

**Trade Tech Course Descriptions  
2017-2018**

**Trade Tech High School is fully WASC accredited. All courses offered at Trade Tech comply with education code and are transferable to other California Public High Schools.**

**Academy Advisory**

**Grades: 9-12**

**Length: Two Semesters**

**Prerequisite: None**

**UC A thru G Requirement: No**

All students will be assigned to an advisory. Advisory has several purposes. First, it provides an advisor that oversees a student's course of study. Secondly, the advisor monitors the student's grades and provides support/resources when needed. An advisory group is comprised of multiple grades with the intent of the upper classmen, along with the advisor, helping and guiding the lower classmen. The third purpose of the advisory is to keep students aware of upcoming events. Another critical purpose of advisory is the 2 schoolwide Green Build Tech Academy projects each year. The advisor is responsible to keep students on track with these projects. Successful completion results in students receiving 2.5 credits each semester for participating in advisory.

**ENGLISH/LANGUAGE ARTS**

**Creative Writing (Elective)**

**Grades: 10-12**

**Length: Two Semesters**

**Prerequisite: None**

**UC A thru G Requirement: No**

This course focuses on the development of students' creative written expression. Following a writers' workshop model, the class emphasizes sharing writing with peers and offering constructive criticism and an honest reader's response. Various genres are explored, including poetry, drama, short stories, and creative nonfiction. Students study professional writing as a model for their own writing and are encouraged to submit finished pieces for online publication and contest submission. The culminating course product is a portfolio of revised, published works that will be presented at Trade Tech's Night of Excellence.

**English 9**

**Grades: 9**

**Length: Two Semesters**

**Prerequisite: None**

**UC A thru G Requirement: b**

Following Common Core expectations, this course introduces ninth-grade students to critical analysis of literature and nonfiction writing through individual analysis, group discussion and activities, and individually written responses. The course curriculum and assessments are designed to prepare students for higher level English courses and testing. Students will read a variety of both literary fiction and nonfiction and informational texts. Students will gain skills necessary for competent writing by focusing on the mechanics of language, vocabulary development, and directed reading and writing. Students will complete a variety of writing activities, focusing on mechanics, structure, idea development, and clarity of expression.

### **English 10**

**Length: Two Semesters**

**UC A thru G Requirement: b**

This course continues to follow Common Core expectations to develop tenth-grade students' ability to critically analyze a variety of texts and media through individual analysis, group discussion, and written responses. The course curriculum and assessments are designed to prepare students for higher level English courses and testing. Students will read a variety of both literary fiction and nonfiction and informational texts. Students will gain skills necessary for competent writing by focusing on the mechanics of language, vocabulary development, and directed reading and writing. Students will complete a variety of writing activities, focusing on mechanics, structure, idea development, and clarity of expression.

**Grades: 10**

**Prerequisite: None**

### **English 11**

**Length: Two Semesters**

**UC A thru G Requirement: b**

This course is designed to continue preparing students for postsecondary reading and writing demands. Students will read a variety of both literary fiction and nonfiction and informational texts, increasing their analyses of structure and purpose in order to deepen understanding of increasingly complex readings. Over the course of a year, students will also produce a variety of texts, focusing on structure, idea development, and clarity of expression. This is the last English course required for NCTTHS graduation, but students planning on continuing to college should plan on taking English 12.

**Grades: 11**

**Prerequisite: None**

### **English 12 (CSU Expository Reading and Writing A & B)**

**Length: Two Semesters**

**UC A thru G Requirement: b**

English 12 is a college-preparatory course for the literacy demands of higher education. Students will be expected to increase their awareness of the rhetorical strategies employed by authors and to apply those strategies in their own writing. They will read closely to examine the relationship between an author's argument or theme and his or her audience and purpose; to analyze the impact of structural and rhetorical strategies; and to examine the social, political, and philosophical assumptions that underlie the text. Course texts include contemporary essays, newspaper and magazine articles, editorials, reports, biographies, memos, assorted public documents, and full-length novels. This course requires much more work to be completed outside of class as compared to earlier English courses; students should expect to spend time each week, possibly each day, reading and annotating texts or completing written assignments.

**Grades: 12**

**Prerequisite: Recommended C or better in English 11**

## **MATHEMATICS**

### **Business Math**

**Length: Two Semesters**

**UC A thru G Requirement: No**

This course is NOT for students planning to attend a 4-year university. Business Math is a course designed to teach students the mathematics used by many businesses. Students will work on basic math skills and learn how to apply them to business applications. This is done by focusing on gathering data, interpreting data and converting data to usable outputs by creating

**Grades: 10-12**

**Prerequisite: Passing full year of Algebra 1 or Integrated Math 1**

graphs and charts. Students will learn to analyze revenue, profit, and inventory of businesses. Projects involving workplace math will be taught along with specific computer applications, such as spreadsheets.

**Pre-Algebra**

**Grades: 9-10**

**Length: Two Semesters**

**Prerequisite: 209 or lower on MAP**

**UC A thru G Requirement: No**

This course prepares students for Algebra 1. It includes properties and operations of the real numbers developed in a logical and systematic way, reviews arithmetic skills (e.g., greatest common divisor, least common multiple, prime factors, etc.), and emphasizes techniques for study habits necessary for successful completion of higher mathematics courses. Classroom instruction is supplemented with online resources.

**Integrated Math 1**

**Grades: 9-12**

**Length: Two Semesters**

**Prerequisite: Passing Pre-Algebra**

**UC A thru G Requirement: c**

**230 or higher on MAP**

Students will develop an understanding of broadly useful ideas of algebra and functions, geometry, statistic and probability, and discrete mathematics. Students will be actively engaged in understanding and applying mathematics by working in teams and using technology to solve problems as of many people do in their jobs. Graphing calculators and computer software tools will be used for helping with calculations, drawing, and data analysis in mathematical explorations and solving problems.

**Integrated Math 2**

**Grades: 9-12**

**Length: Two Semesters**

**Prerequisite: Passing Integrated Math 1**

**UC A thru G Requirement: c**

Students will further develop an understanding of broadly useful ideas of algebra and functions, geometry, statistic and probability, and discrete mathematics. Each of these strands is developed within the fundamental ideas such as functions, matrices, symmetry, data analysis, and curve fitting. Students will be actively engaged in understanding and applying mathematics by working in teams and using technology to solve problems as of many people do in their jobs. Graphing calculators and computer software tools will be used for helping with calculations, drawing, and data analysis in mathematical explorations and solving problems.

**Algebra II**

**Grades: 10-12**

**Length: Two Semesters**

**Prerequisite: Passing Geometry or Integrated Math 2**

**UC A thru G Requirement: c**

This course is designed to build on the knowledge and skills developed in Algebra I and Geometry (or Integrated Math I & II). Students will learn more in depth algebraic concepts and skills in accordance with the California Mathematics Content Standards. Students will gain experience with algebraic solutions, including operations on polynomials, manipulating and graphing variety of algebraic functions, solving systems of linear and nonlinear equations, working with logarithmic and exponential functions, sequences and series, the binomial theorem, and the complex number system.

**Pre-Calculus**

**Grades: 11-12**

**Length: Two Semesters**

**Prerequisite: C or better in Algebra II or Integrated Math 3**

**UC A thru G Requirement: c**

The course reviews topics from Geometry and Algebra 2 in graphical, numerical and algebraic terms. Additional topics include wider and more in depth concepts in trigonometry: laws of sines and cosines, graphs of all trigonometric functions, trigonometric identities, and an introduction to matrices and conic sections.

**Calculus (Not offered every year – depends on sign up in May)**

**Grades: 12**

**Length: Two Semesters**

**Prerequisite: C or better in Pre-Calculus**

**UC A thru G Requirement: c**

This course ties together concepts that students have studied in previous classes and introduces the concepts of calculus. This class provides an excellent opportunity for the student to experience a college-level mathematics course in a high school setting.

Calculus deals with calculating and exploring things that change at variable rates. The major concepts of calculus include limit, derivative, and integrals. In addition to these major concepts we will successfully highlight numerous subtopics and methods as listed in the Calculus AB Topic Outline in the AP Calculus Course Description. We will explore each concept in four different ways; graphically, numerically, algebraically, and verbally emphasizing the connections and applications. This class will prepare students for the Advanced Placement Calculus AB exam in which students may earn college math credit.

A graphing calculator is required to help students solve problems, explore relationships, and interpret and support results. A graphing calculator, a TI-83+ or equivalent, is required for this course.

**SCIENCE**

**Earth Science**

**Grades: 9-12**

**Length: Two Semesters**

**Prerequisite: None**

**UC A thru G Requirement: g**

Earth Science will provide students with the comprehensive study of earth and space sciences through investigation and model building. Topics will include biogeochemical cycles, metrics and density, topography, earth's composition, dynamic earth processes (plate tectonics, erosion), energy in earth systems, earth's place in the universe (Kepler's laws), atmosphere, weather and climate, and California geology (energy and mineral resources). Emphasis is given to data analysis, laboratory investigation skills, and critical thinking.

**Biology & Lab**

**Grades: 9-12**

**Length: Two Semesters**

**Prerequisite: None**

**UC A thru G Requirement: d**

Biology is a college preparatory course designed to familiarize students with the diversity and processes of life. This course emphasizes the molecular, cellular and organism levels of life; the human body systems (digestive, excretory, nervous, immune, respiratory and circulatory); genetics; DNA and genetic engineering; the ecology of organisms (energy production and flow within living systems); the role that evolution has played in life on earth (adaptations,

speciation, survival of the fittest). The students develop laboratory and critical thinking skills through experimentation and analysis.

**Physics & Lab (Offered in beginning in an even year)**

**Grades: 11-12**

**Length: Two Semesters**

**Prerequisite: C or better in Integrated Math 1 or Algebra I**

**UC A thru G Requirement: d**

Physics is a lab-based course which introduces students to the principal concepts of physics and the scientific methodologies used in physics. Students will use experimental set-ups and scientific tools to observe, collect data and analyze physical phenomena in the fields of mechanics (kinetics, forces, Newton's laws, potential and kinetic energy, momentum, elastic and inelastic collisions, machines), thermodynamics (heat and transfer of heat), optics (refraction of light), electricity and magnetism (electrostatics, electric current and circuits, magnets and electromagnetism). Students will first learn the concepts via demonstrative lectures, and then have the opportunity to reinforce their understanding of physics by applying their knowledge to complete several laboratories and interdisciplinary projects.

**Chemistry & Lab (Offered in beginning in an odd year)**

**Grades: 11-12**

**Length: Two Semesters**

**Prerequisite: C or better in Integrated Math 1 or Algebra I**

**UC A thru G Requirement: d**

The college preparatory chemistry course covers inorganic and organic chemistry topics sometimes overlapping with biological and physical concepts. Students will first acquire lab skills of measurement using the metric system (mass, length and volume) that they will use throughout the year. They will learn about the physical and chemical properties of metals and nonmetals, the characteristics of mixtures and pure substances, the atomic and electronic structure, periodic trends of Mendeleev periodic table of the chemical elements, 3 dimensional structures of molecules, chemical reactions (precipitation, synthesis, oxidation-reduction, exothermic versus endothermic, the heat and the rate of reactions, limiting reactant), the mole, gases (Boyle's law), aqueous solutions, acids and bases, saponification, and biochemistry (chemistry of nutrients).

**PHYSICAL EDUCATION**

**PE 9/Health**

**Grades: 9**

**Length: Two Semesters**

**Prerequisite: None**

**UC A thru G Requirement: No**

This course is designed to investigate and apply the basic concepts and principles of lifetime physical fitness and other health-related factors. Emphasis is placed on wellness through the study of nutrition, weight control, stress management, and on exercise and fitness. Upon completion, students should be able to plan a personal, lifelong fitness program based on individual needs, abilities, and interests. This class will include the following components of fitness, cardiovascular and respiratory endurance, muscular strength, flexibility, muscular endurance, body composition and balance.

This class will be a full view of muscular function – how muscles work, how they grow, the nutrition they need to boost growth, how their development can assist fat loss, and how to safely exercise using the proper form and technique. Proper weight training consists of

cardiovascular benefits, but its chief goal is to build muscle in a healthy, educated, and safe manner.

**PE 10-12 Emphasis in Fitness/Aerobic Cardio/Dance**

**Grades: 10-12**

**Length: Two Semesters**

**Prerequisite: None**

**UC A thru G Requirement: No**

This class will be a combination class of cardio, strength, and body weight workouts. This class will be mixing it up with circuit training, running, walking, aerobic dance, tabata training, weight training, & core exercises. This class will also dive into proper nutrition to fuel your body along with fitness and healthy goal setting.

**Personal PE**

**Grades: 10-12**

**Length: One quarter (45 hours = 2.5 credits)**

**Prerequisite: PE 9/Health**

**UC A thru G Requirement: No**

Maximum of 10 units per year for Approved Personal PE program completed out of school. See the office manager for a parent/student contract and log sheets.

**Team Sports – As offered annually**

**Grades: 9-12**

**Length: One Season – see description below**

**Prerequisite: None**

**UC A thru G Requirement: No**

Participation in more than 80% of practices and games to earn 5 PE credits (must total at least 90 hours).

**SOCIAL SCIENCE**

**World History**

**Grades: 10**

**Length: Two Semesters**

**Prerequisite: None**

**UC A thru G Requirement: a**

Students will analyze and examine the foundation and ideals of Democracy and its influence on the Renaissance and Enlightenment period. Students will explore the cultural and political movements throughout the world studying the development and aftermath of revolutions in both hemispheres, and their effect on a global level. Students will analyze the impact of industrialization and imperialism and the impact throughout the world. They will also cover World Wars I and II, including the understanding of specific ideologies and the repercussions of their beliefs. Students will examine the politics of the Middle East and their relationship to current events around the world. Students will analyze current global issues, such as overpopulation and worldwide terrorism. Assignments include internet activities, essays, Moviemaker presentations, Power Point presentations, critical thinking exercises, analysis of primary sources, and hands on projects. (Community College Equivalency: )

**US History**

**Grades: 11**

**Length: Two Semesters Prerequisite: 11<sup>th</sup> Grade or Passing World History both semesters**

**UC A thru G Requirement: a**

Students will study the political, social, economic, and diplomatic history of the United States, beginning with the Revolution and concentrating primarily on the 20th century. Themes and topics covered in this course include, but are not limited to, the following: the influence of

Enlightenment thinkers on the drafting of the nation's founding documents, migration/immigration and the rise of industrialization, US role as a world power and its presence in World War 1, the Great Depression and the New Deal, World War 2, social transformation after WW II, the Civil Rights Movement, the Cold War, and other recent historical events. (Community College Equivalency: History 101 US thru Recon 3 semester units, and History 102 US since Recon 3 semester units)

**Civics**

**Grades: 12**

**Length: One Semester      Prerequisite: 12<sup>th</sup> grade or passing US History both semesters  
UC A thru G Requirement: a**

This course is designed to introduce the student to the structure and function of federal, state, and local governments in the United States. Students gain an understanding of the United States Constitution, citizenship, and the legal system. Lessons are presented in a variety of ways including lecture, class discussion, reading assignments, videos, and projects. Student evaluations consist of textbook worksheets, class projects, class participation, activities, quizzes, and tests. (Community College Equivalency: POSC 101 Introduction to Politics and American Political Institutions 3 semester units or POSC 102 Introduction to United States and California Governments 3 semester units)

**Economics**

**Grades: 12**

**Length: One Semester      Prerequisite: 12<sup>th</sup> grade or passing US History both semesters  
UC A thru G Requirement: a**

Students will also master fundamental economic concepts, applying the tools (graphs, statistics, equations) from other subject areas to the understanding of operations and institutions of economic systems. Studied in a historic context are the basic economic principles of micro- and macroeconomics, international economics, comparative economic systems, measurement, and methods. (Community College Equivalency: ECON 100 Basic Economics 3 semester units or 101 Principles of Economics (Macro))

*Note for all students: For any students who wish to graduate early, in addition to all courses and credits being required, please meet with the principal before planning to graduate early. If you notify the school of this intent after the start of the 2<sup>nd</sup> semester of your junior year, Trade Tech will NOT be able to accommodate this request. See below for information about required senior classes.*

*Civics and Economics are ONLY available to 12<sup>th</sup> graders at Trade Tech. If you wish to graduate early, you will need to take the Equivalency of Civics and Economics at a community college, transfer credit from any secondary school prior to 12<sup>th</sup> grade must be evaluated on an individual basis. You MUST have these preapproved in writing prior to taking the classes to ensure they will transfer to meet our requirements.*

*At Palomar Community College, the Civics requirement is currently met with POSC 101, Political Science – Introduction to Politics and American Political Institutions, and the Economics is currently met with Econ 101, Principles of Economics (Macro).*

**FOREIGN LANGUAGE**

**Spanish I**

**Length: Two Semesters**

**UC A thru G Requirement: e**

This is an elective course designed to develop world language skills and to prepare students for living in a global society. Classroom instruction is designed to develop the ability to communicate in a second language by involving students in communicative tasks. Classroom instruction includes reading, writing, listening, and speaking skills. Students will learn the target language in a contemporary cultural context.

**Grades: 9-12**

**Prerequisite: None**

**Spanish II**

**Length: Two Semesters**

**UC A thru G Requirement: e**

This is the second year of an elective course designed to further enhance world language skills and to prepare students for living in a global society. Classroom instruction is designed to increase the ability to communicate in a second language by involving students in communicative tasks. Classroom instruction includes reading, writing, listening, and speaking skills. Students will learn the target language in a contemporary cultural context.

**Grades: 9-12**

**Prerequisite: None**

**Spanish III**

**Length: Two Semesters**

**UC A thru G Requirement: e**

This is the third year of an elective course designed to further enhance world language skills and to prepare students for living in a global society. Classroom instruction is designed to further increase the ability to communicate in a second language by involving students in elaborate communicative tasks. Classroom instruction includes reading, writing, listening, and speaking skills. Emphasis will be placed on writing and speaking. Students will learn the target language in a contemporary cultural context.

**Grades: 10-12**

**Prerequisite: Spanish II**

**Spanish IV – Spanish for the Professions**

**Length: Two Semesters**

**UC A thru G Requirement: No**

The 4<sup>th</sup> year program is designed to prepare students for Spanish in the workplace. Students will be taught vocabulary and language that is common in the workplace. Translator preparation testing will be discussed and, if students wish to take a translator test, Trade Tech staff will work to prepare the student and find resources for student to independently continue their preparation.

**Grades: 11-12**

**Prerequisite: Spanish III**

**ENGINEERING AND MANUFACTURING**

**Drafting**

**Length: Two Semesters**

**UC A thru G Requirement: No**

An introduction to mechanical and architectural drafting including symbols, lettering, construction principles and details as related to the development of working drawings.

**Grades: 9-11**

**Prerequisite: None**

Half technical drawing class, half art class, this project based-course immerses students in engaging hand drawing projects that include exercises that promote construction math,

engineering, science achievement (MESA). While the use of computer aided drawing (CAD) software dominates modern construction drawings, this course gives students a strong foundation by first learning how to draw by hand. The ability to demonstrate, on the fly, a design inspiration, or a revision to a floor plan, is a critical skill used daily in many careers. In this class, students develop the habit of thinking like architects, engineers, building scientists, city planners, and graphic artists. They learn how to use technical drawing equipment and become adept working with the architectural scale. In one unit, students become architects, conceptualize their own green dream home, bring the structure to life through a series of hand drawings, and finally, build scale models. Perspective drawing, map making, and construction estimation skills emerge as students are immersed in the practice of designing, drawing and building. The culmination of the course is an introduction to CAD where hand drawing skills learned throughout the year, transfer to immediate success drawing with a computer.

This yearlong course is offered specifically for freshman as an introduction to construction and engineering through graphic representation. Before students learn how to create and use computer aided drawing programs such as REVIT and AutoCAD, it is critical that they learn how to create construction and engineering drawings by hand. In this course, students are introduced to the architectural scale and architectural drafting equipment. Students are exposed to model making, house design, blueprint reading, construction estimation, and map making.

**MESA (Mathematics, Engineering and Science Achievements) / Engineering Technology 1**

**Grades: 9**

**Length: Two Semesters**

**Prerequisite: None**

**UC A thru G Requirement: No**

This is an introductory class aimed at integrating core curriculum; project based learning, engineering design, architecture, design, and the design process. This is a hands on activities class which will develop planning, organization, and technical skills necessary in basic engineering understanding. This class will also allow students to have access to industry standard software used in 3D modeling, and 3D architecture in BIM (building information modeling).

**Advanced Engineering Technology**

**Grades: 11 & 12**

**Length: Two Semesters**

**Prerequisite: IED**

**UC A thru G Requirement: No**

The Advanced Engineering Design (AED) course is a continuation on IED that involves advanced projects with a focus on the design process with an emphasis on real-life problems and constraints, teamwork, practicality, budget, and performance. Student lead engineering projects will be used as a foundation for learning principles from many engineering disciplines such as mechanical, electrical, robotic, and software engineering. Projects will be supplemented with instruction on topics such as static and dynamic systems, gear trains, linkages, power transmission, etc. This course involves advanced 3-D modeling with Autodesk Inventor and Revit. Students are given the freedom to explore advanced modeling techniques and features embedded in the software which aid in structural analysis, materials properties, presentation enhancements etc.

**Introduction to Engineering Design (IED - PLTW)**

**Grades: 10-12**

**Length: Two Semesters**

**Prerequisite: None**

**Special Note: Palomar College Credit is available for completion with a B or better.**

**UC A thru G Requirement: g**

Introduction to Engineering Design (IED) is a high school level course that is appropriate for 9th or 10th grade students who are interested in design and engineering. The major focus of the IED course is to expose students to design process, research and analysis, teamwork, communication methods, global and human impacts, engineering standards, and technical documentation. IED gives students the opportunity to develop skills and understanding of course concepts through activity-, project-, and problem-based (APPB) learning. Used in combination with a teaming approach, APPB-learning challenges students to continually hone their interpersonal skills, creative abilities and understanding of the design process. It also allows students to develop strategies to enable and direct their own learning, which is the ultimate goal of education. The course assumes no previous knowledge, but students should be concurrently enrolled in college preparatory mathematics and science. Students will employ engineering and scientific concepts in the solution of engineering design problems. In addition, students use a state of the 3D solid modeling design software package to help them design solutions to solve proposed problems. Students will develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges that increase in difficulty throughout the course. Students will also learn how to document their work, and communicate their solutions to their peers and members of the professional community.

**Civil Engineering and Architecture (CEA - PLTW)**

**Grades: 10-12**

**Length: Two Semesters**

**Prerequisite: IED**

**Special Note: Palomar College Credit is available for completion with a B or better.**

**UC A thru G Requirement: g**

The major focus of the Civil Engineering and Architecture (CEA) course is a long-term project that involves the development of a local property site. As students learn about various aspects of civil engineering and architecture, they apply what they learn to the design and development of this property. The course provides freedom to the teacher and students to develop the property as a simulation or to students to model the real-world experiences that civil engineers and architects experience when developing property.

The CEA course is intended to serve as a specialization course within the Engineering Academy sequence. The course is structured to enable all students to have a variety of experiences that will provide an overview of both fields (Mechanical Engineering and Civil Engineering). Students work in teams, exploring hands-on projects and activities to learn the characteristics of civil engineering and architecture.

In addition, students use Revit, which is a state of the art 3-D design software package from Autodesk, to help them design solutions to solve their major course project. Students learn about documenting their project, solving problems, and communicating their solutions to their peers and members of the professional community of civil engineering and architecture (Prerequisite: Introduction to Engineering Design C or better).

**Graphics Design and Modeling (Manufacturing Tech)**

**Grades: 10-12**

**Length: Two Semesters**

**UC A thru G Requirement: f**

This course offers students the opportunity to learn foundational graphic design and basic modeling techniques and methods. The course starts students off with a historical background of art history as it relates to graphic design and modeling. They will learn about the job opportunities that are available to them in this occupational field and the schooling/training necessary to earn gainful employment in this field. Students will have the opportunity to learn entry level sketching and drawing with a focus on shading and topography. They will learn how to create storyboards for their animations using pencils, pens, clay and multiple other objects to help “sell” their animation to the teacher prior to before creating the animation using computer software animation packages. Graphic design animation assignments shall include having the students create a construction safety video and a mini-movie of their choice utilizing claymation. Students in this class will learn how to effectively use 3 dimensional printing through the use of 3D printers and its associated software. This course also provides and introduction to modeling starting off with the hands-on claymation. Experts and professionals in this area will come into this class to help the students learn the best ways to manipulate the clay to relay the story to others. Modeling will also be taught using manual operation mills and lathes to create 3D models from pre-cut and specifically dimensioned wood blocks. They will learn the safety procedures associated with using these machines and the basic mathematical knowledge necessary to create models using these machines. Students will gain the necessary knowledge to be successful in Manufacturing 1, the next course in this pathway. Students will complete both individual and group projects during this course. They will learn the process that is involved for an individual or group to take a graphic and modeling design project from imagination to design to actual construction.

**Manufacturing 1**

**Length: Two Semesters**

**UC A thru G Requirement: g**

Students will learn the basics of Materials Science applied to machining and forming and develop a thorough understanding of the theory behind and the importance of attaining a mastery of basic machining skills. The course starts students off with a historical background of machining and machine tools. They will learn about the job opportunities that are available to them in this occupational field and the schooling/training necessary to earn gainful employment in this field. Safe working habits such as proper attire, housekeeping, tool handling and storage will be a primary focus. Safe operation of manual machine tools and metal forming equipment commonly found in a machine shop will be covered as well calculating feeds and speeds as it relates to material types and cutting tools. Students will learn through “hands on experience” how different types of materials react during the machining process and finishing operations. Machine shop vocabulary as it relates to blueprint reading, quality control, and screw thread identification will also be covered.

**Grades: 1-12**

**Prerequisite: IED**

**Manufacturing 2/ Advanced Machining**

**Length: Two Semesters**

**UC A thru G Requirement: g**

Students will start with the basics of CNC machining and develop a thorough understanding of the theory behind and the importance of attaining a mastery of CNC machining skills. They will learn safe working habits when running CNC equipment, proper attire, housekeeping, tool holder handling and storage as well as machine and coolant maintenance. Blueprint reading, inspection, set up, calculating feeds and speeds, and tool path for different materials and

**Grades: 11-12**

**Prerequisite: Manu1**

cutting tools will be covered. Beginning with manual programming using G and M codes, students will eventually create CNC Lathe and Mill programs using Autodesk HSM Inventor.

## **COMPUTER SCIENCE INFORMATION TECHNOLOGY**

### **Introduction to Computer Science Information Technologies**

**Grades: 10-12**

**Length: Two Semesters**

**Prerequisite: none**

**UC A thru G Requirement: No**

**Students who earn a B or better will receive 3 units of Palomar College credit (CSIT 105)**

The study of computer concepts and basic proficiency in modern application software. Computer concepts will focus on basic terminology; computer literacy; information literacy; hardware; software; information systems; structured design techniques, overview of the computer industry; ethics and current issues including virus protection and prevention. Hands-on introduction to Windows operating system and application software including basic proficiency of the Internet; browsers and e-mail. The Microsoft Office Suite will be taught using Word, Excel and PowerPoint.

### **Introduction to Coding and Programming**

**Grades: 10-12**

**Length: Two Semesters**

**Prerequisite: none**

**UC A thru G Requirement: No**

Introduction to Coding and Programming introduces students to the fundamental concepts of computer science and challenges them to explore how computing and technology can impact the world. More than a traditional introduction to programming, it is a rigorous, engaging, and approachable course that explores many of the fundamental ideas of computing so all students understand how these concepts are transforming the world we live in.

## **CONSTRUCTION**

### **Building Maintenance**

**Grades: 9-12**

**Length: Two Semesters**

**Prerequisite: C or better in Construction II**

**UC A thru G Requirement: No**

Students will learn the basics of building/property maintenance. Students will learn the proper identification of building components and materials. Students use their knowledge to construct a scaled structure utilizing current construction techniques. Instruction in the proper techniques in painting application and preparation. Basics of plumbing and electrical repairs. Carpentry repairs with an emphasis on finish trims and moldings. The importance of performing maintenance items with an eye on quality, cleanliness and professionalism is stressed.

Completion with a C or better can apply a total of 10 units towards Physical Education high school graduation requirement.

### **Construction I**

**Grades: 9-12**

**Length: Two Semesters**

**Prerequisite: None**

**UC A thru G Requirement: No**

Construction 1 is an introduction to the basic fundamentals of construction tools and skills. With focus on safety, students learn how to use basic tools properly and develop many construction skills.

Complies with OCHA – 10 training requirements. Explains the safety obligations of workers, supervisors, and managers to ensure a safe workplace. Discusses the causes and results of accidents and the impact of accident costs. Reviews the role of the company policies and OSHA regulations. Introduces common job-site hazards and identifies proper protections. Defines safe work procedures, proper use of personal protective equipment, and working with hazardous chemicals. Identifies other potential construction hazards, including hazardous materials exposures, welding and cutting hazards, and confined spaces. Students will be instructed in varied material identification and uses.

### **Construction II**

**Grades: 10-12**

**Length: Two Semesters**

**Prerequisite: Construction I**

**UC A thru G Requirement: No**

Construction 2 is a review of construction tools and skills. In addition, basic communication skills provide trainees with techniques for communicating effectively with co-workers and supervisors. Includes practical examples that emphasize the importance of verbal and written information and instruction on the job. Student utilizes their knowledge and skill to build an animal enclosure (dog house, chicken coop, etc). Course emphasizes the importance of working drawings and estimation skills. Students will design personal projects, using design parameters given by the instructor. Projects will include material take-offs, cost estimations and completion schedules. Continued instruction in tool and personal safety emphasized.

### **Construction III (*Multi-Craft Core Curriculum: Building Scaled Structures*)**

**Grades: 11-12**

**Length: Two Semesters**

**Prerequisite: Construction II**

**UC A thru G Requirement: g**

Construction III is a review of construction tools and skills. Students use their knowledge to construct a scaled structure utilizing current construction techniques. Students learn basic maintenance skills in various trades. Students prepare for their career by building resumes, develop interview skills and strategies for job placement. Instruction in advanced blueprint reading and interpretation is an integral part of the course. Students will learn the different levels of business development, IE: Limited Liability Companies, Sole Proprietorships, Corporations Etc. Continued emphasis on design and estimation skills and ongoing safety training. Students will be instructed in the importance of environmentally conscious building design and construction. Students will learn the significance of delivering projects on time, on budget with quality.

### **Finish Carpentry/Interior Design**

**Grades: 11-12**

**Length: Two Semesters**

**Pre-Requisite: IED, Grade C or better in Construction II**

**UC A thru G Requirement: No**

The finish carpentry course will introduce students to the skills necessary to perform basic to advanced finish carpentry projects. Students will learn the names and purposes of finish trims and finishes.

Students will learn to use the proper tools to perform specific finish trim applications. In conjunction with the interior design course students will understand the specific finish

applications that work with particular design ideas. Students will learn to hang interior and exterior doors including all hardware.

Students will perform installations of varied finish trim products, IE: Baseboards, base shoes, door and window casings, door jambs, wainscoting, crown moldings, chair rails, stool and apron etc. Students will be able to explain and understand the relationship between rough carpentry work and its unintended effect on the quality of the finished product. Upon completion of the course students will be competent in the afore mentioned applications and understand the difference between marginal quality and high quality workmanship.

#### **OTHER COURSES:**

##### **Automotive Technology**

**Grades: 11-12**

**Length: Two Semesters**

**Prerequisite: Bike Repair/Small Engine**

**UC A thru G Requirement: No**

This course will show students a look at the different aspects related to automotive repair. Through hands on experience, as well as other resources, students will gain hands on experience and learn about how engines and other systems of automobiles work and learn about maintenance. Students will have the opportunity to work with engines, suspension components, brakes, and more.

##### **Bicycle Repair/Small Engine**

**Grades: 10-12**

**Length: Two Semesters**

**Prerequisite: None**

**UC A thru G Requirement: No**

Bicycle repair is a course designed to cover the basics of bicycle repair. Students will also be restoring bicycles and have the opportunity to donate the restored bicycles through several organizations. For the second semester, students will learn about the principles of operation for an internal combustion engine. Students will learn how to fully disassemble and reassemble a small engine that would typically be found in a lawnmower or other types of outdoor power equipment.

##### **Credit Recover (Acellus)**

**Grades: 10-12**

**Length: Two Semesters**

**Prerequisite: Failing any core course**

**UC A thru G Requirement: depending upon course to be recovered**

The Credit Recovery Class allows students to gain missing credits that are needed for graduation. The course uses the Acellus system which provides students with a large selection of online courses. Acellus courses are taught via video instruction, and combined with adaptive and interactive assessments on each concept. Unit exams, mid-term exams and the final exam are given to the student throughout the course. The courses are automatically graded, and concepts are retaught when students fail to master the material. Coursework is monitored in the class to ensure that the students are doing their own work. Students work at their own pace, and if they are diligent, they can complete more than one course in a semester. *Credit Recovery is not a credit bearing course. Students earn credits for the courses they are retaking.*

##### **Leadership**

**Grades: 10-12**

**Length: Two Semesters**

**Prerequisite: None**

**UC A thru G Requirement: No**

Students enrolled in the course will apply these skills in dealing with peers, school administration and the community. The course will have a hands-on, active learning approach to leadership. The course can be customized to meet the needs of the Grade Level Councils, but is also adaptable to a broader student population.

**Office Assistant**

**Length: Two Semesters**

**UC A thru G Requirement: No**

Office Assistant is an elective designed to help students learn the basics of how an office operates. Students will assist the office manager with clerical tasks such as copying, answering the phones, sorting, mailing, running messages to classrooms and other tasks that may be needed. Students will earn 5 credits. Class is graded Pass/Fail.

**Grades: 9-12**

**Prerequisite: None**

**Personal Finance**

**Length: Two Semesters**

**UC A thru G Requirement: g**

Personal Finance is designed to help students make informed decisions about real world financial issues. This course will give students the tools and resources needed to make wise financial decisions. Students will analyze their personal financial decisions, evaluate the costs and benefits of their decisions, recognize their rights and responsibilities as consumers, and apply the knowledge learned to financial situations encountered later in life. Students will design personal and household budgets; simulate the use of checking and saving accounts; demonstrate knowledge of investment, debt, and credit management; evaluate and understand insurance and taxes, and develop a comprehensive knowledge of rental and lease agreements. In addition, students will learn the basics of Business Finance. This is designed to help students learn about major and minor business making decisions. Students will gain an understanding of the necessary components to determine market capitalization of private and publicly traded companies. The course provides students the opportunity to gain a strong understanding of the stock, bond and real estate markets.

**Grade: 11**

**Prerequisite: None**

**Study Hall**

**Length: Two Semesters**

**UC A thru G Requirement: No**

Study hall is a period for students to actively participate in their academics. This can take the form of reviewing classroom notes, finishing homework, studying for a test/quiz, and/or completing a group project. It can also be used to work on an independent. Used wisely this time can be an addition to a student's educational resume. Students enrolled in this course receive elective credits

**Grades: 9-12**

**Prerequisite: None**

**Success Skills**

**Length: Two Semesters**

**UC A thru G Requirement: No**

Success Skills is a two-semester course designed to teach students how to use proper study methods to increase their educational success at North County Trade Tech High School and

**Grades: 9-12**

**Prerequisite: None**

beyond. A secondary purpose of this course is to help students improve their interpersonal skills. Improving interpersonal skills will increase a student's opportunity to enjoy a more enriching high school experience and it will assist her/him in becoming a more polished, well-rounded, and employable member of society. Students will be given an opportunity to receive homework assistance from instructor.

**Teacher's Assistant**

**Grades: 10-12**

**Length: Two Semesters**

**Prerequisite: None; Teacher Approval**

**UC A thru G Requirement: No**

Teacher's Assistant is an elective designed to help students learn the basics of how a classroom operates. Students will assist teachers with clerical tasks such as copying, sorting, filing, and other tasks that may be needed. Students will earn 5 credits. Students will be required to sign an agreement prior to being allowed to be a TA. Class is graded Pass/Fail.

**Yearbook/Newspaper**

**Grades: 11-12**

**Length: Two Semesters**

**Prerequisite: None; Teacher Approval**

**UC A thru G Requirement: No**

Yearbook team members produce the NCTTHS yearbook each year, from capturing eventful school moments with digital photography to editing those photos and finalizing the publication using a web-based design application. Concepts covered and skills developed through the year include photography and photo editing, interviewing skills, basic color theory, elements of design, and copy and caption writing. This class requires the ability to work as part of a team, take direction from others, work independently, and meet deadlines.

**Introduction to Theater**

**Grades: 9-12**

**Length: Two Semesters**

**Prerequisite: None; Teacher Approval**

**UC A thru G Requirement: f**

This class will introduce the students to the various arts that create a complete theatrical production, including both dramatic and musical theater: acting techniques, sets, costumes, lights, sound, make-up, etc. Classroom requirements include participation on stage and behind stage in productions during school hours and after school hours. There are no auditions, but specific positions will be determined by staff. Students, however, will be expected to become actively involved in all aspects of a production.

North County Trade Tech High School does not discriminate on the basis of Race, Color, National Origin, Sex or Handicap.