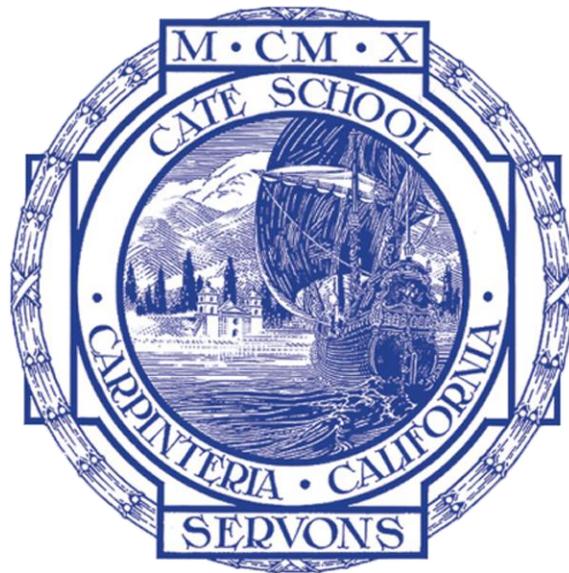


**CATE SCHOOL**  
**ACADEMIC COURSE**  
**REGISTRATION BOOKLET**

**For the School Year 2017-2018**



## **Course Registration Deadlines 2017**

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- February 1: Registration materials available on PowerSchool and registration request system open to advisors.
  
- February 16: Last registration discussion in advisory before initial registration closes.
  
- February 20: Deadline for initial course requests by advisor. Department chairs and Director of Studies review initial requests.
  
- March 21: Registration system reopens at 9:00am for changes to initial requests
  
- March 24: Last registration discussion in advisory before final registration closes.
  
- March 28: Registration system closes at 9:00am; subsequent changes should be discussed with the relevant department chair, then emailed to Scheduler
  
- March 30: Final request revisions from the Department Chairs, Director of Studies & advisors released to Scheduler
  
- April 10: Final teaching assignments & sectioning from Department Chairs released to Scheduler
  
- April 17: Advanced and honors placements released to students, conversations initiated
  
- April 24: Advanced and honors placements finalized
  
- May 29: Department Chairs provide new student placements to Scheduler
  
- July 3: Master schedule (teachers, courses and classrooms) complete
  
- August 23: Student Course Enrollment documents available on Veracross Portals

## **PRINCIPLES, OBJECTIVES, STANDARDS AND GRADE-LEVEL THEMES**

*The overarching objective of Cate School's academic program is to promote the greatest growth possible for each student and teacher.*

**Educational Principles** Each Cate student and teacher will develop:

**Curiosity** – a desire to discover the unknown and acquire the ability, imagination, and initiative to ask and pursue questions of real value

**Determination** – the ability to identify worthy risks; the methods and skills of the academic disciplines and one's own best learning practices; the grit, patience, and self-discipline to persist at hard work; the resilience to deal with both failure and success

**Communication** – the skills to collaborate productively with others, to present information clearly, and to be effective presenters, listeners, and respondents employing verbal, quantitative, and visual languages skillfully, using a range of media

**Knowledge** – essential knowledge and core competencies and standards of honorable scholarship

**Compassion** – recognition of the needs and interests of others; empathy and respect; the skills of collaboration, leadership, membership, and service

### **Curriculum Standards**

Cate's curriculum will consist of courses of study that:

- embody our educational principles and school-wide objectives
- are coordinated across disciplines and over four successive years
- achieve discipline-specific objectives
- are developmentally appropriate
- employ effective teaching practices

### **Grade-Level Themes**

9th grade is the year of **Orientation and Organization**

10th grade is the year of **Awareness and Responsibility**

11th grade is the year of **Connections and Purpose**

12th grade is the year of **Mastery, Self-Determination, and Leadership**

## **KINDS OF COURSES**

1. A **YEAR COURSE** runs for the entire year. Students who enroll in a year course in the fall are required to remain enrolled for the entire year.
2. A **TRIMESTER COURSE** runs for one trimester and may be offered in the fall, winter, or spring.

## **GENERAL POLICIES**

1. In most cases students will take five full-credit courses each trimester and may take up to three half-credit courses in addition to the five course requirement.
2. Special circumstances may lead to exceptions being made to the above requirements, but these exceptions need approval of his or her advisor, and approval of the Director of Studies.
3. Each course in the curriculum follows a prescribed course of study – texts, materials, methods, and objectives – approved by the department chair and the director of studies as being appropriate to the stated goals of the course. Students in a given course are not exempted from any element of its course of study.
4. Directed Studies may not be used to reach the minimum units/trimester.
5. The terms “lower” and “upper” school are used to designate course loads. “Lower school” refers to 9th and 10th grades, and “upper school” refers to 11th and 12th grades.
6. Letter grades and comments are used to communicate student achievement and areas of strength and growth at the end of each trimester. Final course grades that are based on the three trimester grades and exam grades are communicated in the final grade report in June and appear on the official school transcript.
7. A student’s grade point average (GPA) is based on a four-point scale and is calculated by multiplying the course credit by the numeric equivalent of the final course grade earned. Cumulative student GPA’s are calculated at the end of the sophomore, junior and senior years. Grades from the 9<sup>th</sup> grade year are not part of the GPA calculation.
8. Honors courses receive an additional 0.5 weight in the GPA calculation and Advanced courses receive an additional 1.0 weight in the GPA calculation.

## **ADVANCED COURSES**

Cate's Advanced Courses are designed to challenge our most accomplished and aspirational upper school students by giving them an opportunity for focused and in-depth student in a particular discipline and interdisciplinary topic. Students in Advanced courses must master essential knowledge typical in college-level courses and also develop and apply the higher order thinking skills that are essential elements of a college course. Advanced courses are designed to provide the greatest possible challenge for students who have shown sustained commitment and achievement in a particular discipline.

### **CRITERIA for an ADVANCED COURSE at CATE**

An Advanced Course:

- Is consistent with our school-wide principles, educational standards, and grade-level and department objectives.
- Offers a challenging, demanding, and intellectually rigorous experience in an academic discipline to students who have demonstrated the interest, skills, and attitudes necessary for advanced work.
- Requires the application of skills and content acquired and mastered in earlier course work in the discipline or interdisciplinary area.
- Expects higher order thinking, advanced skill development and mastery of essential knowledge in the discipline(s).
- Involves independent work and inquiry that requires students to ask and answer questions of interest to them and of real value and meaning in the academic discipline.
- Places emphasis on depth of inquiry and student initiative.
- Includes assessments that are open-ended and designed so that students are required to practice the discipline. (“do the discipline” be historians, scientists, artists, mathematicians, etc.).
- May be designed with a conventional metric (AP or National Examination, SAT II's) or National Standards in discipline as a guide, but not as a means of student assessment. That is, the course is not driven by the test nor is the test used as the end point for a backward design.
- Is consistent with the University of California criteria for an advanced course in the academic discipline.

## **GRADUATION REQUIREMENTS**

### **ARTS**

For students entering in the 9th grade, Foundation Arts and a course the following year. Note: any performing arts course(s) taken in the FA year will count towards the Foundation requirement only. For students entering in the 10th grade, one half-credit visual arts course and one half-credit performing arts course, and a course the following year. One additional course or approved equivalent in upper school (grades 11, 12).

### **ENGLISH**

One course per year.

### **HISTORY**

A course in each of the first two years, and U. S. History in the upper school.

### **HUMAN DEVELOPMENT**

Freshman Seminar for freshmen, and Sophomore Seminar for sophomores.

### **MATHEMATICS**

One course per year through the junior year, with the final course determined by the initial Cate entry level. All students are expected to complete Math 30: Integrated Algebra and Trigonometry.

### **MODERN LANGUAGES**

Three sequential years of the same language.

### **SCIENCE**

Three years of science. Physics is taken in the freshman year, Chemistry in the sophomore year, Biology in the junior or senior year.

### **COURSE CREDITS**

The credits per trimester or year reflect the time commitment required for each course. Courses that meet in each letter block for a year or a trimester are considered “full” credit courses. Courses that meet in one, two or three letter blocks each week are partial credit courses. Students are required to take 5 full credit courses each trimester and may take up to three partial credit courses for a maximum of 6.5 credits/trimester. A course of study that exceeds 6.5 credits for any trimester requires advisor and Director of Studies approval.

The following course credit notations appear on student transcripts:

Full year course:	1.00
Trimester course:	.33
Full year, half credit course:	.50
Trimester, half-credit course:	.17

## TYPICAL COURSES OF STUDY

### GRADE 9

The freshman course of study is made up entirely of required courses.

Humanities (English/History)	Physics
Mathematics	Foundation Visual & Performing Arts
Modern Languages	Freshman Seminar

### GRADE 10

With a few exceptions, sophomores take the following courses:

English 10	Arts
Mathematics	Chemistry
Modern Languages	Sophomore Seminar
Sophomore History	

### GRADE 11

Requirements in the junior and senior years are:

1. U. S. History or Advanced U. S. History
2. Biology or Honors Biology
3. Completion of the art requirement

Virtually all juniors take the following three courses:

1. English 11
2. Mathematics: Students who have not taken Math 30 (Integrated Algebra 2 and Trigonometry) must do so, students who have completed Math 30 may take courses from Math 40 (Integrated Functions) through advanced courses in Statistics, Computer Science, and Calculus to satisfy their third-year requirement.
3. Modern Languages

### GRADE 12

Seniors must take English 12 in the fall and an English elective in the winter and spring. If they have not already done so, they must complete whatever requirements remain. Seniors may choose to pursue an independent Inquiry Project

Students entering the junior year should plan for both the junior and senior years. When choosing courses students should consider graduation requirements, appropriate workload, college plans, and above all, individual strengths and interest in planning for the two-year sequence. When there are questions about the appropriate course of study department chairs, college counselors, and the director of studies can serve as resources in addition to the individual advisors.

## **DIRECTED STUDIES**

Directed Studies are meant to satisfy an interest that lies outside and beyond the established curriculum. Directed Studies courses are trimester-long or year-long. They are designed by any student in conjunction with a faculty director who is willing to supervise and grade the study.

Directed Studies courses must be documented and approved by the Director of Studies by May 15 for the fall trimester of the following year, or by October 15 for the winter trimester, and February 15 for the spring trimester.

Directed Studies courses are available to junior and seniors.

Directed Studies may not be used to reach the minimum units/trimester.

## **A CULTURE OF INQUIRY**

Cate School is committed to the creation of a culture of inquiry. To that end, the entire school is engaged in a year-long conversation in response to an essential and authentic question and common read presented to the school in the spring.

Upon returning to school in the fall, advisory groups and academic classes have the opportunity to consider and reference the essential question and inquiry book. The Convocation program – a weekly series of speakers, performers, and special guests – is developed in order to enhance the conversation; other workshops and visitors will be invited during the course of the year to add breadth to the year's inquiry.

### **SENIOR INQUIRY PROJECT (.33 credits/Spring Trimester)**

The program of inquiry offers a particular challenge to members of the senior class. Independent self-initiated challenge brings an authentic intellectual adventure and allows mastery of skills particular to a senior's response to the organizing question. During the period of course registration, juniors may begin consideration of an Inquiry Project that will receive full credit as a spring trimester course in the senior year. In conjunction with the advisor, a junior may elect to take on an independently initiated Inquiry Project.

During the summer between the junior and senior year, the rising senior wishing to pursue an Inquiry Project must draft a proposal to be approved by the Inquiry Team, a group of faculty who oversees the progress of the individual projects; approval of a final proposal must be secured by the end of the fall trimester of the senior year. Students who undertake an Inquiry Project will choose a course load in the winter and spring trimesters that allows time for independent work. While students who undertake an Inquiry Project work independently, the Inquiry Team provides criteria for the assessment of their work and may also be used as a resource for their research.

In any senior class, distinctive abilities and interests abound; the response to the essential question might elicit a variety of Inquiry Projects. Those with a scientific turn of mind may consider cosmology, geology, biology, meteorology, or neurology while humanists might explore literature, memoir, psychology, political science, economics, history, theater, communications, or religion. Technology, geo politics, art history - all within the scope of the organizing question.

In the last weeks of May students present the publications, performances, exhibitions, or events that demonstrate the culmination of the year's Inquiry. The celebration of the independent inquiry work of seniors allows the entire community to witness the particular response to the organizing question.

## **ARTS DEPARTMENT**

Graduation requirements:

1. For students entering in the 9th grade, Foundation Arts and a course the following year. Note: any performing arts course(s) taken in the FA year will count towards the Foundation requirement only.
2. For students entering in the 10th grade, one half-credit visual arts course and one half-credit performing arts course, and a course the following year.
3. One additional course or approved equivalent in upper school (grades 11, 12).

Students in good academic standing are permitted to request a half-credit arts course that will not be counted against their overall course load. Full-credit arts courses are treated in the same manner as all other full-credit courses.

Year courses offered by the Arts Department range from full-credit courses at the advanced level to intermediate and introductory courses that carry a half credit, fit readily into most students' courses of study, and allow students to benefit from continuous involvement in the arts. Trimester elective courses, half-credit in scope and a single trimester in length, offer briefer, focused study in a specialized art form. Students may take a single trimester elective or configure a sequence of three in order to create a year program.

### **FOUNDATION ARTS**

The Foundation Arts program, a prerequisite for freshmen, consists of the combination of Foundation Visual Arts and a one of several performing arts course options.

### **FOUNDATION VISUAL ARTS**

.17 credits/trimester. Year Course. Foundation Arts students construct an understanding of the purposes of art, build essential skills and learn principles of design thinking, materials thinking through exciting project-based work organized around the core artistic goals of description, expression, function, and aesthetic appeal. Foundation Arts students learn valuable skills of project management and develop the ability to recognize strengths and areas for improvement in their own work and that of others. Foundation Visual Arts students work with all members of the arts department, exploring all the artistic media available to them at Cate.

## **FOUNDATION PERFORMING ARTS**

.17 credits/trimester. Year Course. Students must take one of the following courses (which are described elsewhere in this booklet) as the performing arts component of Foundation Arts:

- Chorale
- Orchestra
- Jazz Ensemble
- Introduction to Music

Students with a strong interest in the Performing Arts may request two of these music courses concurrently.

## **YEAR COURSES IN ARTS**

### **ADVANCED ART HISTORY:**

.33 credits/trimester. Year Course. The arts have always been the means through which men and women have given form to the most amazing and profound ideas, beliefs, and emotions, so we encounter wonderful works of architecture, painting, and sculpture in our study every day. Students will gain a clear overview of cultural history, including a framework of key events and ideas that has proved to be of enormous benefit to Cate students when they move into college study. Depth of study on most important topics replaces sheer volume of coverage. The art history program develops skills in observation, analysis, reading, and writing. Students learn how to read a wide range of written works, including texts, critical and analytical pieces, works of journalism, and literature. We develop skills of expository and analytical writing essential for college study. Students who wish to take the AP examination in Art History (not required) participate in focused preparation activities to help them perform at their best.

### **INTRODUCTORY CERAMICS/SCULPTURE 1**

.17 credits/trimester. Year Course. Introductory Ceramics/Sculpture 1 students spend the majority of the year learning how to throw and trim clay on the pottery wheel. By the end of the year, students will be able to throw and trim bowls, platters, vases, jars with lids, pitchers, jugs, mugs, and ultimately, a teapot. The focus of Ceramics 1 is indeed the development of basic throwing skills; however, basic decorating practices are also utilized to enhance each piece. By the end of the year, students will begin to demonstrate through the glazing of their pieces a harmony in the relationship between a form and its colors and decoration.

Prerequisite: Foundation Arts

### **INTERMEDIATE CERAMIC DESIGN**

.17 credits/trimester. Year Course. This course focuses on more sophisticated throwing and trimming techniques, and offers opportunities for greater self-expression using clay as the medium. While the emphasis is on throwing and

trimming, hand-building and slab construction are important aspects of the curriculum. By the end of the year, Intermediate Ceramic Design students will be able to create larger forms by throwing sectionals and using a variety of slab construction techniques. Greater focus is devoted to general aesthetic principles in Ceramics 2, and time is spent comparing classical western ideals with those of a strong Japanese influence within the world of ceramic art. By the end of the year, students will have used a variety of more advanced decorating techniques – including slip trailing, carving, incising, and fluting – to capture elements of these different perspectives on aesthetics in ceramics.  
Prerequisite: Introductory Ceramics/Sculpture 1

### **ADVANCED CERAMICS/SCULPTURE**

.17 credits/trimester. Year Course. This advanced course provides an ambitious and intensive exploration of the expressive and functional aspects of stoneware and porcelain clays. A developmental sequence of assignments during the first semester helps students gain the advanced technical skills for both sculpture and thrown ware. During the second semester they design their own projects with an emphasis on in-depth exploration of form, design, decoration and glazing. Advanced students are called upon to instruct beginning potters in the capacity as teaching assistants during the first semester. Students who wish to participate in the Advanced Placement program of the College Board will develop a portfolio of work to be submitted in the spring. That body of work must conform to the curriculum mandated by the AP program.

Prerequisite: Intermediate Ceramic Design and permission of the department.

### **STUDIO ART 1**

.17 credits/trimester. Year Course. Through a series of structured and open-ended assignments, students will develop creative and technical skills through work in a variety of media and forms of expression. Drawing, painting, printmaking, mixed media, bookbinding, and collage are among the many techniques students may use. Projects are increasingly ambitious and students develop pieces of high quality. Students learn to manage and assess their own pieces and to critique each other's work constructively.

### **STUDIO ART 2**

.17 credits/trimester. Year Course. Studio 2 is recommended for students who want to continue developing their creative thinking and artistic skills in 2D media and beyond. Students work with the media introduced in Studio 1 plus new forms of art and materials. Students will be given more freedom and responsibility to work independently and develop projects that are in line with their own artistic passions and academic interests. Students will begin to develop portfolios at this level, which may be used as support material for college applications.

Prerequisite: Studio 1 or permission of the department.

## **ADVANCED STUDIO ART**

.17 credits/trimester. Year Course. Advanced Art is designed for students who have progressed beyond the intermediate level in their visual studies. The purpose of this course is to provide Cate's most accomplished and engaged studio artists the opportunity to pursue individual, directed studies in an environment that allows them to see and learn from each other's work. This course carries the advanced designation and weighting. Students will develop and execute challenging individualized projects while coming together regularly to discuss advanced principles of art and design, to develop critical and analytical skills, and to learn from the challenges and processes being undertaken by their peers. Students who wish to prepare and submit a portfolio for college applications and/or awards programs will be prepared and supported in doing so.

Prerequisite: Studio Art 2 or permission of the department.

## **PHOTOGRAPHY and FILMMAKING 1**

.17 credits/trimester. Year Course. This introductory course in Static/Motion photography and film assumes little or no previous knowledge of the digital still or video cameras. Over the course of the year students will begin with photography as the means of capturing imagery and then move towards capturing motion. Through practical experience students will be introduced to photography and film as mediums for communicating information and ideas in effective visual forms. Topics include: operation of the cameras; artistic compositions; computer operation; file compression and formatting; use of related software (i.e. Adobe Photoshop and Adobe Premiere). Students will learn to operate their digital cameras and post-production software, print and present their photographic work, create and present videos. At least one hour of homework per week is required of each student.

## **PHOTOGRAPHY 2**

.17 credits/trimester. Year Course. This course explores intermediate photographic and digital techniques and concepts. This course is an extension of the techniques learned in Introduction to Photography and Filmmaking. Students will learn how to solve photographic problems through a series of guided and individualized assignments. Students will work on developing concepts, advance knowledge of post-production software, print and present their photographic works. Students will be introduced to alternative techniques, such as photographic transfers, photo encaustic and book making. At least one hour of homework per week is required of each student. A portfolio is submitted at the end of the year.

Prerequisite: Introduction to Photography and Filmmaking or permission of the department.

## **DIGITAL FILMMAKING 2**

.17 credits/trimester. Year course. Digital Filmmaking 2 students work as individuals and as collaborative teams. Using equipment and techniques

ranging from the simplest and most direct (such as cell phone video) to ambitious and advanced – professional quality DSLR cameras – students will learn and apply a valuable and essential set of design and production skills. Projects extend from brief moving images (5-7 Second Videos) to silent films, music videos and completed short subjects. For larger group projects, students may take on roles from screenwriting and storyboarding to direction, camera work, lighting, performance, and post-production work. Prerequisite: Photography and Filmmaking 1 or permission of the department.

### **ADVANCED PHOTOGRAPHY**

.17 credits/trimester. Year Course. This course explores advanced photographic and digital techniques and concepts and is an extension of the techniques learned in Photography 2. Students will plan, shoot, develop and print bodies of work that are conceptually motivated and technically proficient. Topics in Advanced Photography include contemporary discourse, portraiture, non-traditional approaches to photography and photography as sculpture or installation art. At least one hour of homework per week is required of each student. A portfolio is submitted at the end of the year. Prerequisite: Photography 2 or permission of the department.

### **ADVANCED DIGITAL FILMMAKING**

.17 credits/trimester. Year course. Advanced Digital Filmmaking students continue to work as individuals and as a collaborative team. This course builds upon the creative and technical skills students have developed and it will open up an opportunity for students to explore filmmaking further with the addition of a trimester dedicated to film studies. Students will continue to use equipment and techniques ranging from cell phone video to DSLR video capture. Projects extend from brief videos and completed short subjects, to non-narrative projects and installations. For larger group projects, students may take on roles from screenwriting and storyboarding to direction, camera work, lighting, performance, and post-production work. Prerequisite: Digital Filmmaking 2 or permission of the department.

### **DIGITAL ART 1**

.17 credits/trimester. Year course. Working primarily with Adobe Photoshop, Illustrator, and InDesign, students will be introduced to the basics of each program in order to develop a foundational skill set in the world of design. As students investigate and discover the many definitions and uses of “digital art”, they will have the chance to develop original artworks that serve a variety of purposes. Students will create surreal photographs and digital paintings through manipulating original photographs in Photoshop; they will create posters, branding, and product design developed from original illustrations created in Illustrator; and finally students will produce print media including books, flyers, and programs for school productions in InDesign.

## **ADVANCED DIGITAL ART**

.17 credits/trimester. Year course. Students will build on their understanding of design concepts and practices while working with Adobe Photoshop, Illustrator, In Design, and 3D modeling programs developed in Digital Arts 1. Students will continue to work with the Makerbot and Form Plus 3D printers, and they will be introduced to alternative modes of digital output. At least one hour of homework per week will be required of each student. Prerequisite: Digital Arts 1.

## **ACTING 1, 2**

.17 credits/trimester. Year course. This course is designed to familiarize students with the theater – its intent, structure, effectiveness and value – through performance. Through the study of a wide variety of scenes, monologues and short plays, students in Level 1 will be able to: communicate effectively and work cooperatively with an ensemble, take creative risks, develop physical, vocal, and mental skills through active participation in warm up and acting exercises, analyze text to determine author’s intent and historical/cultural context, and constructively evaluate and critique their own work, as well as being able to deliver tactful and thoughtful criticism to others. Level 2 students will be called upon to demonstrate and model these skills in a mentorship role, building toward the ultimate goal of directing scenes and leading class exercises.

## **TECHNICAL THEATER PRODUCTION AND DESIGN 1, 2, 3**

.17 credits/trimester. Year course. This course is designed to help students develop a practical knowledge of theater through production analysis, technical design and construction. Through hands on instruction, Level 1 students will learn to: manage and care for the theater space and equipment, implement basic sound, lighting and scenic designs for theater events, collaborate and communicate effectively, and how to effectively combine purpose with artistry. Level 2 students will be called upon to demonstrate and model these skills in a mentorship role, building toward the ultimate goal of managing the crew to help create and implement their own designs.

## **INTRODUCTION TO MUSIC**

.17 credits/trimester. Year course. Introduction to Music is a broad survey of music history, theory and performance. Students will play on instruments from around the world from West Africa to India to Indonesia. They will study the past 3000 years of western music and follow its development to present day in the United States while learning the basic elements of music theory. Students will compose original pieces on digital audio workstations and receive an introduction to reading music notation. Finally, they will form rock bands and learn how to play various rhythm section instruments.

## **CATE CHORALE**

.17 credits/trimester. Year course. This course is designed to foster an understanding of choral music and a love of singing. By participating in the ensemble, students will be expected to: prepare choral repertoire for public performance; develop musicianship skills, such as pitch and rhythmic accuracy, and sight-singing; develop vocal and breathing technique, tone production, and diction; expand their individual potential within a group context; and identify the historical context for the choral selections and explain their cultural relevance. No previous experience is required. This group is open to all.

## **HONORS CHORALE**

.17 credits/trimester. Year course. Junior and Senior students who have completed one year of Chorale may apply for Honors Chorale, which is also a year course. In addition to the Chorale curriculum, Honors Chorale students will assume a leadership role within the choir. They will be called upon to lead sectional rehearsals, help less-experienced singers learn their music, and provide critical feedback to singers in a positive manner. Honors students may also be asked to submit and conduct songs for performance.

## **ADVANCED CHORAL MUSIC: CAMERATA**

.17 credits/trimester. Year course. Camerata is an advanced singing group that explores a wide variety of genres and styles from 16th century madrigals to contemporary pop songs. Singers will be expected to: prepare choral repertoire for public performance; build and practice exemplary vocal and breathing technique, tone production, and diction; hone their sight reading and musicianship skills; expand their individual potential within a group context; and identify the historical context for the choral selections and explain their cultural relevance. Enrollment in this course is by audition.

## **ORCHESTRA**

.17 credits/trimester. Year course. This is a performance-oriented course designed for string, woodwind, brass and percussion players who wish to play classical music with fellow musicians. Unique repertoire will be selected for each performance based on the abilities and skill levels of the group. Several performances are scheduled throughout the year and students' participation is required at all of them. In addition to regular rehearsals and performances, there may be occasional sectionals, master classes and musical quizzes scheduled.

## **HONORS ORCHESTRA**

.17 credits/trimester. Year course. Students can sign up for Honors Orchestra, which will take place in addition to the regular orchestra rehearsals and performances. The Honors group will divide into small chamber

ensembles and rehearse more challenging repertoire. The pieces will be performed at various Cate events throughout the year.

### **JAZZ ENSEMBLE**

.17 credits/trimester. Year course. This is a performance-oriented course designed for musicians who wish to play jazz music. Students are introduced to the elements of improvisation including jazz harmony, soloing strategies and ensemble playing. Selected music will span the history of jazz, from Dixieland to Big Band and Bebop to Modern. There are two skill levels of jazz band and students will need to audition for the more advanced group. Performances are scheduled throughout the year at various Cate School events. Students are required to perform at each show.

### **HONORS JAZZ ENSEMBLE**

.17 credits/trimester. Year course. Students in the advanced jazz band can sign up for the Honors Jazz Combo. This group will divide up into small groups and rehearse more challenging material. The honors rehearsals and performances will take place in addition to regular jazz band commitments.

### **ROCK/ELECTRONIC MUSIC PERFORMANCE**

.17 credits/trimester. Year Course. This course will meet during S block, similar to Jazz Band and Orchestra, and break into bands to play music that students and faculty select. Music theory, music history and songwriting concepts will be discussed. Students will learn how to write rock and electronic music, record it in the studio and perform it for live audiences.

### **TRIMESTER ELECTIVES IN INSTRUMENTAL MUSIC:**

#### **PRODUCTION PATH**

The Production path is designed for students who want to understand electronic music, recording studio techniques and the essentials of how the music business works. Students may select one of these electives independently or take them all sequentially.

#### **ELECTRONIC MUSIC**

.17 credits/trimester. Fall course. Students will learn the process of creating music using Macintosh computers, DAWs and midi workstations. Cate School uses Garage Band, Logic Express, Logic Pro 9 and Pro Tools, but students are also welcome to bring their own computers and software to build musical compositions. By the end of this course, students will be able to write their own music, produce it using the technologies available, edit it for the listening audience, and bounce it out for publication.

#### **RECORDING STUDIO**

.17 credits/trimester. Winter course. Students will gain firsthand knowledge of a working studio. Cate's recording studio uses Logic Pro 9 and ProTools

software, four microphones and an assortment of amps and instruments. After learning the ins and outs of getting quality sound recordings on various instruments, students will learn to mix and edit their recorded music. Students will test their skills using live musical groups on campus to build their production portfolio.

### **THE BUSINESS OF MUSIC**

.17 credits/trimester. Spring course. Students will study how the music industry works while learning the basics of business management. The class will use case studies and business theory to follow how a song comes to life and becomes a hit single. Along the way, students will discover how business principles apply to an industry that is in a current state of massive change. Each student will create a business plan for a Cate student band or musician, and contribute to the Cate School music website as a final deliverable. No music performance experience is necessary for this class - just a love of music.

### **MUSICIANSHIP PATH**

The Musicianship path is designed for students who want to try out an instrument for the first time, add a new instrument to their repertoire or improve on an existing instrument. The skill level will be geared towards first-timers, but if more advanced players sign-up, we will offer projects and homework that fits their appropriate abilities. Ultimately, the goal of the class is to perform and/or record our music. Students may select one of these electives independently or take them all sequentially.

### **PERCUSSION ENSEMBLE**

.17 credits/trimester. Fall course. Students will learn the essence of reading and playing rhythms. The class will play percussion instruments from many cultures, including West Africa, the Middle East, India, the Caribbean, Brazil and Indonesia. In addition, the techniques of playing with sticks will be employed as students practice on marching drums, mallet instruments and drum sets. The goal of this course is to create a performing group that will share its beats with the rest of the school community.

### **GUITAR ENSEMBLE**

.17 credits/trimester. Winter course. Students will participate in a guitar ensemble that will perform pieces chosen for their appropriate skill levels. They will study scales, chords and other components of music theory. Although it's not required, students will be encouraged to sing as we play tunes from many different genres: rock, pop, folk, country, jazz and classical. The goal of this course is to prepare several pieces for performance.

### **ROCK/POP ENSEMBLE**

.17 credits/trimester. Spring course. Students will learn the basics of playing a variety of musical instruments, including piano, guitar, bass and drums.

They will understand how songs are composed, arranged and performed in small ensembles. Students will study the history of rock and gain basic concepts of music theory. The ultimate goal of the class is to put together several songs for performance and/or recording.

### **SONGWRITING PATH**

The Songwriting path is designed for students who want to understand the basic of music theory and create their own music from scratch. The skill level will be geared towards first-timers, but it would certainly be helpful if students were comfortable playing and writing on a specific instrument or software. The goal of this path is to create a portfolio of original music. Students may select one of these electives independently or take them all sequentially.

### **MUSIC THEORY**

.17 credits/trimester. Fall course. Students will study the elements of music and learn how musicians create music. Rhythm, harmony, melody, scales, intervals and song structure will be explored. These essential components will be used to study chord progressions and musical forms. We will study other songwriters' compositions in order and begin to create our own pieces.

### **SONGWRITING**

.17 credits/trimester. Winter course. Students will begin writing songs, chord progressions, and musical forms. A special section on lyric-writing will be included. These songs will be brainstormed, created, edited and played live and/or in the recording studio. Students will learn how to record themselves and put together a portfolio of original compositions.

### **MUSIC COMPOSITION**

.17 credits/trimester. Spring course. Students will study the elements of music and create longer-form compositions, including electronic, jazz, film and classical. The basics of music theory knowledge will be employed as we study other composers' music and create our own more advanced pieces. The direction of this class will be based on the interest and levels of the students.

## **ENGLISH DEPARTMENT**

Graduation Requirement: One course per year

### **HUMANITIES (English/History)**

.66 credits/trimester. Year Course. Freshman Humanities serves as a gateway course to learning at Cate and to Cate's culture of inquiry. Multidisciplinary in nature and closely coordinated in execution, it follows the practices of the humanities by developing and exploring essential questions of human nature and the diversity of human experience in the historical eras of the past and in contemporary society today. Specifically, we engage with authentic, anchoring artifacts of literature, history, art, architecture, and religion drawn from the classical to early modern eras of Western civilization. With an emphasis on disciplined student inquiry, meaningful discussion and oral presentations, creative and analytical writing, and research, the course builds the skills and knowledge that are needed for success in the freshman year and beyond.

### **ENGLISH 10 and 10 HONORS**

.33 credits/trimester. Year Course. In the 10th grade, students read challenging works in all major literary genres (poetry, short stories, essays, drama, memoirs, and novels); they also write extensively, study grammatical principles, learn new vocabulary, and contribute regularly to classroom debates and discussions. Our second-year course emphasizes the effective use of sensory detail and dialogue in personal writing; students also continue to practice forming, developing, and supporting ideas in analytical writing. As readers, Cate sophomores are trained in more sophisticated forms of literary response; they learn to identify the elements and purposes of many types of creative expression and to shape their insights into clear, defensible statements. Finally, students continue to hone their listening and speaking skills in the classroom, expressing themselves clearly and responding carefully to the views of others.

### **HONORS ENROLLMENT:**

.33 credits/trimester. Year Course. English 10 Honors is an advanced section of English 10 for our most accomplished sophomores. The pace is faster and the expectations are higher; Honors students do more reading and writing than the sophomores in the regular sections, and their work is held to a higher standard. To a greater extent than other tenth-graders, they should be self-reliant, attentive to language, able to apply previously learned skills, quick to learn new tools and strategies, knowledgeable about certain literary concepts, and eager to share their opinions in the classroom. They also need to be genuinely interested in reading, discussing, and writing about literature. *The selection process for the Honors course is competitive. In addition to reviewing each student's 9th-grade record in Humanities, the English Department takes into account the results of the annual Honors qualifying*

*essay, the annual Humanities grammar test, and a comprehensive evaluation of effort, accomplishment, and degree of interest.*

### **ENGLISH 11 and 11 ADVANCED**

.33 credits/trimester. Year Course. In the 11th grade, students read American fiction, nonfiction, drama, and poetry; they also write regularly in several forms and study the advanced principles of grammar. The junior-year writing curriculum introduces new skills in all modes while reinforcing the skills learned in prior years. Teachers focus on strategies for achieving dynamic description and narration in stories and personal essays; of equal importance are the methods of investigation, persuasion, and argumentation in analytical work. Students are increasingly responsible for the success of classroom conversation; they are expected to exhibit open-minded and respectful partnership in the many discussions, workshops, and presentations that comprise the junior year at Cate.

### **ADVANCED ENROLLMENT:**

.33 credits/trimester. Year Course. Advanced English 11 is a challenging course designed to prepare students for the reading and writing assignments they'll encounter in literature courses at the college level. The reading assignments are occasionally longer, the writing assignments are more frequent, and there is an increased emphasis on analytical skills: close scrutiny of language, demonstrating an awareness of rhetorical devices; facility of interpretation, including the secure use of abstract terms; and logical argumentation, including the use of quotation and secondary sources. Students are increasingly responsible for independent synthesis of all elements of a reader's experience into original and coherent ideas.

*The selection process for the English 11A is competitive. In addition to reviewing each student's record in English 10, the department takes into account the results of the annual qualifying essay, the annual English 10 grammar test, and a comprehensive assessment of effort, accomplishment, and degree of interest.*

### **ENGLISH 12 and 12 ADVANCED**

.33 credits/trimester. Fall course. Senior English offers students an opportunity to practice the reading and writing skills introduced during the preceding three years. The course begins with a writing unit focused on the college essay; the rest of the term varies and is sometimes devoted to a reading of Hamlet and sometimes to a unit on Modernism. In all cases, texts include poetry. In the winter and spring terms, seniors enroll in electives of their choice; the department routinely offers a wide range of writing workshops and focused literary seminars.

### **ADVANCED ENROLLMENT:**

.33 credits/trimester. Fall course. Advanced English 12 is an especially rigorous and challenging course. Command of the fundamentals of literary study is assumed, and students invited into the course are required to think and

write independently and to take responsibility for the success of all workshops and discussions. As readers, they are expected to be capable of making nuanced inferences and of articulating sophisticated views supported by thoughtful analysis of the text. As writers, they are expected to be capable of **independently** crafting essays that demonstrate mastery of a wide range of creative and analytical skills.

*The selection process for 12 Advanced is competitive. In addition to reviewing each student's record in English 11, the department takes into account the results of the annual qualifying essay, the department takes into account the results of the annual qualifying essay and a comprehensive assessment of effort, and a comprehensive assessment of effort, accomplishment, independence of scholarship, and degree of interest.*

### **WINTER TRIMESTER SENIOR ELECTIVES**

.33 credits/trimester. Winter courses.

**THE AMERICAN WILDERNESS:** This two-trimester interdisciplinary course may be taken as an English elective. For a detailed course description, please refer to the English [Interdisciplinary Courses](#) section.

**MODERN WORLD LITERATURE:** In this course we'll sample literature from around the world – novels, short stories, poems, and graphic novels that reveal the great diversity of human experience. Among the possible readings are *Deep Rivers* by Jose Maria Arguedas (Peru), *Half a Yellow Sun* by Chimamanda Ngozi Adichie (Nigeria), *Men In the Sun and Other Palestinian Stories* by Anouar Benmalek, *Persepolis* by Marjane Satrapi (Iran), and *A Thousand Years of Good Prayers* by Yiyun Li (China).

**FICTION WORKSHOP:** The purpose of the Fiction Workshop is to give seniors an opportunity to explore and apply the narrative skills they've been honing over their previous years at Cate, with a clear emphasis on creating fiction. Also we want to give students a taste of how such workshops are run at the undergraduate, graduate, and post-graduate levels. To that end, all students will be asked to submit original work to the group on a consistent basis and to respond to the work of others in a manner that is critical, constructive, and supportive.

**WAIT! YOU HAVEN'T READ THAT?** We read a wonderful variety of novels and plays during the four years a student spends in the study of English at Cate, but, inevitably, we miss a few of the landmark works along the way. Depending on student interest, this course will introduce pieces by either American or English authors; we'll draw from a list that includes Twain, Faulkner, Hemingway, Fitzgerald, McCullers, Didion, Vonnegut, Erdrich, and McCarthy; or Austen, Bronte, Dickens, Eliot, Trollope, and Hardy. The focus of the course is on reading and discussion; we'll be covering a lot of ground quickly.

**DON QUIXOTE:** We'll read Part 1 of Miguel de Cervantes' epic two-part novel, originally published in 1605. Among the most influential and best-loved books ever written, *Don Quixote* defies description; while combining elements of ancient, medieval, and Renaissance literature, it manages to be profound, poetic, philosophical – and very funny. Find out why people all over the world have loved this book for 400 years!

**DO the RIGHT THING!** In this course we'll see how even the most morally upright characters can find themselves mired in extremely sticky ethical situations. We'll read stories, plays, and a short novel or two that provide riveting examples of this awful but all-too-familiar human experience. Our list of possible authors includes Joseph Conrad, Milan Kundera, Henrik Ibsen, and T. C. Boyle – all of whom show us that it's not always easy to do the right thing!

**THIS AMERICAN LIFE (ACCORDING TO YOU):** We will take as our inspiration some of the most compelling radio shows on the air today, namely: This American Life, Radio Lab, and The Moth Radio Hour. The course will be divided into three-week sections, each devoted to studying a different medium employed on these shows: interviews, essays, short stories, stories told live, and whatever else we discover that motivates and excites us. For the final assignment of the course you'll work with two other students to create an episode on a single theme – love, hate, adventure, change, things that go bump in the night, etc. – and you'll turn that episode into a podcast to be featured on the Cate website.

**THE SCHOOL of HARD KNOCKS:** *Oliver Twist* and *Great Expectations*. Orphans and convicts; pickpockets and murderers; love, hatred, ambition, and revenge: all is captured in two of Charles Dickens' most compelling novels. We will follow Oliver and Pip – the young heroes of these books – as they struggle to make their ways in a confusing world.

**CAUGHT BETWEEN WORLDS:** Many of us in the U.S. lead divided lives – one of loyalty to a traditional culture and one of assimilation into mainstream America. In this course we'll read stories that explore the unique tensions that arise for "hyphenated" Americans (African-Americans, Asian-Americans, Mexican-Americans and many others) as they grapple with opposing expectations and the difficulty of navigating two worlds simultaneously.

**CREATIVE NONFICTION:** Part study of literature, part workshop, in this senior elective we will read recently published nonfiction – from full-length memoirs to brief lyrical essays – seeking to understand how various types of nonfiction operate, and how we can use this understanding to write some of our own.

**J.D. SALINGER:** Most Cate students will have read Salinger's *Nine Stories* their sophomore year. This seminar is offered to give them the opportunity to read the rest of Salinger's oeuvre (the bound part anyway), which is brief enough that we should be able to tackle it all within the term. That includes *The Catcher in the Rye*, *Franny and Zooey*; *Raise High the Roofbeam, Carpenters*; and *Seymour: an Introduction*. In addition to Salinger's own work, we will be looking at the dramatic shifts in his critical reception over time, those elements of his biography that are pertinent to his fiction, and also some of the religious ideas and texts that informed his work and artistic process, including *The Diamond Sutra*, *The Way of the Pilgrim*, and *The Gospel of Sri Ramakrishna*.

**VIRGINIA WOOLF:** Virginia Woolf was an English writer considered one of the foremost modernists of the twentieth century. Her career spanned the years between the end of World War I and the beginning of World War II. In this elective we will read a collection of her works that may include *Mrs. Dalloway*, *To the Lighthouse*, and *The Waves*, identifying both how she was influenced by and how she influenced the time and place in which she wrote.

### **SPRING TRIMESTER ENGLISH ELECTIVES**

.33 credits/trimester. Spring courses.

**GENDER MATTERS:** This interdisciplinary course may be taken as an English elective. For a detailed course description, please refer to the English Interdisciplinary Courses section.

**POETRY WORKSHOP:** In this creative writing course, our focus will be on student writing. The majority of our classes will center upon workshop critiques of each other's poems. We will also read and discuss work by major American poets, many of them still working today.

**INTRODUCTION to AMERICAN FILM:** Industry? Art? Technology? Popular culture? A consideration of American film might include history, cinematography, sound, editing, set design, special effects, acting, directing, production, distribution, merchandising, and more. This course is an introduction to the methods by which one "reads" a film. Though the specific focus of the course is subject to change from year to year – whether it be films of a certain style (noir), theme (high school), or era (the golden 70s) – the abiding purpose is to examine each film as a purposefully created universe, whose tone, color, language, framing and speed are all a product of specific and discernible choices. We will, as such, consider cinematography, editing, and screenwriting, and will write a short piece in response to the film screened each week. **In order to experience the films as they were meant to be screened, one class each week will take place in the evening and will last for approximately two hours.** In the past, this course has included discussion of the work of Howard Hawks, Frank Capra, Alfred Hitchcock, John Ford,

Orson Welles, Richard Linklater, Elia Kazan, Stephen Spielberg, Francis Ford Coppola, Robert Altman, Martin Scorsese, Woody Allen, and Christopher Nolan. Several genre pieces – *Cat People*, *Casablanca*, and *Singin' In the Rain* - have also been featured.

**UNCONVENTIONAL HEROINES:** This course will follow the daring – or at least unusual – paths of female protagonists who choose to live their lives a little differently! We'll devote the first half of the trimester to Jane Austen's *Pride & Prejudice*; after that, we'll read several shorter works by Henrik Ibsen, Kate Chopin, Isabel Allende, and other writers who earned their reputations by ignoring (even defying) societal norms.

**CAUGHT BETWEEN WORLDS:** Many of us in the U.S. lead divided lives – one of loyalty to a traditional culture and one of assimilation into mainstream America. In this course we'll read stories that explore the unique tensions that arise for "hyphenated" Americans (African-Americans, Asian-Americans, Mexican-Americans and many others) as they grapple with opposing expectations and the difficulty of navigating two worlds simultaneously.

**THE PLAY'S the THING:** This course offers seniors the chance to dedicate a full trimester to reading nothing but plays, with an emphasis on modern and contemporary works by American and English dramatists. For our material, which we will both read and watch, we will be drawing from a list of playwrights including Eugene O'Neill, Tennessee Williams, Edward Albee, Samuel Becket, Arthur Miller, Lillian Hellman, and more current voices as well, including David Auburn, John Patrick Shanley, and Yasmina Reza.

**WAIT! YOU HAVEN'T READ THAT?** We read a wonderful variety of novels and plays during the four years a student spends in the study of English at Cate, but, inevitably, we miss a few of the landmark works along the way. Depending on student interest, this course will introduce pieces by either American or English authors; we'll draw from a list that includes Twain, Faulkner, Hemingway, Fitzgerald, McCullers, Didion, Vonnegut, Erdrich, and McCarthy; or Austen, Bronte, Dickens, Eliot, Trollope, and Hardy. The focus of the course is on reading and discussion; we'll be covering a lot of ground quickly.

**LOVE in ALL the WRONG PLACES:** This will be a mixed-media course on the difficulty of having a lasting relationship in this crazy world – a world of ongoing political crisis and moral outrage. We'll read and watch the work of modern masters such as Nadine Gordimer (*Crimes of Conscience*), Art Spiegelman (*Maus*), and Milan Kundera (*The Unbearable Lightness of Being*).

**SCREENWRITING:** This course will run itself more or less like the Fiction Workshop (winter trimester), principally relying for its content on the submitted work of

students, with the one difference that the work will be written in the screenplay or teleplay format. Given the technical requirements and peculiarity of such forms, we will be paying heed to the more rigorous approaches outlined in various different screenwriting programs (such as Mariner), with the idea of producing a serviceable draft of a finished piece by trimester's end. With that in mind, we will also be examining the work of masters past and present – including the original screenplays, adaptations, and professional reflections of (among others) Robert Bolt, Lillian Hellman, William Goldman, Robert Towne, David Mamet, the Coen brothers, and Charlie Kauffman.

**MID-CENTURY MADNESS: Salinger / Kerouac / Plath:** Nothing better illustrates postwar life in America than the combination of J.D. Salinger, Jack Kerouac, and Sylvia Plath, all of whom were writing their most famous books at the dawn of the nuclear age. Among other things, we'll read *A Catcher in the Rye*, *On the Road*, and *The Bell Jar*.

**MODERN WORLD LITERATURE:** In this course we'll sample literature from around the world – novels, short stories, poems, and graphic novels that reveal the great diversity of human experience. Among the possible readings are *Deep Rivers* by Jose Maria Arguedas (Peru), *Half a Yellow Sun* by Chimamanda Ngozi Adichie (Nigeria), *Men In the Sun and Other Palestinian Stories* by Anouar Benmalek, *Persepolis* by Marjane Satrapi (Iran), and *A Thousand Years of Good Prayers* by Yiyun Li (China).

## **INTERDISCIPLINARY COURSES**

### **THE RISE of AFRICA: HISTORY AND NARRATIVE (English/History)**

.33 credits/trimester. Winter course. This course seeks to understand Africa through its literary and cultural products. Since the independence movements of the 1960's, the African continent has experienced tremendous change. The substantial economic and political transitions experienced by each nation have been chronicled and captured in historical texts, rich stories and audio-visual media. Using these creative artifacts, we will undertake a study of themes such as imperialism, post-colonial identity, modernization, and gender, which have impacted and continue to shape the ongoing development of various African nations and peoples. In doing so, we will also consider the way that historical and literary narratives construct Africa in the Western imagination. Sources for this class will consist of short stories, selected readings on African political and economic history, as well as contemporary articles and short films. This class is open to seniors for English credit and to both juniors and seniors for history credit.

## **THE 20th CENTURY AFRICAN AMERICAN EXPERIENCE: A HISTORICAL AND LITERARY STUDY (English/History)**

.33 credits/trimester. Winter course. In this course we will analyze the 20th century African American experience through both a historical and literary lens. The reading list includes but is not limited to Isabel Wilkerson's Pulitzer Prize-winning *The Warmth of Other Suns: The Epic Story of America's Great Migration* and Toni Morrison's National Book Critics Award-winning *Song of Solomon*. The value in applying both a historical and a literary lens to a time period rests largely in the access it provides to both the rational and the emotional. History tells us that between 1915 and 1970 nearly 6 million African Americans left the South for more northern and western cities, and the better lives they were sure awaited them there. Literature tells us about the complex emotions and struggles (physical, financial, familial, and social) that resulted. When taken together we can better understand the impetus for such a migration and the impact it had on, as Wilkerson states, "our cities, our country, and ourselves." This class is open to seniors for English credit and to both juniors and seniors for history credit.

## **GENDER MATTERS (English/History)**

.33 credits/trimester. Spring course. We will begin the course by pursuing the question: *How did we get here?* In this vein, we will examine key historic events and seminal theoretical texts and, from these, infer the essential, and in many cases shifting, assumptions, concepts, questions, and critiques that are foundational to Gender Studies. We will devote specific attention to identifying how, throughout the history of Gender Studies, the 'we' itself has been redefined, ultimately becoming more inclusive of the diverse experiences of not only women, including non-Western women, but also of men and LGBTQ+ communities. We then will turn our inquiry to the question of: *How and why is gender perceived and experienced today?* Here, we will rely heavily on contemporary, literary 'artifacts.' These literary artifacts, both fiction and nonfiction, will allow us to explore gendered perspectives and experiences in today's world and also to identify how gender shapes (and is shaped by) factors such as politics, class, race/ethnicity, nationality, religion, age, and education as well as assumptions about biology and sexuality. Throughout the course, students will be asked to weigh for themselves: *Why does gender matter?* In exploring all three of these overarching, essential questions, students will be asked to demonstrate senior-level English and History writing skills via a variety of literary, narrative, and analytical forms.

## **AMERICAN WILDERNESS (English/Science)**

America is a country forged from wilderness. This course is designed to deepen our understanding and appreciation of the natural world and to develop our sense of its role in defining both American culture and our own individual perspectives. Being in wilderness makes us think differently, to ask bigger questions. This course seeks to tackle those larger questions in order to deepen our understanding of both ourselves and our place in the cosmos. It is taught in a two-trimester sequence in order to provide a comprehensive and holistic exploration, employing both intellectual and experiential lines of inquiry. Students are asked to think deeply and seriously so that wilderness takes on a more profound meaning than simply as an aesthetic resource. Classroom work will include a variety of academic disciplines – English, environmental science, and philosophy – and there is a strong outdoor component to this course to ensure that students have the opportunity to experience the natural world in a manner less abstract than the classroom.

### **AMERICAN WILDERNESS I: The Wilderness Ethos**

.33 credits/trimester. Winter course. In the first trimester, students will examine the role of wilderness in American culture – historically and currently – using the writings of authors such as Thoreau, Abbey, Stegner, Leopold, and McPhee to develop a personal understanding of the value of wilderness in their own lives. While developing their critical reading and writing skills, students will examine current environmental and political implications of our impact on the American wilderness and, through the use of a journal, work actively to articulate their own developing perceptions about the role of wilderness in American culture. *(In the winter trimester, there will be an overnight solo backpacking trip, and students will begin to learn the skills of whitewater kayaking in preparation for the river trips of the spring trimester.)*

### **AMERICAN WILDERNESS II: Looking Inward**

.33 credits. Spring course. The classroom component of the second trimester in this two-trimester sequence shifts from analytical reading, critical writing, and argumentation to personal introspection and creative writing with a study of the novel *The River Why*. Students will explore how the American wilderness has shaped various spiritual paradigms found in American society and use class discussions and journal writing to develop their own sense of their place in the natural world. *(In the spring trimester, students will continue to develop their kayaking skills locally and will spend a weekend on the Kern River applying their whitewater skills to moving water. Prior to Commencement, the course culminates in a week-long desert wilderness river trip in Utah.)* Prerequisite: The Wilderness Ethos.

## **HISTORY DEPARTMENT**

Graduation Requirement: A course in each of the first two years and U.S. History in the upper school.

### **HUMANITIES (History/English)**

.66 credits/trimester. Year Course. Freshman Humanities serves as a gateway course to learning at Cate and to Cate's culture of inquiry. Multidisciplinary in nature and closely coordinated in execution, it follows the practices of the humanities by developing and exploring essential questions of human nature and the diversity of human experience in the historical eras of the past and in contemporary society today. Specifically, we engage with authentic, anchoring artifacts of literature, history, art, architecture, and religion drawn from the classical to early modern eras of Western civilization. With an emphasis on disciplined student inquiry, meaningful discussion and oral presentations, creative and analytical writing, and research, the course builds the skills and knowledge that are needed for success in the freshman year and beyond.

### **SOPHOMORE WORLD HISTORY: IMPERIALISM, IDENTITY, and NATION**

.33 credits/trimester. Year Course. This year-long course will explore issues of imperialism, identity, and nationalism, primarily in the nineteenth and twentieth centuries. A third of the year will be devoted to Europe, a third to China, and a third to sub-Saharan Africa. We will study transformation and tradition, inclusion and exclusion, and conflict and consensus as these themes cross national and regional boundaries. This course will continue to emphasize skills, especially careful reading, focused essay writing, and oral presentation and research methods.

The first trimester will focus on Europe in the nineteenth and twentieth centuries, with units on the EU Today, Imperialism, World War I, Communism and The Russian Revolution, Fascism and World War II, and The Cold War. In the second trimester, our focus will be on China. The units include the Pillars of Traditional Chinese Society, Conflicts with the European Powers from the Celestial Empire to the Unequal Treaties, the Fall of the Qing and the KMT Years, China under Mao, and finally China today. We will spend a week preparing for the sophomore Model United Nations Day featuring Asian countries. In the third trimester, we will continue to explore themes of imperialism, identity, and nationalism, but with the focus on sub-Saharan Africa in the nineteenth and twentieth centuries. European imperialism, independence and the development of nation states, and Africa today will be specific areas of study. A research paper will be a primary focus during this trimester.

## **UNITED STATES HISTORY**

.33 credits/trimester. Year Course. This course teaches skills in reading and interpreting history, through primary and secondary sources, in writing on historical topics, and in preparing a research paper. Students will study the origins of the American political system, the development of the American economy and American culture, and the various crises that have beset the country in the 18th, 19th, and 20th centuries. An important goal of this course is to develop interest in America's past by showing its contemporary relevance.

## **ADVANCED UNITED STATES HISTORY**

.33 credits/trimester. Year Course. The Advanced section also provides a survey of American History with particular emphasis on the use of primary sources, in depth exploration of topics, and historical scholarship. The course is designed for students who have demonstrated the personal interest, initiative, and the high level skills necessary for success in this more intensive, faster paced course. Students enrolled in the advanced section may elect to take the Advanced Placement examination in the spring, but the course emphasis is on depth of study, not test preparation. Enrollment in the advanced class is limited, and placement is determined by the department.

## **ADVANCED ELECTIVES IN HISTORY**

### **ADVANCED SENIOR SEMINAR in HISTORY**

The Advanced Seminar in history is an intensive reading and writing course designed for seniors who have demonstrated sustained interest and success in history in their time at Cate. The Advanced Seminar in History is credited and weighted as an advanced course. While the themes and content of the course change each trimester, the objective of in depth analysis of specific historical questions is central in each trimester. Classes are conducted in the model of a college seminar and students must be committed to ownership and leadership of discussions. In the course of the trimesters, students in the Advanced Seminar will be expected to read historical scholarship, conduct independent research, and substantive historical analysis.

Prerequisites: Permission of department, writing sample, and a minimum of an A- in US History or a B+ in AP US History. Open to seniors only.

## **COMPARATIVE REVOLUTIONS**

.33 credits/trimester. Fall course. What is a revolution? Why do revolutions happen? How do revolutions change societies? This class is a theoretical and historical examination of revolutions, including origins, causes, and results. We will start the class by examining various theories about revolutions and examining two classic examples, The French and Russian Revolutions. We will then use the theories we have studied to examine more modern examples, including the Chinese, Nicaraguan, Iranian, South African, and Eastern European revolutions. Do these fit the model of a classic revolution? A major component of this class will be each student exploring and presenting

another revolution outside of the ones we discuss in class using the theories of revolution we have studied and developed. The emphasis here will be on recent upheavals, including ones still in process. Throughout the course we will use a variety of sources, including classic political science essays and primary sources, but also art and film, to understand the nature of revolution. In the second half of the course especially the emphasis will be on developing sophisticated research and presentation skills.

### **THE SUPREME COURT AND CIVIL LIBERTIES**

.33 credits/trimester. Fall course. This course will focus on the judiciary branch and its influence on American life. More specifically, students will explore various issues of civil liberties and civil rights, how the courts have ruled over the years, and where these controversies stand today. There will be an emphasis on reading and understanding Supreme Court decisions and how they affect American society.

### **ANTHROPOLOGICAL PERSPECTIVES**

.33 credits/trimester. Winter course. This trimester elective aims to deepen students' curiosity about the cultural complexity of the world as well as equip students with the anthropological perspectives and skills to better understand and navigate these complexities in their own lives, both locally and globally. Students will begin by exploring concepts such as: culture and micro-culture; ethnocentrism and cultural relativism; and self and social identity. In addition to interpreting global case studies in light of these concepts, students will be challenged to assess themselves in cultural terms. Students will also devote specific attention to questions of race, ethnicity, and culture (e.g., "What's the difference?" "Why does it matter?") as well as explore cross-cutting cultural variables, including language / communication, religion, class, gender / sexuality, and kinship and marriage. Finally, students will be introduced to two research methods drawn from the field of anthropology: participant-observation and ethnography. The trimester will culminate with an ethnographic research project, based on ethnographic research conducted here at Cate or in the local Carpinteria or Santa Barbara community.

### **THE MODERN MIDDLE EAST: History, Culture, and Political Relations**

.33 credits/trimester. Spring course. This trimester elective directly builds on the key concepts of the first two trimesters by applying them to a focused study of the Middle East. Specifically, students begin the trimester by examining the rich history and dynamic culture of the region. From the dissolution of the Ottoman Empire to the rise of Arab nationalism, the Arab-Israeli conflict, the role of Iran and beyond, students come to understand the deep historic roots of the many political, economic, social, and security issues that face the modern Middle East today. Simultaneously, by looking at key cultural issues such as Islam, fundamentalism, tradition, and modernity, students develop a cultural relative appreciation for the forces driving the peoples and societies of the Middle East. Finally, by combining the lens of

history and culture, the students are then empowered to more critically assess the political interplay between nations of the Middle East and between the United States and the region.

## **ELECTIVES IN HISTORY**

### **TOPICS in NATIONAL AND GLOBAL ECONOMICS**

Microeconomics and Macroeconomics may be taken individually. Economic Policy requires enrollment in Microeconomics and Macroeconomics.

### **MICROECONOMICS**

.33 credits/trimester. Fall course. This course introduces the basic microeconomic analysis of the decision-making process of consumers, firms, and governments in the marketplace. Students will examine the functions of the four different market structures. Discussions will focus on economic issues such as the trade-off between equity and efficiency, sustainable resource use, and poverty and income inequality. Group presentations, current affairs, and guest speakers will supplement the background provided by the textbook.

### **MACROECONOMICS**

.33 credits/trimester. Winter course. This course provides an analytical framework for the understanding of the economy from a broad perspective. Students will analyze the function and purpose of the components of Gross Domestic Product, the causes and cost of inflation and unemployment, and the differences between long-term trends and short-term fluctuations within the economy. A strong emphasis will be placed on using an interactive learning approach through active listening, guest speakers, and team building projects and discussions.

### **ECONOMIC POLICY**

.33 credits/trimester. Spring course. This course examines macroeconomic principles and their applications to issues faced by policymakers. Students will learn about current challenges faced by governments and central banks and examine different strategies to address these challenges. The course will investigate certain macroeconomic models used to distinguish long-term trends and short-term fluctuations in key economic indicators such as Gross Domestic Product, unemployment, inflation, consumer confidence, and deficits. The textbook curriculum will be supplemented by team presentations, current affairs, and guest speakers.  
Prerequisites: Microeconomics and Macroeconomics.

### **HISTORY RESEARCH**

.17 credits/trimester. Trimester Course. The purpose of this course is to provide students the opportunity to learn about topics of their own choosing from any aspect of American, Asian, or European history they find interesting.

The format for the course is student-conducted independent research, working with history and library faculty, and presentations to the class. Students must write a research proposal and obtain permission from the department and Director of Studies.

## **INTERDISCIPLINARY ELECTIVES**

### **THE RISE of AFRICA: HISTORY AND NARRATIVE (History/English)**

.33 credits/trimester. Winter course. This course seeks to understand Africa through its literary and cultural products. Since the independence movements of the 1960's, the African continent has experienced tremendous change. The substantial economic and political transitions experienced by each nation have been chronicled and captured in historical texts, rich stories and audio-visual media. Using these creative artifacts, we will undertake a study of themes such as imperialism, post-colonial identity, modernization, and gender, which have impacted and continue to shape the ongoing development of various African nations and peoples. In doing so, we will also consider the way that historical and literary narratives construct Africa in the Western imagination. Sources for this class will consist of short stories, selected readings on African political and economic history, as well as contemporary articles and short films. This class is open to seniors for English credit and to both juniors and seniors for history credit.

### **THE 20th CENTURY AFRICAN AMERICAN EXPERIENCE: A HISTORICAL AND LITERARY STUDY (History/English)**

.33 credits/trimester. Winter course. In this course we will analyze the 20th century African American experience through both a historical and literary lens. The reading list includes but is not limited to Isabel Wilkerson's Pulitzer Prize-winning *The Warmth of Other Suns: The Epic Story of America's Great Migration* and Toni Morrison's National Book Critics Award-winning *Song of Solomon*. The value in applying both a historical and a literary lens to a time period rests largely in the access it provides to both the rational and the emotional. History tells us that between 1915 and 1970 nearly 6 million African Americans left the South for more northern and western cities, and the better lives they were sure awaited them there. Literature tells us about the complex emotions and struggles (physical, financial, familial, and social) that resulted. When taken together we can better understand the impetus for such a migration and the impact it had on, as Wilkerson states, "our cities, our country, and ourselves." This class is open to seniors for English credit and to both juniors and seniors for history credit.

### **GENDER MATTERS (History/English)**

.33 credits/trimester. Spring course. We will begin the course by pursuing the question: *How did we get here?* In this vein, we will examine key historic events and seminal theoretical texts and, from these, infer the essential, and in many cases shifting, assumptions, concepts, questions, and critiques that are

foundational to Gender Studies. We will devote specific attention to identifying how, throughout the history of Gender Studies, the 'we' itself has been redefined, ultimately becoming more inclusive of the diverse experiences of not only women, including non-Western women, but also of men and LGBTQ+ communities. We then will turn our inquiry to the question of: *How and why is gender perceived and experienced today?* Here, we will rely heavily on contemporary, literary 'artifacts.' These literary artifacts, both fiction and nonfiction, will allow us to explore gendered perspectives and experiences in today's world and also to identify how gender shapes (and is shaped by) factors such as politics, class, race/ethnicity, nationality, religion, age, and education as well as assumptions about biology and sexuality. Throughout the course, students will be asked to weigh for themselves: *Why does gender matter?* In exploring all three of these overarching, essential questions, students will be asked to demonstrate senior-level English and History writing skills via a variety of literary, narrative, and analytical forms. This class is open to seniors for English credit and to both juniors and seniors for history credit.

### **WORLD WAR II: SCIENCE, TECHNOLOGY, AND THE GERMAN WAR MACHINE (History/Science)**

.33 credits/trimester. Spring course. In this course we will explore the role of scientific, mathematical and technological advances from German rearmament to the dropping of Little Man and Fat Boy. No war was as affected by science, mathematics, and invention as WWII, and no country had a richer research and development program than Germany. Before Nazi Germany pioneered the "cruise missile" and the "ballistic missile" and perfected chemical weapons, the Prussian army dominated the continent during the years of German Unification, and the German War Machine boldly supported Austria-Hungary's bid to seek revenge for the death of Archduke Ferdinand I. Historian Robert Citino writes, "Germans themselves repeatedly and vehemently denied having any special or unique system for conducting their wars. War, they claimed, was an art." Before the Second World War defecting or expelled scientists, including Albert Einstein, Wehrner von Braun, and Hans Bethe, exported much of their technology to the United States, where they helped lead the famed Manhattan Project and the development of modern nuclear armaments. As we delve into the German "art form" and the German push to create a scientific juggernaut, we will examine primary source materials to consider several fundamental issues in the relationship between warfare and technology. For example: What is the role of science, and scientists, in war? What technological weapons are morally acceptable and what are not? Under what circumstances is it morally acceptable to bomb civilians during a war? This course seeks to provide a context for students to evaluate and analyze such questions, and, ultimately, to synthesize personal responses to them during our own era of rapid technological advancement.

## **HUMAN DEVELOPMENT DEPARTMENT**

Graduation Requirement: Freshman Seminar (9<sup>th</sup> grade) and Sophomore Seminar (10<sup>th</sup> grade)

### **FRESHMAN SEMINAR: WELL-BEING and SERVICE-LEADERSHIP 1**

.17 credits/trimester. Year Course. Meeting two periods per week and required of all freshmen, this course explores topics of well-being and service leadership within the Cate community and beyond. The topics of well-being include: nutrition, exercise, meditation, healthy relationships, sexual health, drugs and alcohol, reflective practice, sleep, emotional health and use of technology. Students will also build a foundation in service-leadership through the introduction of discovery-based initiatives, outdoor trips and service projects on campus and in the local community.

### **FRESHMAN STUDY SKILLS**

The Freshman Seminar study skills course introduces students to the concepts, skills, and strategies of active versus passive study habits. The course does not have a distinctive meeting time but is integrated into the Freshman Seminar and Humanities courses. Students learn effective strategies in note taking, reading texts, writing essays, preparing for and taking tests while leveraging their personal learning styles and strengths in the process. In addition, students are exposed to important discoveries in brain research, nutrition and learning, and use of multiple intelligences in learning and in the classroom.

### **RESEARCH SKILLS**

.08 credits/trimester. Fall course (9<sup>th</sup> grade), Winter course (10<sup>th</sup> grade). Research Skills introduces students to valuable print and digital resources that they may use for their projects across disciplines; we teach students how to correctly cite sources and how to create lists of works cited; we discuss issues of academic honesty and plagiarism, as well as the ethical use of the Internet; we introduce students to the online resources available at Cate, and we teach them how to become more successful searchers using appropriate keywords and other strategies; we teach students how to effectively use the Internet to find more authoritative websites for their research projects; and we introduce students to the interlibrary loan process. The course begins in the fall trimester of the freshman year and is coordinated with objectives in the Humanities course. The skills focus is continued in the winter of the sophomore year as students prepare for a major research essay in the World History course. While there is no formal meeting time for research skills instruction in the upper school, the knowledge and skill acquired in the freshman and sophomore years becomes the foundation for more complex, sophisticated, and independent research and inquiry in the junior and senior years.

## **SOPHOMORE SEMINAR: WELL-BEING AND SERVICE-LEADERSHIP 2**

.17 credits/trimester. Year Course. This required sophomore course builds on the foundational skills and material from Freshman Seminar. Students will personalize the well-being material to current research and their own lives. Then, continuing to use the model of service-leadership, students explore several models of leadership, ethics and morality help to establish their own values and develop greater empathy for others. Also, through the development of greater self and group awareness and a growth mindset, students actively engage in leadership as a practice.

## **SENIOR TEACHING ASSISTANTS**

.17 credits/trimester. Year Course. Senior Teaching Assistants are selected in the spring of their junior year on the basis of their commitment to work with younger students, their proven dependability and their ability to lead and work cooperatively with others. All TA's are trained in teaching, group leadership and peer counseling skills. Both freshman and sophomore TA's provide personal guidance and support for students and assist in running class discussions and exercises. TA's meet with their section twice a week and meet with other TA's once a week to plan and prepare for the week's classes.

## **TRIMESTER or YEAR ELECTIVE**

### **NEUROSCIENCE and BEHAVIOR**

.17 credits/trimester. Fall course, Winter course, Spring course. Fall: Ethics and Messy Discourse - This seminar-style course will focus on wide-ranging issues and topics of both American and global society, including current events. Student input will help determine the course curriculum. We'll examine not only our own personal stances on various issues, but also, and more importantly, how our opinions are formed and how we can challenge ourselves to be better listeners and more thoughtful participants in what can be messy, emotional, and complicated dialogue. Course Prerequisite: an open mind. Winter: Memory and Learning and Behavior - This lab designed course is an introduction to the psychology of learning and memory. Did it all start with Skinner? Through questioning and exploring our own learning process and memory will lead to independent lab designs and investigations. What is your first memory? Why? How is that possible? What triggers your memory? What is the neurophysiology of memory formation and learning? Would it help to multitask? Is there a magic memory pill? How do you become a professional memory champion athlete? Really? Homework will focus on lab designs and execution. Spring: Behavior and Society - Then the course explores the social relevance of neuroscience, considering how emerging areas in the field reflect and shape social attitudes and agendas. Topics include brain imaging and popular media; neuroscience of empathy, trust, and moral reasoning; new fields of neuroeconomics, neuromedicine and neuromarketing; ethical implications of neurotechnologies such as cognitive enhancement pharmaceuticals; neuroscience in the courtroom; and

neuroscientific recasting of social problems such as addiction and violence. Class designs and reading are shared from the Department of Neuroscience undergraduate program at MIT and the National Center for Case Study Teaching in Science. Students may select any term independently or take them all sequentially. Prerequisite: Open to juniors and seniors.

## **MATHEMATICS DEPARTMENT**

Graduation Requirement: One course per year through the junior year, with the final course determined by the initial Cate placement level. All students are expected to complete Math 30 (Algebra 2). Essentially, the requirement is three years of mathematics, including comparable high school level courses taken prior to Cate, although four years of math are recommended for most students.

Policies: Technology is an active tool in the study of mathematics: A TI-84 graphing calculator is required for all mathematics courses. Students taking advanced courses that match AP courses are expected to take the Advanced Placement examinations in the spring as course requirements. Advanced levels (beyond Algebra 2) and Advanced courses require the consent of the department, which means demonstrated competence in the prerequisite class. Normally, trimester grades of C or better are required to advance to the next level class in the regular sequence through Algebra 2. For Honors selection, grades of A- or better are expected. For Advanced classes, grades of B or better are expected. These standards are intended to ensure proper placement in challenging courses and to help students make good choices so that they can be successful and have the most positive experience.

### **MATH 10: Algebra 1**

.33 credits/trimester. Year Course. This course introduces and emphasizes the basic concepts of algebra, including types of numbers and their properties, variables, operations with expressions, exponents, radicals, axioms, working with polynomials, solving linear and quadratic equations, solving inequalities, and working with rational expressions. This course also introduces functions algebraically and graphically. Emphasis is placed on developing skills needed for future work in math, problem-solving techniques, logic, and applications to real-world situations. Emphasis is also placed on ability to use technology to emphasize and accentuate the math. Intended for students who have not had a full year of Algebra 1 or need more review.

### **MATH 15: Integrated Problem Solving 1: Foundations of Algebra and Geometry**

.33 credits/trimester. Year Course. Math 15 is a problem-solving course, which places both the burden and the excitement of investigation on students' shoulders. We study algebra at the conceptual level, but emphasis is placed on the role it plays in mathematical modeling and as a problem-solving tool. Students are expected to be at the very center of the cooperative process, discussing, writing about, and presenting well-reasoned explanations. The course uses a variety of materials, including problems from Math 1 written by the math department at Phillips Exeter Academy and includes a strong foundation and review of Algebra and Geometry. The course is intended as a transition to Math 20 (Geometry) for students who need more mathematical background or experience.  
Prerequisite: Math 10 or equivalent.

**MATH 20: Integrated Geometry, Algebra, and Statistics**

.33 credits/trimester. Year Course. This course introduces and stresses the basic topics and concepts of plane and solid geometry, coordinate geometry, including angles, triangles, lines, circles, polygons, area, similarity, congruence, and right angle trigonometry. Emphasis is placed on developing problem-solving skills, logical understanding of theorems and proofs, the deductive reasoning process, and relating the material to realistic applications. Algebra skills and descriptive statistics are integrated into the year to provide depth and connections.

Prerequisite: Math 10 or 15.

**MATH 21H: Integrated Problem Solving 2: Geometry Honors**

.33 credits/trimester. Year Course. Math 21H is problem-solving course that provides students with a more rigorous, integrated, and in-depth exposure to geometry in two and three dimensions. Students investigate lines, polygons, vectors, circles, and parabolas while also analyzing right-triangle trigonometry. Through the exploration of linear motion, students are introduced to optimization and transformations. We use a variety of materials, including iPad technology and problems from “Math 2” written by the math department at Phillips Exeter Academy, which focuses on pattern-building through the integration of algebra and geometry.

Prerequisite: Math 10 or 15 and consent of department.

**MATH 30: Integrated Algebra 2 and Trigonometry**

.33 credits/trimester. Year Course. This course builds a strong foundation of algebraic principles and skills by reviewing and extending the topics from previous courses. This is achieved through the study of polynomial, rational, radical, exponential, logarithmic, and trigonometric functions. In addition, discrete topics such as sequences, series, the binomial distribution, and combinatorics are considered. Emphasis is placed on the skills of problem solving, graphing and analyzing functions in multiple forms, and relating the material to real-world applications.

Prerequisite: Math 20 or 25.

**MATH 31H: Integrated Algebra 2 & Trigonometry Honors**

.33 credits/trimester. Year Course. Students in this course access the same content described in Math 30 but go more deeply into proof and applications, while also studying more topics such as matrices and conic sections. Students must qualify for this level and are expected to work more independently, with a spirit of inquiry to investigate why methods work, and with a willingness to challenge themselves.

Prerequisite: Math 20, 21H, or 25 and consent of department.

**MATH 40: Integrated Functions**

.33 credits/trimester. Year Course. This course is designed to prepare students for calculus by providing a thorough study of functions,

trigonometry, and applications. Students explore the algebraic, numerical, and graphical representations of these functions and their transformations in a variety of contexts. Entering students should have a strong background in Algebra, usually meaning B or better in Math 30.

Prerequisite: Math 30.

**MATH 41H: Integrated Functions and Calculus Honors**

.33 credits/trimester. Year Course. Students in this honors level course should already have a strong background in the various representations of toolkit functions and their transformations. This allows time for exploration of parametric and polar functions, recursion and series, as well as projects in mathematical modeling. Differential and integral calculus, following the Advanced Placement AB syllabus is woven in throughout the first two trimesters and is the main focus of study in the spring term. Students enrolling in the honors course may be eligible to enroll in Math 51H (BC Calculus) in the following year.

Prerequisite: Math 30 or 31H and consent of department.

**MATH 45: Probability, Statistics, and Calculus**

.33 credits/trimester. Year Course. This course is intended as a mathematics elective for juniors and seniors who do not choose to pursue one of the advanced options. In the fall and winter trimesters, the course provides an introduction to the discrete math topics of probability and statistics, including the analysis of data, the conducting of surveys, sampling, experiments, and inference. In the spring the major themes of calculus (the limit, derivative, and integral) are introduced in a conceptual approach with applications, with extensive use of the graphing calculator. Financial applications including the use of spreadsheets will be included.

Prerequisite: Math 30.

**MATH 50: Advanced Calculus 1 (AB)**

.33 credits/trimester. Year Course. This college-level mathematics course is designed as an introduction to a variety of topics relating to integral and differential calculus including, functions, graphs, and limits, the conception and application of derivatives, the interpretation and application of integrals, and the fundamental theorem of calculus. The course outline focuses on the tools of Calculus for problem solving. Students will be prepared to take the AP examination in the spring.

Prerequisite: Math 40 and consent of department.

**MATH 51H: Advanced Calculus 2 (BC)**

.33 credits/trimester. Year Course. This course seeks to challenge our strongest students with Calculus topics and a number of topics that prepare students for the Calculus (BC) Advanced Placement Examination but also exceed that syllabus. Emphasis is on theory and more complex problems than those encountered in Calculus 1 and there is emphasis on proof and

applications. Topics include a review of differential and integral calculus, advanced integration techniques, applications, infinite series, vector algebra, and vector calculus. Students will be prepared to take the Advanced Placement examination in the spring.

Prerequisite: Math 41H or Math 50 and consent of department.

**MATH 55: Advanced Statistics**

.33 credits/trimester. Year Course. This course is equivalent to a College level one-semester introductory course in statistics. The purpose of Advanced Statistics is to introduce students to the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students are exposed to four broad conceptual themes: (1) Exploring data: observing patterns and departures from patterns; (2) Planning a study: deciding what and how to measure; (3) Anticipating patterns in advance: producing models using probability and simulation; and (4) Statistical inference: Confirming models. Students will be prepared to take the Advanced Placement examination in the spring.

Prerequisite: Math 40 or 45, and consent of department.

**MATH 61H: Advanced Statistics, Multivariable Calculus, and Linear Algebra**

.33 credits/trimester. Year course. This course explores advanced collegiate math topics beyond Calculus. In the fall, students study descriptive and inferential statistics at an accelerated pace along with calculus applications. Interested students will be prepared to take the AP Statistics exam in the spring. The winter term will expose students to multivariable calculus including partial derivatives, double and triple integrals, and applications. In the spring, students will be introduced to Linear Algebra. The software program “Mathematica” will be used throughout the winter and spring. These topics also provide a natural connection to the style of proof common to higher-level mathematics. The course is intended for students who have completed calculus and have an interest in further work in mathematics.

Prerequisite: Math 50 or 51H.

**MATH 71H: Directed Studies**

For students who have taken the other math electives offered, independent study is available through our directed studies program. Students can design their own program or follow collegiate online options. Separate tuition costs for the student may apply for these programs.

**INTERDISCIPLINARY COURSE**

**MATH 56: Advanced Computer Science -- Scientific Programming (Math/Science)**

.33 credits/trimester. Year Course. This advanced course in scientific problem-solving will provide students with the programming skills to ask and answer a broader class of questions than can be addressed by conventional means. Using concepts from physics, chemistry, biology, environmental

science and mathematics, students will design, code, and run computational models to conduct virtual experiments. Using the open source Python programming language and the rich set of free scientific, mathematical, and graphical packages built for it, students will learn to think like a programmer as they work through case studies and classical algorithms. They will deepen their understanding of population dynamics by modeling a zombie apocalypse. They will appreciate the subtleties of random numbers and probability by constructing a blackjack simulator. They will develop techniques for numerical integration and data visualization as they analyze the record-breaking Red Bull Stratos jump. At the end of the course, students will own a toolkit of transferable problem-solving skills applicable to any discipline at the college level.

Prerequisite: Math 40 and permission of the department.

## **MODERN LANGUAGES DEPARTMENT**

Graduation Requirement: Three sequential years of the same language.

### **MODERN LANGUAGES 1 (Chinese, French, Japanese, and Spanish)**

.33 credits/trimester. Year Courses. Level 1 courses provide an in-depth introduction to French, Spanish, Chinese, and Japanese. The classes emphasize the acquisition of the basic knowledge and skills required for effective communication, including grammatical principles, accent, intonation, and pronunciation. Reading and listening comprehension are also stressed, as are writing skills. Students speak French / Spanish / Chinese / Japanese from the first day of class. Placement is determined by the department.

### **MODERN LANGUAGES 2 and 2 Honors (Chinese, French, Japanese, and Spanish; 2 Honors in Spanish)**

.33 credits/trimester. Year Courses. These courses continue to develop the basic language skills introduced in Level 1, with considerable focus on grammar and vocabulary. Besides continued refinement of speaking and listening skills, these courses emphasize the development of concise, well-organized compositions. French and Spanish students also begin to read literature in preparation for the third-year courses. Honors placement in Spanish is determined by the department.

### **MODERN LANGUAGES 3 and 3 Honors (Chinese, French, Japanese, and Spanish; 3 Honors in Chinese, French, and Spanish)**

.33 credits/trimester or 4.5/trimester for honors courses. Year Courses. These are intermediate courses in which students are able to refine and apply the skills acquired in the first two years. Students are required to make numerous oral presentations, read increasingly sophisticated works, and begin to write more fully developed essays. Honors placement in Chinese, French, and Spanish is determined by the department.

## **ADVANCED COURSES**

### **CHINESE**

#### **CHINESE 4**

.33 credits/trimester. Year Course. Students in this course will further develop intermediate skills in speaking, listening, reading and writing Chinese, as well as engage in cultural enrichment exercises. Exposure to adapted authentic text will complement the interpretive skill of spoken and written Chinese. Students will refine their abilities to speak clearly about a variety of fundamental communicative topics and social situations. Particular emphasis will be devoted to raising fluency of the spoken language, expanding vocabulary in traditional and simplified characters, and

internalizing more complex grammatical constructions. Directed activities will include role-play situations, observation of native speakers interacting in authentic situations, writing pen-pal letters, practicing calligraphy, reporting on internet searches of topics of current interest in China, and reporting on field trip experiences.

Prerequisite: Chinese 3 or permission of the department.

## **ADVANCED CHINESE ELECTIVES**

### **THE CHINESE IDIOM: ORIGINS OF CHINESE THOUGHT**

.33 credits/trimester. Fall course. This course is designed to immerse students in classical Chinese idioms and popular folktales. For thousands of years, four-character idioms have played an essential role in Chinese culture and literature. They were widely used in Classical Chinese literature and are still common in contemporary Chinese writing and spoken language. The students will learn how idioms are used to communicate and express ideas, and how idioms relate to language development and cultural fluency.

### **CHINESE CINEMA**

.33 credits/trimester. Winter course. Students in this course will view and analyze films from China and Taiwan that are rich in cultural, historical, and artistic significance. In addition to enhancing their knowledge of the complexity and richness of Chinese cultures, students will continue to develop their language fluency and critical thinking skills. Students will also gain comprehension confidence as they sharpen their sensitivities to accents from different regions.

### **CHINESE LITERATURE: CLASSICAL TO CONTEMPORARY**

.33 credits/trimester. Spring course. This course is intended to give students a basic understanding of traditional Chinese literature. Students in this course will read, analyze, and discuss several short literary masterpieces from classic and contemporary Chinese artists. As some literature is expressed as song lyrics, students will learn how to sing pieces as well. Works to be covered include: poems from Tang and Song dynasty, contemporary novels, the Analects, 水调歌头、背影、 among others.

Prerequisites: Chinese 3 Honors, Chinese 4, or heritage learners and permission of department.

## **JAPANESE**

### **JAPANESE 4**

.33 credits/trimester. Year Course. Students in this course will develop advanced language skills and cultural sensitivities through close examination of the Japanese soul. From the immigration experience during the early Meiji Era through internment and the atomic bombings of World War II, students will delve into the Japanese value system and its impact on behavior,

perspective, and language elements (*keigo*, *kotobazukai*, etc.). Students will also explore origins, contexts and applications of these values as they connect the teachings of 16<sup>th</sup> century tea master Sen no Rikyu to 20<sup>th</sup> century poet and philosopher Kenji Miyazawa, *haiku* verse and modern environmental policy. Prerequisite: Japanese 3 or permission of the department.

## **FRENCH**

### **FRENCH 4: FRANCOPHONE FILM**

.33 credits /trimester. Year Course. This course is designed to interest and challenge capable students who wish to develop greater proficiency in the French language through class analysis and discussion of francophone films. Foundational elements of grammar are reviewed, refined and practiced as students examine Francophone cultures through film. Students in this course use two texts and full length films from the French-speaking world to move to an advanced level of language and communicative competency. Prerequisites: French 3 or permission of the department.

### **ADVANCED FRENCH LANGUAGE AND CULTURE**

.33 credits/trimester. Year Course. Students in this class will develop strong language proficiency through the study of literature, art, current events, and cinema. Students will also enrich their cultural competence of the Francophone world through a variety of media (podcasts, videos, TV5 Monde recordings, documentaries, etc.), which are used throughout the course to heighten sensitivity to and comprehension of the myriad perspectives and linguistic characteristics of French across the globe. This course will focus on integrating written and aural language skills, as well as acquiring and analyzing information from authentic sources. Students completing this course in good standing will be adequately prepared for college-level courses and to take the AP French Language and Culture examination in May. Prerequisites: French 3, 3 honors, French 4 and/or permission of the department.

### **ADVANCED FRENCH LITERATURE**

.33 credits/trimester. Year Course. This course is designed for students who are proficient in French and have completed French 4 or above with distinction. The class is conducted entirely in French. Students will approach francophone literature determining the role of justice and its application in the texts studied. We will discuss content, style, philosophy, gender, race, class, and culture. Students will explore the historical and cultural contexts of the works explored which will include novels, plays, poems, short stories and film. This course requires students to think critically, examine closely, and question actively. We will consider various perspectives, analyze the different “voices” present, and use various media to support original theories and answer questions formulated by students.

Prerequisites: French 4, Advanced French Language or equivalent and permission of the department.

## **SPANISH**

### **SPANISH 4**

.33 credits/trimester. Year course. This course is for students who have successfully completed Spanish 3 and who wish to continue their study of Spanish. The course develops the four skills (reading, writing, speaking, and listening), with particular emphasis on oral communication and cultural competency, promotes student-centered and contextual learning, as well as critical thinking skills, and develops reading as a basis for general discussions, rather than for close literary analysis. The cultural component consists of a general study of the twenty-one countries of the Spanish-speaking world, organized geographically in eight units. Short readings, music, and videos are part of this component, as are projects on art history, geography, and other historical, economic, and cultural topics. Students will be expected to achieve a general understanding of the issues that the Spanish-speaking world faces in the actual world.

Prerequisite: Spanish 3, 3 honors or permission of the department.

### **ADVANCED SPANISH LANGUAGE AND CULTURE**

.33 credits/trimester. Year Course. Through the study of literature, history, art and current events, students will develop strong command of the Spanish language and expand their cultural understanding. A variety of media and materials (such as articles from newspaper and magazines, literature pieces, literary and cultural blogs, videos, documentaries, online news and podcasts, among others) will serve students as a platform for exploration of the Hispanic language and culture. This course will focus on student development of proficiency in integrating language skills, synthesizing written and aural material, acquiring and analyzing information from authentic sources in Spanish, being able to comprehend different dialects and accents of the Spanish-speaking world, and communicating confidently. Students completing this course in good standing will be adequately prepared to take the AP Spanish Language and Culture examination in May.

Prerequisites: Spanish 3, 3 honors and permission of the department.

### **ADVANCED SPANISH LITERATURE**

.33 credits/trimester. Year Course. This course is designed for students who are proficient in the Spanish language, and have completed Spanish 3 Honors or above with distinction. Students will embark on a literary adventure by reading Spanish works from the 14<sup>th</sup> to the 21<sup>st</sup> Century. In addition to examining and discussing content and stylistic elements, students will explore the historical background of plays, short stories, novels and poetry. This course requires students to engage in deep analytical thinking and writing while deepening their knowledge of the cultural values, traditions,

achievements, and history of the Spanish-speaking world. Students completing this course in good standing will be adequately prepared to take the AP Spanish Literature exam offered each May.

Prerequisites: Spanish 4, Advanced Spanish Language, or equivalent and permission of the department.

## **ADVANCED SPANISH ELECTIVES**

### **HISPANIC CINEMA**

.33 credits/trimester. Fall course. Students in this intensive course will analyze films from a variety of Spanish-speaking countries that are rich in cultural, historical, and artistic significance. In addition to enhancing their knowledge of the complexity and richness of Hispanic cultures, students will continue to hone critical interpretation, analysis and comparison skills. They will continue to develop sophistication and confidence in their speaking and writing as they sharpen their sensitivities to the spectrum of accents, customs, and linguistic nuance Hispanic cultures.

### **MAGICAL REALISM**

.33 credits/trimester. Winter course. This course explores Magical Realism and The Fantastic depicted in Hispanic narrative, film, and art. Dating to the early twentieth century, the magical realism genre weaves magical elements into otherwise realistic human situations. Students will examine works from representative authors and artists, such as Cortázar, Dalí, García Márquez, Kahlo, Allende, Borges, Bioy Casares, and Esquivel. Students also view films such as *El laberinto del fauno*, *Como agua para chocolate* and *Volver*.

### **MASTERWORKS of HISPANIC LITERATURE**

.33 credits/trimester. Spring course. Students in this intensive course will read, analyze, and discuss one literary masterpiece of the contemporary Spanish-speaking world. Independent research, documentaries, interviews, and supplementary readings will provide students with the historical and socio-cultural background necessary to understand the culture and context in which the novel was written. Titles include Gabriel García Márquez's El amor en los tiempos del cólera, Mario Vargas Llosa's La fiesta del chivo, Carlos Fuentes' La muerte de Artemio Cruz, or Isabel Allende's La casa de los espíritus.

Prerequisites: Spanish 4, Advanced Spanish Language, Advanced Spanish Literature, heritage learners, and permission of department.

## SCIENCE DEPARTMENT

***“Science is built up with facts, as a house is with stones. But a collection of facts is no more a science than a heap of stones is a house.”***

*Henri Poincaré (1854-1912)*

Cate's science curriculum is predicated on the belief that every student, whether an aspiring poet, historian, doctor, or engineer, can do science and should graduate a scientifically literate citizen. They should understand the nature of science, have the attitude and skills necessary to engage in scientific inquiry, know core ideas in physics, chemistry, biology, and be able to connect concepts that cut across these disciplines. Each student is expected to nurture their curiosity, appreciate the beauty and wonder of science, possess sufficient knowledge to communicate and engage in informed public discussion of science, be careful consumers of relevant scientific and technological information, and be able to pursue higher levels of science. Cate's Physics First program is intentionally designed to build coherence through each discipline, strengthen science and engineering practices at each grade level, and develop a foundation of scientific literacy upon which to base advanced study in the sciences. With a coordinated curriculum, effective instruction, and capable, compassionate, and determined students, the Science Department seeks to achieve these goals by placing great emphasis on inquiry to ensure that each Cate graduate is an informed, critically thinking, and scientifically literate citizen.

Graduation Requirement: Three years of science is required. A typical course of study is as follows: Physics in grade 9, Chemistry in grade 10, Biology in grade 11, and an elective or advanced course in grade 12. Students entering Cate in grade 10 are enrolled in Chemistry and the physics requirement is waived. New sophomores with credit for Biology in grade 9 are enrolled in chemistry and may then satisfy Cate's graduation requirement with any year-long combination of departmental electives or any full year course in grades 11 or 12. Students entering Cate without credit for biology in grade 9 are required to satisfy Cate's life science requirement as described above.

### **REQUIRED SEQUENCE OF YEAR COURSES**

#### **PHYSICS**

.33 credits/trimester. Year Course. Physics is an algebra-based physics course designed for freshmen. Students investigate the traditional concepts of motion, force, momentum, work, energy, waves, sound, and electrostatics, in preparation for chemistry. Instructional methods follow a research-based guided-inquiry model that capitalizes on hands-on, cooperative learning where students construct their knowledge and find answers to their questions as they investigate and practice scientific inquiry in the laboratory. The course emphasizes finding and describing patterns in nature, exploring depth over breadth of material, fostering and leveraging disciplined curiosity, and sharpening scientific inquiry practices. Open to freshmen.

## **PHYSICS with TRIGONOMETRY**

.33 credits/trimester. Year Course. Physics with Trigonometry is the foundational science class for incoming freshmen at Cate with an advanced mathematical background. Students investigate the traditional concepts of motion, force, momentum, work, energy, waves, sound, and electrostatics, in preparation for chemistry. The course emphasizes finding and describing patterns in nature, exploring depth over breadth of material, fostering and leveraging disciplined curiosity, and sharpening scientific inquiry practices. Students will learn to approach problems through and as an extension of their deep conceptual understanding. Open to freshmen placed in Math 30 or higher.

Co-Requisite: Math 30, or higher.

## **CHEMISTRY**

.33 credits/trimester. Year Course. This introductory lab-based course is designed to foster scientific thinking in the context of environmental challenges. The curriculum will examine material, atmospheric, organic, water, and nuclear chemistry. Open to sophomores.

## **CHEMISTRY HONORS**

.33 credits/trimester. Year Course. This rigorous introductory lab-based course is designed to foster scientific thinking at a high level in the context of environmental challenges. This course is designed for students who, in the previous year, have consistently demonstrated a high aptitude and attitude for doing science. The curriculum will examine material, atmospheric, organic, aquatic, nuclear, industrial, and food chemistry. Open to sophomores placed in Math 30.

Prerequisites: High achievement in Physics and departmental permission.

Co-Requisite: Math 30, or higher.

## **BIOLOGY**

.33 credits/trimester. Year Course. This introductory biology course explores the core topics of ecology, cell biology, genetics, and evolution in the context of global environmental and ecological issues. A rigorous laboratory component supports the exploration of these topics while involving students in the practices of science as they pose questions, investigate, use models, interpret and analyze data, construct explanations, and engage in argument from scientific evidence. With some additional work and a commitment to practicing standardized tests outside of the course, the successful student will be prepared for the SAT Subject Test in Biology.

Prerequisite: Chemistry.

## **BIOLOGY HONORS**

.33 credits/trimester. Year course. This rigorous first-year survey course is designed to foster scientific thinking at a high level and addresses the core topics of ecology, cell biology, genetics, and evolution while placing a

particular emphasis on biological systems at the molecular level. The successful student, with some additional work outside of the course and a commitment to test preparation, will be positioned to perform well on the SAT Subject Test in Biology.

Prerequisite: High achievement in Chemistry and departmental permission.

## **YEAR COURSE ELECTIVES**

### **ADVANCED BIOLOGY (full-year commitment required)**

Fall course: Advanced Molecular and Cellular Biology

Winter course: Advanced Genetics and Heredity

Spring course: Advanced Marine Biology and Ecology of the Pacific

.33 credits/trimester. Year Course. This second year, college-level course will explore molecular and cellular biology, genetics and heredity, and evolution and ecology through the lens of marine biology. Students are expected to design and carry out independent inquiries and perform statistical analyses of their results. Due to the rigor and pace of this course, there is an additional required early morning laboratory time commitment. This course will include significant field work as well as potential after-hours connections through the school's scuba diving program.

Prerequisites: High achievement in Chemistry, Biology and departmental permission. Co-Requisite: Math 30, or higher.

### **ADVANCED CHEMISTRY (full-year commitment required)**

.33 credits/trimester. Year Course. This course is the equivalent of an first-year college course. Each unit begins with a quick review of topics studied in Honors Chemistry and moves quickly to in-depth examinations of atomic and molecular structure, thermochemistry, states of matter, kinetics, equilibrium, oxidation and reduction, and thermodynamics. Emphases are on further developing scientific inquiry practices and developing problem-solving skills to understand the experimental basis of theories. The course has an extensive laboratory component, with many of the labs being guided inquiry.

Successful students, with a commitment to practicing standardized tests outside of the course, will be prepared to take the AP Chemistry examination and the SAT Subject Test. Due to the rigor and pace of this course, there is a required early morning laboratory commitment.

Prerequisites: High achievement in Physics, Chemistry, and departmental permission. Co-Requisite: Math 40, or higher.

### **ADVANCED GLOBAL SYSTEMS (full-year commitment required)**

Fall course: Science of Pollution, Human Health, and the Environment

Winter course: Earth's Climate, Past and Future

Spring course: Human Population and the Sustainable Society

.33 credits/trimester. Year Course. This course examines the integrated system of physical, chemical, biological, and human interactions that determine the past, current, and future states of the Earth. The course employs a strong focus on a critical evaluation of the scientific evidence and arguments regarding quantitative risk assessment, environmental impact, and human health and welfare. Laboratory and fieldwork allow students to explore both course concepts and experimental design. Due to the rigor and pace of this course, there is an additional required laboratory time commitment.

Prerequisite: High achievement in Chemistry and Biology. Co-Requisite: Math 40, or higher.

### **INTERDISCIPLINARY ELECTIVES**

#### **MATH 56: Advanced Computer Science -- Scientific Programming (Science/Math)**

.33 credits/trimester. Year Course. This advanced course in scientific problem-solving will provide students with the programming skills to ask and answer a broader class of questions than can be addressed by conventional means. Using concepts from physics, chemistry, biology, environmental science and mathematics, students will design, code, and run computational models to conduct virtual experiments. Using the open source Python programming language and the rich set of free scientific, mathematical, and graphical packages built for it, students will learn to think like a programmer as they work through case studies and classical algorithms. They will deepen their understanding of population dynamics by modeling a zombie apocalypse. They will appreciate the subtleties of random numbers and probability by constructing a blackjack simulator. They will develop techniques for numerical integration and data visualization as they analyze the record-breaking Red Bull Stratos jump. At the end of the course, students will own a toolkit of transferable problem-solving skills applicable to any discipline at the college level.

Prerequisite: Math 40 and permission of the department.

#### **WORLD WAR II: SCIENCE, TECHNOLOGY, AND THE GERMAN WAR MACHINE (History/Science)**

.33 credits/trimester. Spring course. In this course we will explore the role of scientific, mathematical and technological advances from German rearmament to the dropping of Little Man and Fat Boy. No war was as affected by science, mathematics, and invention as WWII, and no country had a richer research and development program than Germany. Before Nazi Germany pioneered the "cruise missile" and the "ballistic missile" and perfected chemical weapons, the Prussian army dominated the continent during the years of German Unification, and the German War Machine boldly supported

Austria-Hungary's bid to seek revenge for the death of Archduke Ferdinand I. Historian Robert Citino writes, "Germans themselves repeatedly and vehemently denied having any special or unique system for conducting their wars. War, they claimed, was an art." Before the Second World War defecting or expelled scientists, including Albert Einstein, Wehrner von Braun, and Hans Bethe, exported much of their technology to the United States, where they helped lead the famed Manhattan Project and the development of modern nuclear armaments. As we delve into the German "art form" and the German push to create a scientific juggernaut, we will examine primary source materials to consider several fundamental issues in the relationship between warfare and technology. For example: What is the role of science, and scientists, in war? What technological weapons are morally acceptable and what are not? Under what circumstances is it morally acceptable to bomb civilians during a war? This course seeks to provide a context for students to evaluate and analyze such questions, and, ultimately, to synthesize personal responses to them during our own era of rapid technological advancement.

### **AMERICAN WILDERNESS (Science/ English)**

(Winter and spring trimesters): Essentially a philosophy course with the American wilderness as a central theme, this two-trimester course seeks to deepen our understanding and appreciation of the natural world. Using a variety of different disciplines – English, environmental science, and philosophy – and an experiential component that allows students to experience wilderness firsthand, students are provided a comprehensive and holistic exposure to our vanishing American wilderness.

There is a strong outdoor component to this course. There is an overnight solo backpacking trip, time spent learning to whitewater kayak (including a weekend on a trip on the Kern River), and the course culminates with a week-long desert rafting/kayaking river trip in Utah before Commencement weekend.

### **AMERICAN WILDERNESS 1: The Wilderness Ethos**

.33 credits/trimester. Winter course. In the first trimester, students will examine the role of wilderness in American culture – historically and currently – using the writings of authors such as Thoreau, Abbey, Stegner, Leopold, and McPhee to develop a personal understanding of the value of wilderness in their lives. While developing their critical reading and writing skills, students will examine current environmental and political implications of our impact on the American wilderness and, through the use of a journal, work actively to articulate their developing perceptions about the role of wilderness in American culture. *(In the winter trimester, there will be an overnight solo backpacking trip, and students will begin to learn the skills of whitewater kayaking in preparation for the river trips of the spring trimester.)*

## **AMERICAN WILDERNESS 2: Looking Inward**

.33 credits. Spring course. The classroom component of the second trimester in this two-trimester sequence shifts from analytical reading, critical writing, and argumentation to personal introspection and creative writing with a study of the novel *The River Why*. Students will explore how the American wilderness has shaped various spiritual paradigms found in American society and use class discussions and journal writing to develop their sense of their place in the natural world. *(In the spring trimester, students will continue to develop their kayaking skills locally and will spend a weekend on the Kern River applying their whitewater skills to moving water. Before Commencement, the course culminates in a week-long desert wilderness river trip in Utah.)*

Prerequisite: The Wilderness Ethos.

## **TRIMESTER ELECTIVES and ELECTIVE SEQUENCES**

### **ADVANCED PHYSICS SEQUENCE**

Fall course: Mechanics

Winter course: Electricity & Magnetism

Spring course: Modern Physics

All courses in this sequence require Physics as a Prerequisite – it is a second-year physics course -- and departmental permission. Co-Requisite: Math 50 or higher.

### **ADVANCED PHYSICS with Calculus: MECHANICS**

.33 credits/trimester. Fall course. This course is modeled after an introductory calculus-based college course. It explores kinematics; Newton's laws of motion; work, energy, and power; systems of particles and linear momentum; circular motion and rotation; and oscillations and gravitation. Due to the rigor and pace of this course, there is an additional required laboratory time commitment.

Prerequisite: Physics and departmental permission. Co-Requisites: Advanced Physics and Math 50, or higher.

### **ADVANCED PHYSICS with Calculus: ELECTRICITY & MAGNETISM**

.33 credits/trimester. Winter course. This course, ideally following Advanced Physics with Calculus: Mechanics, is modeled after an introductory calculus-based college course and explores electrostatics; conductors, capacitors, and dielectrics; electric circuits; magnetic fields; and electromagnetism. Due to the rigor and pace of this course, there is an additional required laboratory time commitment.

Prerequisite: Physics and departmental permission. Co-Requisites: Advanced Physics and Math 50, or higher.

### **ADVANCED PHYSICS with Calculus: MODERN PHYSICS**

.33 credits/trimester. Spring course. This course, ideally following Advanced Physics with Calculus: Mechanics and Electricity & Magnetism, is modeled after an introductory calculus-based college course and explores the principles and mathematical implementation of two revolutionary developments of the 20<sup>th</sup> century – Relativity and Quantum Mechanics. The resulting understanding of everything from the structure of the atom to the evolution of the universe will be investigated. Due to the rigor and pace of this course, there is an additional required laboratory time commitment.

Prerequisite: Physics and departmental permission. Co-Requisites: Advanced Physics and Math 50, or higher.

### **GENETICS SEQUENCE**

Fall course: Transmission Genetics

Winter course: Advanced Molecular Genetics

### **TRANSMISSION GENETICS**

.33 credits/trimester. Fall course. This trimester elective examines the details by which genetic information is transferred from one generation to the next and how that information is transformed into the physical expression of traits. Advanced studies will include the ability to distinguish more subtle patterns of inheritance, such as sex-linked traits, incomplete and codominance, multiple alleles and linked genes, as well as types and effects of different chromosomal mutations. The course will conclude with an examination of the interaction between genes and the environment. Students will discuss and debate the ethical issues raised by their studies in stem cells, reproductive technology, and eugenics.

Prerequisite: Chemistry. Co-requisite: Biology.

### **ADVANCED MOLECULAR GENETICS**

.33 credits/trimester. Winter course. This advanced course of study examines the biochemistry of the gene and the applications of current biotechnology. Students will identify the molecular structure of DNA and the mechanics of DNA replication and protein synthesis. Students will become proficient with current biotechnological skills and techniques involving DNA extraction, gel electrophoresis, the polymerase chain reaction, and genetic engineering. Throughout the course, students will consider and discuss the ethical dilemmas associated with the development of these revolutionary ideas and techniques. Due to the rigor and pace of this course, additional required laboratory time commitment may be required.

Prerequisite: Transmission Genetics.

## **MARINE SCIENCE SEQUENCE**

Fall course: Physical Oceanography

Winter course: California Coast

Spring course: Biological Oceanography

### **PHYSICAL OCEANOGRAPHY**

.33 credits/trimester. Fall course. The world ocean is the defining feature of our planet and makes it habitable. This senior elective examines the major physical and chemical properties of the ocean and the essential understandings needed to understand this dynamic system. Emphasis will be placed on current events, including but not limited to, ocean acidification, sea level rise, climate change, ENSO, ocean currents, and waves, in the context of curiosity, care, and stewardship.

Prerequisites: Chemistry and Biology.

### **CALIFORNIA COAST**

.33 credits/trimester. Winter course. California's 1,100-mile coastline is an iconic geographical feature and one of the State's most precious resources. This course examines the CA coast in terms of surf, sand, life, and stone, given the coastal boundary of unrelenting geological, biological, and oceanographic processes. Compelling questions like, can we continue to live at the edge of the sea, will guide student learning. This course may require field trips and local fieldwork in the winter term.

Prerequisites: Chemistry and Biology.

### **BIOLOGICAL OCEANOGRAPHY**

.33 credits/trimester. Spring course. The world ocean supports a great diversity of life and ecosystems that are inextricably linked. This course examines the marine environment as vast interconnected living space with diverse and unique ecosystems distributed horizontally by latitude as well as vertically through the water column – from the pelagic surface to the abyssal depths. Students will survey major groups of organisms that populate these communities and examine the patterns of interaction that characterize marine ecosystems. Lab work will emphasize representative adaptive strategies of animals from the world ocean's most significant warm and cold-water communities.

Prerequisites: Chemistry and Biology.

## **SPORTS MEDICINE SEQUENCE**

Fall course: Sports Medicine 1: Introduction to Athletic Training

Winter course: Sports Medicine 2: Injury Assessment and Rehabilitation

### **SPORTS MEDICINE 1: Introduction to Athletic Training**

.33 credits/trimester. Fall course. This course will serve as a basic introduction to the fields of Exercise Physiology and Kinesiology, Physical Therapy, Emergency Management and Orthopedic Medicine. Through a variety of hands-on experiences and laboratory inquiries, students will be exposed to the basic skills and concepts relating to the prevention, recognition, and management of athletic injury, as well as the collaborative health care approach utilized by sports medicine professionals. Students will increase their knowledge and awareness of human anatomy and physiology, a variety of health-related conditions, basic first aid and emergency management procedures (American Red Cross CPR/AED and First Aid Certification). Opportunities for specialized practical experience with the Athletic Trainer and Cate School team physicians will also be available. Prerequisite: Chemistry. Co-requisite: Biology

### **SPORTS MEDICINE 2: Injury Assessment and Rehabilitation**

.33 credits/trimester. Winter course. Students in the course will further their knowledge and understanding through increased emphasis on practical utilization of skills and knowledge. Coursework will emphasize the hands-on application of assessment techniques and design of appropriate rehabilitation plans based on case study materials, theoretical scenarios, and observational experiences with athletic trainers and physicians. Students will complete advanced coursework in the areas of anatomy, physiology, exercise physiology, and kinesiology. Emphasis will also be placed on the profession of athletic training and concepts related to the practice, professional responsibilities, and advancement of the profession. Prerequisite: Sports Medicine 1