CHARTER HIGH SCHOOL FOR
ARCHITECTURE + DESIGN
105 SOUTH 7TH STREET
PHILADELPHIA PA 19106

CHAD| Charter High School for Architecture + Design 2016-17 Program of Studies

MISSION STATEMENT

The Charter High School for Architecture + Design is a learning community committed to an innovative program integrating the design process with the mastery of a strong liberal arts education. The school offers each student the opportunity for success and the preparation for life-long learning and responsible citizenship. CHAD is a thoughtful academic environment that engenders love of learning, intellectual curiosity, and new ways of seeing, and prepares students for higher education.

A MESSAGE FROM THE DIRECTOR OF ACADEMICS

Welcome to the Charter High School for Architecture and Design, a vibrant, independent school and an energetic and creative community. These are exciting times to explore architecture and design! Don Norman, author of Design of Everyday Things, *says that "[d]esign is the practice of intentional creation to enhance the world." One way our students can impact the future is by using design thinking as a problem-solving tool. Our commitment at CHAD is to provide a safe and intellectually challenging environment that will empower students to become innovative thinkers, creative problem-solvers, and inspired learners preparing to thrive in the twenty-first century. We believe our CHAD students have the potential to design a better future and we work hard to provide opportunities for each and every student to gain the tools and skills that will empower them to make a difference in the world.*

- *Alison Saeger Panik*

Department Chairs

Andrew Phillips	Design
Gary Ross	Math
Sharen Ferrigon	Science & Health
Melanie Hoffman & Marina Gerstemeier	English & Spanish
Mel Ruth	Social Studies

Class Advisors

Jeff Gerstemeier	Senior Class
	Junior Class
Donniell Cooke	Sophomore Class
M. Amy Wischum	Freshman Class

Governing Board of Trustees

Marguerite Anglin *Temple University Campus Planning & Design*	Board Chair
Monique McCray *SchraderGroup Architecture*	Vice President
Jeff Krieger *Krieger + Associates, Architects*	Treasurer
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Alexandra Overton *CHAD Alumnus* *Interior Designer, Ewing Cole*	
Tepvaddei Ros *CHAD Alumnus* *Institute of Emerging Health Professions* *At Thomas Jefferson University*	

Administrative Team

Gregory Wright	Chief Executive Officer
Alison Saeger Panik	CAO/Director of Academics
Dr. Melissa Oyer	Director of Individualized Student Services
Charles Anerino	Director of Student Life
Andrew Phillips	Director of Design Education
Victor Gonzalez	Director of Security
Dawn Carmichael	Administrative Assistant for Business and Human Resources
Sabrina Foreman	Administrative Assistant for Enrollment and Student Life

Equal Opportunity Statement

The Charter High School for Architecture and Design is an Equal Opportunity Employer. It is the policy of CHAD to provide equal opportunity for all employees and applicants for employment without regard to race, color, creed, religion, gender, sexual orientation, national origin, age, marital status, mental or physical disability, pregnancy, military or veteran status, or any other basis prohibited by state or federal law.

GRADUATION REQUIREMENTS

The Architecture and Design Charter High School (CHAD) awards a high school diploma to every student who meets the requirements for graduation. Such requirements include the successful completion of courses of study for a four-year high school and which meet the standards set by the Commonwealth of Pennsylvania Academic Standards, laws and regulations.

CHAD requires that all students complete a minimum of twenty-four (24) credits as defined in the Program of Studies between grades 9 and 12 to graduate.

Credits must be completed in the following areas:

Number of credits	*Subject Area*
4	English
4	Mathematics
4	Science
3	Social Studies
6	DESIGN Arts or Humanities or Both
1	Health and Physical Education
2	ELECTIVES 2 World Language
24	TOTAL

Students transferring to the Architecture and Design Charter High School (CHAD) who are in jeopardy of not satisfying local graduation requirements due to differences in requirements between CHAD and the previous school(s) attended are entitled to an adjustment to the graduation requirements according to procedures established by the CEO/Director of Academics.

GRADING SYSTEM

Students will receive a numerical grade at the end of each quarterly marking period. The final quarterly, semester and full term course grades will be numerical grades. Work that is incomplete in any quarter will receive an "F" and be averaged in with other grades that quarter. The grading system used is as follows:

A	100 – 90%	Superior achievement
B	89 – 80%	Good achievement
C	79 – 70%	Average achievement
D	69 – 65%	Minimum achievement
F	64 – 0%	Failure due to unsatisfactory achievement
	Below 50%	Ineligible for Summer School

REPORT CARDS

The Architecture and Design Charter High School year is divided into four marking periods. Report cards are issued at the end of these nine-week periods. Mid-term progress reports are issued half-way through each quarter. Dates are indicated on the school calendar.

QUARTERLY, SEMESTER, and FULL TERM COURSES

A nine-week course is referred to as a QUARTERLY course, which is one marking period or approximately 45 days in duration.
An eighteen-week course is referred to as a SEMESTER course, which is two marking periods or 90 school days in duration. Courses which have a duration of two semesters are referred to as FULL TERM courses. If the course is not designated as a semester course, assume the course's duration is a full term.

GRADE POINT AVERAGE

The Grade Point Average (GPA) is a system for calculating a student's scholastic average on a *0 to 4 scale.*

The GPA is calculated after each quarter and at the end of the year. (Calculations are based on quarter grades and the exam average, if applicable, not end of the year averages.) These calculations are performed in the following manner:

The official cumulative GPA is calculated in the summer. The official class rank is based on this cumulative GPA. The GPA and Class Rank, which are calculated in the summer after eleventh grade, are the figures which are used in the college application process.

A cumulative plus year-to-date GPA is calculated for seniors after the first semester. It is reported to colleges that request that information from their applicants.

CLASS RANK

Class rank is determined by arranging the GPAs of all students being graduated in the same year in order from highest to lowest.

PREREQUISITES

Students are required to fulfill prerequisites before taking certain courses. Students who have satisfied the prerequisite but do not meet the recommended grade contained therein and/or who are not recommended by their current teacher to take the desired course may submit a formal request to their counselor. This request will be reviewed by the student's counselor and DIRECTOR OF ACADEMICS and approved or denied based on the information presented.

HONORS COURSES

The Honors courses are intended for students who are interested in an enriched experience in a specific subject, who have satisfied the pre-requisites, and who have the ability and desire to handle the increased academic standards. To remain in these courses, students must continue to demonstrate ability and desire to do the type of assignments required by the honors program.

INDEPENDENT STUDY

Independent Study programs are available in unusual situations when it is determined that a course is a necessary component of a student's program, but it cannot be scheduled otherwise. Courses taken in this manner will receive a grade and assigned course value. Independent study arrangements must be approved by the teacher, parent, school counselor, and Director of Academics in writing.

SUMMER SCHOOL

CHAD may offer summer school courses for students who have insufficient achievement to pass a course (grade of 64 -55%). Students may take up to two summer school courses. Each course will be held four days per week for 6 weeks. Most courses will be half-day courses.

PowerSchool

Students and families may keep track of student academic progress and attendance through CHAD's web portal. The PowerSchool Parent Portal provides secure, self-service information about each student's daily progress in school. Families and students benefit from real-time access to grade averages, homework, missing assignments, and progress reports. The system can easily be accessed from any location with an Internet connection. PowerSchool also offers an app for phone access.

Information regarding access to student PowerSchool accounts is provided to students and families during the first weeks of school.

2016-2017 STANDARDIZED TESTS

The CHAD Counseling Department suggests the following college admission testing sequence for all students:

PSAT/NMSQT
This is recommended for all juniors who plan on taking the SAT and/or wish to compete for the National Merit Scholarship. The PSAT is administered at CHAD to all juniors.

SAT & SUBJECT TESTS
CHAD does not offer the SAT & Subject Tests on campus. Please see www.collegeboard.com for nearby locations, specific dates, and to register for a test. A student with a disability, whose condition substantially limits his or her ability to participate in College Board tests, may be eligible for accommodations. The request for accommodations is initiated by completing a Student Eligibility Form. This eligibility form has specific deadline dates and can be obtained through the Counseling Office.

COLLEGE & CAREER PATHWAYS COUNSELING

Architecture and Design Charter High School students take standard core courses as well as design courses. These courses build a foundation for education after high school, whether it is in college, business or trade school, the military service, or the workforce. CHAD's career pathways counseling aims to prepare students for careers based on their specific interests and abilities. Students work with counselors to construct career goals and receive support in preparing for their careers through one or more of the following:

- Four-year or two-year college
- Business or trade school
- Military
- Apprenticeship
- Entry-level employment

KEYSTONE EXAMS

The Keystone Exams are end-of-course assessments designed to assess proficiency in various subjects. During the 2016-17 school year, the following Keystone Exams will be administered: Algebra 1, Literature, and Biology. The Keystone Exams are one component of Pennsylvania's proposed system of high school graduation requirements. Keystone Exams help schools guide students toward meeting state standards. Keystone Exam results are used to determine CHAD's School Performance Profile score, which will be posted on students' transcripts and will ultimately determine eligibility for graduation. Beginning with the Class of 2019, students will be required to score proficient in all Keystone Exams to graduate. Please see the 2016-2017 school calendar for testing dates. Please also see http://www.pdesas.org/Assessment/Keystone for more information about these important graduation requirements.

COURSE DESCRIPTIONS

DESIGN DEPARTMENT

The Design Department offers a sequence of courses to provide foundational experiences and advanced studies in architecture and design. Students entering 9th and 10th grade take a series of 2-D and 3-D foundation courses. They are viewed as a full-year foundational experience. In subsequent years, students may indicate their first choice of course. If first choices are not available, students will be automatically scheduled for an alternate.

FRESHMAN AND SOPHOMORE DESIGN The Freshman and Sophomore Design curriculum in 2016-17 will include a series of design courses led by CHAD's Design faculty. These courses have been designed to provide students with a variety of hands-on design experiences that will introduce the design process, problem solving and basic design skills. Each Freshman and Sophomore will enjoy separate quarterly courses over the course of the school year. Each grade level will include four of the following:

BOOK ARTS Explore analog and digital processes for designing, producing and constructing hand assembled books. Book topics will feature student researched and narrated themes.

CHARACTER DESIGN Study examples and develop introductory animation skills, using both hand and digital techniques, to creating a cast of characters and the story they share.

DIGITAL PORTFOLIO It starts here. Your portfolio is a record of all your creative efforts. It's how you will show colleges what your capabilities. This class begins that effort, which will continue for the next four years (and further).

FIGURE DRAWING Observe and learn the elements, gestures and mannerisms of the human figure through drawing techniques, varied mediums and special exercises lasting from 30 seconds to several days.

GEOMETRIC STRUCTURES Why do things stand up, or not? Create simple, modularized structures which seek to defy gravity and support surprising loads. Learn about their underlying mathematical principles.

MAKER TECHNOLOGIES Tinker with kits of parts to create unexpected, fascinating and funny assemblages to amuse and amaze. This class is about serious play, trial and error and unexpected discovery.

ORGANIC STRUCTURES How do animals build what they do? And why do they last, or not? Explore the fascinating world of animal habitats while building your own structures based upon their principles.

SKETCHING & ILLUSTRATION Sketching is the designer's most potent tool. It's how he or she visually thinks. Learn the tools and techniques of sketching and how to maintain an organized sketchbook so you can impress others.

WEAVING ARTS Before fashion, there's fabric. Explore what gives fabric it's qualities, textures and patterns through hands- on weaving and cloth construction exercises, then test the range of possibilities.

2-D / 3-D DESIGN What's it like to translate a drawing into an object, or a three dimensional object into two dimensions? This course introduces technical drawing and modeling through both analog and digital media.

JUNIOR DESIGN

11IA INTRODUCTION TO ARCHITECTURE: TECTONICS (Grade 11) This course introduces the fundamentals of architecture, technical drawing, model building and spatial concepts. The sequenced projects study the four influences upon our experience and perception of space. These influences are dimension, composition, material and phenomena. Additional course topics include design methodologies, drawing and modeling skills, spatial perception, ordering principles, organizational systems and the essential vocabulary to describe, define and design physical, habitable space.

11FD INTRODUCTION TO COSTUME AND FASHION DESIGN: TEXTILES (Grade 11) This course explores the world of garment design and sewing to life through an in-depth look at the apparel industry. Students explore the foundation of the human body with a focus on skeletal and muscular anatomy through drawing exercises. The concept of human distortion in terms of proportion in fashion illustration is explored through static pose croquis (or figure template) using those industry standards. The course introduces careers in fashion and costume design and potential majors that address said careers. The course focuses on building strong portfolio pieces including textiles, fabric knowledge, dye experiments, and documentation of collaborative group projects.

INTRODUCTION TO CRAFT ARTS (Grade 11) Craft arts are works of design that are produced at a one-to-one scale, using traditional methods, to create artifacts which often have deep cultural roots. This course introduces the craft arts tradition through such techniques as macrame. Macrame is a form of textile making using knotting rather than weaving or knitting. The course requires focus and emphasizes design and creativity as deliberative, intertwined processes. Students will learn the elements and principles of design as they apply to their craft arts production and as they create designs, using different techniques and materials, to express their imagination, fantasy and creativity.

INTRODUCTION TO FINE ART (Grade 11) This course focuses upon creating visual art forms, utilizing various skills and techniques, with increasing scope and complexity. Fine Art produces works which are created for both aesthetic and intellectual expression. Its success is contingent not only upon beauty but also meaning. These are, for the most part, subjective evaluations. As such, Fine Art differs from craft and applied arts. There is no explicit function or use which might be objectively evaluated for effectiveness, whether artfully achieved or not. However, Fine Art still requires attentive disciplined attention and technical ability to fully master the mediums employed. This course will develop student skills in several mediums and work toward this goal of mastery.

11GD INTRODUCTION TO GRAPHIC DESIGN: VISUAL COMMUNICATION (Grade 11) Graphic design is a visual language used to communicate ideas and captivate viewers. This course incorporates the process of designing, preparing, and reproducing visual images such as words, photographs, artwork, and symbols in printed and digital formats. This class will provide an overview of the design communication process including conceptualization, terminology, and technology. Students will study layout, typography, desktop publishing (using Adobe Creative Suite), screen printing, offset lithography, and digital photography. They will investigate concepts and acquire skills in page layout, illustration (digital and traditional), typography and image manipulation. Problem based assignments will introduce students to current computer applications used in the graphic design profession.

INTRODUCTION TO ILLUSTRATION (Grade 11) This course investigates the design process through the methods of illustration making. Illustration is a visual explanation or interpretation of a text, concept or process. Illustrations are usually designed for integration with published media such as posters, flyers, magazines and books. A variety of styles, techniques, methods and applications will be introduced and developed through the course as student work progresses from simple exercises to higher levels of

complexity and sophistication. Project applications may include archaeology, books, botany, concepts, fashion, information, technical descriptions, medical explanations, literary narratives, and scientific processes.

11ID INTRODUCTION TO INDUSTRIAL DESIGN: FORM AND FUNCTION (Grade 11) This course introduces Industrial Design by offering students the opportunity to design solutions for product and lighting problems using 3D modeling software and using an engineering notebook to document their work. Students engage in the design and development of product and lighting projects while exploring the design process, research and analysis, teamwork, communication methods, global and human impacts, engineering standards, and technical documentation. The course will include thumbnail sketching, 2-D measured drawing and model making. Students will also be introduced to small batch production, scale, ergonomics and acoustic design.

SENIOR DESIGN

12ARCH1 ARCHITECTURE 1 (Grade 12) Architecture I studies placemaking. The sequenced projects investigate how spaces are defined and interrelated, how they accommodate routine or ritualized events, how place and event mutually inform one another, and shape our understanding of both. Additional course topics include existing condition survey, scaled representation, orthographic and shadow projection, advanced model building, an introduction to material assembly, construction techniques, basic structural theory, and the vocabulary essential to these practices.

12ARCH2 ARCHITECTURE 2 (Grade 12) Architecture 2 offers in-depth experience of the architectural design process combined with real-world, full-scale construction and fabrication opportunities. Architecture 2 students create a building program and develop a solution through a sequence of phases that reflect a university or professional architectural design process: programming, conceptual, schematic and design development. Design/build exercises introduce the last two phases of the process: construction documentation and construction observation. Proficiency in all forms of drawing and modeling, both analog and digital, are strongly recommended and will be refined.

12FAS1 COSTUME AND FASHION DESIGN 1 (Grade 12) This course follows Introduction to Costume and Fashion Design: Textiles. It is and in-depth exploration into the principles of fashion illustration, costume design and garment construction. The course includes a survey of fashion and costume design history, with a focus on understanding thematic connections. Students create fashion and costume croquis to build skills required for fashion and costume illustration. Students build hand sewing skills through embellishment design and introductory sewing machine work. Successfully sewn and thematically appropriate work is considered for inclusion in CHAD's annual fashion show.

12FAS2 COSTUME AND FASHION DESIGN 2 (Grade 12) This course builds upon Costume and Fashion Design 1. It offers advanced work in illustration, sewing skills and garment construction. Students learn advanced sewing techniques, such as seam construction, structured components, darts, pleats and gathers prior to creating garments using commercial patterns. The commercial patterns are related to the yearly fashion show theme, reinforcing the importance of thematic connections and concepts in fashion design. Students achieve mastery in sewing a garment from a commercial pattern and technical drafting. Then their curriculum is independently guided based on learning desires. Students select from a "menu" of projects ranging from advanced mood and concept boards to digital illustration exploration to pattern drafting.

12GRD1 GRAPHIC DESIGN 1 & PHOTOGRAPHY 1 (Grade 12) This hybrid course builds upon the basic print processes, graphic design principles and illustration concepts introduced through Introduction to Graphic Design: Visual Communication. Emphasis is placed on screen printing, offset printing and photographic printing. Students will investigate concepts and acquire skills in page layout, illustration (digital and traditional), typography, computerized layout composition, line and halftone photography, platemaking, vector graphics, dye sublimation printing, and image manipulation. Problem based assignments will introduce students to current computer applications used in the graphic design

profession. Photography 101 will introduce the technical functions of an SLR camera and key elements in the making of a excellent photograph.

12GRD2 GRAPHIC DESIGN 2 & DIGITAL DARKROOM 1 (Grade 12) This course is designed to provide the experienced student in Graphic Design technology an opportunity to specialize in one area. Emphasis is placed on offset lithography, screen printing, digital composition, prepress and post press production. Students will be responsible for producing various printed materials for CHAD. Photography students, having learned to properly capture their subjects in photographs, will learn how to manipulate images by using Adobe Photoshop.

12IND1 INDUSTRIAL AND PRODUCT DESIGN 1 (Grade 12) This course builds on Form and Function through the design and development of products, lighting, furniture and interior projects. The course will include 2-D and 3-D measured drawing, scale and full-size prototype model making. Problems engage and challenge students to explore a broad range of industrial design topics. Students will develop skills in problem solving, research, and engineering, while learning strategies for design process documentation, digital production, structure testing, collaboration and presentation.

12IND2 INDUSTRIAL AND PRODUCT DESIGN 2 (Grade 12) This course builds upon Industrial and Product Design 1. The course will include 2-D and 3-D measured drawing, scale and full-size prototype model making and digital model making. Problems engage and challenge students to explore a broad range of industrial design topics. Students will develop skills in problem solving, research, and engineering, while learning strategies for design process documentation, digital production, structure testing, collaboration and presentation.

ENVIRONMENT DESIGN 1 & 2 (Grade 12) This hands-on, project-based course introduces students to the philosophy of designing art, objects and the built environment while observing the principles of social, economic, and ecological systems. The course is structured around 12-permaculture design principles. These integrated thinking tools allow a designer to re-create environments and behaviors with less energy and fewer resources. Students focus on building community and making changes in their immediate environment. The course features field trips and speakers about topics such as urban gardening, recycling, assemblage art, and sustainable architecture. Students foster a positive growth mindset as they learn and grow together. Class is primarily focused upon students building technical skills, critically responding to various artist/designer examples and sharpening creative problem solving skills.

INTERPRETIVE DESIGN 1 & 2 (Grade 12) Through this course, students will work on projects using a variety of materials and techniques to acquire and build 21st Century Skills. These skills are: collaboration, creativity, communication and critical thinking. Projects will use both two dimensional and three dimensional methods to interpret, represent and convey ideas, concepts and/or stories into visual descriptions. Design fabrication will utilize online CAD programs, object scanning with 3D scanners, and modeling with various 3D printers and media. Project fabrication may be digitally oriented, but it will not be limited to just these materials, tools and/or media as assembly is ultimately and hands on enterprise.

MATH DEPARTMENT

The mathematics department is committed to mathematical literacy for all students at various levels of content depth. Students are strongly encouraged to complete Algebra 1 by the end of Grade 11. Students should earn a 74% or higher in Algebra 1 and/or score proficient on the Keystone Algebra 1 Exam before progressing to more advanced math courses. Calculators are permitted for use in most math classes.

TPALG PRE-ALGEBRA
This course is intended for the student who is not quite Algebra ready, and who needs more time to master the skills required for success in higher math courses. Topics will include: fractions, decimals, percentages, use of integers, basic equations and inequalities, data-mining in word problems, statistics and graphic representations of data. It is designed to improve confidence and mastery for reluctant math students. Students enrolled in Pre-Algebra will follow a year-long course designed to help them improve basic math skills, including, but not limited to: manipulation of fraction operations, the usage of decimals and percentages, conversion of measurements, operations with integers and other real numbers, and finally, Algebraic terms and uses.

ALG1 ALGEBRA 1
(Grade 9-10) Algebra 1 focuses on the logistical beauty of Algebra and its relevance to students. This course is designed to help students develop computational, procedural and problem solving skills that will provide a solid foundation for further study in mathematics with an emphasis on solving inequalities, linear functions, systems of equations and inequalities, exponents, polynomials and factoring, quadratic functions and equations, radical expressions and equations, and rational expressions and functions. Additional emphasis will be placed on problem solving applications. Students will complete the Keystone Exam at the end of this course.

ALGEBRA 1H
(Grade 9) The Algebra I Honors course is designed to provide students with an in-depth level of instruction, an accelerated pace and a cooperative learning environment. The course guides students in the development of critical thinking skills and algebraic problem- solving skills, which provide the foundation for real world problem solving. It is targeted to highly motivated students who have previously had some algebra. Students will complete the Keystone Exam at the end of this course.

1002 GEOMETRY
(Grade 10-12) The Geometry course includes an in-depth analysis of plane, solid, and coordinate geometry as they relate to both abstract mathematical concepts as well as real-world problem situations. Topics include logic and proof, parallel lines and polygons, perimeter and area analysis, volume and surface area analysis, similarity and congruence, trigonometry, and analytic geometry. Emphasis will be placed on developing critical thinking skills as they relate to logical reasoning and argument. Students will be required to use different technological tools and manipulatives to discover and explain much of the course content.
Prerequisite: Algebra1 (74% or higher) and/or Keystone Algebra 1 Exam score of proficient or advanced

12ALG ALGEBRA 2
(Grade 10-11) This course builds upon the skills learned in Algebra 1. The course includes the study of rational and irrational numbers, quadratic equations, polynomials, factoring, logarithmic and exponential functions, probability and statistics, systems of equations and inequalities, and rational and radical expressions and equations.
Prerequisite: Geometry (recommended 65% or higher)

COLLEGE ALGEBRA
(Grade 11-12) This course is a continuation of topics from Algebra 2. Topics of study include algebraic equation and inequalities, absolute value, polynomial, rational, exponential and logarithmic functions, conic sections, systems of equations and inequalities, matrices and determinants, Additional topics may include sequences and series, probability and mathematical induction.
Prerequisite: Algebra 2 (recommended 65% or higher)

PC12 PRE-CALCULUS
(Grade 11-12) Precalculus combines the trigonometric, geometric, and algebraic techniques needed to prepare students for the study of calculus, and strengthens students' conceptual understanding of problems and mathematical reasoning in solving problems. Facility with these topics is especially important for students intending to study calculus, physics, and other sciences, and/or engineering in college. This course is designed to cover topics in Algebra ranging from polynomial, rational, and exponential functions to conic sections. Trigonometry concepts such as Law of Sines and Cosines will be introduced. Students will then begin analytic geometry and calculus concepts such as limits, derivatives, and integrals.
Prerequisite: Algebra 2 (recommended 74% or higher)

SCIENCE DEPARTMENT

The CHAD Science Department provides students with the knowledge and skills base needed to meet the Pennsylvania Academic Standards in the following areas:

Unifying Themes of Science, Inquiry and Design, Biological Sciences, Chemistry, and Physics.

To meet the PA Academic Standards, each student should successfully complete at least one course in Biological Sciences and one course in Physical Sciences before the senior year.

906 INTEGRATED SCIENCE
(Grade 9) This introductory course is designed for ninth graders who need preparation for the rigor of Biology. This course will cover macro-biology principles including, but not limited to, ecology, evolution and population, genetics, bacteria and viruses, Protista and fungi. The course will expand upon content introduced in middle school science courses. A thorough review of basic scientific principles in addition to lab safety, lab equipment and laboratory training is also included in this course.

1003 BIOLOGY 1
(Grades 10-11) Students taking biology will examine what is considered to be life on earth. There is a wide variety of different types of animal and plant life, on earth, that will be studied during the course of the year. The topics that will be covered include but are not limited to cell structure, cell function, replication and cell division, maturation, reproduction and molecular genetics (the study of DNA). In addition, students will learn the importance of biological molecules, how to preform lab experiments, how both animals and plants react to their surroundings and be able to compare and contrast cellular respiration and photosynthesis. Also included in this course are projects and hands-on activities. Students will complete the Keystone Exam at the end of this course.

ENVIRONMENTAL SCIENCE
(Grades 11-12) This course is designed as a sequel to Biology 1 for students who require additional study to master content for the Keystone Biology Exam. The course content will focus on the study of the unity and diversity of organisms, the interdependence of living and non-living world, and the development of species. The course will include the topics of biotechnology, cells, genetics, and natural selection. Students will also explore weekly issues in sustainability, including sustainable energy, land and water conservation, and sustainable food production. Students may retake the Keystone Biology Exam at the end of this course.
Prerequisite: Biology 1

1103 CHEMISTRY
(Grades 11-12) This course is designed to familiarize students with a variety of chemistry areas including aspects of organic and inorganic chemistry, biochemistry and nuclear and environmental chemistry. Particular attention will be focused on problem solving and real-world applications. The relationship chemistry has to our everyday lives will be stressed.

1203 PHYSICS
(Grade 11-12) General Physics is an algebra-based college prep course. A variety of natural physical laws and phenomena will be explored through the use of class lectures and presentations, labs, demonstrations, and projects. This is predominantly a problem solving class. The overarching goal is to encourage students to use a variety of problem solving techniques along with the tools provided by algebra and trigonometry to quantitatively analyze many facets of the natural world.
Prerequisite: Recommended 74% or better in Algebra 1 and Algebra 2 or by teacher approval

12BB MARITIME PHYSICS
(Grade 12) Maritime Physics is an accelerated 12th grade physics class that is held at CHAD 3 days a week and at the Independence Seaport Museum at Penn's Landing 2 days a week. At CHAD, we learn the concepts and formulas necessary to do college prep Physics. When we are at the museum we spend half our time in the boat shop building real wooden boats, and the other half in the museum reinforcing the concepts we are covering at CHAD. At the ISM we work in the workshop with professional boat-builders and expert craftsmen and women. We learn how to use a variety of power tools and hand tools. When the weather permits, we use the cruiser Olympia and the submarine Becuna as classrooms. We also spend time out on the water learning how to row and sail.
Prerequisite: Recommended 80% or better in Algebra 2 and concurrent enrollment in Geometry or Precalculus

ENGLISH DEPARTMENT

Each high school student must take and pass a ninth grade, tenth grade, eleventh grade, and twelfth grade English course to graduate. In addition to a literature survey component, all non-elective English courses provide writing activites and research, vocabulary study, study skills, and career awareness instruction. Elective courses will not be counted toward meeting English graduation requirements.

901 ENGLISH 1
(Grade 9) As freshmen's first high school English class, this course emphasizes English Language Arts skills including the abilities to read and analyze multiple genres of literature, to write for various purposes, and speak effectively. We will read and analyze the elements of fiction in the forms of short stories and a novel, the elements of drama in plays, the elements of poetry in both classic and modern poems, and the elements of nonfiction in the forms of memoir, supplemental articles, and research-based projects. Many of the pieces of literature we read will revolve around the concept of the individual and where an individual fits into society, as related to students' own lives. In addition to receiving and evaluating information, students will learn to effectively to communicate information and support their opinions through speech, visual presentations and projects, and written work.

901H ENGLISH 1 Honors
(Grade 9) The ninth grade English honors course is built around several components, including vocabulary, grammar, selected short stories, novels, drama, non-fiction, and poetry, which provide the basis for concentrated study, composition and research, critical discussion and speech. Students are expected to enter into serious academic discussions and to produce a variety of in-depth writing assignments.
Prerequisite: Recommendation of school counselor based on literacy screening and 90% or higher in 8th grade English.

1001 ENGLISH 2
(Grade 10) This course is designed to continue the exploration of the Language Arts curriculum. We will cover several things: communication and its forms, what, why, and how we write. We will produce several original works of our own, and discuss what it means to be alive, what it means to be a human being living in this society, the idea of communication, persecution, social responsibility, and the concept of literature as a tool of social commentary and as a catalyst for [social] change. Particular focus will be on the PA Common Core Standards as they apply to reading, writing, and listening and speaking skills.

Students will engage in formal and informal writing, including analysis, persuasion, exposition, compare and contrast, and process papers. Students will complete the Keystone Exam at the end of this course.

102H ENGLISH 2 Honors
(Grade 10) This course includes all the content of English 2 as well as additional studies designed to increase skills in analysis, synthesis, and critical thinking. Much of the reading, writing, and oral activity is the result of involvement with selected literature, some of which will be assigned as summer reading. Students will complete the Keystone Exam at the end of this course.
Prerequisite: Recommendation of the English department and/or counselor and recommended 84% or better in 9th grade English 1H or 90% or better in 9th grade English 1

1101 ENGLISH 3
(Grade 11) English 3 revolves around the theme "Finding America." The novels, plays, poems, essays, and articles we will read explore the question, "What does it mean to be American?" This course will enable students to identify notable periods of American literature and their general characteristics and to gain an understanding of how literature acts as a reflection of the historical period from which it evolves. Particular focus will be on the PA Common Core Standards as they apply to reading, writing, and listening and speaking skills. Students will engage in formal and informal writing, including analysis, persuasion, exposition, compare and contrast, and process papers.

110H ENGLISH 3 Honors
(Grade 11) This course is designed to be high-level study requiring much initiative and ability. Analysis and critical thinking are expected in reading, writing, and oral activities which revolve around selected American literature, some of which is assigned in advance as summer reading. The novels, plays, poems, essays, and articles we will read explore the question, "What does it mean to be American?" This course will enable students to identify notable periods of American literature and their general characteristics and to gain an understanding of how literature acts as a reflection of the historical period from which it evolves. Particular focus will be on the PA Common Core Standards as they apply to reading, writing, and listening and speaking skills. Students will engage in formal and informal writing, including analysis, persuasion, exposition, compare and contrast, and process papers. The honors level course demands more independent reading, greater analysis of literature, and more advanced writing than regular level 11th grade English.
Prerequisite: Recommendation of English department, school counselor and recommended 84% or better in tenth grade English 2H or 90% or better in tenth grade English 2

1201 ENGLISH 4: INDIVIDUAL IN SOCIETY
(Grade 12) This senior English course revolves around the theme of the Individual in Society. The novels, plays, poems, essays, and articles in this course explore the question, "How do individuals react or behave when they are in conflict with some element of society— such as an institution, the law, or social norms?" This course will challenge students to understand how notable literary characters deal with the conflicts they confront in society. Particular focus will be on the PA Common Core Standards as they apply to reading, writing, and listening and speaking skills. Students will engage in formal and informal writing, including analysis, persuasion, exposition, compare and contrast, and process papers.

1201H ENGLISH 4 Honors
(Grade 12) This course consists of literature survey within the theme of Individual in Society, readings of novels and plays to reflect structure, student-selected readings, strong emphasis on vocabulary, and instruction in advanced composition and the research paper. Students will become extensively involved with organizational and conceptual analysis and will demonstrate these skills as they engage in written and oral activities.
Prerequisite: Recommendation of the English department, school counselor, and recommended 84% or better in eleventh grade English 3H or 90% or better in eleventh grade English 3

SOCIAL STUDIES DEPARTMENT

The CHAD Social Studies program is based on the Pennsylvania Academic Standards for history, Civics and Government, Economics, and Geography. History is the unifying discipline and includes designated strands of geography, civics, government relations, economics, political science, and contemporary issues. These strands provide students with the skills and knowledge necessary to make informed decisions. Skills include critical thinking and problem solving techniques, which lead to negotiation and resolution of social conflicts.

904 WORLD HISTORY
(Grade 9) This course primarily focuses upon major events in world history from Prehistory to the present, using a chronological approach and an architectural lens. Students examine major civilizations by investigating the architecture of the time using an anthropological approach to understand people and places. Architectural investigations include Prehistory, Early Civilizations, Greece, the Far East, Rome, Buddhism, Rock-Cut Architecture, Early Christian Churches, Islam, Middle Ages, and the 15th through 21st Centuries. Special attention will be placed on understanding the context of major events and their relationships to modern day institutions and issues. We will focus on the significance of individuals and groups who made major political, economic, technological, and cultural contributions to world history, and will analyze how continuity and change have impacted belief systems, innovation, commerce, settlement patterns, and social organization across time. Finally, we will study historical documents, artifacts, mock trials and historic sites that provide insight on the trajectory of civilization.

U.S. HISTORY
(Grade 10) This is a full-year course designed to discover American History, using a chronological approach and an architectural lens beginning with the Constitutional Era and ending with the present. Students will explore local historical sites and architecture as the context for each theme. Architectural investigations include Colonial, Georgian, Neo-classical, Victorian, Art Deco, Modernist, International, and Postmodern styles and their connections to historical themes in city and nation. Constitutional development, the growth of democracy, westward expansion, secession, slavery, the Civil War, industrialization, immigration, and the Progressive Movement are some of the major historical themes addressed. The incorporation of minorities and their roles are studied in their historical context. The cause and effect relationships of historical events will be emphasized throughout the course through the applications of historical principals and concepts.

12AAH AFRICAN AMERICAN HISTORY: TIDES OF FREEDOM
(Grade 12) Tides of Freedom explores over 300 years of Philadelphia history and freedom through the evolution of the African experience along the Delaware, using the lens of four key moments; *enslavement, emancipation, Jim Crow, and civil rights*. The TOF exhibition draws largely from the collections of the Independence Seaport Museum. It will feature many objects and images never before exhibited—and will also explore collections in new ways. The show will also include loans from other Philadelphia-area museums. The student will interact with this exhibit and prepare and research various aspect of TOF and develop way to increase this interaction with other Philadelphia students.
0.5 credit

CGOV CIVICS/GOVERNMENT
(Grade 12) This course focuses on civics (the study of the rights and responsibilities of citizenship) and government (the political direction and control exercised over the actions of the members, citizens, or inhabitants of communities, societies, and states). Students analyze political views and the responsibilities of citizenship in determining how these influence the democratic process at the federal, state and local levels. Then, taking this knowledge a step further, students identify and analyze how real world issues and perspectives affect *their* world.
0.5 credit

SPANISH DEPARTMENT

The Spanish Department recommends that students study two years of foreign language.

SP9 SPANISH 1
Spanish 1 is designed to develop communication skills in listening, reading and writing by utilizing the "5C's": Communication, Cultures, Connections, Comparisons, and Communities. Throughout this course students will use basic skills to communicate in the target language with the teacher, students individually, in pairs, and in groups. Students will work primarily with the development of topical vocabulary. Students will also complete related projects and study the culture of Spanish-speaking countries.

1006 SPANISH 2
Spanish 2 is design to develop communication skills in listening, reading and writing by utilizing the "5C's": Communication, Cultures, Connections, Comparisons, and Communities. Throughout this course students will use basic skills to communicate in the target language with the teacher, students individually, in pairs, and in groups. Students will work more in depth with vocabulary and grammar. Students will articulate to provide descriptions and communicate about cultural topics in Hispanics countries.

HEALTH/PHYSICAL EDUCATION DEPARTMENT

All students must take and pass 1.0 credit of Health (one full term course or two semester courses) to graduate.

908 HEALTH 1
(Grades 9-12) The first semester of CHAD's health education course will provide all students with the skills and knowledge to promote responsible lifetime decision-making and contribute to a healthy and safe society. Healthy choices and decision-making skills are stressed. The program teaches students the skills necessary to weigh options, to make responsible decisions, and to develop behaviors/goals that promote healthful living. CHAD recognizes that student wellness and proper nutrition are related to students' physical wellbeing, growth, development, and readiness to learn. The units covered in this course include First AID/CPR/AED, Substances, Nutrition, Diseases, and Wellness.
The second half of CHAD's health education course is an experience and discussion-based class that uses a variety of activities, project based learning and authentic learning opportunities to discover the world of Health. Topics include but are not limited to growth and development in adulthood and late adulthood, the impact of media on personal health and safety of adults, the impact of violence on community members, nutritional choices of adults and the impact it has on health status, and examining issues relating to the use/non-use of drugs.
1.0 credit

Architecture + Design Charter High School
Bell Schedules

NORMAL BELL SCHEDULE

	Grade 9		Grade 10	Grade 11	Grade 12
Period 1	8:00-8:53		8:00-8:53	8:00-8:53	8:00-8:53
Period 2	8:56-10:12	8:56-9:49	8:56-9:49	8:56-9:49	8:56-9:49
Period 3	*9th Grade Lunch A 10:15-10:45*	9:52-11:08	9:52-10:45	9:52-10:45	9:52-10:45
Period 4	10:48-11:41	*9th Grade Lunch B 11:11-11:41*	10:48-11:41	10:48-11:49	10:48-11:41
Period 5	11:44-12:37		11:44-12:37	*11th Grade Lunch 11:52-12:22*	*12th Grade Lunch 11:52-12:22*
Period 6	12:40-1:33		*10th Grade Lunch 12:41-1:11*	12:25-1:33	12:25-1:33
Period 7	1:36-2:29		1:14-2:29	1:36-2:29	1:36-2:29
Advisory	2:32-2:45		2:32-2:45	2:32-2:45	2:32-2:45

9:30 DELAYED ARRIVAL BELL SCHEDULE (shortened periods 2-6)

	Grade 9		Grade 10	Grade 11	Grade 12
Period 2	9:30-10:12	9:30-9:49	9:30-9:49	9:30-9:49	9:30-9:49
Period 3	*9th Grade Lunch A 10:15-10:45*	9:52-11:08	9:52-10:45	9:52-10:45	9:52-10:45
Period 4	10:48-11:41	*9th Grade Lunch B 11:11-11:41*	10:48-11:41	10:48-11:49	10:48-11:41
Period 5	11:44-12:37		11:44-12:37	*11th Grade Lunch 11:52-12:22*	*12th Grade Lunch 11:52-12:22*
Period 6	12:40-1:33		*10th Grade Lunch 12:41-1:11*	12:25-1:33	12:25-1:33
Period 7	1:36-2:29		1:14-2:29	1:36-2:29	1:36-2:29
Advisory	2:32-2:45		2:32-2:45	2:32-2:45	2:32-2:45

*In the event of consecutive delayed arrivals, students may be advised to attend their Period 1 class during Period 2 in this schedule, per announcement by administrative team. A sign will also be posted in the intake area.
Lunches will be scheduled at the shaded time slots.

HALF DAY BELL SCHEDULE A (9TH GRADE LUNCH ONLY)

	Grade 9		Grade 10	Grade 11	Grade 12
Period 1	8:00-8:51		8:00-8:51	8:00-8:51	8:00-8:51
Period 2	8:54-9:45		8:54-9:45	8:54-9:45	8:54-9:45
Period 3	*9:48-10:18*	9:48-10:39	9:48-10:39	9:48-10:39	9:48-10:39
Period 4	10:21-11:12	*10:42-11:12*	10:42-11:33	10:42-11:33	10:42-11:33
Period 5	11:15-12:00		11:36-12:00	11:36-12:00	*11:36-12:00*
OPTIONAL LUNCH SERVED GRADES 10-12 12:00-12:20					

HALF DAY BELL SCHEDULE B

	Grade 9		Grade 10	Grade 11	Grade 12
Period 7	8:00-8:51		8:00-8:51	8:00-8:51	8:00-8:51
Period 6	8:54-9:45		8:54-9:45	*8:54-9:15*	8:54-9:45
Period 5	9:48-10:39		*9:48-10:18*	9:18-10:18	9:48-10:39
Period 4	10:42-11:33		10:21-11:12	10:21-11:12	*10:42-11:12*
Period 3	*11:36-12:00*	11:36-12:00	11:15-12:00	11:15-12:00	11:15-12:00
OPTIONAL LUNCH SERVED GRADE 9 EARLY LUNCH 12:00-12:20					

COURSE OFFERINGS 2016-17

DESIGN
16BA BOOK ARTS
16DPORT DIGITAL PORTFOLIO
16FDRAW FIGURE DRAWING
16GSTRU GEOMETRIC STRUCTURES
16MTECH MAKER TECHNOLOGIES
100STRU ORGANIC STRUCTURES
16SILLU SKETCHING & ILLUSTRATION
WEAVING ARTS
TEXTILES & FABRICS
162D 2-D / 3-D DESIGN
11IA INTRODUCTION TO ARCHITECTURE – TECTONICS (Grade 11)
11ID INTRO TO INDUSTRIAL DESIGN (Grade 11)
11GD INTRO TO GRAPHIC DESIGN (Grade 11)
11FD INTRO TO FASHION DESIGN (Grade 11)
16ICRAFT INTRO TO CRAFT ARTS (Grade 11)
16IFINE INTRO TO FINE ARTS (Grade 11)
16IILLUS INTRO TO ILLUSTRATION (Grade 11)
12ART1 ARCHITECTURE (Grade 12)
12FAS1 FASHION DESIGN 1 (Grade 12)
12GRD1 GRAPHIC DESIGN 1 (Grade 12)
12IND1 INDUSTRIAL DESIGN Grade 12)
16ENV1 ENVIRONMENT DESIGN (Grade 12)
16INTER INTERPRETIVE DESIGN (Grade 12)

MATH DEPARTMENT
TPALG PRE-ALGEBRA
902 ALGEBRA 1A
10MSEM MATH SEMINAR/ALGEBRA 1A LAB
ALG1 ALGEBRA 1 (Grade 9-10)
16ALG1H ALGEBRA 1H (Grade 9)
12ALG ALGEBRA 2 (Grade 10-11)
1002 GEOMETRY (Grade 10-12)
16COLLALG COLLEGE ALGEBRA (Grade 11-12)
PC12 PRE-CALCULUS (Grade 11-12)

SCIENCE DEPARTMENT
906 INTEGRATED SCIENCE (Grade 9)
1003 BIOLOGY 1(Grade 10-11)
16ESCIE ENVIRONMENTAL SCIENCE (Gr 11-12)
1103 CHEMISTRY (Grade 11-12)
1203 PHYSICS (Grade 11-12)
12BB MARITIME PHYSICS (Grade 12)

ENGLISH DEPARTMENT
901 ENGLISH 1 (Grade 9)
901H ENGLISH 1H (Grade 9)
1001 ENGLISH 2 (Grade 10)
102H ENGLISH 2H (Grade 10)
1101 ENGLISH 3 (Grade 11)
110H ENGLISH 3H (Grade 11)
1201 ENGLISH 4 (Grade 12)
1201H ENGLISH 4H (Grade 12)

SOCIAL STUDIES DEPARTMENT
904 WORLD HISTORY (Grade 9)
16UHIST U.S. HISTORY (Grade 10)
12AAH AFRICAN AMERICAN HISTORY: TIDES OF FREEDOM (Grades 10-12)*
CGOV CIVICS/GOVERNMENT (Grades 10-12)*

SPANISH DEPARTMENT
SP9 SPANISH 1(Grade 9-12)
1006 SPANISH 2 (Grade 9-12)

HEALTH/PHYSICAL EDUCATION DEPARTMENT
908 HEALTH (Grade 9-12)*