reflections on each step of the problem solving process. By the end of this course, students will have learned the basics of this exciting field of engineering and they will have a deeper insight into their own problem-solving styles and talents.

## COMPUTER SCIENCE

[Head of the Department: Ashok Pillai]

Computer Science extends beyond simply typing code into a computer. The true essence of this discipline lies in creatively approaching a problem, designing a solution, and then translating that solution into code that can be executed by a computer.

The Computer Science Department aims to advance the problem solving abilities of its students through courses that emphasize the development and implementation of creative algorithms. While instruction in higher level courses primarily focuses on Java, students will develop an intuitive understanding of programming language structure and object-oriented programming, which allows them to learn new languages with minimal effort.

A two-semester course sequence (Computer Science 20-21) exists for students seeking a cursory introduction to computational thinking, algorithms, and fundamental programming concepts. For students wishing to study computer science with the intent to pursue further this field at the collegiate level, there is a four-semester sequence (Computer Science 54-55, Computer Science 61-62), which has been designed for those students who wish to learn about programming languages, algorithms, computer organization, data structures, and discrete mathematics topics applicable to computer science. Students having completed these courses should possess the ability to use functional and object-oriented programming algorithms, constructs, and data structures to solve advanced computational problems. Additionally, they will be able to analyze algorithm and program efficiency with respect to both execution time and space requirements. For the truly sophisticated students, advanced topics in computer science can be studied upon completion of this four-semester sequence.

The A Level Advanced Placement Computer Science Examination covers the first semester of computer science as taught at virtually all universities and colleges that use Java in their introductory course for computer science majors. Students interested in preparing for the A Level Advanced Placement Examination should take Computer Science 54 and 55.

COMPUTER SCIENCE 20. *Computational Thinking. Fall. The Department. 4 meetings weekly. Prerequisites: Math 21 and Math 22. In the case of over enrollment, preference will be given to students in Class I or II, and students will be ranked by performance in Math 21, Math 22, and other core math courses.* This course introduces students to the foundational concepts of computer science and challenges them to explore how computing and technology can impact the world. Whether it's 3-D animation, engineering, music, app development, medicine, visual design, robotics, or political analysis, computer science is the engine that powers the technology, productivity, and innovation that drive the world. Computer science experience has become an imperative for today's students and the

workforce of tomorrow. This course focuses on creative problem solving and real-world applications to prepare students for their future academic and vocational careers. Topics covered in this course include programming, abstractions, algorithms, large data sets, the Internet, cybersecurity concerns, and computing impacts.

COMPUTER SCIENCE 21. *Algorithms and Principles of Computer Science. Spring. The Department. 4 meetings weekly. Prerequisite: Computer Science 20. ExPRT Certificate eligible.* This is a continuation of Computational Thinking (Computer Science 20) where students will be given the opportunity to use technology to address real-world problems and develop relevant solutions. They will connect computing ideas, create and analyze computational artifacts, and communicate both orally and in written form as they collaboratively develop these solutions. Students intending to take the Advanced Placement examination in Computer Science Principles should enroll in Algorithms and Principles of Computer Science and participate in the weekly workshop offered by the Department during the spring semester.

COMPUTER SCIENCE 54. *Computer Science. Fall. Mr. Pillai. 4 meetings weekly. Open to members of Classes I or II and to members of Classes III and IV with Permission of the Department. Prerequisites: Math 22, Math 31, and Permission of the Department.* This course teaches the fundamentals of object-oriented programming using Java. Topics covered will include data types, selection constructs, loops, methods, Strings, and object encapsulation. The course stresses the understanding of problem solving in terms of algorithmic development.

COMPUTER SCIENCE 55. *Advanced Placement Computer Science: Programming in Java. Spring. Mr. Pillai. 5 meetings weekly. Prerequisite: Computer Science 54 and Permission of the Department. ExPRT Certificate eligible.* This course is a continuation of Computer Science 54. Students examine and write larger and more complex programs consisting of multiple classes. It will consider style and expression, structured coding, modularization, implementation, testing, and maintenance of software. Related topics include arrays, the construction of classes, inheritance, polymorphism, and recursion. Measuring algorithm efficiency will be considered with particular emphasis on sorting and searching. Prepares students for the A Level Advanced Placement Examination in Computer Science.

COMPUTER SCIENCE 60. *Advanced Topics in Computer Science. Fall, Year. The Department. 4 meetings weekly. Prerequisite: Computer Science 55 or Computer Science 54 with Permission of the Department. ExPRT Certificate eligible.* Especially qualified students may study advanced topics such as multimedia and web design and production, networking, algorithm design and analysis, theory of computation, programming languages, computer architecture, software development, iOS or Android apps, or operating systems. Students in this course will be expected to do a considerable amount of independent study. May be taken as either a one-semester (fall only), or yearlong course. THIS COURSE WILL NOT BE OFFERED IN 2016-2017.

COMPUTER SCIENCE 61. *Algorithms and Data Structures. Fall. Mr. Pillai. 4 meetings weekly. Prerequisites: Computer Science 55 and Permission of the Department. ExPRT Certificate eligible.* After a review of Java classes and the principles of designing classes, there will be an in-depth examination of the Java Collections library, iterators, the efficiency of algorithms using Big-Oh analysis, and predicate logic.

COMPUTER SCIENCE 62. *Advanced Data Structures. Spring. Mr. Pillai. 4 meetings weekly. Prerequisite: Computer Science 61 and Permission of the Department. ExPRT Certificate eligible.* This advanced course in data structures and discrete mathematics will begin with a detailed discussion of problem solving with the following abstract data types: linked

lists, stacks, queues, trees, graphs, maps, tables, and priority queues. Algorithm analysis and proving the correctness of recursive functions using mathematical induction will also be considered. The remaining time will be spent on graphical user interfaces and advanced techniques for the management of data such as balanced search trees, hashing, sorting data in external files, and searching external tables. Time permitting, students will also be taught how to use the typesetting language LATEX.

COMPUTER SCIENCE 70. *Seminar in Advanced Computer Science. Fall, Year. The Department. 4 meetings weekly. Prerequisites: Computer Science 62 and Permission of the Department. ExPRT Certificate eligible.* This open-ended course will focus on topics of interest to students who have completed computer science through Computer Science 62. Possible areas of study might include (but are not limited to) assembly language, software design and development, app development, databases, or artificial intelligence. Large scale, collaborative programming projects will be a primary focus of this course, and students in this course will be expected to do a considerable amount of independent study. May be taken as either a one-semester (fall only), or yearlong course.

## SOCIAL SCIENCE DIVISION

[Head of the Division: Cal Hitzrot]

The History and Social Science Division provides a forum for students to investigate a diversity of ideas and experiences. Through course readings and class discussions, students explore the complexity of our world, in order to come to a better understanding of the global community, and in time, of themselves. The Division's course offerings cover many of the ideas, events, and people responsible for shaping the world's cultures. By analyzing historical narratives – both primary and secondary sources – and by comparing competing interpretations, students develop their critical thinking skills and learn to speak and write persuasively, culminating in the generation of original ideas. The process of researching, organizing, and writing research papers is developed and reinforced throughout the curriculum, teaching students skills that will assist them in many fields of intellectual inquiry.

All students must take four semesters of history (any course designated as History). Students in Class IV are encouraged to enroll in history both semesters. In the fall semester, students should enroll in *The Ancient World* (History 10). In the spring semester, students should enroll in one of the *Topics in World History* courses (History 12, 13, 14 or 15). These courses are designed to solidify the skills students will need for future study within the Division.

Students in Class III are encouraged to enroll in history both semesters. In the fall semester, students should enroll in *Early Modern World History* (History 20). In the spring semester, students should enroll in *Modern World History* (History 21). **Students who wish to take the Advanced Placement World History Examination in May should enroll in both *Early Modern World History* (History 20) and *Modern World History* (History 21). An optional Advanced Placement preparation workshop will be offered in concert with *Modern World History* in the spring.**

Students in Class II are required to take *United States History* (History 30). Alternatively, they may enroll in AP United States History (History 41) if they have completed History 20 and achieved a grade of 88 or higher in History 21. Students may not request AP United States History if they have not taken History 20 and History 21. Students in Class I may enroll in Advanced Placement or seminar courses of their choice.

Upper-level courses, which may be elected by any member of Classes I and II, focus on specific areas within the larger framework of the Social Sciences. These advanced courses encourage students to use the skills and techniques acquired in earlier courses to delve more deeply into fields of personal interest. In cases of over-enrollment, preference will be given to members of Class I.

All upper-level courses taken by a member of Class I or Class II in any area within the Social Science Division, including *United States History*, confer credit towards the distributional requirement in the Social Sciences. Only courses designated as History will count toward the departmental requirement.

## HISTORY

**HISTORY 10.** *The Ancient World. Fall. The Department. 4 meetings weekly.* History 10 is a one semester survey that investigates how early peoples organized into civilizations. The goal of the course is to examine the stories, laws, religions, and traditions of the ancient peoples of the Near East, including the many early civilizations of Mesopotamia, the Egyptians, and the Hebrews. More specifically, this course focuses on the way that early peoples interacted with their environment and with each other, and also on the choices that those early peoples made to organize and maintain their pre-modern societies. In addition to quizzes, tests, and short essays, this course will also feature an extensive, step-by-step research process, resulting in an annotated bibliography.

**HISTORY 12.** *Topics in World History: the Islamic World. Spring. The Department. 4 meetings weekly.* History 12 is a one-semester survey of the history of the Middle East from the life of the prophet Muhammad (c. 600 CE) to the Ottoman conquest of Constantinople (1453 CE). The goal of this class is to provide students with an understanding of Islam and the development of an “Islamic world.” Using a multidisciplinary approach, this course will explore the geography of the region; the development of monotheism in Judaism, Christianity, and Islam; the Umayyad and Abbasid Dynasties; the Fatimid Dynasty and the Berbers; the Crusades; the Mongol invasions; and finally the rise of the Ottoman Empire.

**HISTORY 13.** *Topics in World History: China. Spring. The Department. 4 meetings weekly.* History 13 is a one-semester course that introduces students to the history of China through a study of the rise, flourishing, and seeds of decline of imperial China. Beginning with the Zhou, Qin, and Han dynasties, students learn about the emergence of the three philosophies — Confucianism, Taoism, and Legalism—and how they became intertwined with imperial rule and culture. After an introduction to Buddhism, the focus turns to the cultural and economic flowering of China under the Sui, Tang, and Song dynasties, when China boasted a brilliant, cosmopolitan culture and remarkable commercial and technological development. After studying the Mongol invasion and rule under the Yuan dynasty, the course concludes by the Ming dynasty’s shift from international engagement to increasing insularity. Using primary sources—including artifacts, literature, and art—and secondary materials, this course continues to emphasize effective reading comprehension and evidence-based writing skills.

**HISTORY 14.** *Topics in World History: West Africa. Spring. The Department. 4 meetings weekly.* History 14 is a one-semester course that explores the history of West Africa from the time-period of Muhammad (c. 600 CE) to Postcolonialism (1960s). Using primary and secondary sources, students will examine both the inter-African phenomena—trade networks, weather, Empire building, traditional belief-systems, and disease — and extra-African influences — Trans-Atlantic Slave Trade, spread of Christianity and Islam, Arab Slave Trade, The Columbian Exchange, and Colonialism. Students will become familiar

with both oral and written historical narratives. Key units include the Trans-Saharan trade network, the rise of sub-Saharan empires, the impact of the Arab world in East Africa, the impact of Islam and International trade, early interactions between Christian Europe and West Africa, Geography, and the Colonial World.

**HISTORY 15.** *Topics in World History: the Americas. Spring. The Department. 4 meetings weekly.* History 15 is a one-semester survey that explores the history of the American continents from the earliest peoples migrating across the land bridge from Siberia to the arrival of the Spanish in the 1520s CE. The course will focus on the study of indigenous peoples, most notably the Maya of the Yucatan Peninsula, the Aztecs of Mesoamerica, and the Inca of the Andes Mountains, and several North American Native American ethnic groups, including the Anasazi and the Iroquois Confederacy. Students will also read two Norse sagas about the discovery and attempted colonization of Vinland (L'Anse aux Meadows in Newfoundland) by Vikings from Greenland. In this course, students will develop geography skills, hone their reading comprehension skills, and craft written responses to essential questions. **THIS COURSE WILL NOT BE OFFERED IN 2016-2017.**

**HISTORY 20.** *Early Modern World History. Fall. The Department. 5 meetings weekly.* History 20 is a one-semester survey course that focuses on world history from 1450 – mid 1800s CE. While the course incorporates a wide range of topics, there is an emphasis on the political, intellectual, and cultural issues that shaped the early modern world. Specific attention is paid to learning how to interpret primary source materials and to developing geographic literacy. Students will also work on writing effective paragraphs, according to the tenets of the sophomore writing workshop. Students who wish to take the Advanced Placement examination in World History should enroll in this course and attend the exam preparation workshop offered by the Department during the spring semester.

**HISTORY 21.** *Modern World History. Spring. The Department. 5 meetings weekly.* History 21 is a one-semester survey course that focuses on world history from the mid-1800s to the present. Its main focus is to continue to develop the skills of analysis and synthesis, through examination of primary sources, the writing of paragraphs, and the presentation of ideas in class discussions. This course also features a formal research assignment and continued emphasis on geographic literacy. Students intending to take the Advanced Placement examination in World History should complete *Early Modern World History* and participate in the workshop offered by the Department during the spring semester.

**HISTORY 30.** *United States History. Year. The Department. 5 meetings weekly.* This yearlong course covers the study of the United States from the earliest European settlements (early 1600s), through the present day. It utilizes both primary and secondary documents to illuminate those trends and events which have contributed most significantly to the formation of the American character and to the institutions and ideals with which we deal today. Strong emphasis is placed upon the development of the skills of research and writing necessary for the pursuit of the discipline of history. Students will complete a major research paper in the second semester.

**HISTORY 40.** *Advanced Placement Art History. Year. Ms. Munro. 5 meetings weekly. Prerequisite: Permission of the Department. Admission to AP Art History is based on performance in Art 11, United States History, and English 30 and 31. **Distributional credit in the Arts, the Humanities, or the Social Sciences.** This course may be designated as an Art course.* Spanning from the Paleolithic art of cave painting to new-media installations of the twenty-first century, this course offers a comprehensive investigation of the history of art. Students will also study art from diverse, global traditions, with units dedicated to the arts of Africa, Asia, the Americas, and Europe. As a college-level course, this class will rely on primary sources, academic articles and a course textbook.

Throughout the year, students will also refine the skills associated with art-historical writing and criticism, and the class will make periodic trips to area museums.

HISTORY 41. *Advanced Placement United States History. Year. The Department. 5 meetings weekly. Prerequisite: History 20 and History 21 (with a minimum grade of 88 in History 21). Students will be ranked and admitted based on their performance in History 21.* This course covers the same topics as History 30, but with a more varied and in depth approach to inquiry based critical reading through historiography and the interpretation of primary sources. This reading intensive course is intended for highly motivated students of history and emphasizes a blend of content mastery with the development of extemporaneous expository writing skills. The course relies on seminar discussion and student-centered activities and will prepare students to take the Advanced Placement Examination in United States History in early May.

HISTORY 42. *Advanced Placement European History. Year. Mr. Hitzrot. 5 meetings weekly. Open to Class I and II.* This content intensive course investigates the political, social, economic, diplomatic, intellectual and cultural history of Europe, from the Renaissance (c.1350 CE) to the present day. This course is intended for highly motivated students of history and relies on seminar discussion and student engagement. This course will prepare students for the Advanced Placement Examination in European History in early May.

The following seminar courses are open during the **fall semester** to all members of Classes I and II. In the case of over enrollment, preference will be given to members of Class I.

HISTORY 50. *Afro-American History. Fall. Mr. Whitlock. 4 meetings weekly.* This course will explore the African-American experience from the seventeenth to the late twentieth centuries. Using primary and secondary sources, students will hear the stories, explore the cultures and delve into the causes and effects of slavery in Colonial America, and explore the black presence in the Era of the American Revolution. Students will learn about the complex interplay of freedom and restriction in the Antebellum, Civil War, and Reconstruction periods. Modern African-American History focuses on the struggle to dismantle segregation against the forces of resistance through the World War periods, culminating in the advances of the Civil Rights Movement of the 1950s and 1960s. Students will deepen their understanding of the complexities of color, class, and race in United States History. **THIS COURSE WILL NOT BE OFFERED IN 2016-2017.**

HISTORY 51. *The Harlem Renaissance. Fall. Dr. Munro. 4 meetings weekly. **Distributional credit in the Social Sciences or the Humanities.*** The Harlem Renaissance is a one-semester course that explores the historical, cultural, philosophical, literary, and artistic “rebirth” which occurred within various communities of Harlem, New York City in the 1920’s. Using a variety of sources—from poems to songs, short-stories, film and art—students will examine the tense racial atmosphere which gave rise to the ideas of the renaissance as well as the cultural legacy which followed from it. This course will be organized thematically around the following key themes: history, philosophy, Art, Literature and Poetry, and Song. By the end of the course, students will have broad and interdisciplinary perspectives on not only this time in African American history, but also in American social, political, and aesthetic history.

HISTORY 52. *War and Reconciliation. Fall. Mr. Hitzrot. 4 meetings weekly.* In his provocative 2002 book, the war correspondent Chris Hedges asserted that “war is a force that gives us meaning.” This course will investigate that assertion, based on case studies of human conflict throughout history, from the sacred texts of the ancient Hebrews to more contemporary conflicts in Yugoslavia, Afghanistan, and Iraq. The course will also examine ways that societies have recovered from war through various methods of

reconciliation. Course materials will be drawn from primary source texts, book-length secondary sources, and video clips. In conjunction with nightly readings, students will also post to a shared class blog. Students will write essays in response to the course readings and in response to issues that arise from class discussion.

HISTORY 53. *History of Dissent. Fall. Mr. Musto. 4 meetings weekly. **Distributional credit in the Social Sciences or the Humanities.*** Throughout world history individuals and groups have marched to the beat of a different drummer, and raised their voices in strident protest. How has dissent shaped society? We are going to study the story and development of dissent in society from Martin Luther and Galileo to Mary Wollstonecraft and Thomas Paine to John Brown and Lucy Stone from Mahatma Gandhi and Martin Luther King to Nelson Mandela and Malala Yousafzai. In addition to studying the historical antecedents of dissent, students will be encouraged to engage in first-hand experience by visiting and studying a present-day dissent organization (in the Boston area) to investigate connections between the history of dissent and the process of making dissenting opinion heard today.

The following seminar courses are open during the **spring semester** to all members of Classes I and II. In the case of over enrollment, preference will be given to members of Class I.

HISTORY 55. *Era of the American Civil War: 1850-1877. Spring. Mr. Whitlock. 4 meetings weekly.* Students will explore the complex variables which made the Civil War arguably the most transformative event in US History. Through a variety of primary, secondary and multi-media sources, students will delve into the political, economic, and social factors which contributed to the coming of the war. We will also examine the formation of the Confederacy, the military campaigns, and the key developments which led to Union victory. The course will close with an examination of the Reconstruction Era which further challenged the restored Union. A principal focus throughout the course will be the “peculiar institution” of American slavery, its abolition, and the ongoing racial tensions which continued to divide the fragile peace of the post-Civil War. **THIS COURSE WILL NOT BE OFFERED IN 2016-2017.**

HISTORY 56. *Global Studies. Spring. Dr. Munro. 4 meetings weekly.* Global Studies is a one-semester course which will introduce students to the study of globalization. Global Studies aims to help students develop tools and language to help better equip them to understand and navigate the complexities of our ever-connected and quickly-changing world. Through the study of history, geography, politics, philosophy, economics, and religion students will be introduced to an interdisciplinary understanding of contemporary issues such as migration, justice, and culture, to name a few. Students will have the opportunity to supplement their readings and class discussions with current events and field trips to local communities with strong ties to other parts of the world. By the end of the course, students will have a more focused idea on how to think through the experiences of others, both on campus and around the world.

HISTORY 57. *Ancient Mediterranean History. Spring. Ms. Hession. 4 meetings weekly. **Distributional credit in the Social Sciences or the Humanities.*** This course will examine the distinctive cultural, political and social achievements and institutions of the Greek city-states and the Roman Republic during the classical period. Central themes include the rise of democracy in Athens, the Persian and Peloponnesian Wars, the establishment of the republic at Rome, the Punic Wars between Rome and Carthage, and the expansion of Roman rule across Europe and Mediterranean. Students will read a mixture of primary and secondary sources, including selections from Greek and Roman poets and historians. No prior knowledge of Greek or Latin is assumed. The course will develop essential historical skills, and students will make and explore connections between ancient and early modern

European history, as well as the decisive influence of the classical historians on America's founding fathers.

**HISTORY 59.** *Art and Life in Nineteenth-Century France.* Spring. Ms. Munro. 4 meetings weekly. This course may be designated as an Art course. **Distributional credit in the Social Sciences, the Arts, or the Humanities.** From Courbet's *Burial at Ornans* to Monet's *Waterlilies* and from the Arc de Triomphe to the Eiffel Tower, many of France's most recognizable cultural contributions were executed during the nineteenth century. In this course, we will consider the historical backdrop against which these monuments were created, gaining insight into the unique conditions that led to a flourishing of culture and, ultimately, to a radical reconsideration of France's established institutions. Making use of scholarly secondary sources and a wide range of primary sources—including art, essays and works of fiction—we will pursue an in-depth investigation of this period and its persistent impacts on the conditions of modern life.

## ECONOMICS

**ECONOMICS 41.** *Advanced Placement Economics.* Year. Mr. Pandolfini. 5 meetings weekly. *Prerequisite: Permission of the Department. Admission to AP Economics is based on performance in United States History (85 in AP US History or 87 in US History), in mathematics (85 in Math 49) and on completion of the summer assignment by the mandated due date.* This course is an introduction to microeconomics and macroeconomics. The microeconomics section of the course will analyze the behavior of individual consumers and producers and the laws of supply and demand in competitive and uncompetitive markets. The macroeconomics portion of the course will discuss the indicators used to judge the economic health of a nation and how policy makers use fiscal and monetary policy to target economic growth, low unemployment, and price stability. Sources include research publications, newspapers, and web sites for economic statistics and popular and scientific viewpoints. Class activities include market simulations, debates, and student-centered activities. Student groups will present an advanced topic or application as a final project. This course prepares students to take the Advanced Placement Examinations in Microeconomics and Macroeconomics.

## PSYCHOLOGY

**MINDFULNESS 10.** *Introduction to Mindfulness.* Fall. Mr. Worthen. 1 meeting weekly. All members of Class IV are enrolled in this course. This ten week nonacademic credit course introduces students to the history, benefits, and practice of mindfulness. Mindfulness is often defined as “paying attention to our present moment experience with curiosity and acceptance” and is a skill that allows students to gain a deeper understanding of attention, thoughts, emotions, and feelings. While this course is required, the practice of mindfulness at Middlesex is always optional.

**PSYCHOLOGY 50.** *Psychology.* Fall, Spring. Ms. Cohane. 4 meetings weekly. What does it mean to be human? Who are you and why are you the way you are? How do people suffer and how are these problems addressed in psychotherapy? These are just a few of the big questions we will explore in this introductory course to psychology. To this end, we will examine psychological theories and research in the realms of personality, developmental, social, cognitive, abnormal, and clinical psychology. We will read case studies, explore current research, and observe our own experiences in order to better understand ourselves and how we relate to the world around us. This is an activities, discussion and researched-based class requiring a curious and open mind and a willingness to participate in self-reflection.

## POLITICAL SCIENCE

POLITICAL SCIENCE 40. *American Government. Fall. Mr. Hoar. 4 meetings weekly. Prerequisite: a grade of at least 84 in United States' History or the previous year's history course and Permission of the Department.* The study of American government and political science seeks to move beyond simply identifying and understanding the structures of government; it instead focuses upon the factors within the American political system that influence the shape of political outcomes. This course will begin its study of the American government in 2016 with an in-depth look at American presidential and congressional elections, public opinion, and voter participation in advance of the November elections, then returning to our constitution, looking not just at the structures created by that compact, but also its historical and theoretical background, and continuing thereafter to examine the evolution of that document and its key principles, including federalism and the separation of powers, followed by an examination of American political culture and its shape and influences on American politics. This course is a prerequisite for students interested in taking AP Political Science in the spring.

POLITICAL SCIENCE 41. *Advanced Placement American Government and Politics. Spring. Mr. Hoar. 5 meetings weekly. Prerequisite: A grade of 84 or above in Political Science 40 and Permission of the Department. In the case of over enrollment students with the best performance in Political Science 40 will be given preference.* A continuation of the examination of American political science begun in Political Science 40, Advanced Placement American Government and Politics continues the examination of the principles implemented by the American Constitution by looking at that document's interpretation by the American judiciary system, particularly with regard to civil rights and civil liberties. It then turns increasingly to contemporary politics, focusing on major sources of outside influence on the institutions of government, the media, interest groups, and parties, before a thorough examination of the major institutions of government--Congress, the Presidency, and the Bureaucracy--themselves. The course concludes by pulling together all of the previously considered inputs to understand how they affect the final policy process in the United States. Accompanying our study of these aspects of the political system is heavy analysis of current events and political phenomena, applying and using the principles learned throughout our various units. This course prepares students for the Advanced Placement Examination in American Government and Politics.

## RELIGIOUS STUDIES

RELIGIOUS STUDIES 50. *The Mystery of Mysticism. Fall. Ms. Smedley. 4 meetings weekly. **Distributional credit in the Social Sciences or the Humanities.*** Whirling dervishes, ecstatic dances, fasting in the wilderness, yoga, meditation, chants, and silence are all different paths to the same goal: oneness with the divine. In this course we will examine the mystical movements of Hinduism, Buddhism, Judaism, Christianity, and Islam. Considering the broader context of their respective religious traditions and reading myriad primary sources, we will study the lives of swamis, monks, Kabbalists, desert fathers, and Sufis. Throughout our intellectual journey into these various mystical traditions, the students will be encouraged to consider their own spiritual journeys as well.

RELIGIOUS STUDIES 51. *BIG Questions. Spring. Ms. Smedley. 4 meetings weekly. **Distributional credit in the Social Sciences or the Humanities.*** In this course we will examine several philosophical and theological "BIG questions" of human existence, such

as the nature of reality, free will, perception, love, god, truth, equality, good, and evil. We will study these elusive and enigmatic questions by reading selections from ancient Greeks to modern day Americans (such as Plato, Arnold, Eliot, Hesse, King, Sartre, Singer, Skinner, Thoreau, Voltaire, and Vonnegut), as well as from the three Abrahamic religions; we will also watch some relevant films (such as *Groundhog Day*, *Pleasantville*, *Sliding Doors*, and *The Truman Show*). Daily discussions will be an integral part of the class experience and academic assessment. Students will write a series of papers, short and long, personal and analytical. This class is for the open-minded student, secure enough to consider new ideas, confident enough to defend his/her own ideas, respectful enough to hear other ideas, and prepared enough to participate avidly every day.

## ARTS DIVISION

[Head of the Division: Thomas Kane]

The Arts Division works to expand students' self-confidence, self-awareness, and self-discipline through their own creative works and performances. By studying works from various cultures — both modern and historic — students become more accomplished practitioners and learn to articulate meaningful and informed responses to works of art.

The Division includes three departments: Art, Music, and Theatre. In addition to formal courses, the Division sponsors art exhibits and concerts, assembly presentations, and other dance and theatre presentations both by students and professionals.

**CLASS IV:** Students entering Class IV must enroll in one *Elements of Style* course (Art 11, 12, 13 or 14) each semester. These four courses may be taken in any order, but all four must be completed by the end of a student's Class III year. Members of Class IV may enroll in additional full-credit Arts Division courses only with the permission of the Academic Office. Chorus and/or Studio Music may be taken in addition to the required curriculum without such permission.

**CLASS III:** Returning members of Class III must complete their requirements in *Elements of Style* (Art 11, 12, 13 or 14) by taking those courses not taken during their Class IV year. Entering members of Class III must take Art 11 during one semester and Art 12, 13 or 14 during the other. Students may enroll in additional full-credit Arts Division courses only with the permission of the Academic Office. Chorus and/or Studio Music may be taken in addition to the required curriculum without such permission.

**CLASSES I and II:** Members of Classes I and II must satisfy their distributional requirement in the arts during their last two years by one of the following methods:

1. taking two half-credit courses in the Division. (Space may be available in Art 11, 12, 13 or 14, but only after Class IV and III enrollment is complete.)
2. taking one full-credit course in the Division.
3. regular participation in the Chapel Chorus for two full years with no academic credit.
4. regular participation in the Small Chorus or SWAG for one full year with no academic credit.
5. regular participation in Studio Music for two semesters (do not have to be consecutive) with no academic credit.

6. taking a major role in a full length play or musical with no academic credit.
7. taking a supporting role in two full-length plays or musicals with no academic credit.
8. directing or taking a role in two one-act productions.
9. serving on the production/running crew of two full-length plays or musicals.

**PLAQUES:**

As a diploma requirement, students in Class I must design and carve a plaque for permanent display at the School. With the permission of the instructor, members of Class II may carve their plaques before their Class I year. The scheduling of woodcarving classes will be arranged at the beginning of the year.

## **ELEMENTS OF STYLE**

Required of Classes IV and III (see note above). Open to Classes II and I only if space permits.

These four half-credit courses are at the core of the Arts Division curriculum. The courses share a set of terms common to all the Arts. The intent is to give each student the ability to sharpen his or her ability to look, listen, and participate in the Arts with perception and discretion.

**ART 11. *Elements of Style in Art History. Fall, Spring. The Department. 3 meetings weekly. Half credit.*** This course introduces students to the elements of style in painting, sculpture, and architecture. Students will gain an appreciation of works from diverse cultures and periods, with particular emphasis on the western tradition during the second quarter. Students will develop the vocabulary of art criticism as they learn to articulate their observations with precision and to interpret these observations through compelling analysis. Students will also explore the concept of period style, and they will fuse this understanding of style with the appropriate historical contexts. Through writing approximately four essays over the course of the semester, students will become increasingly confident in their critical judgment and will leave the course with a better understanding of the expressive power of the visual arts.

**ART 12. *Elements of Style in Music. Fall, Spring. The Department. 3 meetings weekly. Half credit.*** This course provides an introduction to perceptive listening, an exploration of the history of music, an understanding of how music reflects the society and culture in which it was created, and basic instruction in singing and playing. Students will begin with a survey of musical instruments and the nature of sound production. They will explore basic elements of music such as rhythm, melody, and tone. The class will then continue with a three-week introduction to the basics of singing and tone production. Following that, students will learn to play steel drums. The class ends with a study of Western Art Music from Medieval Gregorian chants and Renaissance madrigals to the Baroque and Classical works of Bach, Mozart, and Beethoven, through nineteenth-century-romantic piano and orchestral compositions to the neoclassicism of Stravinsky, serialism of Schoenberg, and the music being composed today!

**ART 13. *Elements of Style in Studio Art. Fall, Spring. The Department. 3 meetings weekly. Half credit.*** This course is designed to develop a student's ability to see, recognize, and come to terms with various artistic forms. Students will be introduced to drawing, color theory, composition, design, three-dimensional forms, perspective, and collage.

**ART 14. *Elements of Style in Theatre. Fall, Spring. The Department. 3 meetings weekly. Half credit.*** This course will serve as an introduction to American realistic theatre.

Recognizing that theatre is the study of human behavior, as students take on the roles of both actor and playwright, much attention will be paid to the motivations that inform language and action. The class will culminate in a public performance of original scenes in the theater.

## VISUAL ART

[Head of the Department: Stacey McCarthy]

Full-credit courses open to members of Classes I and II, and to others with the permission of the Academic Office. These art courses may be pursued under the structure of an athletic project without academic credit for one season during the Class I or Class II year with the permission of the Academic Office.

ART 20. *Painting I. Fall, Spring. Mrs. McCarthy. 3 meetings weekly. **This course counts as a prerequisite for AP Studio Art.*** This course is designed to introduce students to the language of painting through a variety of assignments beginning with gesture drawing, monochromatic still life studies and color theory experiments. After a formal introduction, students will be encouraged to develop their technical skills and expressive ideas as artists through their investigation of the landscape and figure. Students will be required to paint in the studio outside of class time, incorporate research into their process, and discuss ideas in individual and group critiques.

ART 21. *Advanced Painting. Fall, Spring. Mrs. McCarthy. 3 meetings weekly. Prerequisite: Painting. **This course counts as a prerequisite for AP Studio Art.*** This course builds upon the materials, concepts and methods studied in Painting I. Students will continue to work from observation, but will also explore abstraction and figuration through traditional and experimental methods. Assignments will become increasingly student driven and independent and artist research will be encouraged in order to help students explore the relationship between technique and idea. Group and individual critiques will remain an integral component of the curriculum.

ART 22. *Advanced Drawing. Fall, Spring. Mrs. McCarthy. 3 meetings weekly. **This course counts as a prerequisite for AP Studio Art.*** This course builds upon the visual language and techniques studied in Art 13. In this studio-based course, we will begin by drawing from direct observation, but will quickly expand our practice to include non-traditional approaches to image making, including, but not limited to, drawing from imagination, collage, historical and contemporary references. We will use drawing as a means to problem solve, exploring the relationship between process and concept. Students will be required to maintain a sketchbook and work in the studio outside of class time. Individual and group critiques, artist research and exhibition of artwork are integral components of this course.

ART 27. *Mixed Media Experimentation. Spring. Mrs. McCarthy. 3 meetings weekly. **This course counts as a prerequisite for AP Studio Art.*** This course is designed to introduce beginning to advanced students to a range of 2D and 3D approaches to making Art. The class will focus on process, design, innovative problem solving and experimentation rather than on end product. Students will have the opportunity to develop a visual language through multiple mediums, including painting, drawing, sculpture, “found” form, and collage. Weekly creative challenges will be assigned focusing on ideas such as abstraction, narrative and realism. Students will be required to work in the studio outside of class, incorporate research into their process, and display their work in exhibitions.

ART 28. *Video Production. Fall, Spring. Mr. DuBray. 3 meetings weekly.* This course is an introduction to video production as a means of telling a story. Through a series of project-based assignments, students will develop basic skills in digital video production, while becoming familiar with the medium's unique technical and aesthetic qualities. Using an array of tools, including cameras, computers, microphones, iPads, and special effects, students will explore multiple strategies of making art with video. Production topics covered include; Preproduction (story boarding, scheduling, casting, etc.); Production (cinematography, mise-en-scene, shooting, etc); and Postproduction (editing, Foley sound, visual effects, etc.). Classroom instruction, screenings, readings and discussions will challenge students to discover the diversity that video as a medium offers.

ART 29. *Introduction to Printmaking and Graphic Design: A Study in Artistic Influence on Global Media. Fall, Spring. Ms. Morrison. 3 meetings weekly.* Ever since the invention of the printing press, graphic design has played a large role in media production and pop culture. Graphic images are everywhere we look from signage to movie posters to pizza boxes. In this class, we will begin with an introduction to design theory, spending several weeks completing shorter projects and challenges with the online design program Canva. With this foundation, we will begin to explore the design creative process in Adobe Illustrator and Photoshop as well as print media such as screen printing for longer term projects. Individual and group critiques will encourage students to analyze, describe and interpret artwork. The class will end with an open final project of the student's choice.

ART 30. *Ceramics. Fall, Spring. Ms. Morrison. 3 meetings weekly. Maximum of 8 students per class.* This course will introduce students to a variety of techniques in hand-building, including pinch pots, coil and slab construction, and wheel work as well as basic glazing and firing methods. Projects build on construction and craftsmanship skills and encourage students to challenge themselves in developing and expressing a personal aesthetic in their work, culminating in the design and completion of an independent project to be included in the final exhibit at the close of the semester. Self-evaluation and weekly practice outside of class time are important parts of the learning process throughout the course.

ART 31. *Advanced Ceramics. Fall, Spring. Ms. Morrison. 3 meetings weekly. Maximum of 8 students per class. Prerequisite: Ceramics.* In the Advanced Ceramics class, students have the opportunity to delve deeply into one or two clay construction methods that really interest them. New construction techniques such as collaring and throwing taller forms on the wheel or carving with additive and reductive methods may also be introduced. Working closely with the teacher, advanced ceramics students are expected to develop their own syllabus and build a network of contemporary and historical art references that serve as inspiration for their own personal style.

ART 32. *Advanced Studio Projects: Ceramics. Fall, Spring. Ms. Morrison. 3 meetings weekly. Prerequisite: Ceramics, Advanced Ceramics and Permission of the Department.* Students committed to mastering their skills in sculptural form in clay are offered the opportunity to tailor a course program to further explore areas of interest. This might include alternative firing techniques, jewelry making, clay sculpture or advanced decorative techniques. Each student will design, create, and host his/her own final exhibit at the close of the semester.

ART 33. *Sculpture Carving. Spring. Mrs. McNally. 3 meetings weekly. Maximum of 8 students.* This course will be an exploration of three-dimensional sculptural forms. Students will develop and explore their ideas using clay, stone, and wood and a variety of traditional and nontraditional tools and processes. The sculptures will be created through subtraction processes allowing each student to gain an understanding of the relationship between formal, conceptual, and aesthetic concerns. Group discussion of work will be integral to the class. Students will be required to show their work in a class exhibition.

- ART 34. *Sculpture: Art of The Puppet. Spring. Mr. Butera. 3 meetings weekly.* Puppetry is an art of contrasts, simultaneously ancient and avant-garde, primitive and sophisticated, children's entertainment and serious art form. In this class students will explore the mysterious and magical world of puppetry. We will experiment with a variety of simple methods of puppet design and construction before engineering a more complex long-term project. Depending on the preferences of each particular class, the final project could either be an individual or a group endeavor.
- ART 35. *Photography. Fall, Spring. Mr. Butera. 3 meetings weekly.* This course is both for beginning students and for those who already have some photographic experience. Students will learn the basics of digital camera function and Photoshop workflow. Assignments will involve a variety of photographic genres, such as, but not limited to; landscape, portraiture and night photography, and photographic techniques including, depth of field, and the freezing and blurring of motion, as well as elementary design and compositional considerations. Students who do not have access to a digital camera may borrow one from the department.
- ART 36. *Advanced Photography. Fall, Spring. Mr. Butera. 3 meetings weekly. Prerequisite: Photography or Permission of the Department.* Students in Advanced Photography will take a more rigorous approach to the aesthetic and conceptual aspects of their work. The emphasis in this course is on the development of a personal photographic vision. By the end of the semester each student is required to produce a portfolio of images organized around a coherent theme and expressing an individual aesthetic point of view, informed by the work of the great photographic masters, both classic and contemporary. It is expected that throughout the semester students will regularly shoot photographs outside of the designated class periods, and on occasion, be available to go off campus on shooting expeditions.
- ART 37. *Photographic Portraiture. Fall. Mr. Butera. 3 meetings weekly. Prerequisite: Photography or Permission of the Department.* Since its inception in the 19<sup>th</sup> century, photography and portraiture have been inextricably linked. In this course, students will explore the rich legacy of photographic portraiture, becoming acquainted with the giants of the medium such as Nadar, Sander, Cartier-Bresson, Hurrell, Arbus, and Lorca DiCorcia. Initial assignments will flow from our study of historical styles and philosophical approaches. Technical aspects may include, but are not limited to – studio lighting, flash, lenses, camera angles, and compositional considerations. As a final project, each student will be required to create an original portfolio of portraits that exhibit both a personal visual style and coherent, conceptual point of view.
- ART 38. *The Photo Book. Spring. Mr. Butera. 3 meetings weekly. Prerequisite: Photography or Permission of the Department.* Even in this age of ever evolving technology, the photo book remains a significant art form, central to the practice of many contemporary photographers. In this course, students will create their own self published photo book utilizing on-line services such as Blurb. We will consider the various factors that contribute to a successful photo book, such as the unity of concept and vision, sequencing of images, as well as aspects of design and typography. For inspiration, students will be exposed to a wide variety of photo books, from those that changed the course of photo history, to others that are more unusual and esoteric. As a prerequisite, students must already have produced an aesthetically and thematically consistent body of work that will provide the foundation necessary to create a meaningful photo book.
- ART 39. *Advanced Photoshop. Fall, Spring. Mr. Butera. 3 meetings weekly. Prerequisite: Photography or Permission of the Department.* This course will address the technical aspects of digital workflow and Photoshop technique on a more advanced level. Concepts

covered will include, but not be limited to: Camera Raw, Adobe Bridge, Layers, Masks, Chanel Mixer, Filters, Advanced Color Workflow, Patch Tool, Composite Images and HDR. While the assignments will be structured around the goal of mastering a variety of digital processes, it is expected that student's will be photographing subjects suitable for the creation of a final portfolio that manifests both technical skill and artistic merit.

ART 40. *Advanced Placement Art History. Year. Ms. Munro. 5 meetings weekly. Prerequisite: Permission of the Department. Admission to AP Art History is based on performance in Art 11, United States History, and English 30 and 31. **Distributional credit in the Arts, the Humanities, or the Social Sciences.** This course may be designated as a History course.* Spanning from the Paleolithic art of cave painting to new-media installations of the twenty-first century, this course offers a comprehensive investigation of the history of art. Students will also study art from diverse, global traditions, with units dedicated to the arts of Africa, Asia, the Americas and Europe. As a college-level course, this class will rely on primary sources, academic articles and a course textbook. Throughout the year, students will also refine the skills associated with art-historical writing and criticism, and the class will make periodic trips to area museums.

ART 41. *Advanced Placement Studio Art: Drawing, 2-D or 3-D Portfolio. Year. Mrs. McCarthy. 4 meetings and one evening weekly. Open to Class I. Prerequisite: 2 or more Visual Arts courses. Students must state their interest during their junior year and will be selected for participation in the AP Studio Art course by the Department an outside judge.* Advanced Placement Studio Art is a rigorous college-level course where students produce an extensive art portfolio of 24 works of art. Students who enroll in this course should do so with the understanding that they plan to participate in the Advanced Placement evaluation in early May. This course has been designed to meet the external criteria established by the College Board, and will address all three sections of the Portfolio development: breadth, quality and concentration. Through direct teacher instruction (4 classes per week plus figure drawing), individual and group critiques, and independent focused studio research and practice, students will acquire the conceptual, technical and critical abilities to execute their personal ideas and complete a portfolio, which demonstrates mastery in concept, composition and execution. A major gallery exhibition will be presented in late spring featuring the art completed during the previous two semesters.

ART 42. *Advanced Placement Studio Art: 2-D Photography Portfolio. Year. Mr. Butera. 4 meetings and one evening weekly. Open to Class I. Prerequisite: Two or more photography course. Students must state their interest during their junior year and will be selected for participation in the AP Studio Art course by the department an outside judge.* Advanced Placement Studio Art is a rigorous college-level course in which students are required to produce a thematically diverse portfolio consisting of 24 exhibition quality photographs. Students who enroll in Advanced Placement Photography should do so with the understanding that they plan to participate in the Advanced Placement portfolio evaluation. This course has been designed to meet the external criteria established by the AP program, and as such, will entail a substantial time commitment. Students will address all three AP portfolio categories: Breadth, Quality and Concentration. The first semester will be dedicated to the Breadth portfolio, which consists of assignments that focus primarily on design considerations as expressed through a diversity of photographic genres. The second semester is devoted to the development of a personal body of work that explores a particular subject, theme or concept in a coherent and compelling manner, demonstrating technical and critical mastery of the medium. The course will culminate in a major gallery exhibition in the late spring featuring each student's work.

ART 59. *Art and Life in Nineteenth-Century France. Spring. Ms. Munro. 4 meetings weekly. This course may be designated as a History course. **Distributional credit in the Arts, the Humanities, or the Social Sciences.*** From Courbet's *Burial at Ornans* to Monet's *Waterlilies* and from the Arc de Triomphe to the Eiffel Tower, many of France's most recognizable cultural contributions were executed during the nineteenth century. In this course, we will consider the historical backdrop against which these monuments were created, gaining insight into the unique conditions that led to a flourishing of culture and, ultimately, to a radical reconsideration of France's established institutions. Making use of scholarly secondary sources and a wide range of primary sources—including art, essays and works of fiction—we will pursue an in-depth investigation of this period and its persistent impacts on the conditions of modern life.

## MUSIC

[Head of the Department: Pierson Wetzel]

Participation in musical activities is encouraged for all students. The Music Department aims to foster and nourish the singing and playing talents of the students by providing a variety of opportunities that will allow the development of those talents in depth. The Department not only realizes the intrinsic merit of music, but also firmly believes music training and the appreciation of musical values are important factors in the growth and development of the whole person.

The following courses may be taken for academic credit.

MUSIC 22. *Advanced Studio Music. Spring. The Department. Lesson Block and practice times. Open to members of Classes I and II. Prerequisite: Music lessons and permission of the Department.* This is an advanced course in studio music. Admission to the course is based upon a student's previous accomplishment in music as evaluated by his or her private teacher and an audition with the Department. The student's performance in the Winter Music Recital may be considered as an audition for this course. The student is required to attend one lesson per week, practice at least five 40-minute sessions per week (to be scheduled by the Music Department), and perform in the Spring Recital and the Thoreau Music Recital. In addition, each student will be responsible for memorizing and performing at least two pieces of diverse style, learning six major and six minor scales and arpeggios, and completing weekly assignments in etudes or comparable exercises to build technique. Each lesson will be graded, as will recital performances. Private music lessons are not covered by tuition. Students will be charged the School's usual fee for lessons.

MUSIC 23. *Middlesex Jazz Ensemble. Fall, Spring. Mr. Rabb. 3 meetings weekly plus 1 private lesson. Open to all instrumentalists with some degree of proficiency on their instruments; no audition necessary.* The Jazz Ensemble offers music students the opportunity to play and learn about jazz and jazz improvisation. By working on standard compositions from the jazz repertoire, from lead sheets and written arrangements, students can experience both a small group setting (with emphasis on improvisation) and big band ensemble playing. Students are expected to attend three rehearsals, take one private music lesson, and practice regularly each week. Students will be charged the School's usual fee for lessons.

MUSIC 24. *Classical Chamber Music Ensemble. Fall, Spring. Dr. Wetzel. 3 meetings weekly plus 1 private lesson. Open to all instrumentalists with some degree of proficiency on their instruments; no audition necessary.* Classical Chamber Music Ensemble offers classical music students an opportunity to explore and perform chamber music of the Baroque,

Classical, and Romantic eras and the twentieth century. Students will learn to develop non-verbal, musical communication skills necessary for playing intimate chamber music. Focus will be placed on preparing music for the Holiday Concert and Spring Instrumental Concert. Students will be charged the School's usual fee for lessons.

MUSIC 25. *Steel Pan Ensemble. Spring. Mr. Rabb. 4 meetings weekly.* This course is designed for students who have an interest in learning to play the steel pan and being part of a fun performance band, performing at the Spring Instrumental Concert. Beyond learning to play the steel pans in class, students will learn basic music theory and study the culture and music of the Caribbean. Music experience is not a prerequisite. The group is also open to students who play drums, guitar, or bass.

MUSIC 26. *Intro to Digital Music. Fall. Mr. Rabb. 4 meetings weekly.* This course offering is designed to provide an introduction to audio production. The primary software is *GarageBand* by Apple. Students will learn how to record, edit, and mix music through a series of group and individual projects designed to promote creativity and expression. Students will learn about the elements of music: rhythm, form, melody, etc. Students will explore the many facets of *GarageBand* including how to create audio tracks, add audio effects (EQ, Noise Gate, Compressor, Delay, and Reverb), create MIDI tracks, podcasting, and create music for video.

MUSIC 40. *Advanced Placement Music Theory. Year. Dr. Wetzel. 5 meetings weekly. Prerequisite: Permission of the Department. **Distributional credit in the Arts or the Humanities.*** The broad goals of this course are to develop fundamental music literacy necessary to function effectively among fellow musicians and to develop tools to understand music in new ways. We begin this course with a study of the basic elements of music theory (scales, key signatures, rhythm, etc.) and quickly progress to a study of chord progression and the principles of voice leading. To facilitate this learning, aural skills will be developed incorporating melodic and rhythmic dictation and sight-singing. The course then advances to the study of secondary dominants, chromaticism, and mode mixture. Assessments include nightly workbook assignments and larger, long-term composition and transcription projects. This course prepares students for the Advanced Placement Examination in Music Theory.

The following offerings do not receive academic credit, but they may be used to fulfill upper level distributional credit in the Arts.

*Studio Music. Fall, Spring. Mr. Rabb. Block TBA. A student in Class I or II will receive one-half credit toward fulfilling the Arts distributional requirement for each semester of participation in Studio Music.* This is a course in applied music which develops the student's vocal and/or instrumental talent through solo and ensemble performances. Students will have the opportunity to perform in the Winter, Spring, and Thoreau Recitals, and are encouraged to participate in the classical chamber ensemble or in the jazz band, and/or Choral Ensembles. Students will be charged the School's usual fee for lessons.

*Chapel Chorus. Fall, Spring. Mr. Rabb. Chapel Chorus Block. Students in Class I or II may fulfill the Arts distributional requirement by participating in all required rehearsals and performances for two years.* Chapel Chorus is a non-auditioned singing ensemble which performs both *a cappella* and accompanied choral works. Anyone is invited to join and no previous musical background or experience is necessary. Public performances throughout the year include a candlelight Holiday Concert in early December, and the Spring Concert in April.

*Small Chorus. Fall, Spring. Dr. Wetzel. Members must be available Monday/Tuesday evening, Thursday morning, and must choose two of four L Block rehearsal times to commit to Small Chorus. Small Chorus members must be members of Chapel Chorus. Audition is required at the beginning of the school year. Students in Class I or II can fulfill the Arts distributional requirement by participating in all required rehearsals and performances for one year.* Small Chorus is the heart of the choral program at Middlesex. It is a select mixed singing ensemble of 24-28 members who perform sophisticated choral works, including madrigals, classical masterworks, and collegiate style *a cappella* contemporary/popular songs. The Small Chorus performs in the same concerts as the Chapel Chorus and gives additional concerts for other school events including Revisit Days and Terry Room performances. The all-female group, the MXolydians, and the all-male group, Bateman's Bullfrogs, are chosen from the members of Small Chorus.

*SWAG. Fall, Spring. Mr. Rabb. Monday or Tuesday evening. In combination with Chapel Chorus, students in Class I or II can fulfill the Arts distributional requirement by participating in all required rehearsals and performances for one year. SWAG members must be members of Chapel Chorus. Audition is required at the beginning of the school year.* SWAG (second women's *a cappella* group) is a girls singing ensemble of 12-14 members who sing at the Holiday Concert and informal school performances.

## THEATRE

[Head of the Department: Thomas Kane]

The goals of our program are twofold. Primarily, the focus is on the making of theatre; we want students to become stronger practitioners of the theatre arts. At every level of study, something is produced: a staged performance, a written scene, an original design, a fully realized production. In doing this work, students are asked to apply and develop a sense of creativity and imagination, to stretch their abilities, to take risks, and to develop a sense of artistic discipline. Secondly, as theatre is the study of human behavior and experience, the Department wants students to gain a sense of empathy and understanding for the world around them. Through the act of creating a theatrical world, they should develop a stronger understanding for the world they live in.

In addition to the courses listed below, advanced students may design with the department Independent Courses in direction, playwriting and design.

THEATRE 33. *Approaches to Acting. Fall. Mr. Kane. 4 meetings weekly.* Working from the techniques laid out in the Atlantic Theatre Company's book, *A Practical Handbook for the Actor*, students will practice creating characters for the stage. We will focus first on performing scenes from modern playwrights and then on performing scenes from Shakespeare. In all our work, emphasis will be placed on creating realistic, connected, purposeful and dynamic performances.

THEATRE 34. *Advanced Approaches to Acting. Spring. Mr. Kane. 4 meetings weekly. Prerequisite: Theatre 33 or Permission of the Department.* Using the fundamentals laid out in Theatre 33, students will work to expand their range as actors. Starting with scenes from Chekhov and then working our way to newer playwrights, students will continue to explore what is needed to create truthful and fully embodied characters for the stage.

THEATRE 37. *Technical Theatre. Fall, Spring. Mr. DuBray. 4 meetings weekly.* This course is a survey of basic technical theater techniques from script analysis, and concept development and design, to choosing and using tools, hardware, and theatre equipment. Students will learn and use various technical theatre skills including building and painting

sets and props, hanging and focusing lights, and programming the light board. This course will use script-analysis techniques used by designers and directors to develop a clear production concept by reading a play and creating and presenting individual designs to the class. Students will exercise creative and practical skills through in-class projects of set, lighting, sound and costume design. Each student will be required to give and receive peer feedback and work collaboratively and safely.

THEATRE 38. *Theatre Design. Fall, Spring. Mr. DuBray. 4 meetings weekly. Prerequisite: Theatre 37 or Permission of the Department.* This course is an in-depth look at designing for theatre. This course will use script analysis techniques used by designers and directors to develop a clear production concept by reading plays and creating and presenting individual designs to the class. Students will exercise creative and practical skills through in-class projects of set, lighting, sound and costume design. Each student will be required to give and receive peer feedback and work collaboratively and safely. The opportunity to design for a Middlesex production as part of class is a possibility.

THEATRE 80. *Projects in Theatre. Fall. Mr. Kane. 4 meetings weekly. Prerequisite: Theatre 33 and 34 or Permission of the Department.* This ensemble based acting course focuses on exploring current American playwrights from realists like Tracy Letts and David Margoliess to the more surreal, such as Mac Wellman and Charles Mee. In addition to creating performances for the stage, the ensemble will also create shorter video pieces.

THEATRE 90. *Advanced Projects in Theatre. Spring. Mr. Kane. 4 meetings weekly. Prerequisite: Theatre 80 or Permission of the Department.* In the final class in our acting curriculum this ensemble based class works to bring two years worth of technique to practice. Students collaborate to choose their final pieces and the course ends in a full-length workshop production in our studio theatre.

