**Greenhills School**

**Course Guide**

**2014-2015**



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**AN OVERVIEW OF GREENHILLS SCHOOL**

**BRIEF HISTORY**

In September 1968, Greenhills enrolled its first students in grades seven, eight, and nine, and added a grade each succeeding year until the first senior class graduated in 1972. This accomplishment followed several years of investigation and planning by a group of Ann Arbor citizens who sought to establish a high quality, college preparatory school for young people from Ann Arbor and the surrounding communities. They acquired a thirty‑five acre site, originally part of "Greenhills," the estate of Mr. and Mrs. Richard Earhart, and obtained a charter and status as a non‑profit institution from the State of Michigan. Assembling a Board of Trustees charged with the ultimate responsibility for the venture, they recommended to the Board the appointment of Edward M. Read as first Headmaster. Mr. Read was succeeded in 1975 by James W. Gramentine, who in turn was succeeded by David T. McDowell in 1983. In the 1988‑89 academic year, a pilot program for sixth graders was initiated, and a full class of sixty students was added the following year. In 1993, J. Anthony (Tony) Paulus became head of school, serving in that capacity until 2005, when Peter B. Fayroian moved into this position, serving as head of school for seven years. In 2012, Carl Pelofsky became our sixth head of school. Through gradual planned expansion, the School has reached its current enrollment of approximately 550 students in grades 6-12. Its relatively small size has much to do with the relaxed, open, and personal atmosphere which has developed at the School in its brief history.

**MISSION STATEMENT**

Greenhills School is a student-centered community that helps young people realize their full intellectual, ethical, artistic and athletic potential in preparation for college - and beyond - as curious, creative and responsible citizens who respect all individuals and their differences, and whose meaningful and balanced lives will better the world.

**PHILOSOPHY**

Greenhills provides a challenging liberal arts program that emphasizes cognitive, physical, social, and personal development, the acquisition and ordering of knowledge and information, critical thinking, creative expression in a variety of media, and effective communication. All students are encouraged by a dedicated and highly qualified faculty, drawn from a wide variety of backgrounds, to develop the habit of making sound, independent judgments, to demonstrate initiative, to work cooperatively and collaboratively, and to recognize the virtues of a disciplined approach to their studies, while at the same time becoming familiar with the pleasures and rewards of vigorous intellectual activity. Believing that educators have a responsibility to offer guidance that extends beyond purely academic instruction, the school provides its students additional opportunities for growth through the performing arts, co-curricular programs, and numerous social, cultural, and athletic activities. Faculty members make every effort to employ methods that are appropriate to the age, ability, and interests of their students. The environment of mutual respect that the school fosters leads to the formation of meaningful student/faculty relationships that enhance learning. Greenhills also recognizes that the connection between effort, achievement, and the formation of character is strengthened by an active and open partnership between the family and the school.

In all of these ways, Greenhills strives to cultivate in its students a sense of social responsibility, justice, tolerance, and a respect for others, in the belief that such humanistic values best serve our democratic and pluralistic society. Accordingly, the school expects all of its students and faculty to uphold the institution's central values. Admission to Greenhills is based on two compatible criteria: the degree to which students appear likely to benefit from the personal environment of this relatively small school, and the degree to which they will improve and contribute to the community by their participation. With these objectives in mind, selection is based on intellectual promise, character, the willingness to work and the way in which each student's unique background and perspective will contribute to the life of the school community.

**DIVERSITY STATEMENT**

Greenhills School was founded during the modern civil rights era with racial equality as a central part of the vision of its founders. Today, the vision is continued through the promotion of diversity as integral to the ethos and practices of the School. We believe people from different races, cultures, socio-economic backgrounds, genders, political beliefs, physical capacities, religions and sexual orientations are sources of strength that enrich teaching and learning at Greenhills. Greenhills strives to build a diverse learning community by integrating different ideas, thoughts, personal gifts, life experiences and talents into the classroom and other programs of the School.

**GREENHILLS CORE VALUES**

**Students are at the Center:** Faculty, administration, staff, parents, alumni and trustees are all engaged in our students’ attainment of knowledge and wisdom by providing them with small class sizes, the best tools and the finest academic, artistic and athletic programs.

**We Commit to Character:** We insist upon an environment in which true learning is nurtured by the integrity of our faculty, administration, staff, parents and students. We expect every individual within the community to respect all people, and to abide by the values and guidelines of our institution.

**Teachers are Mentors:** As teachers, coaches and role models, faculty and staff support, inspire, challenge and provide constant feedback to our students. We approach teaching as an art, bring joy to the process of learning and help students take risks, build confidence and reach their potential while seeding an insatiable desire for lifelong learning.

**We Engage in the Ann Arbor Community:** Greenhills is a vital part of a vibrant community of scholars, business leaders, innovators and philanthropists. We seek every opportunity in this community to enhance the experience and wisdom of our students, and to serve the community in return.

**Alumni are our Finest Assets:** Students who graduate from Greenhills are highly regarded and sought after not only for their academic excellence, but also for their global perspective, their ethical behavior and their interest in making the world better.

**We are Partners:** There is a partnership among all Greenhills constituencies (students, teachers, administration, staff, parents, trustees, and alumni) that reflects our shared values of trust, respect, honesty, integrity, openness, accessibility, commitment, enthusiasm and high morale.

**Our Budget is Conservative:** Without compromising the core values of the School and the funding required to sustain them, a Greenhills education will be accessible to a diverse constituency through the combination of affordable tuition and a robust financial aid program.

**SCHOOL ORGANIZATION**

**Middle School**

Middle school includes grades 6, 7 and 8, and offers courses in the disciplines of English, math, science, social studies, foreign language, fine and performing arts, computers, health and wellness. In each of these courses, teachers emphasize the development of habits of mind. The middle school has its own athletic program, extracurricular activities, social events and Student Council.

The team approach in the 6th, 7th and 8th grades enables groups of students and teachers to work together to achieve optimal academic and personal growth for all students. The advising system in the middle school operates in two distinct ways. The 6th grade works within an advisory system where a student is personally guided by one of the four “core” 6th grade homeroom teachers. Normally, a student meets with his/her advisor a few times per week. The 7th and 8th grades work within an advisory system where a student is personally guided by a teacher who is affiliated with a particular team of teachers for a specific grade level. Normally, 7th and 8th grade advisories meet formally once per week. The head of middle school and team leaders also work with the middle school faculty concerning issues of curriculum, discipline, grade level activities and student morale.

**Upper School**

The upper school includes grades 9–12. Building upon the academic skill sets and habits of mind established in the middle school, students in the upper school receive a rigorous and varied college preparatory course of study, which includes core requirements in English, math, science, social studies, foreign language, fine arts and physical education. This curriculum is further enriched by a variety of academic electives and opportunities in athletics, drama, music and forensics, as well as publications, student government and service learning. The upper school program culminates in students designing, producing and presenting the results of an independent project of an investigative and/or creative nature.

The head of upper school and the dean of students work closely with department chairs, class principals and upper school faculty regarding academic issues and school culture. Class principals meet regularly with grade level teachers and advisors and are specifically concerned with the academic progress of individual students, social climate, student morale and other issues relevant to a particular class.

The head of school, heads of middle and upper school, dean of students, class principals, team leaders and school counselor, as well as advisors and teachers, are available to assist with the concerns of students and parents. All play important roles in working directly with students, and students are encouraged to approach any one of the above without hesitation.

**II. ACADEMIC MATTERS**

**Middle School**

Middle school students pursue a required course of instruction and make choices in foreign language, music, and extracurricular options.

**Upper School Graduation Requirements**

Minimum General Requirements: A student must earn a minimum of 20 graduating credits in grades 9–12. All students in grades 9–12 are required to take a minimum of 5 courses which receive academic credit each semester.

**Minimum Departmental Requirements**

*English*  
 4 Credits: English I, II, III required. Students must select a course both semesters during senior year.

*History and Social Science*

3 Credits: at least one credit in World History (Foundations of Civilization **or** Modern World), one credit in United States History, and/or one credit from electives. ***Note****:* If both World History courses are taken, the second credit in World History can fulfill the additional elective requirement.

*Mathematics*  
 3 Credits: through at least Algebra II.

*Science*  
 3 Credits: at least one in life science and one in physical science (Chemistry or Physics); we strongly encourage students to take at least one course in all three areas, Biology, Chemistry and Physics.

*Modern and Classical Languages*

2 Credits: two sequential levels studied at Greenhills School, though three years of study is strongly recommended. When possible, we recommend the entire sequence of study.

*Fine and Performing Arts*

1 Credit

*Health*

½ Credit (Beginning with the Class of 2015 and beyond)

*Service Learning*

Students are to participation in an approved project that is to be completed within one calendar year, January to January.

In addition to the above requirements, upper school students have the opportunity to take electives, be involved in [co-curricular](http://www.greenhillsschool.org/programs/co-curricular.php) activities, as well as in clubs and sports.

**Course Selection**

In the spring of each year, students receive a registration form for the upcoming year. The online course guide provides descriptions of courses, a summary of requirements, an explanation of credits, policy for placement and advancement in sequential courses, and a tentative educational plan. Students select their courses taking into account minimum departmental requirements, graduation requirements, and personal interests.

**Course Placement**

Every attempt is made to place students in courses at the appropriate level of challenge. Occasionally, the need arises for a student to make a placement adjustment (for example, from Honors Geometry to regular Geometry). In this case, students may change placements at any time within the first marking period with no record on the transcript. Marking Period I grades will be calculated in consultation with the teacher and the Department Chair. If a student wishes to change placements after the first marking period, substantial justification and approval are required for the change, and “withdrew passing” or “withdrew failing” is recorded on the transcript.

**Changing Schedules (Middle School)**

Students wishing to change schedules must see the Scheduler within the first week of class. Early, candid conversations with all involved teachers and the Head of Middle School are strongly urged before any changes are made. Because parental approval is needed to register for courses, a phone call or note from a parent to the student’s advisor is also required for schedule changes.

**Adding or Dropping Classes (Upper School)**

Students wishing to change schedules by dropping and/or adding a course may do so within the first two weeks of the semester (10 classes). After the first week (5 classes), the student must complete a Drop/Add form, which involves getting permission from parents, the teacher, Class Principal, Scheduler, Dean of Students and Head of Upper School. Students may not add a course after the drop/add period ends. Early, candid conversations with all involved teachers and the Head of Upper School are strongly urged before any changes are made.

The first discussion about dropping a class takes place between the student and the teacher. Following that, the student must work with the Class Principal and Scheduler to complete the Drop/Add form. A student may drop a course at any time within the first marking period (or the first eight weeks in the case of a second semester elective) with no record on the transcript. If a student wishes to drop a course after this eight-week period, substantial justification and approval are required for withdrawal. At that point, “withdrew passing” or “withdrew failing” is recorded on the transcript, and no grades or credit are recorded. Partial credit is not granted for courses not completed. Seniors should be aware that transcripts may be sent to colleges at any time after the first four weeks of the fall semester, and therefore changes after this period are not advised.

**Failing a Course/Repeating a Failed Course**

If a student fails an upper school course, the grade of "E" is indicated on the transcript and is figured as "zero" when calculating the grade point average. Regarding the minimal 20-hour graduation requirement, no credit is given for a failed course. Sometimes a department may require or recommend that a student repeat a failed course, or a student may simply elect to do so. In such cases the earlier course and grade remain on all school records, and the repeated course and grade are indicated as well. If the repeated course is passed, then the student receives credit for it towards graduation requirements.

**Repeating Courses**

There are certain courses at Greenhills that students may repeat and for which credit can be earned each time. These include art courses, and choral and instrumental music classes. If a student wishes to repeat some other course and receive credit for it, approval must be granted by the teacher, and priority will be given to students wishing to take it for the first time if the course enrollment is full.

**Advanced Placement Examination Program (Upper School)**

The Advanced Placement Program is a cooperative educational endeavor between secondary schools and colleges and universities. It provides the means for colleges to grant credit, placement, or both to students who have applied themselves successfully. Students may elect to take Advanced Placement examinations when they are offered in May. Students will be notified well in advance of the procedures for taking Advanced Placement examinations. Generally speaking, students who take a designated AP course are expected to sit for the exam. Check the Online Course Selection Guide for course designations, descriptions, prerequisites and other AP requirements.

**Learning Supports and Accommodations for Students**

While all of our students have the potential to achieve and function at a relatively high level, approximately 15% of our students need additional learning support. Students who have been evaluated and diagnosed with attention deficit disorder and executive functioning difficulties, written expression difficulties, dysgraphia and developmental coordination disorder, nonverbal learning disorder, dyslexia, math disability, and other learning and emotional problems often need additional support and accommodations to make learning more fluid and accessible to them. While we encourage families to provide their students with outside performance coaching and content tutoring, we also provide Learning Center support at school.

**Learning Center**

The goals of Learning Center support include skill building in areas of strength and weakness, developing compensatory strategies, and developing self-advocacy skills. Middle school intervention is more focused on learning how to learn and developing study skills while upper school interventions focus more on helping the student develop compensatory strategies for performance and achievement.

The Learning Center Coordinator and School Counselor process standardized testing accommodations applications for upper school students.

The Learning Center also hosts teacher meetings, in-services, and parent consultations to discuss and review best practices and developmental transitions for our students needing additional learning supports.

Learning Center Coordinator

* Meets one-on-one or in small groups with 6th, 7th and 8th graders and with upper school students.
* Visits middle school classrooms to assist with organization and study techniques and to work with teachers to devise learning supports for students with special needs.
* May meet with 9th grade students during the students’ academic studio period.
* Makes arrangements to meet with students after receiving a referral from the student’s teacher and conferring with teachers, and often with parents, about how the student best learns. As students mature throughout the upper school, the Learning Center Coordinator confers mainly with the student and his or her teachers.
* Helps all students understand their educational plans, profiles, and accommodation guidelines.
* Helps coordinate communication between teachers, parents and student. Students are progressively encouraged to become their own advocates by learning how to email, meet with, and talk to their teachers about what they need in order to learn. By grade 12 our goal is for seniors to be able to make their own accommodation arrangements with their teachers.
* Coordinates the proctoring of accommodated exams and standardized tests that are given at school. Most standardized tests, including accommodated standardized tests, are given at national test centers. Particular accommodations require in-school testing for accommodated standardized tests.

**School Counselor**

The School Counselor consults with the Learning Center Coordinator, helps oversee the operation of the Learning Center, and writes educational plans detailing what our students need based on the student’s educational history and neuropsychological evaluation results. Neuropsychological test results are generally considered current across a three-year period from the test date. Students sometimes have extant diagnoses when they come to our school and we encourage all families to inform us about student evaluation histories. Often, teachers recommend that a student be evaluated when the student does not make the expected growth in learning.

At the middle school level, plans are informal and descriptive of the learning support the student requires. At the upper school level, the educational plans are formal documents that are submitted to the College Board and ACT when accommodations are requested for the PSAT, SAT, ACT, MME or AP exams.

**School Accommodations**

Accommodations are developed based on the skills being taught in the classroom in relation to the needs of the student and the class. Depending on their evaluation outcomes and teacher reports, students may be eligible for and accommodations may include:

* Extended time on tests
* A distraction-reduced setting for test taking
* Use of a laptop for writing-intensive tasks
* The opportunity to periodically stand and stretch during class
* Preferred seating
* Tests may be reformatted for reduced visual overload as needed, or for large size print
* Tests may be given in two parts, over one or more days
* Tests may be read to the student
* Tests may be given in alternative ways, e.g., oral for written work
* Directions and test instructions may be verbally clarified
* Grades may be weighted to reflect oral and written work variations
* Late work may be given reduced penalties at the teacher’s discretion
* Spelling errors may be waived

**Standardized Testing Accommodations for Students with Learning Differences**

Students with learning differences requesting extended or unlimited time on the SAT or the ACT or other standardized tests must present extensive documentation in support of that request. The ACT, for example, may require from the family a professional diagnosis of a specific disability, a developmental history, a current (within three years) comprehensive evaluation by a licensed or certified evaluator and the results from valid, standardized assessments before allowing a student extended or unlimited time. SAT requirements are similar. Additionally, the school must also demonstrate that the student has a history of receiving the requested accommodations on school-based tests. For these reasons, it is important that parents begin the application process at the earliest possible date, preferably in the preceding school year for which the accommodations are sought. Details of the ACT policy for students requesting testing accommodations can be found at the ACT website, www.act.org/aap/disab/policy.html. Information for the SAT can be found at www.collegeboard.com/ssd. For referrals to appropriate professionals who are skilled in the area of testing for learning disabilities, parents are encouraged to consult the School Counselor.

**Study Abroad**

While Greenhills recognizes the value inherent in study abroad, it cannot make any commitment to accept credits from foreign schools in lieu of those from Greenhills. Credit may be considered after the division has discussed each case and made its decision based on individual merit. Families planning to have their child study abroad must communicate their intentions through the Head of Middle School or Head of Upper School at the earliest possible date.

**Transfer Credit from Peer Institutions**

Students who enter the upper school after the ninth grade will receive credit for courses successfully completed at another school, which conform to the Greenhills’ academic program and system of awarding credits. Special care with placement is taken in the mathematics and foreign language sequences.

**Special Arrangements for Independent Study**

Independent study courses may be approved for seniors who have exhausted a sequence in our curriculum and have met the school’s graduation requirements in that area. An independent study class will not replace or count as a course required for graduation, nor will it count toward meeting the five-course minimum required each semester. A student wishing to receive Greenhills credit for an independent study arrangement (whether taught by a Greenhills teacher or one outside) must tender a comprehensive written proposal to the Head of Upper School and appropriate Department Chair, including instructor's name and qualifications, address and phone number, specific time arrangements (equivalent to in-class and homework time for a regular course), requested credit, and parent signature. All such arrangements must be approved in advance and before the start of the semester. All independent study classes will be graded on a Pass/Fail scale. The teacher sponsoring the independent study class must be a member of the department through which the course relates. For example, a course for which a student is seeking Science credit will have a Science teacher as an instructor. If a teacher from another department is sponsoring the class, agreement for this must be reached between Department Chairs from the respective departments prior to the beginning of the class.

Of special note are classes related to foreign languages not offered by Greenhills. We support and admire students who wish to pursue the acquisition of all languages. When a student chooses to learn another language outside of our program this will not replace our graduation requirements. These courses will not be listed on the Greenhills transcript.

**Courses Taken at Other Institutions (Upper School)**

Students may take courses at other institutions if they are not offered by Greenhills and providing they receive prior approval from the Head of Upper School. These courses will not appear on the official transcript and are not included in the student’s course load. They may not be used to fulfill graduation requirements stipulated by individual departments.

Once graduation requirements are met, seniors may take a maximum of one independent study class per semester. These courses will be documented on the transcript as pass/fail only. Juniors who have also met graduation requirements may obtain special permission to take an independent study class each semester. Permission from the appropriate Department Chair and Head of Upper School will be required. Documentation will be required for students seeking to pursue independent study. 

**Senior Project**

Seniors complete a senior project during the final three weeks of their second semester. Senior projects are independent activities that may be done individually or in small groups. To qualify to participate in this program, students must be in good academic standing and must obtain permission from all their teachers. Permission and release from regular class attendance is earned by sustained performance, good behavior and citizenship. Ultimately, the decision to allow a student to participate in this program rests with each of the student’s teachers, the 12th Grade Class Principal, the Dean of Students, and the Head of Upper School. The program culminates with a formal presentation during the final week of the semester. All Greenhills families are invited to attend Senior Project presentations.

**Final Examination Policy for Seniors**

Seniors who sustain their usual level of performance, and for whom deportment is not a cause for concern, can expect to be released from taking final examinations. This policy applies to all students not doing senior projects and to those courses where project participants have chosen, or have been asked, to remain in the class until the end of the semester. There are some exceptions to this policy. In all cases, however, the decision about who is or is not released rests with the teacher of the particular course.

**III. EVALUATION OF STUDENT WORK**

**Marking Periods**

Year-long (full credit) courses are divided into four marking periods. The two completed through December, along with the December examinations, constitute the first semester. The remaining two marking periods and the June examination make up the second semester. The final grade is the average of the two semester grades, slightly weighted to reflect the longer second semester. Greenhills also offers some semester-long (half credit) courses, primarily electives for upper school students.

**Grades/Marking System**

Grading practices vary with the class and the individual instructor. One teacher, for example, may grade homework while another does not. Quizzes, tests, and examinations are weighted differently from course to course. Students should check with the teacher in each course to determine his or her policy on grading.

Greenhills uses grades of "A" through "E" defined as follows:

A+ = 100-100+%

A = 93-99% outstanding work, superior effort & thought

A- = 90-92%

B+ = 87-89%

B = 83-86% quality work

B- = 80-82%

C+ = 77-79%

C = 73-76% satisfactory work

C- = 70-72%

D+ = 67-69%

D = 63-66% marginal work, barely passing quality

D- = 60-62%

E = 0-59% failing work

Ordinarily, the grade E indicates that a student has not made satisfactory progress. However, in some courses that are sequential in nature (most math and foreign language courses) "not making satisfactory progress" is defined as receiving a C- or lower as a semester or marking period grade. If the student is "not making satisfactory progress," his or her current placement and/or choices for future courses in the sequence will be reviewed.

**Grading Policies**

The standards and expectations of a course are established and determined by individual teachers. Teachers establish their individual policies in a written form that is sent home with each student in September (teachers who share sections of a course will work together on this to arrive at a consistent grading policy). It then becomes the responsibility of the students to know what the grading policy consists of and what the requirements are for each course they are taking. Marking period, exam, semester, and year-end grades appear on the report card; transcripts for grades 9–12 show only semester and year-end grades. Teachers may change recorded grades only in cases where a computational or reporting error resulted in an incorrect original grade, and all such changes must be made no later than the last day in June 30 (the second week in June for seniors). After that time, it is difficult to revise report card records and class rankings. Grades are not changed as a result of reappraisal of a student's work.

**Homework**

Homework assignments are designed to give students the opportunity to reinforce new material, to further explore with ideas, methods, and processes, and to take individual responsibility for learning. Teachers use homework as one way of assessing what a student does and not understand. Families must use care so as not to interfere with the essential purpose of homework when they correct or directly assist in its completion. Families must allow their children’s homework to inform a teacher accurately. Students are always responsible for completing homework independently, unless a teacher has given permission to work with other students. The successful Greenhills student comes to recognize that academic excellence is the result of close engagement with teachers in the school and consistent effort and focus at home.

In the Middle School, homework is a regular part of each day. Teachers design assignments to enable students to spend between 20-30 minutes per subject per night. All middle school students are provided with a homework planner and are responsible for recording assignments in their planners and make sure they understand the expectations. Working with families, children must prioritize how they will spend his or her after school hours. In middle school, this often means limiting participation and balancing the number of after-school programs in which a child participates to ensure time for complete homework. Effective communication between home and school is the key to successful management of children’s varying responses to school life in middle school—including homework.

No assignments are to be made due the first day back following school holidays. Teachers are sensitive to special circumstances and holidays when students may be absent and will consider each student’s situation when scheduling tests and assignments. Furthermore, students excused for observance of religious holidays are allowed reasonable time to complete any missed work.

**Testing**

Students should not have more than two full-period tests on a given day. Major project due dates may also fall into this category. Testing schedules for middle school students may be further modified by the teaching team. Students taking courses out of grade level may still encounter conflicts, and in order to resolve these, should bring the conflict to the teacher's attention in advance of the scheduled test. No tests or major projects will be made due the first day back following school holidays, nor are they to occur on religious holidays. For policies regarding absence on the day of a test, please refer to ATTENDANCE POLICIES pages in the family handbook.

**Examinations**

During the required five-day exam periods in December and June, regular classes do not meet, and students must be at school for each scheduled exam. The exam schedule will be posted in advance of the exam period. Students should expect to take one or two exams each day. Exams for 7th and 8th grade courses are 90 minutes long, while all upper school exams are two hours in length. If conflicts arise (usually when courses are taken out of grade level), or if three exams are scheduled in one day, other arrangements are made at the student's request. Sixth graders will have a modified schedule for exams, and parents will be notified of the guidelines and times in advance. **Please note exams will not be given prior to the scheduled exam week**.

Exams will not be given to students to keep. In their classes, students are provided the opportunity to review all December exams when school resumes after the holidays, with specific attention given to self-assessment and using them as learning tools for future test situations. Parents, too, are welcome to review exams. To optimize communication, we ask that all such arrangements occur at school with the teacher so that any concerns can be addressed.

Since the academic calendar is published well in advance of the school year, parents should not ask to have examinations given at a time other than during the regular exam period.

**Grade Reports to Parents**

For students in grades 7–12, parents receive grade reports at the end of each marking period or semester. They also receive two written comments during the year from each of their child’s teachers, detailing progress and any difficulties the student may be having. All grades of C- or lower will be accompanied by a written comment. These typically include specific, concrete information about the student's academic work and contributions to class, as well as detailed suggestions about how to improve. Additionally, teachers contact parents when a student's performance changes radically. Parents should feel free to phone or email the teacher or advisor at school if concerns arise. Sixth grade parents receive two detailed reports (October and March) written by the teacher, including feedback about the student's performance and progress.

**Incomplete Grades**

If, because of illness or other excused absence, a student's work is incomplete at the end of a marking period or semester, the report card will show a letter grade representing only the work done up to that point, and a letter grade and an “I,” indicating that the course work is incomplete. Students are expected to complete missed work within a reasonable time (usually 10 school days), at which time the grade is recalculated. The incomplete grade will not count toward graduation requirements until all work is complete. If, after a prescribed amount of time, the work is not complete, the final grade will be calculated assigning a zero to each piece of missing work. Incomplete grades for seniors, especially at semester's end, are permitted only in dire circumstances, since this creates clerical difficulty for our college guidance staff and, more importantly, may disadvantage the student's application to college.

**Parent Concerns**

Faculty members are dedicated professionals who care deeply about their effectiveness as teachers and their relationship with their students. Therefore, we strongly urge parents to communicate initial concerns with the teacher or the advisor first. Teachers can be expected to return both e-mails and voicemails within a 24-hour period. Early communication provides opportunity for clarification, allowing both the teacher and the family to work toward resolution and to mitigate further problems.

Subsequent steps to addressing parent concerns:

* Team Leaders or Class Principals may then be contacted, who may meet with the teacher to discuss what has occurred up to this point.
* The Head of Middle School, the Head of the Upper School, or the Dean of Students may then arrange a meeting, which could include the parent(s) and possibly the student and his or her advisor.
* The Head of School is available, ultimately, to hear unresolved concerns from parents, students and teachers after the above steps have been taken.
* Parent Conferences

Scheduled Parent/Teacher Conferences are held for grades 6-12 in October. The date appears on the academic calendar, and parents schedule appointments with their child's teachers online. Scheduling details will appear in Greenhouse.

* Academic Difficulty

The faculty advisor, working with the student, parents and teachers, often can help the student to use time more effectively or to find the assistance needed. Should difficulties of an academic or behavioral nature follow a student throughout the course of a year, there are a couple of administrative steps that are triggered with the goal of helping the student work through his/her difficulties.

If a student receives an E or two D’s in a marking period, he/she will be placed on academic notice, and the student, parent(s), and the student’s advisor will meet and put together a written academic plan to improve performance. If a student is on academic notice for two marking periods, then the student and his/her teachers, advisor, Class Principal/Team Leader, and parent(s) will meet together to draft a Performance Agreement. While a Performance Agreement is triggered by two marking periods on academic notice, a student may also be placed on a Performance Agreement at the discretion of his/her respective Class Principal or Team Leader for ongoing academic concerns. Students in the Upper School on academic notice may lose some privileges and be required to attend Academic Studio.

**Please note:** *All full year courses are worth one credit and single semester courses are worth ½ credit, unless indicated otherwise.*

**IV. Courses Offerings for 2014-2015**

***Co-curricular***

**Forensics**

Forensics offers students the opportunity to develop public speaking skills. Participants write speeches, learn impromptu, extemporaneous or broadcasting techniques, or work with selected pieces of literature in preparation for competition.

Grades: 9-12 Credit: 0 Term: All Year

**Literary Magazine**

Evergreen is the student-produced literary magazine. All Greenhills students have the opportunity to submit written works for this annual publication.

Grades: 9-12 Credit: 0 Term: All Year

**Newspaper**

The Alcove is the student-produced newspaper. Published bi-monthly, students participating in its production have an opportunity to take photos, write text and work on the layout of the publication.

Grades: 9-12 Credit: 0 Term: All Year

**Yearbook**

Forward is the student-produced all-school yearbook. Students participating in its production have an opportunity to take photos, write text and work on the layout of the publication.

Grades: 9-12 Credit: 0 Term: All Year

**Note:** these courses are acknowledged on the transcript with a designation of honors, satisfactory, or unsatisfactory. No academic credit is awarded for these courses.

***English***

The English Department challenges its students to develop vigorously, and with pleasure, their ability to read, think, speak, and write. Students explore works representing a variety of genres, media, and cultures. Instruction emphasizes: 1) close reading focused on structure, rhetoric, and figurative language; 2) critical, creative, moral, emotional, and historical thinking; and 3) effective and eloquent writing. Reading and writing assessments increase in complexity both within a given year and throughout the seven years of instruction. Grammar and usage are taught formally in the middle school and are reviewed as needed and integrated with writing instruction in the upper school. A similar approach is used with the study of vocabulary. This thorough study of language and literature reinforces the school's broader mission of encouraging students to develop their full potential as curious, creative, and responsible citizens who respect all individuals and their differences, and whose meaningful and balanced lives will better the world.

**Middle School**

**English 6**

In this course, students read, analyze, and discuss short stories, poems, plays, novels, and essays. Professional works serve as model texts that help students enhance their critical reading skills and gather more confidence in their writing. In writing workshop, students draft creative and expository pieces. While discussing class texts, students examine genre, style, emotional themes, and societal issues. Throughout the year, students begin to grapple with the differences between writing for the page and writing for oral performance. The class uses *Rules of the Game: Grammar Through Discovery* as a jumping off point for grammar lessons, which focus on spelling, usage, mechanics, parts of speech, and word order. Vocabulary is taught within the context of literary texts. Reading for the course includes short stories by Gish Jen, Gary Soto, Langston Hughes, Francisco Jimenez, and Toni Cade Bambara. In past years, students have also read *The Westing Game* by Ellen Raskin, *The Mostly True Adventures of Homer P. Figg* by Rodman Philbrick, poems in *A Child’s Anthology of Poetry* edited by Elizabeth Hauge Sword, selections from *Mousetrap and Other Plays* by Agatha Christie, *Red Scarf Girl* by Ji-Li Jiang, and *The Ear, the Eye, and the Arm* by Nancy Farmer. The book list may change from year to year.

Grade: 6 Term: All Year

**English 7**

English 7 focuses on skill development in reading, writing, and speaking.  Exploring a variety of forms and genres, students consider writing as an intentional act that can be examined, questioned, and discussed. Students continue to enhance reading comprehension while also beginning to consider texts at an abstract level through analysis of theme and diction.  Written work stresses the use of evidence and reasoning to support one’s claims. Particular emphasis is placed on the learning process, and students are given specific steps and tasks to help them read closely and write purposefully.  Vocabulary is taught in context, and grammar is taught through direct instruction, within the context of student writing, and through consideration of language use in the larger world.   In the Integrated Public Speaking program (IPS), students will review basic vocal delivery skills – articulation, projection, inflection, and pause – through the presentation of an oral reading and a memorized monologue. Eye Contact, gesture, and movement are also incorporated into the performances.  Students also deliver an informative speech as a group, with each individual responsible for a portion of the presentation. Attentive audience behavior is expected, as is the use of positive feedback. Core texts for English 7 include Laurie Halse Anderson’s *Chains,* S.E. Hinton’s *The Outsiders*, Karen Hesse’s *Witness*, and William Shakespeare’s *A Midsummer Night’s Dream*. In addition, the RIC (“Reading is Cool”) program builds a culture of readers by asking students to read and respond to literature independently throughout the year.

Grade: 7 Term: All Year

**English 8**

The English 8 curriculum builds upon the practices of textual analysis, writing in varied registers, and public speaking, each of which were introduced in English 7 and English 6. In this course, students use texts to explore increasingly sophisticated notions of identity and society. Students are introduced to the concept of subtext, and emphasis is placed on analyzing characters through motivation and action. Throughout the year, the material in this course overlaps thematically with the material in the 8th grade civics class. This interdisciplinary approach is intended to enhance students’ ability to discuss the connections between literary works and the workings of the geopolitical world. In the same way that students are asked to make connections between the fiction they read and their own life experiences, they are encouraged, though a yearlong memoir project, to recognize the overlap between analytical and creative writing. Through the Integrated Public Speaking program (IPS), students present a memorized scene from Shakespeare and an oral reading of one of the selections from their memoir project.  Fundamental vocal and physical delivery skills are reinforced, while advanced skills, such as vocal variety, pacing, creation of character, and creative use of space, are introduced. Students also write and deliver a persuasive speech on a topic of their choice. Attentive audience behavior is expected with the use of written and oral positive feedback and constructive criticism. There are several formal grammar units throughout the year. Core texts often include Sandra Cisneros’ *House on Mango Street*, a Shakespeare play, and Harper Lee’s *To Kill A Mockingbird*.

Grade: 8 Term: All Year

**Upper School**

**English I: Global Identities**

This course introduces students to important works of world literature, both ancient and modern, within the framework of focused discussions of literary terms and techniques. The literature is pulled from a global selection of novels, graphic novels, short stories, poems, and movies. As students review and discuss the texts, they examine several aspects of the coming of age theme and issues of identity, alienation, and community. English I is designed to solidify the skills of close reading and literary analysis *before* having students compose longer argumentative essays. The first several months of the academic year are spent developing more sophisticated close reading skills and working on the building blocks of analytical writing; in the spring, the course shifts into a thorough consideration of writing, revision, and argumentation in various forms, including the traditional academic essay. Grammar is taught in the context of broader writing goals; emphasis is placed on practice and active engagement rather than on the memorization of rules. Vocabulary is taught in context and through lessons on the common Greek and Latin roots that make up many words in the English language. Moreover, a public speaking requirement pushes students to improve their oral communication skills. Through the Integrated Public Speaking program (IPS), students present an informative speech, an oration, and a memorized scene from *The Tempest*. Basic and advanced vocal and delivery skills are reinforced with an emphasis on the varied purpose of speeches, the use of humor in a presentation, and an understanding of the communication process which includes positive feedback, constructive criticism, and listening skills. Major readings for English I may include Homer's *Odyssey*, William Shakespeare's *The Tempest*, J.D. Salinger’s *Catcher in the Rye*, Marjane Satrapi’s graphic novel *Persepolis*, and/or similar works. Students also read widely from a diverse collection of short stories and poems. Quality films such as Niki Caro's *Whale Rider* and the Coen brothers' adaptation of *The Odyssey*, *O Brother, Where Art Thou?*, enhance students' knowledge and understanding of themes and ideas from across the  world.

Grade: 9 Term: All Year

**English II: British Literature**

The course of English study for sophomores focuses on the literary traditions of Britain and their extension to, and reflection within, the colonial and post-colonial worlds. This study is not intended to be a full historical survey but rather a representative journey that touches upon major historical, thematic, and formal developments in the language, literature, and culture of our nearest parent culture. The landmarks that define our course of study trace the enduring relevance of the English literary tradition, which includes such authors as Chaucer, Shakespeare, Raleigh, Sidney, Herbert, Donne, Milton, Blake, Coleridge, Keats, Shelley, Wordsworth, and Dickens. Throughout the year, special attention is paid to the relationship between the canon of British literature and the sense of concern that grows with the power and prominence of the British Empire as experienced by its insiders and outsiders. Students practice close reading and critical analysis through classroom discussions as well as in creative and analytical writing. The reading and writing elements of the course also build upon grammar skills and rhetorical strategies learned in previous years.

Grade: 10 Term: All Year Prerequisite: English I

**English III (or English III AP): American Literature**

The purpose of this course is to provide students with a broad and firm base in writing and discussion skills that allows them to be confident, thorough, and effective in expressing their ideas. Students read thematically in a variety of genres, ranging from poetry to nonfiction to several challenging and substantive novels drawn from the American literary canon. Emphasis in class discussion and in writing assignments is on the analysis of literature both as an exploration of complex ideas and as an art. Students are asked to engage in close textual analysis as they respond meaningfully to the ideas authors present as well as to the literary devices they employ. Writing, both expository and creative, is a primary focus in the class, and artistic and/or film-making projects may also be incorporated. Written assessments are designed to encourage students to think of writing as a multi-step process and to aid students in the development of an authentic writing voice. In the eleventh grade year, students also complete a research paper with the broader objectives of learning to navigate online databases; understanding the relationship between primary and secondary sources; and honing their use of rhetorical skills in argumentation. The AP version of this course adds a special focus on the composition models and techniques that are stressed on the Advanced Placement exam in Language and Composition. Students study essay samples drawn from this test and from other sources, write essays modeled after them, and analyze the prose techniques that writers use. Students in the AP course are encouraged to take the AP Language and Composition exam and will be familiar with the nature of the test if they choose to do so.

Grade: 11 Term: All Year Prerequisite: English II

***Senior Electives***

English electives are only open to seniors; the seminar format of intensive study on a special topic serves as the capstone to students' previous work in upper school English courses. Students are required to take one elective each semester to meet the required full year of credit for English in the senior year. We will make an effort to place students in one of their top three choices; however, it is possible that not all electives will run. In that case, placement will be shaped by the student's schedule, the optimal class size for electives, and other relevant factors.

**English IV/Fine Arts: Playwriting**

This creative writing course gives students first-hand experience with the distinct qualities of writing for the stage. Students consider these vital questions: what elements distinguish playwriting from other forms of writing? How does one fashion ideas into dramatic dialogue and action? Students in this class explore the process of writing plays by reading one-act as well as full-length plays while working on their own pieces. Each student completes a ten-minute play and a larger one-act play. Daily classes consist of writing exercises and free-writes, discussion of reading, the sharing of each other's plays and assignments (read by classmates), as well as  engagement in the final project. This course may be used to satisfy one semester of the Senior English requirement or a Fine Arts credit, but not both.

Grade: 12 Term: Semester I Prerequisite: English III (or English III AP)

**English IV: Into the Modern**

This class explores the shift in Western culture that occurs between the Victorian and Modern periods, from the late 19th century through the early 20th century.  During that transitional time, many of the innovations from the Victorian period achieved full bloom and became increasingly part of everyday life — both for good and for ill.  As the full ramifications of scientific and social “advancements” became more apparent, Victorian optimism became tempered with confusion and doubts about the continuation of Western cultural supremacy.  Modernism begins in this moment of cultural pause; we see artists exploring and expressing increasingly subjective perspectives on the world around themselves, seeking truth and meaning in individual experience rather than in social or national norms. This struggle for personal expression and definition is thematically and aesthetically at the heart of Modernist works, and is what makes these texts still so vital today.  Major texts include Stevenson's *The Strange Case of Dr. Jekyll and Mr. Hyde*, Conrad's *Heart of Darkness*, Eliot's *The Waste Land*, and Woolf's *To the Lighthouse*. Major assessments include critical essays and creative revisions of *The Waste Land.*

Grade: 12 Term: Semester I Prerequisite: English III (or English III AP)

**English IV: Creative Writing Workshop**

In this course, students produce various forms of writing, including fiction, personal essays, and poems. Students frequently write in class and share their work with peers. Longer writing exercises are discussed systematically and critiqued constructively; the goal is to engage, support, and guide writers to become better at their craft. Students who enroll in the course do not have to be exceptionally strong writers, but they must be highly motivated. The class should be considered a personal, artistic exploration through which students choose to commit themselves to intellectual risk-taking and to the considerate discussion of others’ work. In addition to writing and workshopping, students read short fiction and poetry, not as subjects of analysis, but as models for study. By the end of the course, students will have extensive experience generating content ideas, expanding upon them, and, finally, revising their work. Grade: 12 Term: Semester I Prerequisite: English III (or English III AP)

**English IV: From Sonnets to Slam: Poetry’s Place in a Changing World**

What is poetry? Why does poetry matter? How does poetry reflect personal, social, or political contexts? What is the relationship between form and meaning? What happens to a poem in the process of translation? What are the major critical approaches to understanding poetry? How does learning about poetry impact our thinking in unexpected ways? Or, as a 2013 *Washington Post* article queried, “Is poetry dead?” In this senior seminar, students read widely across time periods, poetic genres, and national borders in order to explore the questions above. Along the way, students work to develop their own aesthetic sensibility by becoming fluent in the critical discourse about poetry, by considering the relevance of poetry in various cultural contexts, and by honing their sensitivity to language. Students are also asked to practice scansion and other forms of annotation; to perform a poem recitation; to translate poetry from their language study classes; to give an in-depth presentation on the work of a contemporary poet; to attend at least two local poetry events; and to develop an intensive final project or paper. There is a creative writing component to the course in which students will be asked to experiment with different poetic forms and to share their work with the class. The texts may include the *Norton Anthology of Poetry*, a coursepack of academic articles, and a selection of single-author volumes of poetry. Grade: 12 Term: Semester I Prerequisite: English III (or English III AP)

**English IV: Great American Novels: Moby-Dick and Uncle Tom's Cabin**

In this course, students read only two books: *Moby-Dick* by Herman Melville and *Uncle Tom’s Cabin* by Harriet Beecher Stowe. Published within a few years of one another (1851 and 1852, respectively), these two novels have shaped American identity and culture in complex ways. Although Melville’s novel sold few copies in the 1850s, it was valorized by literary critics nearly a century later and is now widely considered to be the greatest work of American literature. Although Stowe’s novel sold more copies than any other book except the Bible in the nineteenth-century, it was relegated to relative obscurity in the twentieth. Reading either of these books can be a revelatory experience; reading both broadens one’s understanding of what “America” has come to signify today. Along with the novels, students examine a host of cultural materials ranging from documents about the architecture of whaling ships and the use of harpoons to parlor games based on ideas about antebellum slavery and images that depict stage productions of Stowe’s novel. Students in this class also read what literary critics have said about these texts for the last century and a half and, in doing so, gain insight into the ever-shifting dynamic between popular and elite culture. Essays include a literary analysis of *Moby-Dick* and an analysis of an archival document related to *Uncle Tom’s Cabin*. The final assessment for the course is a lengthy research essay designed to help students refine their research methods and sharpen their rhetorical skills.

Grade: 12 Term: Semester I Prerequisite: English III (or English III AP)

**English IV: Shakespeare on Love**

"Love is," according to French theorist Julia Kristeva, "the time in which the Subject assumes the right to be extraordinary." Four centuries earlier, Shakespeare dramatized this idea, imagining more ways than anyone before him that the subject may be "extraordinary" in love. The course of study for this class is dedicated to understanding "love" as Shakespeare does, which is to say, as a malady, a cure, madness, salvation, sacrifice, trust and betrayal, self-immolation and self-projection. Students consider love as a philosophical concept and a social (and political) expression of subjectivity or the concept of Self. Critical work combines a rigorous examination of selected plays and sonnets from the literary, historical, theoretical (New Historicism/Cultural Materialism), and performance perspectives. This class also addresses the pesky authorship question, considers issues surrounding text editing, and considers production choices proffered by various directors of the same play. Texts include a number of the following: *Romeo and Juliet, Love’s Labor’s Lost, A Midsummer Nights Dream, Much Ado About Nothing, Antony and Cleopatra, Twelfth Night*. Student work will include a philosophical exploration on love, student performances, performance reviews, a seminar paper, and a final formal academic essay.

Grade: 12 Term: Semester I Prerequisite: English III (or English III AP)

**English IV: What's Hip?**

"What is Hip?": A Square Study of a Cool Concept. San Francisco super band Tower of Power put this funky question to America back in the 1960's and in so doing asked a critically important question for any deep understanding of American culture. If Hip can be said to have come from some place, that place would be the often contentious, ever creative relationship between the White and Black experiences and expressions of American life. This course focuses on the history of Hip, using John Leland's outstanding book as a foundation, and considers individual expressions of Hip in music (Muddy Waters, Sun House, Jerry Lee Lewis, Chet Baker, Elvis Presley, Miles Davis, Eminem), in literature (including but not limited to Mark Twain, Jack Kerouac, Norman Mailer, Amiri Baraka, Ishmael Reed, William Gibson—can a Canadian be Hip?), in film (Dennis Hopper, Quentin Tarentino), and in spoken word (Lord Buckley, Lenny Bruce, Richard Pryor, Dave Chappelle). Students will consider how the cultural feedback loop of white and black experience informs trends, economics and social groupings in the work of Malcolm Gladwell,  Thomas Frank and Murray Milner, Jr.  Student work consists of seminar papers on individual Hip performances, a Voicethread presentation for a Hip Encyclopedia, an entry to a “What Green People Like” wiki, and a final research paper.

Grade: 12 Term: Semester I Prerequisite: English III (or English III AP)

**English IV/Fine Arts: Acting Shakespeare**

This course delves deeply into one Shakespeare play and culminates in a production at the end of the semester. The class aims to capture both the poetic and the dramatic essence of the language, and students explore the text physically as well as through discussion. Before staging of the piece begins, students engage in many exercises and games that allow the text to inhabit the body. Final performances are held in the theater. Students are expected not only to act but also to be involved in other aspects of the production, from set construction and costuming to promotion and fund raising. This course may be used to satisfy one semester of the Senior English requirement or a Fine Arts credit, but not both.

Grade: 12 Term: Semester II Prerequisite: English III (or English III AP)

**English IV: [t]ex[t]position, or Reading Theoretically**

[t]ex[t]pos is dedicated to the work of writing about reading, where "reading" is a multivalent act involving a series of presumptions about the act itself. The job of work is to explore the notion of the "sign" as defined by Ferdinand Saussure, considering how the sign operates or fails to operate with respect to such topics as culture, power, self, gender, and race. Students read the work of philosophers and critical thinkers like Plato, R. P. Blackmur, Cleanth Brooks, Marx, Althusser, Roland Barthes, Jacques Derrida, Michel Foucault, Luce Irigaray, Carol Gilligan, Houston Baker, Jr., Henry Louis Gates, Jr, and Joyce A. Joyce, taking as texts everything around them that attempts to signify: our "literature," our school, our culture, our selves. The course concludes by considering Huston Smith's essay "Beyond Postmodernism" in relation to Antoine de Saint Exupery's classic tale *The Little Prince*. Class work will include quizzes, and three academic essays.

Grade: 12 Term: Semester II Prerequisite: English III (or English III AP)

**English IV: An(other) Voice: Post-colonial Fiction and Theory**

*In short, we face as a nation the deep, profoundly perturbed and perturbing question of our relationship to others—other cultures, states, histories, experiences, traditions, peoples, and destinies.*

                                                                       --Edward Said, *Culture and Imperialism*

The purpose of this course is to address the “profoundly perturbing question of our relationship to others” which drives Said’s concern about our nation.  Simply stated, our work will be to study the “cultures, states, histories, traditions, and destinies” of “others” through selected fictional works and theoretical positions.  Implicit within our task will be the thoughtful, reflective work of constructing an appropriate and viable position from which to experience these texts.   The texts are largely drawn from the Anglophone tradition and, while hardly exhaustive, are intended to represent the emerging post-colonial literatures (and accompanying issues) that span cultures as diverse as Ireland, India, Africa, Egypt, the Sudan, and the Caribbean.  We will begin the course by framing the theoretical debate surrounding the production and consumption of post-colonial literatures.  Using Joseph Conrad’s *Heart of Darkness* and Chinua Achebe’s scathing critique of the novel as a starting point we will begin to address the theoretical issues at stake.  From these contentious beginnings we will fashion a mode of reading or “experiencing” the text that seeks to understand post-colonial texts as both literary achievement and political expression.     With theoretical tools in hand we will move out to other “other” cultures, voices, states, histories, etc. to discover the many shared and novel experiences of wresting a new literary culture from an old colonial past—what Said calls “destinies.”   Our work will include close reading, active and informed discussion, response essays, electronic discussion, a multi-media project, participation in a global partnership project, and a longer scholarly essay.

Grade: 12 Term: Semester II Prerequisite: English III (or English III AP)

**English IV: American Landscapes**

In this course students explore some of the prototypical landscapes that are integral to American identity. For the purposes of the course, the term “landscapes” is used loosely to refer not only to the natural world, but also to the man-made environments that structure our sense of ourselves as a people. What aspects of these environments reflect typically American desires and conflicts? How has our culture been shaped by encounters with our environment, and how has our culture shaped the environment in which we now live? Major texts include Nathaniel Hawthorne’s *The Scarlet Letter,* Cormac McCarthy’s *All the Pretty Horses*, and Don DeLillo’s *White Noise*. Major assessments include critical essays and an analysis of a consumer product following a field trip to Whole Foods.

Grade: 12 Term: Semester II Prerequisite: English III (or English III AP)

**English IV: Revision Workshop**

Much like in the writing workshop course, students will write short fiction and/or creative nonfiction pieces, though here the emphasis will be on revision rather than on the generation of new material. Throughout the semester, each student will redraft two distinct pieces multiple times. The principal aim of this course is to prepare polished pieces for submission to literary magazines and journals. We will continue to analyze the fundamental aspects of storytelling while exploring the complexities of style, tone, plot, narration, scene, dialogue, and characterization. Though we will read both narrative fiction and nonfiction, each student will be free to compose in whichever form he or she desires.

Grade: 12 Term: Semester II Prerequisite: English III (or English III AP)

**English IV: "Heaven is a Playground": Sport and Culture in America**

"If all the year were playing holidays,/ To sport would be as tedious as to work" (Henry IV). This course explores sport as a cultural text, paying special attention to the question of whether sport merely projects cultural values or constructs them. The class begins by defining sport and considering its philosophical and social implications through the work of Alfie Kohn, Clifford Geertz, Thorsten Veblen, Johan Huizinga, Alan Guttmann, Witold Rybcynski, and George Carlin. The class’ work falls under specific rubrics like sport and religion, sport and leisure, sport and politics, sport and race as well as sport and gender. Because the amount of terrific sports literature is so vast, students select a choice reading assignment to supplement required work. Written work includes a seminar paper, participation in the Seminar Game, and a research paper. Ideally, this course involves some kind of significant fieldwork.

Grade: 12 Term: Semester II Prerequisite: English III (or English III AP)

**English IV: Race & Gender in Contemporary Life and Literature**

Our growing diversity as a people — and our increasing awareness of the potential richness and possible difficulties brought on by that diversity — is a current reality for people in the United States. More and more, people are realizing that they live and work in a multicultural and global society. Accompanying this awareness are questions, such as: What is the meaning of “diversity”? How are gender and race socially constructed? How are systems of human inequality structured by claims about individual bodies and collective character? Through detailed readings and discussions, this class examines the multifaceted formation of identity across axes of race, ethnicity, gender, sexuality, and class. Students work to create a vision of the complexity of identity by considering how these categories overlap and intersect with one another. Students explore the social construction of race and gender in contemporary American life and literature, with one of the primary objectives being the acquisition of theoretical frameworks to better understand their own identities and to approach the complex social realities of the modern world. Texts include a collection of articles on identity, oppression, and privilege; *A Room of One’s Own* by Virginia Woolf; *Angels in America Part One: Millennium Approaches* by Tony Kushner; and the films *Tropic Thunder* and *Fight Club*. Assessments include a reflective personal narrative, an interactive class blog, and a final research project that culminates in an annotated bibliography and a presentation or film.

Grade: 12 Term: Semester II Prerequisite: English III (or English III AP)

***Fine and Performing Arts***

Arts education is essential for every student. The faculty of the Department of Fine and Performing Arts at Greenhills believe that our mission is to promote creative expression, communication skills, problem solving, and inventive thinking. Courses are designed to foster lifelong appreciation through active participation in a variety of arts activities. It is through personal discovery and experimentation, coupled with consistent involvement in the arts that skills are developed, appreciations are formed, and creativity is encouraged.

**Middle School—6th grade**

The Fine and Performing Arts include the following areas of study: Visual Art; Speech and Drama; and Music. Students partake in all of these offerings throughout the year. Several two-week Visual Arts courses introduce students to a whole realm of media. Speech and Drama is conducted once per week. Music is divided between the options of Band, Orchestra and Choir. Students must choose between the three music offerings. Students do not need prior experience to play in the 6th grade band or choir. However, it is recommended that students have some experience to play in the 6th grade orchestra.

Grade: 6   Term: 2-3 Days/Week All Year

**Middle School—7th & 8th grade**

**Art**

This course helps students explore various aspects of the visual arts. This one-semester class will put an emphasis on the development of meaning making through art. Students will explore: art history, art criticism, aesthetics, social issues commonly addressed in artworks, the art of other cultures, visual culture, and various art production techniques. Students will have the opportunity to explore their creative ideas through the art production process. Art production areas can include: drawing, painting, fiber arts, metal arts (jewelry), sculpture, and ceramics (potter’s wheel and hand-building processes). The goal will be for students to gain an understanding and appreciation of the visual arts. Student work will be displayed regularly in the school. In addition, students will have opportunities to work collaboratively on art projects.

Grades: 7–8   Term: 2-3 Days/Week for one semester

**Band**

The Middle School Band is a performing group comprised of 7th and 8th grade students with previous experience on a wind or percussion instrument. Playing different genres of concert band music, the band performs in concert at the end of each semester. Band members have the opportunity to participate in the Solo and Ensemble Festival through the Michigan School Band and Orchestra Association. Grades reflect daily preparation and conduct, concert participation and completion of periodic theory assignments.

Grades: 7–8   Term: 2-3 Days/Week All Year

**Drama Workshop**

Courses offered in the dramatic arts expose students to techniques in improvisational theater, characterization, and presentation through the study and execution of theatre games, script adaptation, vocal inflection, mime, and dramatic characterization. Middle school students have the opportunity to audition for and participate in the annual play and in the forensics program.

Grades: 7–8   Term: 3 Days/Week for one semester

**Choir**

This choir is an ensemble that helps build musicianship skills through the discovery and performance of rich, exciting choral literature. Mixed with preparation for concerts are activities centered around music appreciation, music theory and movement. The music studied spans many styles, from Renaissance madrigals to contemporary Broadway, and two main concerts are given each year, with other events freckled around the calendar. There are also opportunities for students to participate in outside school activities through the Michigan School Vocal Music Association (MSVMA), such as Honors Choir, Solo/Ensemble, and Choral Festival.

Grades: 7–8   Term: 2-3 Days/Week All Year

**String Orchestra**

The Middle School String Orchestra is a performing group made up of 7th and 8th grade students with previous experience on a string instrument. The orchestra prepares diverse repertoire and performs in concert at the end of each semester. Students have the opportunity to participate in the Michigan School Band and Orchestra Association solo and ensemble festival in the winter, and more experienced players may participate in smaller chamber groups throughout the year. Topics studied include vibrato, shifting, finger patterns and instrument techniques. Basic music theory is covered with an emphasis on writing music, understanding keys, and fluently reading music and musical form. Homework generally consists of practicing orchestra music and completing other music assignments. Grades reflect weekly preparation, concert participation, chair auditions, attitude and special projects.

Grades: 7–8   Term: 2-3 Days/Week All Year

**Upper School**

**Acting I**

An introduction to fundamental skills of acting.  Students will study improvisation, character development and monologue and scene performance.  The course is open to 9th-12th grades and is designed for students of all skill levels.  This class is a prerequisite for Acting II.

Grades: 9–12   Term: Semester I

**Acting II**

A workshop for students who are interested in taking their acting to the next level.  Students will continue working on their performance skills in addition to learning about script analysis and audition preparation.  Students will have some influence in shaping the course of the class based on their interests.  Open to 9th-12th grades.  Acting I is a prerequisite for this class.

Grades: 9–12   Term: Semester II Prerequisite: Acting I

**Art Photography**

Art Photography focuses on photography as an art form. This class is workshop format where the majority of class time is spent in the field or in the lab. Students may respond to assignments digitally or conventionally. Students will learn to communicate visually with photographs in response to specific assignments. Each student will study the fundamentals of camera operation such as: metering, selecting appropriate shutter speeds, depth of field, mode selection, indoor and outdoor lighting techniques, specialized lenses, and tripod use. A great deal of time will be spent learning about composition and the use of symbolism to guide the viewer. Image editing software, Adobe Photoshop CS5 will be utilized in this course. At the conclusion of each assignment, students evaluate and discuss each others photographs in a peer-led critique. Evaluation is based upon participation in critiques, aesthetic content, and technical aspects of each assignment and a final portfolio of work. The final examination will consist of the preparation and presentation of a final portfolio. All students will participate in one or more exhibits.

Each student will be charged a fee of $85 for film, chemicals, and or digital media supplies.

Grades: 9–12   Term: Semester I or II

**Art Photography Advanced**

In addition to a more specific exploration of many of the concepts covered in Art Photography I, advanced students will be encouraged to prepare a body of work that is linked technically and conceptually. Advanced concepts will include: developing advanced conceptual frameworks, studio lighting techniques, conceptual portraiture, composites, sequence, symmetrical abstractions, and matting. The final exam will be the production and presentation of a portfolio.

Each student will be charged a fee of $85 for film, chemicals, and or digital media supplies.

Grades: 9–12   Term: Semester II Prerequisite: Art Photography

**Ceramics**

The fundamentals of ceramic construction of both functional and non-functional forms will be explored. Each student will learn specific “throwing” techniques, which includes the following: centering, pulling techniques, creating lids, trimming, and form exploration. Students will be required to explore semester objectives that include, bottle forms, bowls, plates, cantilevered forms, and other open forms. Hand building techniques covered include: slip/score, coil, slab, slump, and mold creation and use. Students will also learn a variety of glazing and firing techniques. Evaluation is based upon technical and aesthetic components of each assignment. All students will participate in the year-end exhibit.

When repeated for credit, "Ceramics" will be designated "Ceramics II" in the second semester, "Ceramics III" in the third semester, and so on. The advanced Ceramics curriculum goes to Ceramics IV.

Students will be charged a fee of $65 for clay and glaze supplies.

Grades: 9–12   Term: Semester I or II

**Upper School Choir**

The Choir is open to all Upper School students. The course centers on the joy of ensemble singing by building vocal technique and musicianship, learning great repertoire across the choral spectrum, and participating in concerts and festivals. Aside from the major concerts at the end of each semester, there are other events: The Halloween concert in October, the Pops Concert in February a concert in March. Some concerts are combined efforts with the Upper School Orchestra. The choir--as a whole, as well as individual singers--also participate in events governed by the Michigan School Vocal Music Association (MSVMA): Honors Choir, Solo/Ensemble and the Choral Festival. A wide range of repertoire is explored, from Renaissance and Baroque to Jazz and Broadway.

Grades: 9–12 Term: 3 Days/Week All Year

**Chamber Singers**

This group is comprised entirely of more advanced members of the high school choir. The singers concentrate on chamber music for small vocal ensembles, including vocal jazz at one end of the spectrum and Renaissance madrigals at the other. Most of the singing is a cappella. Chamber singers will sing on all concerts where the choir appears, as well as some other events where it is not feasible to take the whole choir.

Membership is by audition only, and only by members of the choir. The desire and the work ethic to delve into more advanced repertoire are required.

Grades: 9–12 Term: 2 Days/Week All Year

**Design in Two-Dimensional and Three-Dimensional Media**

This course emphasizes two- and three-dimensional design concepts in metal, found objects, clay, wood, stone, and cement. Each assignment has two parts: 1. Sketching: students work in a sculptural journal to explore conceptual frameworks, sketching ideas, and developing actionable plans. 2. Construction Phase: executing the plan. The concept of “maquettes” or “sculptural prototypes” will be explored as needed to address engineering issues. The focus of each assignment will be aesthetic rather than technical. Students will be encouraged to use symbolism and work with concepts to make the most direct statements. Evaluation is based upon group critiques, application of technical skill, execution, and most importantly how much thought and planning went into a specific work.

Students will be charged a fee of $45 for supplies.

Grades: 9–12   Term: Semester II

**Introduction to Art I**

This introductory art course meets daily and provides sequential learning activities organized around art elements and principles of design. Students will explore a variety of rendering techniques including drawing, painting, computer aided design, pinhole photography, and clay. A great deal of emphasis will be placed on developing conceptual frameworks to make artistic statements. Students will also learn how to formally mat their work and participate in school-wide exhibits. Group critiques will also be explored.

Grades: 9–12   Term: Semester I

**Jazz One**

Jazz One is open to all continuing music students interested in practicing and developing the technique and interpretative skills fundamental to performance in the jazz/rock idiom. Improvisation is introduced as a new concept along with various components of music theory, composition and history. As styles are introduced a repertoire is established. This course includes an introduction to the Music Lab, its notation and recording software, and equipment use.

Grades:  9-12     Term: All Year

**Jazz Lab**

Jazz Lab is open to all continuing music students interested in practicing and developing the technique and interpretative skills fundamental to performance in the jazz/rock idiom. Various components of music theory and history are included to enhance improvisational skills. Other topics may include composition, practice techniques, equipment use and music technology via the Music Lab. Special emphasis is given to analysis and expanding repertoire. Jazz Lab groups are formed each year based on experience and instrumentation, and actively perform within the school and community. This course may be repeated for credit.

Grades: 9–12   Term: All Year Prerequisite: Jazz One

**Studio Jazz**

Studio Jazz is open to select self-motivated and collaboration-minded music students interested in improving their skills in jazz/rock improvisation and performance. Various components of music theory and history are included to enhance improvisational skills and emphasize performance. Additional topics may include but are not limited to arranging, composition, transcription and music technology via the Music Lab. This first-call ensemble performs numerous times throughout the school year in support of community events, school functions and at formal concerts. This course is open to students by audition or by permission of the instructor only and may be repeated for credit.

Grades: 10–12   Term: All Year Prerequisite: Jazz Lab or Jazz Lab

**Orchestra**

The Upper School Orchestra performs a variety of music in various venues. Students perform several times during the year, and the ensemble accommodates anyone with at least two years’ experience on their instrument. Students will improve both personal and ensemble skills through the study and performance of diverse literature. Homework consists of practice and mastery of assigned music; “puzzlers” will include specific excerpts from the assigned music as well as general musicianship covered in class throughout the year. Grades reflect weekly preparation, chair auditions, overall attitude, interaction with classmates, concert participation and special projects. All students in the orchestra have the opportunity to participate in the MSBOA solo and ensemble festivals (district and state) and the ASTA chamber music festival.

Grades: 9–12   Term: All Year

**Chamber Orchestra**

The chamber orchestra is a small ensemble of the most advanced players from Orchestra. This group meets at the discretion of the director, and assumes a high level of technical proficiency. Chamber Orchestra performs regularly in concerts, at school functions and in the community. All students will be offered the opportunity to participate in MSBOA festivals. Students wishing to be considered for the Chamber Orchestra should register for Upper School Orchestra.  Grades: 9–12     Term: All Year

**Painting**

Painting is a timeless process of creating art with color. Painting allows for the expression of one’s thoughts and ideas. In this course, students will explore a variety of mediums, including watercolor, acrylic, and tempera. There will be a focus on composition and the development of ideas in this course. Students will participate in the examination and discussion of paintings from various time periods, and cultures as they explore themes in art. Traditional techniques will be explored, as well as the experimental and abstract. Canvas stretching and surface preparation will be taught in-depth. Painting activities will take place in-studio as well as possible outside locations. Students will also participate in student led class critiques at the end of each unit. Students may repeat this course in order to pursue painting at a more advanced level. There are no prerequisites or final exams.

Students will be charged a fee of $30 for supplies.

Grades: 9–12   Term: Semester II

**Play Production**

This course is an introduction to the varied skills necessary to the successful production of a play. It will include a study of the processes of analyzing, directing, staging, and promoting plays. This course is open to 9th through 12th grades and is highly recommended for students interested in directing and stage management.

Grades: 9–12     Term: Semester II

**Drawing and Printing**

Art is essentially the act of expressing ones thoughts and ideas visually. Drawing is the foundation of all art forms. This course will explore various aspects of drawing in depth. There will be a focus on drawing techniques including: shading, hatching/crosshatching, gesture drawing, and contour line drawing. Representational art, illustration/comic art, and abstract drawing practices will be covered in this course. Students will explore (but are not limited to) still life, landscape, and figure drawing. There will be a focus on composition, and the development of ideas in this course. Students will experiment with a variety of mediums including: pen and ink, graphite, charcoal, colored pencil, oil pastel, mixed media, and intaglio printmaking. There will be an emphasis on exhibition and portfolio building throughout this course. In addition, students will participate in student led class critiques at the end of each unit. Students may repeat this course in order to pursue a more advanced level.

Students will be charged a fee of $30 for supplies.

Grades: 9–12   Term: Semester I

**Tech Theatre**

Technical Theatre explores all aspects of technical theatre production including scenery, lighting, properties, costumes, make-up, and special effects.  The course utilizes Greenhills School's production program as a laboratory for the practical application of skills learned in class.  Theatre safety, collaboration skills and peer leadership are also important elements of the course.

Grades: 9–12   Term: Semester I or II

***Health and Wellness***

The Wellness Department offers courses designed to provide students with the knowledge, skills and ability to make healthy choices.  Classroom curriculum is supported with extracurricular physical activity opportunities offered throughout the year, such as intramural and interscholastic sports programs. The two divisions of Wellness are Physical Education and Health. The Physical Education portion occurs in the gymnasiums and athletic fields, and offers a unique mix of psycho-motor, cognitive and affective learning, providing individuals with multiple opportunities to take risks and experience success.  The Health portion occurs in the classroom and teaches fundamental concepts to build healthy families, relationships and communities through health literacy and promotion. Our goal is to provide an environment that fosters social, emotional and physical well-being so that students develop:

* Responsible personal and social behavior that respects self and others by remaining respectful of divergent views and beliefs
* Willingness to take healthy risks and embrace challenges
* Recognition of personal values and principles to develop a strong work ethic and the ability to make moral decisions
* Understanding of life-long fitness and its contribution to a healthy lifestyle

**Middle School**

**Health 6**

This course is designed to build on student learning and understanding of the following health topics: decision-making, social and emotional health, physical health, nutrition, coping with change, body changes and peer relationships. The course emphasizes the importance of making positive life choices pertaining to common life issues many teenagers experience. Students will have the opportunity to participate in group projects and engage in class discussions.

Grade: 6 Term: 2 Week Rotations, All Year

**Physical Education 6**

Students participate in daily, vigorous physical activity.  Emphasis is placed on physical fitness, skill development, social interaction, proper sports conduct, and the development of a positive self-image.  In the fall students learn skills in flag football including: proper blocking techniques, hand placement on the ball, good throwing and receiving mechanics, and good sportsmanship. The indoor winter months include basketball and fitness testing stations adapted from the NSCA (National Strength and Conditioning Association). During the spring, students rotate through a lacrosse unit.  They practice throwing overhand, cradling, tackling, and shooting on a goal.

Grade: 6 Term: 2 Week Rotations, All Year

**Health 7**

This course is designed to build on student learning and understanding of the following health topics: substance abuse prevention, peer and family relationships, body image, self-esteem, sexuality and gender, and stress management. The course will emphasize the importance of how individuals treat their bodies and their peers on a daily basis, and how each of these aspects contributes to one’s health. Students will have the opportunity to participate in group projects and engage in class discussions.

Grade: 7 Term: 2 Week Rotations, All Year

**Physical Education 7**

This course is designed to build upon skills that were introduced in the 6th grade. Students in flag football enhance basic skills while working on team building. During the winter fitness rotation, students are encouraged to show initiative and self-direction as they look to improve on their prior year’s test scores.  They begin to demonstrate competency in motor skills and movement patterns needed to perform a variety of physical activities. The spring rotation includes a lacrosse unit.  Students strengthen the skills of throwing overhand, cradling, tackling, and shooting on goal.

Grade: 7 Term: 2 Week Rotations, All Year

**Health 8**

This course is designed to build on student learning and understanding of the following health topics: mental and emotional health, chemical dependency, human body systems, reproductive health, and communicable diseases. This course emphasizes the importance of leading a healthy lifestyle, pertaining to common life issues many teenagers experience. Students will have the opportunity to participate in group projects and engage in class discussions.

Grade: 8 Term: 2 Week Rotations, All Year

**Physical Education 8**

This course provides opportunities for skill development, creative expression, teamwork, and life-long well-being. In their final year of flag football, students are well equipped with the mechanics so emphasis is placed on strategies during scrimmages in the fall. During winter months, the students continue to improve upon their prior year’s fitness scores, focusing on the ability to use goal-setting skills to enhance wellness and resilience. In the spring lacrosse rotation, students use their skills of collaboration to participate and engage in scrimmages. Strategies for inclusiveness are emphasized, along with the value of physical activity for health, enjoyment, challenge, and/or social interaction.

Grade: 8 Term: 2 Week Rotations, All Year

**Upper School**

**Grade 9 Health**

This semester-long Health course is required for students in grade 9 and presents developmentally appropriate material to address a variety of health topics.  As the adolescent years are ones of change and growth, this course aims to address the emotional, social and intellectual aspects of Wellness.  Topics to be covered include: physical health, reproductive health, stress management, emotional wellbeing, communicable diseases, reproductive health, addiction, epidemiology and global public health issues.   Focus begins on the individual in the classroom gradually leading to a broader perspective exploring global health issues.  We aim to create a safe environment for students to ask questions and share concerns.  Students achieve a high level of health literacy to enable them to make healthy choices while being introduced to the fundamentals of health through a global perspective.  Students participate in a semester-long self-directed service project focused on a public health issue of their interest.

Grade: 9 Term: 5 Days/Week, One Semester

**Lifetime Fitness**

This course offers a variety of physical activities as well as individual and team sports that encourage lifetime wellness and healthy behaviors. Students will learn how to effectively use the fitness center, develop lifetime fitness skills as well as enhance their team-building and sportsmanship skills. Students will have the opportunity to contribute their ideas to help design their own fitness program. This course will encourage students to maintain their fitness and regular assessments will be a part of the course.

Grade: 9-12 Term: 5 Days/Week, Semester I or II

**Upper School Wellness**

The upper school Wellness curriculum consists of individual support through small groups, a required semester-long course in 9th grade and annual guest speakers for school wide learning. Individual support is seen at every grade-level at Greenhills through the advisory system. Furthermore, student groups have formed around specific issues including: divorce, cancer, depression, sexual orientation and diversity. The University of Michigan Sexual Assault Prevention and Awareness Center (SAPAC) group is invited annually to promote healthy relationships, survivor healing and foster a respectful and safe environment.  In addition, the FCD Educational Services are invited annually to educate students about the risks and realities of alcohol, tobacco and other drug use.

Grades: 9-12 Term: Various

**Note:** there is no credit given for this component of the wellness program

***History and Social Science***

**Middle School**

**Sixth Grade Social Studies**

The focus of sixth grade social studies is world geography. Students learn about the relationship people have with the Earth.  Major topics include: preservation of natural spaces, urban sprawl, population issues, consumption patterns, and globalization. Students learn about these topics in a variety of ways. Students utilize charts, graphs, information and research to understand the interaction with humans and the Earth. Students use technology to access information and to enhance learning. Each semester students complete a long-term research project. The first project is a virtual tour of a National Park using GoogleMaps. Students choose a National Park and then research and write about what makes the park unique. They add their writing to a digital, multimedia map they create themselves using GoogleMaps as a backdrop. The second semester is focused on the “Take Action Project.” In this project students tackle issues such as: children’s rights, the global food system, universal education and environmental sustainability. Following their research and writing, students create an action plan for change, acting as individuals, in small groups, or as a class to make a positive impact in their community and beyond.

Grade: 6 Term: 5 Days/Week, All Year

**American History 7**

This course is an introductory survey of American History with attention given to the role of geography, the development of diverse cultures, and the impact of various people on the development of America. Historical topics include indigenous American civilizations, European exploration and colonization, the American Revolution, Manifest Destiny, slavery and the Civil War, Reconstruction and the rebuilding of the Union, the Industrial Revolution, the United States imperialism, the Depression and World War II.

Students will engage in a year-long project called the “Historians’ Fieldwork Research Project,” in which students research an era during the 20th century in American History. During this project students engage in the work of historians through primary and secondary research, census data analysis, conducting oral histories, and much more. Throughout the year, students complete primary and secondary source readings, various assessments, group projects, oral presentations and analytical writing assignments.

Grade: 7 Term: 5 Days/Week, All Year

**Civics**

This course provides an overview of American Government. Through textual reading, articles and other media, students learn how government works and how it impacts their daily lives. Students begin the year by reading George Orwell's *Animal Farm*. A detailed study of the three branches of American government, how political parties operate, and the modern process of campaigning are highlights of the course. Students examine local government operations before the year ends. Through class discussion and projects of varying size, students are encouraged to think about important political issues and express their thoughts both in writing and oral presentations. Several units, such as *Animal Farm* and Satire, are taught in collaboration with the English department. Students also participate in an Integrated Public Speaking unit. In this unit, students do research on a current topic and prepare a 3-5 minute speech that they present to their classmates.

Grades: 8 Term: 5 Days/Week, All Year

**Upper School**

**Foundations of Civilization**

This class surveys man's cultural development from prehistoric times to approximately 1500. Though the focus is the west, non-western culture and history is integrated into the curriculum with units on early India, China, Egypt, and the Middle East. A humanities approach emphasizes contributions of early civilizations in art, literature, science, philosophy and religion. Students are introduced to other disciplines that support historical research including basic principles of archeology, geography, anthropology and sociology.

There is extensive use of inquiry and problem solving methods, visual materials, and reference tools and resources including primary sources. For example, students might take a virtual tour of Ancient Athens and witness first-hand the economic, social, and political benefits of Athenian citizenship. Teachers and their students present research through technology. A basic text is supplemented by a host of other materials including interdisciplinary pamphlets such as Antigone and The Middle Ages.

Grades: 9-10 Term: All Year

**Big History**

Big History is a problem-based, technology-rich, multi-disciplinary approach to history that places the human past within the largest context possible, from the beginnings of the universe up until life on the Earth today. It unifies history, literacy, and the humanities with the latest findings in astronomy, physics, biology, geography, geology, climatology, prehistory, archeology, anthropology, cosmology, natural history, as well as population and environmental studies.

Students investigate a range of questions connected to our past, including: Where does the historical story begin? How do different people know something is true? How do we use the concepts, tools, methods and questions of different disciplines to investigate essential questions? What happened after the Big Bang? How did our earth form and take shape? What were our earliest ancestors like and how did they live? What were the consequences of agriculture? How did/do humans manage larger and more complex communities? How has the world grown more inter-connected? Why has changed accelerated in the last 500 years? How was the world transformed in the last hundred years? What can we know about the future? In studying these questions, Big History students will deepen their understanding of important historical, scientific, geographic and cultural concepts.

Grades: 10-12 Term: All year

**Modern World History**

World history is the study of global patterns, processes, interactions, and exchanges across a vast sweep of time and geographical space. The global perspective that studying world history provides allows us to account for both similarities and differences among the world’s peoples and societies, and it provides a global context with which to better understand our world, our nation, and ourselves.

In this course, we will use a variety of scholarly texts, historic documents, images, and accounts to address key world historical questions, such as:

What experiences and characteristics do we as humans share? What accounts for our differences? How have human interactions and relations changed over time? How has the relationship between humans and their environment changed over time, and what has been the impact of those changes? How have human views of the world, nature, and the cosmos changed? How can knowledge of the world’s history inform our understanding of the world around us?

Our focus will be the history of the world since the latter half of the 15th century, or since European exploration brought about the convergence of both hemispheres and initiated the first truly global system.

Grades: 10-12, with preference given to 10th graders Term: All year

**United States History 11**

This class is a chronological survey of United States history from exploration and colonization through modern America. Attention is given to political, social and cultural themes and how they interact with each other. Economic, geographic and scientific impact on history is also examined. A narrative text, primary, and secondary sources provide a basis for student background and understanding.

Students are expected to participate in class discussions, work on individual and group projects, write historical essays, and take structured quizzes and tests. Research of historical and cultural events is also a part of the class.

Grade: 11 Term: All Year

**AP United States History**

A survey course of United States history proceeds chronologically involving topics from exploration and colonization through modern America. The development of the American political system, economy, society and culture are examined and contribute to an understanding of our way of life. While a narrative text is used, students also examine primary sources and secondary materials. Course reading is quite extensive and essay writing frequent. Assignments are often problem based and designed to provoke questioning and inquiry and in addition, active participation by students is considered an essential component of the class.

Grade: 11 Term: All Year

**Hot Spots: Global Crises**

This class presents an opportunity to arrive at a more informed understanding of the problems confronting the world today by focusing on several global "hotspots" that make our times such an interesting, and critical, juncture in human affairs. Students’ studies focus on both issues and specific regions, including the Middle East, Asia, and Africa. Among other things, the class looks at terrorism, US intelligence reform, US challenges in Iraq and in the Muslim world, the emergence of China and India, Sudan and the war in Darfur, the Iran situation, and the problems confronting a world awash in weapons, poverty, and illness. The course is seminar and research based. Through contemporary readings and discussion, students are expected to take an active role in the class. Guest speakers are frequent visitors to this class and every effort is taken to use the valuable resources and opportunities provided by the universities in the community. Each marking period a student's work culminates in a documented research paper of some aspect of the issues covered.

Grades: 10-12 Term: Semesters I or II

**Introduction to Political Philosophy**

Aristotle famously defined man as the "political animal," and this course offers the opportunity to explore that notion at some length through the work of several seminal 20th century thinkers. Students will wrestle with such notions as what constitutes a "good" life, what the assumptions are that undergird this notion of "living well," and the relationship between the political arrangements human beings devise and the sort of individuals such arrangements, or regimes, produce. Is there such a thing as human nature, and if so, in what ways are we predisposed to act? Do human beings need laws and governments to enforce them, or are governments—and the people who comprise them—a source of inequity and oppression for the rest of us? What would happen in a "state of nature," where no one was in charge and no laws constrained us? What gives someone the "right" to rule? What is the nature of power? Are all human institutions—including civilization itself—constructed on a foundation of coercion and violence? These are fundamentally political questions, and they have occupied formidable thinkers for millennia. Students will take up these questions in this discussion-based course.

Grades: 10-12 Term: Semester I

**Introduction to Psychology**

During Introduction to Psychology students will study aspects of the human experience that high school students typically find interesting and relevant:

* Happiness and strategies for increasing resilience and optimism
* Consciousness, sleep, dreams, and drugs
* The relationship between the individual and social groups, for example, why people obey

and conform, love and aggress against each other

* How we learn and remember
* The brain and the relationship between the brain and behavior
* Psychological research strategies
* How people develop emotionally, socially, and intellectually across the lifespan
* Psychological disorders and the various treatments for psychological disorder

Additionally, students will develop the following skills during this course:

* Application of a psychological lens through which to understand human behavior, emotion, and thought.
* Critical evaluation, both in writing and in discussion, of the interplay between the social, biological and psychological.
* Evaluation of the kind and quality of psychological research data that inform us.
* Exposure to the APA style of writing and research presentation

Grades: 10-12 Term: Semester II

**Introduction to Sociology: Difference, Power and Discrimination**

What are the forces propelling and shaping human history? To what extent can human societies control their futures, and what kinds of futures are most desirable? What are the causes and consequence of inequality? Can and should social inequalities be rectified? To what extent can individuals choose who they will become, or on the other hand, to what extent are the lives of individuals – and surely their very ways of thinking – “made” by the societies of which they are apart? This course will analyze the unequal distribution of power and the intersections of these characteristics of power – social, racial, economic, and political – that create cultural, psychological, and historic consequences. 10th grade students may take this course with instructor permission

Grades: 10-12 Term: Semester I

**AP Micro Econ**

Microeconomics is the branch of economics that studies how people make decisions and how their decisions interact. This semester-long course provides a basic introduction to the functioning of economic systems at the micro level, which includes entities such as individuals (consumers and producers) and specific markets. We will explore how the scarcity of resources necessitates consideration of trade-offs by individuals and creates the need to make choices. We will examine how individuals make economic choices, using cost-benefit analysis and, in particular, marginal analysis. We will study the model of consumer behavior and critically evaluate the rational man assumption that underlies it. We will study multiple models of producer behavior, each relevant to one of four types of market structure -- perfect competition, monopoly, oligopoly, and monopolistic competition. We will learn how to evaluate market outcomes using the concept of economic efficiency, and underscore the efficiency-equity trade-off faced by society. We will explore how the existence of market power in certain types of market structures distorts economic efficiency and reduces society’s welfare, as do other sources of market failure such as externalities, public goods, and imperfect information. We will examine the role of government intervention in moving a society closer to a desired outcome, by creating appropriate incentives and disincentives. The analytical models we will study are heavily based on algebra, graphs, geometry, and intuition. We will learn how to apply these models as problem-solving tools, not just to understand past and current market events and outcomes, but also to predict market responses to potential events in the future. In short, this course will teach you how to think like a microeconomist.

Grades: 10-12 Term: Semester I

**AP Macro Econ**

Macroeconomics is the branch of economics that is concerned with overall ups and downs in the economy. This semester-long course provides a basic introduction to the functioning of economic systems at the macro i.e. the aggregate level, which includes entities or sectors such as households, firms, the government, the Federal Reserve Bank, and the rest of the world. We will explore how the key sectors of the economy interact via factor markets, product markets and financial markets, generating flows of funds among them. We will define various macroeconomic indicators commonly used to track macroeconomic performance, such as aggregate output (GDP, real GDP), aggregate price level (CPI, PPI, and GDP Deflator), unemployment rate, inflation rate and economic growth rate. We will learn how these indicators are measured, and use them to examine business cycles (booms and busts) as well as the long-term growth record of the U.S. since the Great Depression. We will examine issues such as – what are the limitations of GDP as a measure of economic wellbeing, what are the sources of unemployment, and who are the winners and losers from inflation. We will learn the model of the macroeconomy that explains its behavior, and illustrates how the government’s fiscal policy and the Fed’s monetary policy might be useful in stabilizing the economy. We will explore topics such as the pros and cons of budget deficits and government debt, and what defines and determines a nation’s money supply. We will study how international trade and finance impact the macroeconomy, particularly the value of the dollar. The analytical models we will study are heavily based on algebra, graphs, and intuition. We will learn how to apply these models as problem-solving tools, not just to understand past and current U.S. macroeconomic performance, but also to predict macroeconomic responses to potential events in the future. In short, this course will teach you how to think like a macroeconomist.

Grades: 10-12 Term: Semester II

**Caribbean Studies**

In this course, we will explore the history of the Caribbean region from the time right before Columbus's arrival in 1492 through the end of the twentieth century.  Covering political, economic, social, and cultural themes, we will examine the major developments of the Caribbean past:  discovery and conquest; colonialism and revolution; slavery and emancipation; imperialism and cold war politics; and migration and trans nationalism.  The Haitian Revolution will be discussed as a pivotal moment both in the history of the Caribbean and the history of the Americas more generally. Nineteenth-century themes will include the Cuban struggle for independence and the abolition of slavery in the British, French, and Spanish Caribbean. Consideration of the twentieth century will encompass topics such as U.S. imperialism, intellectual and literary movements, the Cuban Revolution, migration, and the rise of popular musical forms such as salsa and reggae. Reading and other assignments for the class will draw on the work of writers, musicians, and artists of the Caribbean. You will develop a clear understanding not only of the events and issues that have shaped the history of the Caribbean, but also of why and how the history of this region has unfolded in its particular ways.

Grades: 10-12 Term: Semester I

**The History of American Art & Architecture**

The History of American Art and Architecture is a survey of American painting, architecture and the decorative arts describing their development from colonial times to the present. The major schools of painting (for example, the Hudson River School, Ascan School, social realism, etc.) and styles of architecture (Federal, Greek Revival, etc.) will be defined and explored within the social context of their times. Students would be expected to purchase and read a basic text and possibly one or two monographic studies. In-depth research opportunities in which students examine a segment or topic of American art or architecture are required. Field trips to repositories of American art such as the University Museum of Art, the Detroit Institute of Art, the Toledo Museum, and Greenfield Village supplement the course work. More ambitious ventures might lead the class to Colonial Williamsburg or the Delaware Valley (Winterthur and the Brandywine Museum, etc.) or the Cleveland Museum of Art.

Grades:10-12 Term:Semester II

**Chinese Studies**

Studying Confucianism, Daoism, Legalism and Buddhism will lay the philosophical foundation for the study of China's history and culture though the central focus of this class will be the collapse of Imperial China (the longest, continuous government in world history) to the emergence of the Chinese Republic first under Chiang Kai-shek and later under Mao Zedong, through the Cultural Revolution and its aftermath, and the emergence of China on the world stage and leader of the Pacific Rim. Students will view and analyze contemporary film (the *Last Emperor, Beijing Bicycle, Not One Less*, etc.) for its historical and cultural content, read twentieth century Chinese authors (possibly Lu Shun, Ba Qin, etc.) and examine both primary sources and secondary historical and literary texts (such as *Shanghai Girls, Mao's Last Dancer*) in the quest to understand Chinese history and the many tensions rampant there in the 20th and 2lst centuries.

Grades:10-12 Term:Semester I***Mathematics and Computer Science***

Greenhills mathematics teachers are mathematicians and educators. We love our subject, enjoy the art of using mathematical models to solve problems, and embrace the science of continuously improving our pedagogy.

**Department’s Instructional Goals**:

We want our students to:

* *Practice* effective techniques to learn mathematics; to develop study skills, the ability to find and use resources; to ask questions; and become confident in their own problem solving abilities.
* *Understand* that problem solving is a process: It is repeatable; students can try something and be willing to revise and extend their results, to accept that mistakes and adjustments are part of the method.
* *Gain* effective technical communication skills: Students should be able to describe math concepts verbally; write about mathematics with precision; use terminology correctly; and communicate their processes clearly.
* *Use* technology, software, and calculators appropriately: Students should recognize that accuracy and freedom from monotonous calculation are complimented by an understanding of what the calculator is doing, and an appreciation of the limitations of technology. The ability to understand programming, error, and precision are integral to the effective use of technology.
* *Master* the fundamental concepts, big ideas, and skills of mathematics; pattern recognition, generalization, reasoning and proof; skills with numbers, ratio and proportion; reasoning with symbols; estimation; understanding of functions and sets; logical operations, the role of variables: We want our students to feel the interconnected nature of Mathematics.
* *Link* the study of mathematics to the role of mathematics in the “real” world; applications; strengths and limitations of mathematical models; the importance of assumptions and interpretations; the ability to ask questions and interpret mathematical methods and results graphically, symbolically, verbally and numerically.
* *Recognize* the creativity and beauty of mathematics and its centrality: To believe in the accessibility of math and its importance; the potential of every individual to do well in any challenging field with appropriate support. We hope that each student will learn to negotiate the tension between the mastery of skills and the understanding of concepts.
* *Appreciate* the efficacy of deductive reasoning and critical thinking skills; to celebrate the role of proof; assumptions; the formulation & testing of hypotheses, and the axiomatic bases of mathematical systems.
* *Contextualize* the history of math with connections across and within other disciplines: Grow to see that math underlies everything.
* *Become* intelligent and numerate consumers of mathematical information. Interpret, analyze, and represent data in a variety of forms; equations, tables, and graphs; to identify misleading information and to become conversant with the ideas of risk and certainty.

**Curriculum Overview**

The Greenhills School Department of Mathematics is dedicated to providing our students with a rigorous and comprehensive program of college preparatory mathematics. The curriculum has six major content strands woven throughout each course: Number and Operation, Measurement, Algebra, Geometry and Spatial Reasoning, Statistics and Data Analysis, and Topics in Discrete Mathematics. We embrace problem solving as an important life skill, and believe that every student, with proper support and challenged appropriately, is capable of the successful mastery of mathematics.

Our core program takes students through a three-year Middle School sequence designed to build on the students’ understandings of numerical algorithms and thinking and begin to generalize those skills into abstract algebraic reasoning. The faculty is continuously refining the sequence of skills and concepts presented in light of current research on brain development and learning profile, to ensure that each student’s program is appropriately challenging and accessible.

In the Upper School, students progress through a three-year program that leaves them prepared for success in college level mathematics. The traditional sequence of Algebra/ Geometry/ and Pre-Calculus topics is complemented by the inclusion of topics in Discrete Math and Statistical Analysis in each course. At the end of this basic program, a number of semester electives are available, including the option to earn college credit for Advanced Placement Statistics and/ or Calculus AB and BC. Finally, a research option is available for students with significant interest in pure or applied mathematics.

Required courses are offered at two levels of depth and pace: Regular and Honors. Students may also move through the required series of courses at an accelerated pace with the recommendation of the department; as their maturity, interest and abilities develop. Placement is determined using objective measures such as formal assessment and previous grades, as well as teacher recommendation and student interest. Courses are designed so that placement from year-to-year can be flexible, and teachers encourage students to consider the challenge of a faster paced course if that is appropriate, as well as a slower paced course as indicated. Our goal is for every student to experience success in at least one semester of college level mathematics before graduation, so care is taken that the course sequence is managed properly.

We encourage students to develop as learners by supporting choice in the program after the minimum requirement (Algebra II) has been met and by encouraging students to take an active role in seeking help and in articulating their needs. Success in college level mathematics depends not only on a student’s acquired skills but also on the ability to find support, embrace problem solving as a creative enterprise, and rebound from mistakes. Teachers are committed absolutely to providing the support necessary for students to become confident practitioners and consumers of mathematics at the college level and beyond.

**Middle School**

***Grade 6***

**Math 6**

This course uses an investigative curriculum that places fractions, percent, decimals, geometry, probability and statistics in a context relevant to middle school students. Instruction stresses the learning of mathematical skills, problem solving, reasoning and proof, communication of ideas, connections between ideas, and representation of ideas in a variety of ways. Hands-on activities and authentic/performance-based assessments are incorporated with traditional lectures and paper test. Organization and study skills are also taught as an integral part of the class.

*A scientific calculator is required for this course.*

**Pre-Algebra 6**

This course uses an investigative curriculum that places ratios and proportions, variables, linear equations, quadratic equations and exponents in a context relevant to middle school students. Instruction stresses the learning of mathematical skills, problem solving, reasoning and proof, communication of ideas, connections between ideas, and representation of ideas in a variety of ways. Hands-on activities and authentic/performance-based assessments are incorporated with traditional lectures and paper test. Organization and study skills are also taught as an integral part of the class.

*A scientific calculator is required for this course.*

***Grade 7***

**Pre-Algebra 7**

This course has a broad-based integrated mathematics curriculum which will enable students to make the transition to college preparatory mathematics. Students develop algebraic thinking skills while reinforcing basic math skills. Topics include solving equations within the real number system; analyzing and graphing linear equations and inequalities; collecting, analyzing and displaying data; probability; geometric shapes and definitions in both two and three dimensions; area and volume; and spatial visualization. A variety of materials and hands-on activities are provided so that students experience varied approaches to problem solving, increasing students' abilities and awakening their curiosity.

*A scientific calculator is required for the course.*

**Algebra Ma**

Algebra Ma is the first half of a course that includes advanced theoretical topics, as well as extensive work with applications and technology. Algebra Ma will include the study of standard topics such as expressions, equations, operations, linear functions, integers, rational numbers, inequalities, simultaneous equations, exponents, polynomials, factoring, algebraic fractions, square roots, quadratic equations, fractional equations and inequalities. Students will master computational techniques as well as the theoretical development of these and other topics.

*A graphing calculator (TI-83, 83+, or TI-84) is required.*

**Algebra M7**

This is a standard first-year algebra course, offered in the Middle School. This section is similar to the Algebra M offered in the 8th grade, but is open only to 7th graders based on interest, maturity and performance on objective assessments. Operations on real numbers and the concepts of variables and equations are stressed throughout the course. Topics include open sentences in one and two variables, systems of equations, graphing of linear functions, polynomials, factoring, algebraic fractions, exponents, radicals, quadratic functions and equations, and fractional equations. Students use the graphing calculator (TI-83, 83+, or 84) to graph equations and data as well as to find the best-fit line for a set of data. A variety of applications are stressed throughout the course. The final exam in June is a comprehensive two-hour exam.

*A graphing calculator (TI-83, 83+, or TI-84) is required.*

***Grade 8***

**Algebra Mb**

This is the second half of an extended “first-year” Algebra course. It follows Algebra Ma. Students who are successful in Algebra 8 Honors will be prepared to take Honors Geometry in ninth grade and Algebra 2 Accelerated in tenth. Algebra Mb continues through the end of the book that was used for Algebra Ma, extending topics that are not always covered extensively in a traditional first-year algebra course. The book will be supplemented with problems that require students to consider each topic from an abstract or theoretical point of view in preparation for future math courses. Students will study the elements of logic which are formalized in Geometry. They will be required to learn direct and indirect algebraic proofs. Additional topics will include material from discrete math, set theory and probability. Students will extend their use of the graphing calculator to analyze functions and data, with an eye toward college level mathematics. They will extend their knowledge of regression equations including quadratic and exponential functions. This course offers our students a uniquely rich opportunity, laying the foundation for success in advanced math through high school and college. Students use technology to graph equations and data as well as to find the best-fit line for a set of data.

*A graphing calculator (TI-83, 83+, or TI-84) is required.*

**Algebra M**

This is a standard first-year algebra course, offered in the Middle School. Operations on real numbers and the concepts of variables and equations are stressed throughout the course. Topics include open sentences in one and two variables, systems of equations, graphing of linear functions, polynomials, factoring, algebraic fractions, exponents, radicals, quadratic functions and equations, and fractional equations. Emphasis is placed on understanding functions as relationships between sets. Students use the graphing calculator (TI-83, 83+, or 84) to graph equations and data as well as to find the best-fit line for a set of data. A variety of applications are stressed throughout the course. The final exam in June is a comprehensive two-hour exam.

*A graphing calculator (TI-83, 83+, or TI-84) is required.*

**Geometry M**

This is a standard first-year algebra course, offered in the Middle School. Operations on real numbers and the concepts of variables and equations are stressed throughout the course. Topics include open sentences in one and two variables, systems of equations, graphing of linear functions, polynomials, factoring, algebraic fractions, exponents, radicals, quadratic functions and equations, and fractional equations. Emphasis is placed on understanding functions as relationships between sets. Students use the graphing calculator (TI-83, 83+, or 84) to graph equations and data as well as to find the best-fit line for a set of data. A variety of applications are stressed throughout the course. The final exam in June is a comprehensive two-hour exam.

***Middle School Computer Science***

The Computer Science program at Greenhills was developed to address the competencies needed for a strong foundation in this continually evolving academic area. The curriculum is based upon guidelines suggested by the Computer Science Teachers Association (CSTA,) and seeks to prepare students to function in a technology-rich learning environment, to use technology appropriately and ethically, and to develop the ability to use technology as a problem-solving tool. Students should graduate from Greenhills able to pursue Computer Science as an academic choice, either as a major or minor area of study. The Computer Science teachers work with the Math Department to develop curriculum related to programming and hardware, and with the Department of Information and Technology to integrate appropriate skills and competencies both vertically and horizontally.

**Grade 6: My Computer and Me**

Students learn how to operate on a network, to use the universal applications for word processing, computation, and presentation. Connections are made to the students’ work in the core academic areas including science, math, English and social studies. Appropriate and ethical uses of the network and the internet are developed and the role of technology as a learning tool and as a changing element in society is discussed. In addition, students learn to approach more sophisticated applications in systematic ways, including Publisher, music and art applications, and some elementary gaming. *(This course is offered through the Department of Information & Technology Services)*

**Grade 7: My Computer: How Does it Work?**

Students learn about the ubiquitous presence of computers in our world, from the microchip in a favorite toy to the way that Greenhills’ data wall interacts with the School’s weather station and how, exactly, we can retrieve and use the data gathered to make decisions. Students build circuits, are introduced to Robotics, and experiment with a variety of hardware interfaces to try to answer the question, “How does the computer turn electricity into function?”

**Grade 8: Making My Computer *Mine***

Students continue to learn about the design and function of basic hardware systems, and they begin to think about how to bend the computer to their own needs, to manage and enhance their lives and their learning. They begin to understand the nature of programming as the key to its use as a problem-solving tool. Students become proficient with programming the Graphing Calculator and programming in Scratch, as well as other online applications. Ethics and responsibility figure greatly in this component of the Middle School CS course, as students take on roles as leaders in the MS.

**Upper School**

**Algebra I, IH**

Algebra is a method of examining relationships between sets of numbers, called functions, by defining operations on sets. Until the early 18th century, this occurred verbally, numerically, and geometrically. The substitution of symbols for numbers is a relatively late development in the History of Mathematics, but mastery of the manipulation of these symbols has come to be the focus of the modern Algebra I course. This class focuses on the underlying concepts and on their symbolic representations by practicing particular skills and then applying these skills to solving problems and modeling relationships in Statistics, the Sciences and the Humanities. Topics include expressions, equations, operations, linear and quadratic functions, integers and rational numbers, inequalities, simultaneous equations, exponents and roots, simple polynomials, rational expressions and equations and, time permitting, sequences. Heavy emphasis is placed on the connection between the analytical solution to a problem and the graphical: the graphing calculator is used extensively but not exclusively in the analysis and verification of solutions.

While it is understood that many students will have had experience with Algebra prior to taking this course, the class is designed to both reinforce foundational skills and to explore the theoretical underpinnings and practical applications of algebraic techniques before continuing with the math sequence.

The difference between Algebra I and Algebra IH is one of pace and time spent on connecting the abstract language of Algebra to the concrete applications of the subject, as well as time spent to practice specific skills.

**Geometry, Geometry H**

Prerequisite: Completion of Algebra I with a grade of C- or better or Permission of the department. Students wishing to continue in the “H” sequence are expected to maintain at least a B average.

Geometry traditionally follows Algebra and is the course that introduces students to Mathematics as an academic discipline. The mastery of the facts of plane, 3-dimensional and co-ordinate Geometry, triangle trigonometry, area and volume, constructions, and transformations is followed by an investigation of the system of definitions, axioms and theorems first completely articulated by the ancient Greeks. Inductive and deductive reasoning are explored, and students begin to work with formal proof and the nature of mathematical certainty. These ideas are extended into other mathematical disciplines such as number theory and inference. Critical reading and mathematical writing are components of the course, and technology ranging from Euclidean compass and straight edge construction to dynamic geometric software is employed. Connections to the algebraic representations with which students are already familiar are highlighted, and mathematical ideas, such as area as an accumulator and right-triangle trigonometry, which will be featured in future courses, are foreshadowed. The Geometer's Sketchpad is used as an investigative tool, along with other enrichment activities.

The difference between Geometry and Geometry H is one of pace and time spent on the mastery of the facts of plane Geometry, practice writing with precision, and some emphasis on abstract reasoning. Students in an Honors section are expected to possess good study habits, and should be able to work independently.

After successful completion of Geometry, students are well prepared for the SAT II, Level I exam.

**Algebra II / Algebra IIH**

Prerequisite: Completion of Geometry with a grade of C- or better or Permission of the department. Students wishing to continue in the “H” sequence are expected to maintain at least a B average.

The course begins with a review of algebraic structures like operation, function and relation. These ideas are extended into the algebra of transcendental and discrete functions, and trigonometric functions are formally introduced. The complex number system is developed, and the ancillary completeness axioms discussed. The algebra of matrices is formally explored, and matrices are used as models to solve a wide variety of problems, including Markov Chains if time permits. The use of linear, exponential and power functions to model transformed data is explored, as well as the Gauss function’s role as a model of naturally occurring phenomena.

The difference between Algebra II and Algebra II H is one of pace and the level of sophistication of the applications studied. Students in an Honors section are expected to possess good study habits, and are expected to be able to work independently.

***Electives***

The completion of Algebra II signals the end of the required sequence of instruction, and may also complete the three-year Math requirement at Greenhills. Many students will have completed Algebra II before the end of the Sophomore Year, however, and will need to complete at least one additional year of mathematics. It is strongly recommended that students continue to study Mathematics for all four years of Upper School.

Electives are semester courses and, unless otherwise noted are offered each semester, for ½ credit.

**Analysis** (Semester 1)

Prerequisite: Completion of Algebra II with a grade of C- or better or permission of the department.

This course builds upon the ideas and skills covered in Algebra II, with an emphasis placed upon using the tools developed in Algebra and Geometry to solve an array of interesting, real-world problems. Exponential growth and decay, logistic models, data transformations, vectors and series are employed to analyze problems in physics, economics, medicine, and chemistry, among other areas. The course also provides a chance for students to solidify their algebra skills before continuing to topics usually covered in college level coursework.

**Functions**

Prerequisite: Completion of Algebra II with a grade of B or better or permission of the department.

This course continues to explore topics first developed in Algebra II but with a focus on more theoretical aspects of the underlying mathematical structures. Rational and transcendental functions are thoroughly explicated, and there is a heavy emphasis on trigonometry, including units covering circular functions, right triangle trigonometry, graphs, identities, equations, proofs, and applications of the Laws of Sines and Cosines. In addition, a formal study of sequences and series begins. Functions are viewed as elements of a set upon which an algebra is defined, and the idea of inverse and identity elements of that set are formally investigated within that framework. Students work with functions and relations in a variety of representations, explicitly and implicitly defined, in polar and in parametric form. The idea of a limit is introduced. Students hoping to take AP Calculus should take Functions.

After successful completion of Functions, students are well prepared for the SAT II, Level II exam.

**Pre-Calculus**

Prerequisite: Completion of Analysis or Functions with a grade of B- or better or permission of the department.

Pre-Calculus formally reviews the concepts from Algebra and Geometry which are essential to the study of calculus, and introduces some techniques not previously seen, such as partial fractions and sophisticated work with absolute values, as well as a review and continued study of sequences and series, which will be needed in the study of calculus. A complete treatment of the Limit is undertaken, and much work is done with application problems surrounding rates-of-change and the geometry of tangent and secant lines.

**Intro to Statistics** (Semester I)

Prerequisite: Algebra II

This course is a non-AP introduction to Descriptive Statistics and the fundamentals of Experimental Design. The course begins with descriptions of univariate data, including measures of center, spread, variation, as well as the shape of a distribution and unusual features. Then, bivariate data are explored via linear regression, including regression on transformed data. Discussion of correlation and variance lead to the essentials of design, including the difference between a study and an experiment, the idea of statistical evidence, and the role that randomization plays in the practice of inference.

**Financial Applications** (Semester II)

Prerequisite: Algebra II

This course applies Math through Algebra II to topics in personal financial literacy.

Students will learn about the vocabulary of personal finance, develop a solid understanding of the workings of major instruments for borrowing and investing, and see how their mathematical and statistical skills will apply to the day-to-day exercise of personal finance. Emphasis will be placed on the risk-return tradeoff, and overall financial fitness to enable students to make sound financial decisions throughout their lived. Financial literacy and financial fitness are essential life-skills in today’s volatile and highly competitive economy. This class has the power to change the financial course of your life!

The course will incorporate many hands-on activities including reading the financial news, collecting and interpreting financial data, writing brief analytical news-story pieces, problem-solving, using the computer/calculator for spread-sheeting and financial computations, and participating in personal finance simulations and games.

**Calculus A**

Prerequisite: Completion of Functions or Pre-Calc with a grade of B- or better or permission of the department.

This is the first of 3 semesters of AP Calculus offered at Greenhills. Upon the completion of Calculus B or C, students elect to take the AP Calculus AB or BC exam in the spring, and can earn college credit or exemption. The A Semester is centered on Differential Calculus, including a full treatment of the concepts of a limit and continuity. The Intermediate Value Theorem and the Mean Value Theorem are examined. Applications of the derivative include extreme value problems, related rates, curve sketching, elementary differential equations, and the practical meaning of the instantaneous rate of change. Students finish the semester with an introduction to the anti-derivative and the Fundamental Theorem of Calculus.

**Calculus B**

Prerequisite: Completion of Calculus A with a grade of C or better or Permission of the department.

This is the second of 3 semesters of AP Calculus offered at Greenhills. Upon the completion of Calculus B or C, students elect to take the AP Calculus AB or BC exam in the spring, and can earn college credit or exemption. The B Semester is centered on Integral Calculus and includes a complete treatment of differential equations. Applications of the integral include area and distance problems, volumes of solids of known cross sections and of solids of revolution, and the practical meaning of the integral as an accumulator. At the end of the spring semester students complete a comprehensive review and prepare for success on the AP Calculus AB Exam. AP Calculus A & B is equivalent to a first semester of Calculus at the university level.

**Calculus C**

Prerequisite: Completion of Calculus B with a grade of C or better or Permission of the department.

This is the final semester of AP Calculus offered at Greenhills. Upon the completion of Calculus C, students elect to take the AP Calculus BC exam in the spring, and can earn college credit or exemption. The study of calculus continues with the use of Infinite Series to approximate transcendental functions in order to integrate them. In addition, differential and integral calculus topics from the A and B semesters are applied to functions expressed parametrically and in polar form, which leads to a discussion of the application of Calculus techniques to Vector Algebras in order to solve problems in Physics. At the end of the spring semester students complete a comprehensive review and prepare for success on the AP Calculus BC Exam. AP Calculus B & C is equivalent to two semesters of Calculus at the university level.

**Multivariate Calculus**

Prerequisite: Completion of Calculus C with a grade of C or better or permission of the department.

This semester course provides closure to the topics begun in Calculus C by extending Vector Calculus from 3 into multiple dimensions, and exploring the mathematics of n-space. Students work with lines, planes, and curves and conics in 3-dimensions symbolically, graphically and numerically, and apply a variety of techniques including differentiation and integration to the study of these structures. Students may opt to take the course concurrently with *Physics with Calculus* to experience the ideas from both perspectives.

**AP Statistics**

Prerequisite: Completion of Algebra II with a grade of B or better or permission of the department.

Another Advanced Placement Course that allows students the experience of a college level course during Upper School. The first semester includes an overview of Descriptive Statistics, a discussion of Experimental Design, and a unit on Probability. Second semester focuses on inferential statistics and preparation for success on the AP Statistics Exam in the spring. There is a strong component of critical reading and writing in both semesters, as well as the use of appropriate technology. AP Statistics is equivalent to a non-Calculus based semester of Intro to Stats at the university level.

**AP Computer Science A**

Prerequisites: Algebra II and Foundations of Computer Science, or permission of the department

Taught concurrently with Computer Science I & II, AP Computer Science A is a year-long course. In order to receive a Math Credit, students must take the AP Test in the Spring.

The AP Computer Science A course is an introductory course in computer science, with JAVA as the primary language and vehicle for programming. The course is built around the development of understandable, adaptable, and, when appropriate, reusable computer programs that correctly solve a given problem. The design and implementation of computer programs is used as a context for introducing other important aspects of computer science, including the development and analysis of algorithms, the development and use of fundamental data structures, the study of standard algorithms and typical applications, and the use of logic and formal methods. In addition, the ethical and responsible use of these systems is an integral part of the course. The goals of the AP Computer Science A course are comparable to those in the introductory course for computer science majors offered in college and university computer science departments. The AP Computer Science A course is intended to serve both as an introductory course for potential computer science majors and as a course for people who will major in other disciplines that require significant involvement with technology. Students are expected to take the AP Exam in the spring.

**Advanced Research/Topics in College Mathematics**

Prerequisite: Completion or enrollment in Calculus A or AP Stats or Permission of the department.

This course is the capstone experience for the serious student of mathematics as an academic discipline. Students bring their own interests in theoretical or applied mathematics to the table, and pursue independent research under the guidance of the Advanced Research course offered in the Science Department. The experience culminates with student seminars during which each member of the class presents a paper, which may be submitted for publication to an appropriate student journal. Topics vary with student interest but are pursued with rigor and attention to current research in the field. Students may opt to take the course concurrently with *AP Stats* to gain a complete research based experience.

*Students must sign up for this course through the Science Department and meet the requirements of that course, but may petition to receive Math rather than Science credit for the course.*

**Foundations of Computer Science**

Prerequisite:Algebra I

In this course students begin to use computational thinking as a problem-solving tool. They are introduced to programmatic thinking via online programming resources, including Java. In the second half of the course a study of a second type of language is undertaken (for example, Python) and students explore personal interests such as game design or Robotics. No experience with programming is required; though students with programming experience are accommodated with modified curriculum. Students will begin to appreciate the ubiquity of computing and the ways in which a deeper understanding of computer science facilitates communication, collaboration, and efficiency of system design. Students will appreciate computational thinking as a means of addressing issues that are relevant not just to them, but also to the world around them. Object oriented programming will be introduced and students will learn the significance of modular systems and the challenges and necessity of coding as a member of a team. The course is lab based, and will involve substantial practical experience with a variety of platforms.

**AP Computer Science A**

Prerequisites: Algebra II and Foundations of Computer Science, or permission of the Department

The AP Computer Science A course is an introductory course in computer science, with JAVA as the primary language and vehicle for programming. The course is built around the development of understandable, adaptable, and, when appropriate, reusable computer programs that correctly solve a given problem. The design and implementation of computer programs is used as a context for introducing other important aspects of computer science, including the development and analysis of algorithms, the development and use of fundamental data structures, the study of standard algorithms and typical applications, and the use of logic and formal methods. In addition, the ethical and responsible use of these systems is an integral part of the course. The goals of the AP Computer Science A course are comparable to those in the introductory course for computer science majors offered in college and university computer science departments. The AP Computer Science A course is intended to serve both as an introductory course for potential computer science majors and as a course for people who will major in other disciplines that require significant involvement with technology. Students are expected to take the AP Exam in the spring.

Students are encouraged to use personal laptops in AP Computer Science A in order to facilitate homework, coursework and projects.

***Modern and Classical Languages***

**Middle School**

**Latin 6, 7 and 8**

This beginning Latin course for middle-school students covers the basic structures of the language exclusive of the subjunctive. Emphasis is placed on Latin as a means of communication and on reading skills. The primary texts (Volumes 1, 2 and 3 of the Oxford Latin Course) make clear many details of daily life among the ancient Romans. Activities include songs, skits, games, puzzles, work with Latin roots, and introduction to Greek and Roman mythology. Occasional trips to museums enrich the students' experience of the ancient world. By the end of the three-year sequence, students are able to read Latin stories written in all six tenses. They can also reply in Latin to Latin questions about the stories and can participate in simple Latin conversations.

**French/Spanish/Chinese 6, 7 and 8**

Middle Schoolers in our foreign language classes learn very quickly, within real life situations, to speak French, Spanish or Chinese. You would not be surprised, when coming into a classroom, to find our students preparing a skit, acting, singing, eating, drawing, working in groups or with partners, performing listening comprehension exercises and having fun while they are acquiring the foundations of the language. Trips to museums and restaurants offer special opportunities to integrate vocabulary and culture in our classes. Teachers make sure that typical customs playfully enhance our daily teaching. Reading and writing skills are carefully introduced through the use of stories and readings, illustrated writings, skits, letters, and small reports. By the end of the three-year sequence, our students are generally able to function and communicate in many concrete situations. This course is a three-year sequence.

**Upper School**

***Chinese***

**Chinese I**

This course serves as an introduction to Mandarin Chinese. Students will develop basic listening, speaking, reading, and writing abilities, and understand the customs and life of modern China. In speaking, students will develop accurate pronunciation and will develop good communication skills in dialogues and be able to describe daily activities using a broad basic vocabulary. Students will learn the structure and pattern of Chinese characters and be able to write short sentences. Culture is integrated into the curriculum, and includes both modern and traditional life.

**Chinese II**

This course is a continuation of Chinese I and focuses on building the students' command of oral and communicative structures in more sophisticated contexts. This course covers topics such as making appointments, school life, shopping, weather, transportation, writing a letter, among many others. Each theme is based on a communicative topic with specific objectives. Included in the content are contextualized vocabulary and grammar, listening, speaking, reading, and writing skills. Students are expected to become more proficient in both handwritten as well as word-processed Chinese writing. Many internet resources, pod cast, authentic Chinese articles, and a variety of communication activities will be integral parts of each theme.

Cultural topics include Chinese calligraphy, painting, songs, acupuncture, holidays, Taijiquan, and Chinese film.

**Chinese II: For Heritage Speakers**

This section of Chinese is designed to enable heritage speakers of Mandarin Chinese to further develop their language skills, with special emphasis on reading and writing. Chinese culture, from modern to traditional topics, is an integral part of the curriculum, and readings will include newspapers, short stories, and novels. Student input will be given strong consideration in designing the course to meet the needs of its members.

A placement interview is required to enroll in this class.

**Chinese III**

This course is a continuation of Chinese II. The focus continues to be on oral proficiency, along with more grammatical patterns and characters. This course covers topics such as dining, visiting the library, seeing a doctor, going to a party and dating, among many others. Students learn language through creating skits, role-playing, Chinese-style cooking, interviewing native speakers, as well as writing vocabulary and grammar tests. Many internet resources, podcasts, and authentic Chinese materials will provide a variety of ways for students to sharpen their reading, writing, listening and typing skills. Students will also watch movies or documentary clips that show the lives of ordinary Chinese in both mainland China and Taiwan.

At the end of Chinese III, students are encouraged to continue on in Chinese IV-AP or Chinese IV (non AP) based on teacher recommendation. These will be offered in the 2010-11 academic year.

**Chinese III: For Heritage Speakers**

This course is a continuation of Chinese II for heritage students. Our focus continues to be on oral proficiency, along with more authentic reading material and more intensified practice in writing. Class discussion and presentations focus on comparing and contrasting the differences between Western and Eastern values on topics such on holidays, etiquette, and concepts of privacy. At the end of the course, students read traditional Chinese stories for intermediate level students.

A placement interview is required to enroll in this class.

**Chinese IV**

This course is tailored to build upon the existing skills of students who have taken Chinese III. Students will refine and expand their linguistic abilities. Areas of focus will include basic and intermediate grammatical structure and orthography through reading, writing, speaking, and listening. Through a variety of media, students will also explore culture, geography, history, and current events of the Chinese-speaking world. This class will be taught exclusively in Chinese. Students exceeding the targeted level of language proficiency will be encouraged to enroll in the AP Chinese language class. Upon completion of this course, instructors will recommend the appropriate subsequent level of Chinese study. This may be Chinese AP or regular Chinese V.

**Chinese V-AP**

The goal of this course is to deepen students' immersion into the language and culture of the Chinese-speaking world. The course engages students in an exploration of both contemporary and historical Chinese culture. Students will learn about various aspects of contemporary Chinese society, including geography and population, ethnic and regional diversity, travel and transportation, climate and weather, holidays and food, sports and current affairs. This class will be taught exclusively in Chinese. This course prepares students to demonstrate their level of Chinese proficiency across the three communicative modes: interpersonal, interpretative, and presentational. A secondary goal is to prepare students for the AP Chinese Language Exam.

**Chinese VI**

Chinese VI is a full-year, advanced Mandarin Chinese course. Students will focus on enhancing their communication in Chinese, both linguistically and culturally within and beyond the school setting.  This course prepares students to demonstrate their level of Chinese proficiency across the three communicative modes (interpersonal, interpretive, and presentational) and the five goal areas (communication, cultures, connections, comparisons, and communities) as outlined in the Standards for Foreign Language Learning in the 21st Century. A wider range of readings, more writing and translation exercises, increased use of audio/visual materials, and Chinese-language software are essential components of the course.

Prerequisites: Chinese V and permission of the instructor.

**French**

**French I**

This is an intensive course covering the same material as French 6, 7, and 8 which allows the students to continue on to French II. The goals of French I are for students to acquire the basic tools of oral and written communication so that they can express their own ideas and so they can communicate on a basic level should they travel to a French-speaking country. By the end of the year they will have acquired a sufficiently wide vocabulary to enable them to describe people, things and events using the present tense and one past tense, and the ability to use specific idiomatic expressions to express what they want to do, have to do, and what they will do.

Grammar and vocabulary are learned through communicative activities, and 98% of the class is taught using the target language. Activities include skits with dialogue written by the students, singing, conversations using new vocabulary and grammar structures, listening comprehension exercises, and a video program based on everyday situations.

**French II**

Students will continue to expand the frontiers of what they can understand and express. Watching French commercials, performing a skit, taking grammar and vocabulary tests, writing and revising compositions, learning a poem by heart, singing, playing games, preparing and eating typical foods from the French-speaking world, adding many new functional vocabulary and grammar items, are all part of the Level II experience.

Students watch several films during the year. Through discussions and activities based on these films, students learn new grammar structures and expand their vocabulary base and speaking skills. By working together in pairs and in groups, our students will acquire a higher level of accuracy and creativity and will further develop their communication skills. Our Level II students truly enjoy the challenge and rewards of becoming more sophisticated both in their language usage and cultural awareness. After French II, students advance to French III.

**French III**

At this level students will complete their study of basic and advanced grammar except for the fine complex nuances that will be studied the following year in the Advanced Placement class. A variety of activities include spontaneous class discussions driven by student interests, music, films, a fashion project, French television commercials and a lesson on Impressionism. The content of our lessons aims to motivate teenagers, but also to widen the students' horizon by making them aware of social justice and prejudice issues. Students also begin to study French literature with a play by Moliere.

At the end of French III, students are encouraged to continue on to French IV-AP or French IV (non AP) based on teacher recommendation.

**French IV Regular: Popular Culture, Media and Role-playing**

This course focuses on further developing conversational skills and aims to improve the student's understanding of the basic structures of the language. Vocabulary development is a main component of the course. A wide variety of materials is used: works of literature by authors such as Guy de Maupassant, Emile Zola, and Jean de la Fontaine, articles from French newspapers and magazines, several French films, popular French music, and comic strips without dialogue (students make up the dialogue).

In using these materials the goals are: to improve conversational skills, to develop vocabulary use, to incorporate grammar study in the context of material and to perfect writing skills so that students can express themselves with few errors. Students write weekly short essays on a variety of topics from which class discussions ensue.

All of these activities strive to keep the student's interest in French alive and to motivate the student to want to perfect his/her reading, writing and speaking abilities.

**AP French Language and Culture**

This is a college-level course for upper school students in their sixth year of French if they start French in 6th grade, or fourth year if they start in upper school. Necessary structures to communicate (both written and oral) are acquired but will be reinforced during the year, which culminates in the AP Examination in May. Aside from this major objective, the goal is to foster and enhance knowledge and comprehension of Francophone cultures through six themes structuring the curriculum: *Les défis mondiaux, la science et la technologie, la vie contemporaine, la quête de soi, la famille et la communauté,* et *l’esthétique.* These themes will be a frame of reference, allowing students to practice interpersonal, interpretative and presentational communicative skills This course is taught exclusively in French and uses authentic resources from francophone websites and publications. This course supports the national *Standards for Foreign Language Learning in the 21st Century* with all around proficiency in reading, speaking, writing and oral comprehension.

**French V Advanced Literature**

This course, French V Advanced Literature, is a college-level survey course taught exclusively in French. It is offered every year and is designed for the most advanced French students who love literature. The course program is challenging, as all texts are read in the original and can be, in light of the time when they were written, difficult to decode. Besides reading, analyzing and discussing classic and modern literature, students will also learn how to write a formal text analysis.

The reading of the following texts is mandatory:

Plays and Novels: Corneille, Le Cid (17th Century), Molière: L'École des Femmes (17th Century), Voltaire: Candide (18th Century), Maupassant: Pierre et Jean (19th Century), Césaire: Une Tempete (20th Century), Duras: Moderato Cantabile(20th Century); Poetry: Du Bellay: two poems (16th Century), Louise Labé: two poems (16th Century), La Fontaine: four fables (17th Century), Baudelaire: six poems (19th Century)

**French V Regular: Culture, Literature and Politics**

This course proposes to analyze how the notion of French culture has been constructed. Political events in France and the French speaking world are used as a base for learning critically about the history leading to these events. The climate engendered by the September 11 tragedy is an opportunity to examine the francophone world through the eyes of other cultures.

Various elements of the French identity such as cuisine, haute couture, chansons and films are studied through meaningful projects leading once more to the analysis of the construction of that very identity. Literature is viewed as an opportunity to examine the themes of exile, alienation and prejudice.

This course focuses exclusively on content, discussion and exchange of ideas. Grammar is never presented as an obstacle to doing well.

**Latin**

**Latin I**

In this beginning course, students learn the basic structures and vocabulary of the language which the ancient Romans spoke; as a result, students begin to appreciate the structures of their own language and to see the dramatic influence Latin has had on the English language.

The main goal of the course is to help students learn to read Latin, although some speaking and listening in Latin is used. By the end of the year, students have a strong foundation in the Latin language. The course also provides some historical and cultural background to give students a context for the stories they read. Inter alia, students learn about Roman houses, food, architecture, entertainment, clothing and religion, as well as the quasi-mythical stories of Rome’s foundation, regal period, and early Republic.

**Latin II**

Students greatly expand their Latin vocabulary; knowledge of grammar increases to include common uses of the subjunctive, infinitives, participles, and all uses of noun cases. We begin the year by reading myths in Latin, usually Hercules and Jason and the Argonauts. Other myths and historical texts are read as sight-reading exercises. Selections of inscriptions, graffiti, and mediaeval authors may also be read.

By the end of this course students know all of basic Latin grammar and are able to read unadapted selections from Caesar's commentaries on his campaigns in Gaul, the De Bello Gallico, and shorter lyric poems by various authors. A general outline of Roman history is given, with the focus on events during Caesar's lifetime.

**Latin III**

Students may read an edited version of Petronius' Cena (1st century AD) or Pliny’s letters. Students eventually read unadapted selections from the speeches which Cicero gave to the Roman senate and people, e.g., how he saved the Republic from the conspiracy of Catiline. In addition, selections from Sallust supplement the picture presented by Cicero.

Much emphasis is placed on solidifying grammar and syntax to prepare the student for Latin IV/V. Life in the early Empire and late Republic and details of the fall of the Roman Republic are also a constant focus. Other primary sources, such as tomb inscriptions, poems, and extant letters are investigated as supplements.

At the end of Latin III, students are encouraged to continue on to Latin IV-AP or Latin IV (non AP) based on teacher recommendation.

**Latin IV/V or Latin IV/V-AP**

Students read from a variety of authors who reflect the death of the Roman Republic and the birth of the Empire, with a focus on Augustan Rome. In alternating years, we spend most of the course reading Vergil's Aeneid, and discussing the questions he raises about the sacrifices necessary for peace and Empire; the focus every other year has been on selections from the Latin Literature AP exam, namely Catullus, Cicero, Horace and Ovid. Students who wish to take the Advanced Placement exam in May will be prepared to do so with extra reading and exercises.

A separate section of Latin IV/V may be offered for those students who wish to continue Latin but prefer not to prepare for the AP exam. The focus and authors read are the same as those in the AP section, but there is greater emphasis on review and fewer works are read. Class time is devoted not only to translation but to analysis and explication of poetry.

Latin III and Latin instructor’s permission are required to register for this class.

**Latin — Classical Epic**

*Classics Elective*: This class may not be used to fulfill the language requirement. A thorough study of the classical epic, including the Iliad, Odyssey, Theogony, and Aeneid. In addition, selections from the Argonautica, De Rerum Natura, and the Metamorphoses will be assigned.

The approach will be:  
 a) lecture/discussion of the various readings in the works  
 b) project/paper/presentation on selected topics

**Latin — Classical Drama**

*Classics Elective*: This class may not be used to fulfill the language requirement. An introduction to classical Greek drama, both tragedy and comedy, through the study of the works of Aeschylus, Sophocles, Euripides and Aristophanes. One or two plays of each author will be studied, discussed, and used as starting points for student research on various topics, such as:

· The staging of classical drama

* The ancient theater
* Religion and drama
* New comedy
* Roman drama

**Spanish**

**Spanish I**

This is an intensive course that covers essentially the same material as Spanish 6, 7, and 8, allowing the student who satisfactorily completes the course (with a grade of C or better on the final exam) to continue on to Spanish II.

The goals for Spanish I are for students to acquire the basic tools for effective oral and written communication so that they can express their own ideas and communicate on a basic level should they travel to a Spanish-speaking country. By the end of the year they will be able to describe people, places, events, and things in both simple present and past tenses. They will also be able to use specific idiomatic constructions to talk about what they and others have to do, want to do, and will do in the future.

The class is taught in Spanish to develop the students' aural comprehension and speaking skills. Students acquire vocabulary, grammatical structures and functions and, most importantly, confidence in their abilities by participating in communicative, contextualized activities. Emphasis is placed on the richness and diversity of culture and traditions within the Spanish-speaking world. Activities include speaking in pairs and small groups, working on projects, writing dialogues, playing games, singing, celebrating cultural events, studying artists, reading authentic passages, and watching and critically responding to a variety of culturally noteworthy videos and DVDs.

**Spanish II**

Students will continue to expand the frontiers of what they can understand and express in writing, speaking, reading, and aural comprehension. Watching two feature length films and discussing them in Spanish, creating dialogues, or working on small and large projects, taking grammar and vocabulary tests, playing games, singing, preparing and eating typical foods from the Spanish-speaking world, adding many new functional vocabulary and grammar items, are all part of the Level II experience.

By working together in pairs and in groups, our students will acquire a higher level of accuracy and creativity and will further develop their communication skills. Our Level II students truly enjoy the challenge and rewards of becoming more sophisticated both in their language usage and cultural awareness. After Spanish II, students advance to Spanish III.

**Spanish III**

In this level students work to synthesize all aspects of their language study as they gain fluency and confidence in their ability to communicate accurately and effectively on a higher linguistic plane.

All major aspects of grammar from previous levels are reviewed, and all remaining advanced grammatical constructs are presented in a functional context, with specific emphasis on the subjunctive mood and advanced vocabulary acquisition. Students speak daily in Spanish on a variety of topics, and write frequently. They also begin to study literature, reading and discussing short stories, poems, and films from throughout the Spanish-speaking world.

At the end of Spanish III, students are encouraged to continue on to Spanish IV-AP or Spanish IV (non AP) based on teacher recommendation.

**Spanish IV**

This class is designed for those students who wish to continue their study of Spanish, but who do not want to endure the rigors of preparation for the AP Exam. Grammar is reviewed as needed, and always in a functional context. Students develop their vocabulary and fluency of expression as they read, write about, and discuss a variety of texts (both written and visual) from Spain and Latin America.

Students use Spanish daily in class discussions, conduct debates, make oral presentations, and focus their daily efforts on creatively "learning by doing" in all aspects of language use.

**Spanish AP**

In this challenging class, students work towards high-level proficiency in all aspects of language use as they prepare to take the Advanced Placement Exam in Spanish Language in May. Advanced grammar is reviewed as needed in preparation for the AP Exam.

Students acquire a rich and varied vocabulary through reading and discussing in depth short stories, poems, plays and articles from throughout Spain and Latin America. Students write both formally and creatively with frequency, and develop their oral fluency and aural comprehension through constant language use in class. Students willing to put in the effort required by this class will reap great rewards.

Students who enroll in this class must take the AP exam otherwise the AP designation will be removed from the transcript.

Students scoring a three or above on the AP Exam may be eligible for college credit or advanced placement at the university level.

Spanish AP is for students who have successfully completed Spanish III or IV and have departmental permission.

**Spanish V - Topics in Latin American Culture and History**

This year-long course will explore a variety of topics in Latin American History among them independence and revolutionary movements, gender relations, USA-Latin America relations, and current events that affect Latinos in the Americas. We will approach each topic from multiple perspectives such as art, literature, speeches, films, and music.

***Science***

**Middle School**

The Middle School science program is designed to facilitate students’ understanding of fundamental science concepts and scientific practices through the process of inquiry, and to empower students to view themselves as global citizens who have responsibility to take positive action to contribute to a sustainable earth. Our classroom environments reflect the practices of expert scientists, in particular by using inquiry through collaboration. Students answer meaningful questions that investigate phenomena, enabling them to develop an understanding of the natural world in which they live. We work to create a student-centered classroom culture in which students are encouraged to take risks in their collaboration, including the critiquing of each other’s work and ideas. As a result, our students become more thoughtful about their own work and more respectful and supportive of their peers. During the process of inquiry, students ask and refine questions; find, incorporate and use information; design experiments; collect and organize data; create graphs and protocols for data interpretation; and apply results to create scientific arguments and explanations to defend conclusions.

During each year of study in Middle School science, students investigate a variety of science disciplines, including physics, chemistry, biology, earth science and environmental science. As students develop and carry out their investigations, they discover that many phenomena are most fully investigated by integrating key concepts from several science disciplines.

Various technology tools that promote learning are embedded throughout the Middle School science curriculum and serve as essential components of the work. Students use these tools to gather and synthesize information; collect and interpret data; model various phenomena; engage with interactive multimedia; and create presentations for their classmates.

The approach adopted by the Greenhills Middle School science faculty aligns with the National Science Education Standards (1996), with the American Association for the Advancement of Science benchmarks (1993) and with the New Framework for Science Education (2011). The program was selected for inclusion in the 2005 National Science Teachers Association Press publication Exemplary Science in Grades 5-8: Standards Based Success Stories, part of a Monograph Series highlighting programs throughout the U.S. that exemplify the national science standards.

**Science 6**

IQWST units are designed to align with national content and inquiry standards from the American Association for the Advancement of Science (AAAS, 1993) and the National Research Council (NRC, 2011). The Greenhills 6th grade curriculum will include three units—one each in physics, chemistry and biology.

Using an activity-based, rather than a textbook-based curriculum, the student edition functions more like a portfolio, with in-class lab sheets, readings, and other homework assignments assembled in one binder. Focal scientific practices include designing investigations; data gathering, organization, and analysis; modeling of scientific phenomena; constructing evidence-based explanations; and opportunities to develop literacy in science through extensive reading and writing.

*Unit 1: Light, its role in sight, and its interaction with matter*

**See the Light: Can I Believe My Eyes?** is a 10-week, project-based unit. The unit focuses on making sense of an anchoring activity, which we call the “hidden message” activity: A message, or parts of it, appear and disappear depending on the color of light used to illuminate the message. The driving question for the unit is: Seeing the light: Can I believe my eyes? The target science ideas and inquiry processes are instrumental to understanding the anchoring activity and answering the driving question. Students complete several investigations, each time cycling back to the anchoring activity. Each cycle helps them delve into the science content to gain a deeper understanding of how light moves through space, what happens when it meets matter, how our eyes detect light, and how colors of light can be perceived to be different than what they really are. Throughout the unit, a model of light and seeing is developed, applied to explain new phenomena, critiqued, modified, and re-applied.

*Unit 2: Particle nature of matter and phase changes*

This 8-week, project-based unit helps students develop an understanding of the particle nature of matter through experiencing and explaining a variety of phenomena. In order to contextualize chemistry concepts and scientific inquiry in students’ everyday experiences, the unit focuses on the phenomenon of how they smell odors. The driving question, **“How can I smell things from a distance?”** organizes and motivates activities throughout the unit. Students complete a number of investigations, each time revisiting the application to smelling odors. Each cycle helps them delve deeper into the science content to understand the particle nature of matter. The unit focuses on the scientific practice of modeling. Students construct and frequently revise their model of matter, which is represented both as a drawing and a written explanation of their drawing. The teacher facilitates discussions to help students revisit ideas about models and modeling that were introduced in the physics unit.

*Unit 3: Survival: From organisms to ecosystems*

**“Where have all the creatures gone?”** is the title of the biology unit. This ecosystem unit focuses on organisms’ needs for survival and what happens when those needs are not met. It is organized around the driving question: “What can cause populations to change?” This question is addressed through the investigation of a specific population change: students examine why the trout population in the Great Lakes decreased significantly from 1930 to 1990. Over the course of this investigation, students learn why food is important, what structures different organisms have in order to eat and reproduce, what the different relationships are between organisms (e.g. predator/prey, producer/consumer and competition) and what abiotic factors affect ecosystems. All of these pieces combine to help students construct an evidence-based scientific explanation about why the trout population has decreased so drastically.

Prerequisite: None Term: All Year

**Science 7**

The 7th grade science program at Greenhills engages students in developing understanding of key scientific ideas and principles through investigating phenomena in order to experience, first hand, the richness and excitement of developing deep understanding of the natural world in which they live. One goal of the curriculum is to empower students to view themselves as global citizens who have responsibility to take positive action to contribute to a sustainable earth. Three projects comprise the curriculum whose goal is to address the learning outcomes envisioned by the National Research Council’s newly developed *Framework for K-12 Science Education*. The curriculum systematically builds to help students develop understanding. Our pedagogical approach focuses on integrating scientific and engineering practices, crosscutting concepts, and core ideas of science also called upon by the new *Framework*.

"*How healthy is the stream behind our school?"* focuses on earth science, chemistry, biology, and environmental science concepts including water quality, pH/acids/bases, solutions, thermal pollution, turbidity, density, watershed, topography, water distribution etc. Using sensors attached to portable technology tools students collect pH, temperature, conductivity, and dissolved oxygen data at a nearby stream. They also collect a variety of qualitative data. Students collect and then systematically analyze data during the Fall and again in the second semester and look for patterns and trends to determine the quality of the stream for supporting life. Students use this real-time data as evidence to create a scientific explanation that they revise as more data is collected. They also look at how their actions outside in the mini-watershed can adversely affect the quality of the stream. The project culminates with an interdisciplinary public speaking unit where students connect their science learning with the local community as they share their knowledge through formal presentations.

"*How do you make new stuff from old stuff*?" focuses on chemistry concepts including properties of matter such as density, solubility and melting point, the nature of chemical reactions including macroscopic and particulate nature of matter, and the conversation of mass. The curriculum is presented as a series of experiments and activities that build on each other to promote students developing rich understanding of chemistry concepts. The project's focus is on having students develop explanations of chemical phenomena.

*“What do glass beads, concrete, your cell-phone, fertilizer, lubricant, and gold earrings have in common?”* investigates how earth materials are used everyday. Connections are made to both other projects with focus on chemistry and earth science concepts.

All three projects reflect classroom cultures where students collaborate and routinely use scientific and engineering practices in order to explain phenomena as they find solutions to these authentic questions that relate to their daily lives. Students engage in the following scientific practices: asking and refining questions: finding, incorporating and using information: designing experiments; collecting and organizing data: creating graphs and protocols for data interpretation; and applying the results to create scientific arguments and explanations to defend conclusions. New learning technology tools are embedded throughout the curriculum and serve as essential components of the work. These include tools for gathering and synthesizing information, collecting and interpreting data, modeling, and viewing multimedia and presentation software.

Prerequisite: None Term: All Year

**Science 8**

Throughout the 8th grade, students collaborate and routinely use scientific practices in order to explain phenomena as they find solutions to authentic questions. Students engage in the following scientific practices: asking and refining questions; finding, incorporating and using information; designing experiments; collecting and organizing data; creating graphs and protocols for data interpretation; and applying the results to create scientific arguments and explanations to defend conclusions. New learning technology tools are embedded throughout the curriculum and serve as essential components of the work. These include tools for gathering and synthesizing information, collecting and interpreting data, modeling, and multimedia and presentation software.

The 8th grade curriculum has several units that center on the theme of energy. The first unit begins our exploration of the topic of energy with the driving question, "*Why Do Some Things Stop While Others Keep Going?*" This unit focuses on the idea that all of what goes on in the universe involves some form of energy transformation and/or transfer. Students explore how energy gets converted from one type to another, why energy seems to get “used up”, how living things use energy, what sources of energy are available and the different ways of producing energy. Students demonstrate their understanding of these concepts as they design and build a Rube Goldberg machine. Additional lessons will engage the students in the exploration of force and motion.

The second unit, "*How Does Food Provide My Body With Energy?*" is a cross-disciplinary unit targeting chemistry ideas in the context of living systems. This units’ goal is to create personal relevancy and motivation for learning the content, which focuses on the nature of food, how we use food in our cells (respiration), and how plants make food (photosynthesis). As a culminating activity, students design and conduct various investigations branching from the unit that include researched background information, design of procedures and data collection protocols and where data collection includes experiments, questionnaires, and taste-tests (where applicable). This data will be analyzed and the entire investigation will be formally presented to the class.

In the final 8th grade unit, energy is revisited by investigating alternative methods to produce energy to reduce our dependency on foreign oil. Through teacher and student designed investigations students learn firsthand about the difference between continuous and intermittent alternative energy sources by collecting and analyzing data collected from Greenhill’s solar, geothermal and wind turbine energy systems. Students apply their understanding by engaging in activities in which they propose energy plans for remote and populated areas of the country based on available resources. Students further explore Alternative Energy resources by designing and building a wind turbine, a machine, vehicle, or a 3-dimensional building with working parallel and series circuits, powered by solar or wind energy.

Concurrent to our Science curriculum running throughout the year, all 8th grade students develop a “Sustainability Action Project” (SAP). As students explore and learn to appreciate the complexities surrounding energy, it is also important that students understand the sustainability issues connected to energy. Students will address the three tenants of “Sustainability” as they explore their topics of choice.

As a result of the SAP project, students have an opportunity to understand and investigate a community issue of their choosing that recognizes global importance. Students channel their findings into a real action project aimed at taking a stand and proposing a change in the world. While exploring sustainability issues, students use the scientific skills they have developed to investigate the world beyond their immediate environment. By engaging in conversations with students from other schools in the US and abroad, it is our hope that students continue to develop their talents as global citizens to recognize their own and others perspectives on issues surrounding sustainability. They accomplish this goal by translating their findings into appropriate actions to improve the world locally and understand how that small change impacts the world globally. This project will culminate in an evening where students will present their projects to the local community members and leaders.

Prerequisite: None Term: All Year

**Upper School**

Science is ever expanding; each day new ideas and data accumulate. Pick up any newspaper and there will be information on human cloning, deforestation, global warming, nuclear power, medical breakthroughs, extreme weather, and the like. How are students going to deal with this (often technical) array of information? To learn every relevant detail is impossible. However, a working understanding is attainable, both of the unifying concepts, and of the scientific practices by which scientists learn and discover. This working understanding is at the heart of the Science Department’s goals at Greenhills. Exposure to a diverse curriculum that uses current technology such as DNA separating gels and computer probes allows students to develop an understanding of how science “works”. By adding to these skills of research both a working knowledge of key concepts and an environment of critical thinking, there emerges an experience that enables students to take on new ideas effectively.

Our basic goals are to:

1) Foster an appreciation of science and related information and concepts so that students will be able to enjoy science in the future.

2) Equip students with the knowledge and skills for college level work, and so that they would be able to make informed decisions in our increasingly technological world.

Although all students are required to take three full credit science courses, with at least one in life science (biology) and one in a physical science (physics or chemistry), we recommend that all students take a course in each of the three science content areas. (Having a three-discipline background is sometimes a factor in determining who can take a particular advanced course when enrollment is tight.) In fact, the average number of science courses among our graduating seniors is a little over five. Students thinking about a career in either the pure or the applied sciences (such as engineering, medicine, dentistry, or veterinary medicine) are strongly encouraged to take courses in biology, chemistry, and physics, as well as at least one advanced course.

Starting in tenth grade, science courses do not have to follow a specific sequence. Accordingly, if you have particular questions about choices or sequences for your son or daughter, please feel free to contact a member of the Science Department for clarification. A few of these possible sequences are described below.

**Various Science Course Sequences**

While several courses do have prerequisites, many science courses do not have to follow one another in a particular order. Once a student selects a tenth grade course, numerous sequences are possible. Accordingly, if you have particular questions about choices or sequences for your son or daughter, please feel free to contact a member of the Science Department for clarification. A few of these possible sequences are described below.

9th 10th 11th 12th

**Possible Science Course Selections for various grades:**

Intro. Biology Chemistry (or 11, 12) Physics (or 12) Advanced Sciences:

Chemistry Honors (or 11, 12) Physics Honors (or 12) Adv. Bio – OPEC

Conceptual Physics (or 11, 12) Adv. Chemistry (or 12) Adv. Calc Physics

Natural History (or 12) Adv. Bio - CMB (or 12) Advanced Research

ESSU (or 11, 12) Anat. & Physio. (12)

A possible set of courses for students interested in pure or applied science in college:

Intro. Biology Chemistry Honors Physics Honors Choice of

Advanced courses

Advanced Research

A possible set of courses for students who want a basic college preparatory science curriculum:

Intro. Biology Chemistry Physics ESSU

Anat. & Physio.

A possible set of courses for students who want as much science and challenge as they can get:

Intro. Biology Chemistry Honors Physics Honors Adv Biology OPEC

Natural History Adv. Bio-CMB or Adv. Chemistry or

Anat & Physio Adv Calc Physics

Advanced Research

A possible set of courses for students especially interested in physical sciences:

Intro. Biology Honors Chemistry HonorsPhysics, Adv. Calc Physics

ESSU Adv. Chemistry Adv. Chemistry

Advanced Research

These are only a few of the many sequences of courses possible. Some basic expectations include that Introductory Biology precedes other coursework; that a Chemistry course precedes Advanced Biology and Advanced Chemistry; that most of our graduates will take at least a Biology, Chemistry and Physics class; and that there are specific math skills needed for Honors Physics, Advanced Chemistry and Advanced Calculus-Based Physics. For other requirements and prerequisites, carefully read the course descriptions.

**Introductory Biology**

This course is an introduction to the study of living things, emphasizing both their unifying characteristics and those factors contributing to their diversity. Key topics include the nature of science, ecology, introduction to the basic principles of chemistry and biochemistry, cells, genetics, and human biology, using the dissection of a fetal pig to help understand anatomy. Application of factual information to hypothetical situations, current issues and practical topics is an important part of the course, as is a variety of lab work in which hypothesis formation, experimental design, collection and presentation of data, and interpretation of results is stressed. In addition to videos, animations, and supplemental readings, basic information is augmented by a variety of technologies. These include concept-mapping software; computer simulations of biological processes; spreadsheets and statistical software for data gathering and analysis; Internet research sites; and the textbook website.

Note: This course is a prerequisite for Natural History, Advanced Biology, the Chemistry courses, and Conceptual Physics and is generally elected in the ninth or tenth grade year. Transfer students at tenth grade who have not yet taken a biology course are strongly urged to enroll. This course satisfies the life science graduation requirement.

Prerequisite: None Grade Level: 9‑12 Term: All Year

**Natural History of Plants and Animals**

The natural history course introduces the botanical and zoological sciences, with emphases on major plant and animal phyla and classes, and studies of habitats and organisms. The course is a bridge between Introductory Biology and the advanced biology courses.

The principle forms of instruction include small-group work, group and individual projects (small and large), labs (including microscope-based ones), field work, demonstrations, drawings, videos, and lecture format. Class discussion in an intellectually safe environment is encouraged and commonplace. Instructional materials are chosen to both challenge students and empower them. Students learn to use continuous self assessment as a path to mastery, in addition to taking traditional tests and quizzes.

Natural History is intended to be a stepping-stone for further study in science and biology. Students come away with enhanced appreciation for the diversity and classification of living beings and their habitats, and also gain detailed information about many marvelous plant and animal adaptations. They also gain study skills and appreciate the power of feedback, both among peers and from the instructor. The first semester exam is traditional; the second semester culminates in a choice of several non-traditional activities.

Students must have taken Introductory Biology prior to enrollment in Natural History. The course is intended for Grade 10 students first and foremost, with 11th and 12th grade students admitted only if space is available.

Prerequisite: Introductory Biology

Grade Level: 10 (Priority) (11, 12 only if space is available)

Term: All Year

**Chemistry**

This course introduces students to the “Central Science,” leading them in an exploration of the fundamental interactions of matter and energy. Students will learn about this subject through the following topics: atomic and electronic structure, bonding in chemical compounds, chemical reactions, periodicity, stoichiometry and states of matter. Through this material students will grow in their ability to handle an academic challenge as they learn to use the variety of study tools. Varied presentation styles including lectures, demonstrations, laboratory work and guided instructional activities, encourage students to improve their study skills and habits by employing an assortment of learning experiences. Various assessment methods, including quizzes, tests, portfolios, projects and labexperiments & reports, allow students to demonstrate their understanding in a variety of ways.

While Chemistry is a challenging physical science course and will provide a thorough understanding of the fundamental ideas of chemistry, it will not be as mathematically rigorous or cover as many topics as the Chemistry Honors course.

Prerequisite: Algebra 1 Advanced/Introductory Biology Grade Level: 10-12 Term: All Year

**Chemistry Honors**

This course introduces students to the “Central Science,” leading them in an exploration of the fundamental interactions of matter and energy. It is also a goal of this course to challenge students academically, while providing them with a variety of study tools with which to meet this challenge. Through the topics in this course students will grow in their ability to handle academic stress as they become better students. Varied presentation styles including lectures, demonstrations, laboratory work and guided instructional activities encourage students to find their best learning style and to improve their study skills and habits through an assortment of learning experiences. Various assessment methods, including quizzes, tests, portfolios, projects and labexperiments & reports, allow students to demonstrate their understanding in a variety of ways. The core topics that will be covered include atomic and electronic structure, bonding in chemical compounds, chemical reactions, periodicity, stoichiometry, states of matter, chemical equilibrium and acids and bases.

Prerequisite: Introductory Biology and Recommendation of Current Teachers of

Science and Mathematics

Co-requisite: Algebra II

Grade Level: 10-12 Term: All Year

**Chemistry Honors vs. Chemistry** - What distinguishes Chemistry Honors from Chemistry is the pace at which the material is covered as well as an increased emphasis on topics that are more mathematically dependent. Students in Chemistry Honors are expected to work at an accelerated pace, and be able to use algebra easily and confidently. Therefore, students interested in taking Chemistry Honors need the recommendation of both their current science teacher and of their math teacher. Algebra II Honors is at least a co-requisite for Chemistry Honors. Chemistry Honors provides an excellent foundation for Advanced Chemistry as well as college chemistry, and is appropriate for those interested in pursuing a career in science.

**Conceptual Physics**

Physics is the fundamental, most basic science, the one on which all others depend! Everyone should learn physics, but not everyone is keen on the math. So this course is *Conceptual* Physics. In this course students learn about the fundamental forces and natural laws that shape the physical universe just as in any physics course. Students will encounter formulas, which scientists call "laws," but they will use them more as guides to understanding relationships rather than as equations to plug and chug out problems. Through numerous simulations, explorations and experiments students will learn about kinematics, Newton’s Laws of Motion, energy, heat, gravity, electricity and magnetism, and waves. Learning will be assessed through traditional tests and quizzes, but also through projects, lab practicals and activities like an egg drop contest and building models like space stations, satellites, or solar houses. Even though there is less emphasis on math problem solving, students are expected to have a working knowledge of Algebra. Algebra I Advanced and Introductory Biology are this course’s prerequisites.

Because of the significant overlap in topics, students receiving credit for this course may not enroll in regular Physics in following years unless Chemistry is taken in the intervening year. This course satisfies the physical science graduation requirement.

Prerequisite: Algebra I Advanced, Introductory Biology

Grade Level: 10‑12 Term: All Year

**Earth, the Solar System, and the Universe (ESSU)**

This course is an elective introduction to the study of Earth systems science and astronomy. We begin with our home planet, following the path of ancient astronomers to learn more about Earth by studying the skies and developing models of the cosmos. We learn to identify constellations, bright stars, and the patterns of motion in the sky which lead to discoveries about the sun, the seasons, the moon, and the planets. Telescopes, optics, and remote sensing are introduced, and once we recognize that planets are complex systems we return to the planet we know best, delving into geologic history, global circulation patterns in the atmosphere and oceans, climate change, and the influence of humankind. A comparative study of planets in our solar system emerges, including technologies and spacecraft we have employed to investigate the Earth and our astronomical neighborhood. We continue to the stars, our Milky Way Galaxy, and the Universe beyond, including such subject matter as black holes, "doomsday" asteroids, extraterrestrial life, and other current and exciting topics in Astronomy. Laboratory exercises employ hands-on investigations, computer simulations, and observing sessions with the school’s 12.5" telescope. The class is project-oriented, and is suitable for students across the spectrum of mathematical abilities: perfectly comfortable for students in Algebra II, yet offering exciting challenges to students in Calculus BC through serious mathematical and computational projects in astrophysics. Concurrent or previous experience in Chemistry is very helpful, and is strongly recommended.

Telescope observing sessions are scheduled throughout the year as part of the curriculum. Families and friends are invited to these sessions! We will also have several field trips to a planetarium.

This course satisfies the physical science graduation requirement.

Prerequisite: Algebra I Grade level: 10‑12 Term: All Year

**Physics**

This is a first course in algebra-based physics. It is a quantitative approach to understanding the laws of physics that will provide a solid foundation both conceptually and mathematically for future studies in science. Topics will include the nature of science, kinematics, Newton’s laws, gravity, energy, momentum, rotational motion, wave motion, sound, electricity and magnetism, and light. Laboratory work, including construction of apparatus, measurement of physical parameters, and using computers for both data acquisition and analysis, will be a significant part of the course.

This course (or Physics Honors) is strongly recommended for students planning careers in science, engineering or medicine. This course satisfies the physical science graduation requirement.

Prerequisite: Algebra I, Geometry, Algebra II (either previously taken or currently enrolled)

Grade Level: 11‑12 Term: All Year

**Honors Physics**

Honors Physics is intended for science students who are serious about pursuing a challenging class in introductory physics. The topics are identical to those offered in physics but with more conceptually challenging problems and more detailed laboratory analysis. Solid working knowledge of algebra and trigonometry is essential. An emphasis will be placed on the discovery and consequences of the physical laws including ideas which run parallel to introductory calculus. Students are not required to be enrolled in calculus for this course but a strong math background is important. Topics will include Newtonian dynamics, waves, sound and introductory electromagnetic theory. Problems covered are equivalent to an introductory college level class in physics. This course prepares students to take the AP Physics B (Mechanics) exam. Students may also elect to take the AP Physics B (Electricity and Magnetism) exam though some additional instruction would be required to succeed in the Electricity and Magnetism portion.

Either Physics or Honors Physics is strongly recommended for students planning careers in science, engineering or medicine. Students electing to take Honors Physics must carefully consider both their conceptual abilities as well as their work commitment. Honors Physics satisfies the physical science graduation requirement. Enrollment in this course is based on recommendation from a previous science teacher or permission of the instructor. Students enrolled in Honors Physics will need high level conceptual thinking skills and also be capable of doing a significant amount of conceptual learning work.

Prerequisite: Department Permission

Co-requisite: Analysis (either previously taken or currently enrolled),

Grade Level: 11-12 Term: All Year

**Anatomy & Physiology**

This course is designed to introduce students to human anatomy and physiology, with an emphasis on the systems of the body and how they are interrelated. The major topics covered will include: basic human organization, support and movement, integration and coordination, maintenance, and reproduction and development. Students interested in pursuing careers in the health sciences will be delighted to find clinical applications throughout the core material. A significant portion of this course involves hands-on laboratory activities, with particular emphasis given to the comparative anatomy dissection of a cat during the spring semester. We will also use online resources and interactive software to support our dissections and other laboratory work.

Prerequisites: Introductory Biology and either Chemistry or Chemistry Honors

Grades: 11-12 Term: All Year

**Advanced Biology: Organisms, Populations, and Ecology (OPEC)**

This advanced course invites students to study a great variety of interacting creatures---from the microbial to the megafauna and flora---as they exist in Earth’s populations, communities, and ecosystems. Using our first-year university textbook as a challenging starting point, we deepen our understanding by sampling both classic and modern books in ecology and evolution, and cutting-edge work as reported on-line and in current periodicals.

Our learning, be it in the form of discussion, lecture, demonstrations, field trips, lab work, game-playing, projects, or student-taught segments, constantly considers that dynamic influence of natural selection which helps us to understand the past, current, and future diversity of organisms, as well as their structure and function. Also always under consideration are the implications of those human activities affecting the current and future state of the biosphere.

As in other courses in this department, students will continue to grapple with scientific facts, hypotheses, and theories on their way to: thinking (in this case) like biologists; learning how to make the most out of advanced readings; and understanding how science fits with other aspects of human endeavor and knowledge.

Students must have taken Introductory Biology prior to enrollment in OPEC, with Chemistry strongly recommended. Priority is given to 12th grade students, with 11th grade students admitted only if space is available.

Prerequisite: Introductory Biology

Recommended: Chemistry

Grade Level: 12 (Priority) (11 only if space is available)

Term: All Year

**Advanced Biology: Cellular and Molecular Biology (CMB)**

This advanced course is concerned with two major topics: (1) cellular biology and energetics and (2) molecular biology and genetics. Using the same first-year university textbook as the OPEC course, biomolecules, including proteins, fats and lipids, carbohydrates and nucleic acids, are considered in their roles in regulation, structural makeup, defense, bioenergetics, and the anabolic, catabolic and information pathways of cells. The cellular biology and energetics segment will present cells as the structural and functional units of life within which physical and chemical processes occur. Cellular respiration and photosynthesis are studied in their role in metabolic processes. The molecular biology and genetics segment will consider the role of DNA and proteins in genetics and the molecular processes involved with eukaryotic and prokaryotic replication, and recombinant DNA technology. Lab activities will be carried out to support the topics covered in class.

A significant portion of this course involves hands-on lab activities with particular emphasis on student-designed extensions of labs to support the topics covered in class. As a part of the lab component, students will be introduced to statistical analysis of results and writing up lab research in the format expected by many college courses and journals. Current issues and breakthroughs in the field of cellular and molecular biology will be an on-going part of class discussions.

Students must have taken both Introductory Biology and Chemistry or Chemistry Honors prior to enrollment in CMB.

Prerequisite: Introductory Biology and Chemistry

Grade Level: 11-12 Term: All Year

**Advanced Chemistry**

Advanced Chemistry is a second year chemistry course. In this course we will answer the fundamental question: “What makes a chemical reaction happen?” Each topic that we learn about this year will approach this question from a different aspect. Answering this question will involve the investigation of properties of elements and compounds, understanding of atomic theory, explorations in the states of matter and the gas laws. We will also explore chemical kinetics, chemical equilibrium, acid - base chemistry, thermodynamics and electrochemistry. This course is designed to be similar to a general chemistry college course in terms of pace, content and expectations for understanding. Laboratory skills, techniques and analysis will be a major aspect of the course. Students will be prepared to take the AP Chemistry exam in May if they so choose.

Solid mastery of the first year material in Chemistry or Chemistry Honors is essential for success in this course. Students should have a strong ability to problem solve using mathematics. Current science teacher’s recommendation is required for enrollment in this course.   Prerequisite: Chemistry or Chemistry Honors Grade Level: 11 (some 12) Term: All Year

**Advanced Calculus-Based Physics**

This course is recommended for students considering a career in science, engineering or perhaps medicine. Calculus-Based Physics at Greenhills is a college level course. The course is strongly recommended for the advanced placement student who is far enough along in calculus and will be pursuing chemistry, engineering or physics at the college level. This course is a natural extension of the Physics or Honors Physics sequence at Greenhills. The course is very challenging and taught with the assumption of calculus either as a co-requisite. Thought a co-requisite in calculus is required, students tend to perform better if they have a semester of calculus already before beginning Calculus Physics. The course is a full year introduction to calculus physics. It is equivalent to a bit more than the first semester of calculus based physics at the college level. The first semester is an introduction to Newtonian dynamics. The student must make quick progress through these topics which include kinematics, Newton’s laws of motion, energy, momentum, and rotational motion. The second semester will introduce the students to Maxwell’s equations of electromagnetism. Additional advanced topics such as Special Relativity may be added at the instructor’s discretion. The student is introduced to more advanced laboratory techniques and is expected to keep an accurate and complete laboratory notebook.

Students electing this course must have at least a concurrent course in Calculus. Physics or Honors physics is also a pre-requisite. This course prepares students to take the AP Physics C (Mechanics) exam. Students may also elect to take the AP Physics C (Electricity and Magnetism) exam.

Prerequisite: Honors Physics (or permission of instructor)

Co-Requisite: Calculus AB or equivalent

Grade Level: 12 Term: All Year

**Advanced Research Class**

The Advanced Research Class is to be taken by those students who successfully complete the summer phase of the Research Internship opportunity after their junior year. During the fall semester, students will conduct a statistical analysis of their data, carry out background reading on their research topic, and write up their results in a formal (professional level) research paper worthy of a scientific journal (Abstract, Introduction, Background, Materials and Methods, Results, Conclusion, and Bibliography). A special focus of the fall semester will be preparing the application for the Intel Science Talent Search, especially the six required essays due just before Thanksgiving, and the Southeast Michigan Science Fair. During the winter semester students will work on professional level research presentation talks which will be given to science faculty and research mentors, preparing in conference posters and taking part in and leading journal club discussions. The course will end with a research project presentation to next year’s prospective research students.

**Note:** Students who receive placement through Greenhills Advanced Research Program are required to enroll in and complete the Advanced Research Course. Seniors who have spent a similar amount of time in a research experience during the summer between their junior and senior year, but not specifically in the Advanced Research Program, may also elect this class with departmental permission. Students who elect to do their research in Mathematics, Statistics, or Computer Science can receive Math credit for this course in lieu of Science credit. Please see the Math Department Head to discuss this option.

Prerequisite: Successful Completion of Summer Research Program

Grade Level: 12th Term: All year

**Note:** this course is worth ½ credit

***Service Learning***

**Upper School**

The purpose of the service learning requirement is to meet our schools’ mission to “help young people become responsible citizens… whose meaningful and balanced lives will better the world”. Service learning teaches the skills of civic participation and develops an ethic of service and civic responsibility. Students can provide service in the community on a voluntary basis to public, nonprofit agencies, civic, charitable and governmental organizations and on our school campus.

Greenhills students will complete at least oneservice learning experience every calendar year in the Upper School. Service projects must include a participation minimum of three times or ten hours. Students will submit both a proposal and a reflection on the Greenhouse Service Learning page for each project.