Computer Science Fundamentals

Grades: 11,12

Length: Full Year

Environment: Classroom-based

Honors: None

Subject: Mathematics (C)

Discipline: Computer Science

Institution: Santa Maria Joint Union High School District

Course Overview

This project-based course is designed to offer an introduction to computer science. The material emphasizes computational thinking while covering the basic building blocks of programming along with other elements of computer science. These problems will emphasize the mathematical strands of Creating Equations, Reasoning with Equations & Inequalities, Conditional Probability & the Rules of Probability, Interpreting Categorical & Quantitative Data, Building Functions, Interpreting Functions, Trigonometric Functions, Quantities, and Vector & Matrix Quantities, Geometric Measurement & Dimensions,Congruence, and Modeling with Geometry (**A-CED, A-REI, S-CP, S-ID, F-BF, F-IF, F-TF, N-Q, N-VM, G-GMD, G-CO, G-MG**).

The Computer Science foundation this course provides will prepare students for further study in computer science & mathematics, including robotics, video game design, post-graduate computer science use and studies, and help solve real-life problems with coding.

Unit 1: Beginning in Computer Science

This Unit will be an introduction to Computer Science and programming languages. Students will understand what computer science is, how it can help them, and begin to understand how programs interact with their computers. They will write simple programs that help them understand the beginning of input/output concepts and different data and variable types. By the end of this unit, they should have a small understanding of where they are heading through the following 8 units of this course.

Assignments

Lesson 1-1: What is Computer Science?

This lesson will introduce the concept of Computer Science and explain what a Computer Scientist does. It will also allow students an opportunity to assume the role of a computer scientist. By the end of the activity, each student will have a take-home reminder of what he or she learned. New vocabulary words associated with Computer Science will be introduced in a fun and playful way through videos, manipulatives, and activities. Introducing these terms early, in this low-stakes manner, is more productive than waiting for

more advanced opportunities further into the course.

Unit 2: Numbers and Calculation

This unit starts with some history of computers and their uses, then quickly transitions to basic and advanced calculations, random number use, and various programs that use mathematics in different ways to make programs helpful and engaging to interact with. Assignments from this unit include using Real World Data sets, modular data sets provided by the program user, and examples of Big Data. This aligns with many CA CSS Math Content Standards involving linear equations, probability & statistics, seeing structures in expressions to solve problems, and more (**CA CSS A-REI**, **S-ID**, **S-CP**, and more).

Assignments

Lesson 2-5: Random Numbers

Students will begin to use the "import random" module and begin making programs that are more interactive and engaging. They will build a dice game program that includes adding and subtracting real numbers, getting random numbers, while using engaging UI principles to make a game that is simple to design but fun to play. They will be using input & output principles, integers, strings, booleans, and a while loop.

Unit 3: Careers in CS

Students will learn about the many careers that can utilize computer science. This unit often includes guest speakers from a variety of professions when available. From medicine, cryptography, banking, or video game design there are TONS of fields that utilize computer science, and this unit goes into many of them. **This unit focuses on the broader topic of career readiness throughout the CA CSS standards**. Understanding what each career in CS needs is integral to being able to get into a profession that utilizes computer science.

Assignments

Lesson 3-2: Banking

Students will learn about many of the aspects of behind the scenes banking. They will write simple programs for calculating interest, combining sums of money, and other banking based algorithms that many people take for granted.

Unit 4: Making Decisions

Decision making, also known as conditionals, is where the heart of computer science really opens up. Telling a program to act according to an input or a value brings it to life, making things truly interactive. This unit is all about making this kind of branching statements in your programs. Often, mathematicians don't get to do this kind of logic and reasoning until their *Methods of Proof* class in college, even though constraints and conditions are fundamental properties of many CA CSS standards (**CA CSS S-ID** & **S-CP**).

Assignments

Lesson 4-2: Simple Ifs

Students will learn about simple conditionals (if-then). Making a program act a certain way only if a certain condition is met. An example of this would be to ask "Would you like to continue?" If the answer is 'y' or 'yes' you continue the program.

Unit 5: Repetition and Loops

One of the main strengths of computers is being able to do things over and over again at a high volume. This is exactly what loops allow us to accomplish. Making something repeat a certain number of times or until a certain condition is met is paramount to any good program. Students will learn about these processes, what they mean, and how to implement them. These CS lessons will be real world lessons mirroring the sequences and series lessons scattered throughout the mathematical framework (**CA CSS F-IF**, **F-BF**, and **F-LE**)

Assignments

Lesson 5-8: Fake Ai

Students will use their knowledge of loops, conditional statements, and input and output to emulate a fake AI chatbot. This is a fun and engaging way to have students utilize their previous experience in a new program that can be quite amusing.

Unit 6: Sounds

Sounds are an often overlooked aspect of the computer science curriculum, but are fundamental to providing the best user experience possible. Students will learn how to create and edit sounds and add them into their programs to enhance user experience. A mathematical focus on wave height, length, and period are explored through manipulating sounds (**CA CSS F-IF**, and **F-TF**) .

Assignments

Lesson 6-1: Intro to sounds

Learn about the free sound tool Audacity. Use it to make custom sounds, modify CC0 sounds, and add them to a program, look at sound wave length, amplitude, frequency, and modify these to learn how they affect sound. With some microphones and a sound editor, get ready for a wacky day of sound editing.

Unit 7: Arrays

Students will learn what an array is, how to create one, how to add values to it, and how to sort an array. The primary focus will be on arrays of Strings and Ints. This class will provide students, who may not advance far enough in mathematics to experience matrices, a real world application of the concept explored in pre-calc (**CA CSS N-VM**, and **A-REI**).

Assignments

Lesson 7-1: What is an Array?

Students will have to write lists of items and come up with different algorithms in sorting them. This will focus on discovering what is needed to sort things the fastest such as: what type of thing is contained in the list, how long the list is, etc. Students will then look at examples of arrays that are used in various

programs. This introductory lesson does not include any coding, but will include lots of manipulatives and discussion.

Unit 8: Functions

Students will learn how to build and use simple functions for single and repetitive use throughout their code. This emphasis on more object oriented/reusable coding practices is fundamental to good computer science and a key aspect to all math classes following Algebra. Functions are such an important math standard that the term appears 371 times throughout the content standards (**CA CSS N-Q**, **A-CED**, **F-IF**, **F-BF** and many more).

Assignments

Lesson 8-2: Making a Function

After learning about the input/output nature of functions we will make a simple "thinking" function to add some juice to our programs. This function needs to be completely independent of anything else in the program so it may be repurposed again after the lesson. This introduction will be one of the first big steps in preparing students for the Math: CS Fund B course and more complicated algorithms within computer science.

This introduction will be one of the first big steps in preparing students for the Math: CS Fund B course and more complicated algorithms within computer science.

Unit 9: Semester Capstone

The capstone project of this first semester, is a student-led project, where students need to come up with an idea, pitch it to their fellow students, modify it based on feedback, then design, debug, and finish their project in the allotted amount of time. This could be modifications and expansions from previous programs or all new ideas based on their skill level. **CA CSS Standards will vary greatly depending on the project that students choose for this final capstone project**.

Assignments

Lesson 9-2: Pitch Day

Students will be put into groups of 3-5 and will have to explain their initial idea. They will be given feedback on how easy it sounds to implement, how much time it really should take, and any modifications that should be considered to their original idea. Students are required to keep all feedback and address it in their final presentation of their program.

Unit 10: UI and UX

User Experience (UX) describes the experience a user goes through while interacting with a product, while User Interface (UI) is a means by which a person interacts with software. Both of these must be taken into account when designing software. Symmetry, spacing, colors, and more are all taken into account when designing your favorite app and should be considered from this point forward in any programming design. These lessons utilize the Numbers and Quantities, and Statistics and Probability standards **(CA CSS N-Q, S-ID)**

Assignments

Lesson 10-1 Usability

Students will interact with a variety of apps and websites, then create a rubric for how usable/friendly the app or website is to interact with. They will examine where buttons are placed, how easy they are to reach one-handed, determine if the site can be navigated left-handed, along with many other measurements and data. These factors when combined with color use, app flow, and how many interactions/clicks it takes to perform a function will all be documented and a usability score will be given to each site they are assigned followed by a small-group discussion.

Unit 11: Graphics

Lessons begin with angles, loops, and making simple geometric shapes on screen. This is followed by using algorithms to graphically solve mazes and other simple problems. At the end of this unit students will be importing different art that they either have permission to use or create themselves into their program to attempt and make programs that are more user friendly and interactively appealing. These lessons utilize the Numbers and Quantities, Geometric Measurement and Dimensions, and Congruence standards **(CA CSS N-Q, G-GMD, G-CO**)

Assignments

Lesson 11-7 Practice App

Students will build a practice app, with the buttons and interface they created from lesson 11-5. While this practice app does not need to act like what a final product would, all buttons and desired interactions should be, at the minimum, a testing phase (i.e. if a student makes a voting app, when they click on a voting button, it should say something like "Your vote has been received!" but it does not need to connect to a database and actually send a vote).

Unit 12: Hardware

Students will learn some basics about the hardware on which their software runs, as well as integrate various types of hardware into their programs (ex. Using a Raspberry Pi or digital thermometer).

These lessons utilize Modeling with Geometry, and Geometric Measurement and Dimension (**CA CSS G-MG,** and **G-GMD**)

Assignments

Lesson 12-1 Robot Movement

Students will write programs for robots to move. This can be done virtually (see VEX VR), with simple robots (like Sphero), or with more complicated robots that were built by students (see VEX V5). The ultimate goal of this lesson will be to get a robot through a series of goals for the day (ie move a ball into a goal, get through a maze, etc.)

Unit 13: Arrays Expanded

Students will learn how to implement one or more 2D arrays into more complicated algorithms. as well as

3D arrays and beyond. They will also be introduced to different kinds of arrays such as stacks and lists.

These lessons utilize the Vector & Matrix Quantities and Reasoning with Equations & Inequalities standards(**CA CSS N-VM**, and **A-REI**).

Assignments

Lesson 13-2 2D Arrays

Students will learn that you can store an Array in an Array to form complicated matrices of data. They will start by making a simplified calendar (12 months, all have 30 days). For extra credit they can use what they learned in the previous unit to make their calendar look more interesting and possibly more interactive.

Unit 14: Internet

Students will learn fundamentally what the internet is, how it works, and write programs that read/write content on websites, forums, and other internet databases. This will involve understanding and using a variety of technology from getters/setters to jQuery and Google Apps Script.

The lesson utilizes the Building Functions, and Conditional Probability and the Rules of Probability standard (**CA CSS F-BF,** and **S-CP**)

Assignments

Lesson 14-3 Email

Students will write a program that automatically responds to any email they receive with a predefined message. This will be done with a simple Google Apps Script. This will be the first time writing a script using Google Apps Script during this course. Google Apps Script is a light-weight scripting language developed by Google to interact with ALL of their software suite. Eventually, this app (and possibly others) wil be accessed by other software that we write during this class.

Unit 15: Algorithms & Logic Problems

This unit is focused on writing programs that solve problems. Every few days a new logic puzzle will be proposed and students will have to write a program that solves it. From famous Google interview coding questions, to more standard high school coding fare, students will be using their whole brain and all their coding skills to figure out these coding brain teasers.

Most algorithm standards fall under Calculus and above, truly giving our students the chance for upper division mathematics.

Assignments

Lesson 15-1: Algorithms

This lesson will discuss some of the most famous/standard CS puzzles, such as placing eight queens on a chessboard without any queen threatening another. Students will form groups and discuss the different problems being proposed. They will then pick any of the (simplified) problems that they think they understand and write pseudo-code in their coding notebook to solve the problem. They will continue to

discuss, in their groups, whether or not their approach will work until they are confident in their approach. If they get through all of these steps (discussion, choosing a problem, planning, pseudo-code) then they can begin to write the program. If not, then they are to complete it at home, and be ready to write code the next day.

Unit 16: Games

Games take more calculations than ANY other kind of program. From gravity, distance, force, feedback, to screen size ratios there is tons of fun and calculations to be had. So dip your toes into the world of game design and learn all the ins-and-outs of making interactive experiences for people.

Just a few of the standards utilized in this unit are Linear, Quadratic, and Exponential Models, Creating Equations, Reasoning with Equations and Inequalities, Modeling with Geometry, and Conditional Probability and the Rules of Probability **(CA CSS F-LE, A-CED, A-REI, G-MG, S-CP)**.

Assignments

Lesson 16-1: Game Audit

Students will choose a web game to play, and then attempt at writing pseudo code for all the systems they encounter. From clicking the start menu to integrated gravity, every system needs to be documented and explained. This will be broken down into menu, interface, and physics to help them identify as many systems as possible.

Unit 17: Apps

From gravestone and BMI calculators to password generators and countdown timers everyone wants to make the next big app. This unit will be focused on creating the full experience of making an app that could be published on a mobile device or as a web app. The different apps in this unit will primarily focus on Interpreting Functions, Linear, Quadratic, and Exponential Models, Interpreting Categorical and Quantitative Data standards **(CA CSS F-IF, F-LE, S-ID).**

Assignments

Lesson 17-5: Lotto App

Students will make an app that will take in the amount they would win in the lottery and then tell them how much they would get a year as an annuity and how much they would earn in interest a year if they just took it as a lump sum and invested it. Their app should include modifications based on interest, amount to spend each year, and other factors of consideration. Many of these calculations have been done before in their budgeting app (17-3) and can be appropriated for this app. The UI and UX can be minimal for these assignments, but should still be more welcoming than just a text prompt.

Unit 18: Final Capstone

The capstone project of this class is a student-led project where students need to come up with an idea, pitch it to their fellow students, modify based on feedback, then design, debug, and finish their project in the allotted amount of time. This should be a cumulative project showing off all the skills they learned over the past 17 units. This could be modifications and expansions from previous programs or all new ideas based on their skill level. **CA CSS Standards will vary greatly depending on the project that students**

choose for this final capstone project.

Assignments

Lesson 18-1: Brainstorming

With all of their knowledge from the previous two semesters, students need to start to brainstorm and plan for their capstone project. The project must implement graphics in some way, utilize UI and UX concepts, and either be engaging or solve a problem. Any project they come up with will eventually need to be approved with a full design document before production begins. Brainstorming can be done individually or in groups, but their idea should be ready to be pitched to groups of their peers before the next lesson (18-2 Pitch Day).

Websites

Title	Authors	Organization	Website
Project Stem: Fundamentals of Python	Project Stem	Project Stem	https://www.project-stem.com/
CS 50 Intro To Computer Science	David J. Malan	Harvard	https://www.youtube.com/watch?v=OvKCESUCWII&list=PLhQjrBD2T3817j24-GogXmWqO5Q5vYy0V
Code.org	Various	Code.org	https://code.org/

Robotics

Grades: 9,10,11,12

Length: Full Year

Environment: Classroom-based

Honors: None

Subject: College-Preparatory Elective (G)

Discipline: Mathematics - Computer Science

Institution: Santa Maria Joint Union High School District

Course Overview

Students will work in engineering teams to design, build and test increasingly complex robots. The course will illustrate the engineering design process, the importance of integrating sensors, complex machine control (programming), and multi-robot systems in a robot design. Students will be expected to solve challenges using physical robots with custom code. Students will work in teams to complete four design projects that will serve as assessments during the year and will also participate in in-house and regional competitions. Special attention will be paid to the design process and its communication through both presentation and documentation. The course will include a final exam, which will incorporate a design challenge, documentation and presentation of design.

Unit 1: Engineering Design

The engineering projects for this course will utilize tools, software, infrastructure, and conventions found in engineering. Students will be familiarized with the basic tools, themes, and strategies regularly used in the fields of engineering. As this course progresses over the year students will draw from this "toolbox" of skills as they encounter each new learning experience. Students will, in turn, master these tools, themes, and strategies by applying them when necessary rather than by practicing them in abstraction. Students will learn about the steps of the design process including topics such as prototyping, production, testing, and manufacturing.

Assignments

Students will be learning basic programming skills via Robot C, C++, or Python. For this assignment, students will be downloading software onto their laptops, and creating basic code to exercise a VEX testbot. The students will produce/build a VEX testbot, including sensors. They will learn how to control the basic sensors on the testbed through their chosen programming language and include instruction on version control along with commenting.

Unit 2: Wireless Control

Students will experience cutting edge technology when they interface their robots with wireless game controllers. Students will be introduced to and begin to master the basics of programming via their chosen programming language. The robots will need to be able to move in straight lines, reverse and rotate. In this unit, students will learn how to operate their robot using radio control in both Arcade and Tank style. Students will have multiple opportunities to test and refine their designs.

Assignments

Students will be building a robot that will be controlled solely through a wireless game controller. They will be given a task for the

robot to do, and will program the game controller to meet the robot's requirements. They will use their VEX building skills as well as their programming skills to produce a robot controlled by a wireless game controller. The students will Learn the variables to be considered with programming with a game controller, and the effective use of the game controller in moving their robots.

Unit 3: Construction

In this unit, students will begin to apply engineering principles to the design and construction of robots. Students will study the fundamental design of VEX robots. While students are learning how to fabricate their robots, they will also be required to draw upon physics concepts such as speed, velocity, and angular momentum. Further, a significant amount of math is necessary to fabricate the complex geometries of the parts that are required for robotics. Students will create a robotic platform capable of two-dimensional motion at a variety of speeds. This platform must also be capable of supporting a variety of sensors and electrical systems for remote access. Through this project students will be introduced to the various industry fastening and joining methods typically used in product development. These include, but are not limited to, screws, bolts, nuts, rivets, etc. Students will be introduced to specification sheets for materials used in engineering and also start to learn about concepts related to materials such as stress, and strain, fracture toughness, elasticity, electrical and thermal conductivity, etc. As the student progresses through the unit, they will be constructing their first Vex robot. They will learn how to use basic assembly tools as well as how to identify available Vex robotic components from the classroom inventory system. The robot construction is broken down into subsystems like chassis, drive train, wiring and radio control. After the robot is constructed, the students test and troubleshoot their creation. Best engineering practices require extensive testing, followed by reflection and re-engineering. The students will recognize that multiple solutions are possible. All designs will be annotated in an ongoing, cumulative Engineering Notebook, following prescribed standards for documentation.

Assignments

Students will be selecting a project from multiple ideas. The students will brainstorm, sketch, design and build their concept for the robot. They will produce a prototype, and program the Robot for capturing, lifting, intake, launching, and pushing various objects. Through the process, the students will learn about the design and redesign cycle of the engineering design process to document their versions in the engineering notebook as rarely do designs work the first time as envisioned. Students will produce a working machine/robot that accomplishes a specific function.

Unit 4: Sensors

Unit 3 introduces the student to open and closed loop robotic navigation using sensors. This unit builds on the dead reckoning programs constructed previously. Digital bumper switches are added to the robot so that it can interpret its environment autonomously. An ultrasonic range-finding sensor is introduced to allow the robot to sense its environment without touching it. A set of advanced drive functions is taught in order to simplify the autonomous control of the speed and direction of the robot. These drive functions are used in conjunction with a line-following sensor to have the robot follow a line on the playing field autonomously

Assignments

For this assignment, students will be building an autonomous robot utilizing sensors to achieve a specific, given task. The students will brainstorm, sketch and build the robot in teams. They will produce a robot, along with corresponding code to run the robot. The students will learn to utilize sensors to provide a closed loop system.

Unit 5: Arms and Lift Systems

Unit 5 combines the elements introduced in unit 2-4. The arm is added to the robot and a basic physics analysis is done on how the addition of the arm affects the overall robot design. Center of gravity, and its importance to robotic design, is introduced. Stall torque is examined on the arm as well as the speed and gear ratio. The student is challenged to incorporate two limit switches into the design of the arm to control the movement of the arm. This requires the student to create a program to map the input from one of the channels on the transmitter to the motor on the robot controlling the arm. An end effector is added to the end of the arm on the robot using a servo-motor to control the gripping range of the end effector. In the final activity, the student must program the robot to drive on the playing field and retrieve a ball while being controlled with the radio control. More advanced students may adapt the arm to create a more versatile lift system.

Assignments

The students will be given requirements to build a robot that will be lifting objects that are heavier in comparison to the robot. They will be learning how to apply building techniques with a changing center of gravity. They will work in teams to sketch, design, build and redesign their robot. They will produce a robot capable of lifting a 5 lb load (ball type object) and move it to a specific second location. The students will learn how to construct a robot that does not tip over when lifting and moving a load.

Unit 6: Capstone: VEX Competition

Students will adapt their design to compete in an in-house competition based upon VEX Robotics game, or an actual VEX Robotics Competition (VRC) at the local level. Students will finalize both Autonomous and User-Controlled programs using sensor input to compete. Students will prepare presentations to demonstrate their design process and how their robot accomplished the design task. Students will also use their programming skills to complete challenges within RobotC Virtual worlds. In addition, they will program an autonomous portion of the game onto their completed robot. Students will also use their newly acquired skills to perform outreach events to display their work and design to local school and community partners, and provide VexIQ support for elementary and middle schools.

Assignments

Students will receive a set of rules for a robotics game, and then work in groups to design from scratch a suitable robot to accomplish the task of playing the game. Students will produce a robot that will be controlled by a game controller to achieve a specific task. Students will learn the various trade offs of speed vs. accuracy, lifting objects and delivery methods, as well as autonomous mode programming. The students will compete with their robots in an in-class competition to showcase skills.

Websites

Title	Authors	Organization	Website
VEX Inventors Guide	--	VEX Robotics Inc.	http://www.vexrobotics.com/wiki/index.php/Inventor's_Guide
Robotics Academy Curriculum	--	Carnegie Mellon	https://www.cmu.edu/roboticsacademy/roboticscurriculum/index.html

Multimedia

Title	Authors	Director	Series	Date	Website	Medium
RobotC	--	--	--	--	www.robotc.net	Software
VEXcode V5	--	--	--	--	www.vexrobotics.com	Software

Art 2 A/B

Grades: 10,11,12

Length: Full Year

Environment: Classroom-based

Honors: None

Subject: Visual & Performing Arts (F)

Discipline: Visual Arts

Institution: Santa Maria Joint Union High School District

Course Overview

This is a two semester intermediate level art course with a focus on helping students develop skills in painting and pencil rendering through observation and application of art principles. This course will build on existing knowledge of art making skills and design concepts complimented by art history, theory, appreciation and criticism. Students will complete projects and discussions designed to build on their understanding of the fundamentals of drawing and painting as a process, and its relation to space, color, and form. Students will improve their techniques in the mediums that they have previously explored and will be introduced to a new set of materials. Disciplines in both two dimensional and three dimensional art; such as advanced drawing (from observation, memory and imagination), advanced painting, collage, and sculpture will be the focus of this class.

Every unit is designed to allow students to produce an original and unique artwork that is meaningful to them. Students are provided with the materials, time and space to explore the possibility of a variety of art mediums. Additionally, students are encouraged to research and to find connections in art history and their everyday environment as a source of inspiration.

Assessment for this course are based on several formative and summative assessments. First, the students' in class daily work (note taking, worksheets, participation, sketches and research) are collected and graded. For major art productions students receive a rubric at the beginning of every unit with clear expectations and the goals/objectives of the unit. Students self evaluate by and monitor their own progress based on this rubric. Then, students are expected to participate in verbal and written individual, peer and whole class critiques at several points through the duration of the work period. Students receive mid-project feedback from their peers and teacher. Finally at the completion of the artwork students answer short answer reflection questions that highlight understanding of the units concepts. Additionally, students take quizzes and tests (multiple choice, short answer and production) throughout the semester to evaluate their knowledge of art terms, vocabulary and concepts.

In conjunction with learning about artists' lives students will also learn about these artists' careers in sculpting, architecture, printmaking, illustration etc. Additionally students will learn about highlighted careers in each unit

that utilize the skills/concepts that they will learn. Finally, students will make connections to their own artwork.

Students are given the opportunity within each unit's powerpoint presentations and assessments to critique artwork. In this critique process students are analyzing and interpreting artwork by master artists as well as peer artwork verbally and through teacher facilitated discussion. The focus of the first three units in this course is to establish a written foundation in art criticism for students to use for the rest of the course and in every unit that follows.

Students will learn new art vocabulary, skills and in every unit; this will allow students to develop and verbalize their aesthetic preferences and choices. Also, through opportunities such as class discussions, peer critiques and artist presentations students will carefully observe, analyze, interpret artwork, and will communicate to others their personal evaluations.

The structure of each unit in this course is outlined and explained below:

Demonstrations and Media and skill exploration:

A combination of teacher sourced readings, demonstrations, and hands-on discovery based activities designed to engage students to explore and deepen knowledge of art theories, processes, and skills.

Google Classroom/, Google Slides/PowerPoint presentations that:

1.
   Have visual exemplars that demonstrate the units processes and skills. These exemplars often range from studer

2.
   offer opportunities for students to develop art criticism skills and express their aesthetics verbally through class di

3.
   reinforce the newly introduced art vocabulary and unit objectives.

Sketching and Brainstorming worksheets that:

1.
   allows students to explore multiple solutions to the art problem at hand

2.
   allows students to explore ideas and establish composition before beginning a final artwork

3.
   allows students to using art books, videos, and independent internet research for reference and inspiration

The Final artwork that:

1.
   allows students choice and creativity

2.
   allows students to explore the new mediums presented in class

3.
   allows students to demonstrate their understanding of each unit's skills and concepts.

Project reflections that:

1.
   Requires that students engage in the critique process

2.
   requires students to use academic and art related vocabulary

3.
   requires students reflect on their own thinking and Art making process

Unit 1- Review Elements of Art and Principles of Design

Students will focus upon the elements of line, shape and form, value, texture, space, and color as well as the principles of balance, emphasis, harmony, variety, contrast, movement and rhythm, and proportion. Students will expand their individual sketchbook in order to develop and refine drawing skills on a regular/daily basis. It is through the focus of the elements and principles of art that students can further develop technical and observational drawing skills in their portfolios and sketchbooks. Students will create two posters to display on the classroom walls. One poster will show the students' understanding of an Element of Art while the second poster will show their understanding of a Principle of Design.

Assignments

*Students will be able to explore the art processes and skills listed below to create an original artwork that demonstrates this acquired knowledge. Additionally, students will be able to define, identify, and discuss the significance of these art terms in relation to their own artwork, their peer's artwork as well as current and historical artist's work. In Unit 1 students will create two posters representing one Element of Art and one Principle of Design.

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Elements of Art (The Elements of Art (Color, line, value, texture, space, shapes, forms)

- The Principles of Design (Balance, Movement, Contrast, Pattern, Emphasis, Unity, Rhythm, Variety)

Unit 2- Papel Picado

Students will build upon their prior knowledge of the Principle of Design: Balance. Students will create a design using their knowledge of technical drawing and add to this knowledge the addition of cropping and symmetrical or radial balance. Students will discuss the traditions and history of papel picado. Students will discuss focal points and how cropping and balance affects an overall composition. They will be able to demonstrate knowledge as to how cropping a piece of art and focusing on balance changes an overall composition's focal point for the viewer.

Assignments

*Students will be able to explore the art processes and skills listed below to create an original artwork that demonstrates this acquired knowledge. Additionally, students will be able to define, identify, and discuss the significance of these art terms in relation to their own artwork, their peer's artwork as well as current and historical artist's work. Students will cut paper to create symmetrical balance in traditional, cultural works of art (papel picado).

- Elements and Principles of Design- Positive/ Negative Space, Balance, Pattern, Composition, Space, Shape

- Historical and cultural exemplars: Lithography, Dia de los Muertos, Jose Guadalupe Posada, Frida Kahlo, Diego

- Visual Arts Standard/s: 2.2 Enduring Understanding: Artists and designers balance experimentation and safety, freedo

Unit 3- Japanese Notan

Students will build upon their prior knowledge of technical drawing and add to this knowledge the addition of cropping and balance. Students will apply artistic elements and principles of positive/negative space, balance, contrast, and unity. Students will discuss focal points and how cropping and balance affects an overall composition. They will be able to demonstrate knowledge as to how cropping a piece of art and focusing on balance changes an overall composition's focal point for the viewer. Students will practice using X-Acto knives to cut their designs out.

Assignments

*Students will be able to explore the art processes and skills listed below to create an original artwork that demonstrates this acquired knowledge. Additionally, students will be able to define, identify, and discuss the

significance of these art terms in relation to their own artwork, their peer's artwork as well as current and historical artist's work. Students will understand how to create a successful composition through balancing positive and negative space in their Notan designs.

- Principles of design- Positive/ Negative Space, Balance, Pattern

- Symbolism and themes in artwork

- Composition, geometric and organic shapes, space

- Historical and cultural exemplars: Kirie Paper cutting, Kara Walker, Masayu Fukuda, Turburam Sandagdorj

- Visual Arts Standard/s: 2.2 Enduring Understanding: Artists and designers balance experimentation and safety, freedo

Unit 4- Skeleton Drawing

Students will utilize learned observational skills and technical drawing skills to create an original still- life composition in graphite. They will select 3-5 household objects with multiple textures and arrange them in order to create depth. The composition will demonstrate observational skills associated with perspective with an emphasis on shading, value, and line quality. Students will improve their observational drawing techniques in order to create a work of art that showcases depth, dimension, and texture through value and line quality. Students will use their observational drawing skills to create a skeleton drawing that is portfolio-worthy work of art in graphite.

Assignments

*Students will be able to explore the art processes and skills listed below to create an original artwork that demonstrates this acquired knowledge. Additionally, students will be able to define, identify, and discuss the significance of these art terms in relation to their own artwork, their peer's artwork as well as current and historical artist's work. Students will create a realistic drawing of a skeleton with mixed media elements including graphite pencils and paint.

- Contour (Continuous, blind, cross)

- Principles of design- proportion, contrast, space

- Composition, cropping and overlapping/Depth

- Still life and realism

- Metaphors and symbolism

- Historical and cultural exemplars: Leonardo Da Vinci, Rembrandt, Vermeer.

- Career connection: Medical illustration, Scientific illustration

- Visual Arts Standard/s: 2.1 Enduring Understanding: Through experimentation, practice, and persistence, demonstrate

Unit 5- Gesture/Figure Drawing

Students will use oil pastels to create a gesture or figure drawing with accurate proportions. Students will use their knowledge of color theory to choose colors that convey emotions and/or meaning.

Assignments

*Students will be able to explore the art processes and skills listed below to create an original artwork that demonstrates this acquired knowledge. Additionally, students will be able to define, identify, and discuss the significance of these art terms in relation to their own artwork, their peer's artwork as well as current and historical artist's work. Students will practice gesture drawing from life before creating a final figure drawing using oil pastels.

- Principles of design- proportion, contrast, movement

- Foreshortening

- Emotions and narratives

- Color theory and color schemes (Monochromatic, Analogous, complementary, etc.)

- Historical and cultural exemplars: Post Impressionism, Romanticism, Impressionism, Edgar Degas

- Career connection: illustration, medical illustration, animation, cartooning, comic illustration, sketch artist.

- Visual Arts Standard/s: 7.2 Enduring Understanding: Evaluate the effectiveness of an image or images to influence ide

Unit 6- Art Careers Slides and Project

Students will begin researching an art career of their choice and create a slide presentation with valuable information they gathered about their career. They will find a working designer in that field to research and present, using visual examples. Then, students will choose a creative project associated with their art career. Students will meet the clients' criteria with their expectations and constraints in mind for their creative project.

Assignments

*Students will be able to explore the art processes and skills listed below to create an original artwork that demonstrates this acquired knowledge. Additionally, students will be able to define, identify, and discuss the significance of these art terms in relation to their own artwork, their peer's artwork as well as current and historical artist's work. Students will research an art career and create a slide presentation to share with others. Students will then chose a creative project to complete in the role of their art career.

- Google Slides, PowerPoint, Canva

- Art Career Research, Creative Art Career Project

- Career connections: Architect, landscape architect, makeup artist, tattoo artist, art teacher, animator, illustrator, p

- Visual Arts Standard/s: 9 Enduring Understanding: Determine the relevance of criteria used by others to evaluate a wo

Unit 7- Two Point Perspective Painting (Surrealism)

Students will complete one and two point perspective drawings from life: inside and outside. Students will explore the Surrealist art movement and associated artists. Students will practice watercolor techniques and study atmospheric perspective, linear perspective, and surrealist concepts to create a two-dementional watercolor painting in the Surrealist style.

Assignments

*Students will be able to explore the art processes and skills listed below to create an original artwork that demonstrates this acquired knowledge. Additionally, students will be able to define, identify, and discuss the significance of these art terms in relation to their own artwork, their peer's artwork as well as current and historical artist's work. Students will create a two point perspective painting to show their understanding of linear perspective and the Surrealist art movement.

- One, two, three point perspective

- Atmospheric perspective: Foreground, Middleground, background, depth

- Landscape, Seascape, Cityscape

- Historical and cultural exemplars: Surrealism, Tetsuya Ishida, Pietro Perugino, Melozzo Da Forli, Gustave Cailleb

- Career connections: Interior design, Architecture, set designers

- Visual Arts Standard/s: 2.1 Enduring Understanding: Through experimentation, practice, and persistence, demonstrate

Unit 8- Mona Lisa Project (Appropriation)

Students will utilize the elements and principles of art to reproduce the famous Mona Lisa painting. They will choose three elements of art to focus on that will change the original piece and make it their own. The project will be designed and created individually in preparation for student art portfolios. Students will utilize any two mediums of choice in order to create this piece. Their final works will demonstrate a deeper level of understanding of the elements and principles of art.

Assignments

*Students will be able to explore the art processes and skills listed below to create an original artwork that demonstrates this acquired knowledge. Additionally, students will be able to define, identify, and discuss the significance of these art terms in relation to their own artwork, their peer's artwork as well as current and historical artist's work. Students will redesign and rework the Mona Lisa painting as a modern Mona Lisa.

- Appropriation

- Value gradation and modeling: Chiaroscuro, Illusion and depth

- Tonal values, lowlights, midtones, highlights, reflective lights, core shadow and cast shadows

- Monochromatic, tints, shades, tones

- Composition, emphasis, cropping

- Historical and cultural exemplars: Dada, Pop Art, Leonardo Da Vinci, Banksy, Andy Warhol, Jasper Johns

- Visual Arts Standard/s: 2.2 Enduring Understanding: Demonstrate understanding of the importance of balancing freedo

2.3 Enduring Understanding: Reflect on, re-engage, revise, and refine works of art or design considering relevant traditional and contemporary criteria as well as personal artistic vision. (Adv.VA:Cr3)

Unit 9- Artist Portfolio

Students will choose 3-5 pieces of work from the entire year they feel represent them as an artist, what their interest is, what they have accomplished, etc. All work must be in excellent condition and made presentable. Students will learn successful practices for photographing artwork and creating an art portfolio.

Assignments

*Students will be able to explore the art processes and skills listed below to create an original artwork that demonstrates this acquired knowledge. Additionally, students will be able to define, identify, and discuss the significance of these art terms in relation to their own artwork, their peer's artwork as well as current and historical artist's work.

Students will create a reflection, and an artist's statement based on the work in their portfolio.

- Visual Arts Standard/s: 4 Analyze, select, and critique personal artwork for a collection or portfolio presentation. (Acc.V

- Cardboard sculpture

- Attaching techniques

- Visual Arts Standard/s: 2.3 Enduring Understanding: Collaboratively develop a proposal for an installation, artwork, or s

Unit 10- Art Gallery Display

Students will assist with planning and executing an art exhibit. Students will help select artwork to put in a display. Students will discuss with other students and the teacher the criteria for a display. Students will defend their position on the best pieces to display. Students may help set up the display, learning how works are displayed and labeled in exhibits.

Assignments

*Students will be able to explore the art processes and skills listed below to create an original artwork that demonstrates this acquired knowledge. Additionally, students will be able to define, identify, and discuss the significance of these art terms in relation to their own artwork, their peer's artwork as well as current and historical artist's work. Students will show their artwork in a gallery show after evaluating and judging their own artwork and their peers.

-

Career connection: Gallery/Museum Curator, Art Coordinator, Event Coordinator

- Visual Arts Standard: 4 Analyze, select, and critique personal artwork for a collection or portfolio presentation. (Acc.VA

Unit 11- Pinata Project (3D Design)

Students will collaborate in groups to discover the history of Pinatas before creating their own Pinata collaboratively. Students will discover international traditions of pinatas as well as current artists creating modern pinatas. Students will need to work together to create a pinata with a theme.

Assignments

*Students will be able to explore the art processes and skills listed below to create an original artwork that demonstrates this acquired knowledge. Additionally, students will be able to define, identify, and discuss the significance of these art terms in relation to their own artwork, their peer's artwork as well as current and historical artist's work. Students will be able to celebrate the end of the school year by utilizing the pinata as it is traditional used.

- Cardboard sculpture

- Attaching techniques

- Visual Arts Standard/s: 2.3 Enduring Understanding: Collaboratively develop a proposal for an installation, artwork, or s

Websites

Title	Authors	Organization	Website
California Arts Standards for Visual Arts	California Department of Education	California State Board of Education	https://www.cde.ca.gov/be/st/ss/documents/caartsstandards.pdf

Other Materials

Title	Authors	Date	Material Type	Website
Art Talk	Rosalind Ragans	2005	Reference/ resource	https://www.mheducation.com/prek-12/program/MKTSP-RDA04M0.html
The Visual Experience- teacher's edition	Hobbs, Salome and Vieth	2005	Reference/ resources	https://www.davisart.com/Products/CategoryCenter/GP-121416/The-Visual-Experience.aspx
A Basic History of Art-5th edition	H. W. Janson and Anthony F. Janson	1997	Reference	https://www.pearson.com/us/higher-education/program/Davies-Janson-s-Basic-History-of-Western-Art-Plus-NEW-My-Lab-Arts-with-e-Text-Access-Card-Package-9th-Edition/PGM2481407.html
Gardner's Art Through the Ages- 12th ed.	Fred S. Kleiner and Christian J. Mamiya	2005	Reference	https://www.cengage.com/c/gardner-s-art-through-the-ages-a-global-history-15e-kleiner

American Sign Language I

Ernest Righetti High School (053303)

Basic Course Information

School(s) Offering This Course:

School Name	Course Learning Environment	Transcript Code(s)	Local Course Code(s)
Ernest Righetti High School (053303)	Classroom Based	ASL1	n/a

Title:	American Sign Language I
Length of course:	Full Year
Subject area:	Language Other than English (E) / LOTE Level 1 American Sign Language
UC honors designation?	No
Prerequisites:	A complete funcion of at least one hand (Recommended) Be able to write in English (Recommended)
Co-requisites:	None (Recommended)
Integrated (Academics / CTE)?	No
Grade levels:	9th, 10th, 11th, 12th

Course Description

Course overview:

This course will teach basic signs, grammar, fingerspelling, and the cultural aspects of Deafness. Students will learn basic communication. Total participation is mandatory in order to properly learn the language. Activities will include: students working in pairs or groups, role playing, skits, songs, and impromptu presentations. In addition to written homework, students are expected to study/practice outside the classroom on a daily basis. Students will also be required to complete a poster on a famous Deaf person and attend one out-of-class function. This course may not be repeated for credit.

1. Develop receptive skills 2. Develop delivery skills 3. Develop skills in reading the specialized written form of American Sign Language 4. Develop skills in writing the specialized written form of American Sign Language 5. Develop an understanding of the necessary structure basic to the American Sign Language sentence. 6. Acquire a basic functional vocabulary in American Sign Language 7. Become familiar with the Deaf Culture 8. Develop a fluent style of delivery, including a knowledge of all handshapes. 9. Demonstrate the use of critical-thinking skills throughout the course curriculum.

Course content:

Unit One: Greetings and Farewells

1. To learn proper greetings and farewells in ASL

2. To introduce yourself and Others

3. To learn Basic ASL sentence structure

4. To ask and answer questions

5. To learn how to interact appropriately with Deaf people

6. To learn the role of facial Expressions and non-manual signals

⊒ **Unit Assignment(s):**

1. Take the Unit One Exam

2. Create a signed presentation with a partner for their expressive evaluation

Unit Two: Basic Conversation

1. To ask for help and Clarification

2. To engage in basic conversation on a variety of topics

3. To understand the cultural view of Deafness

4. To improve familiarity with ASL grammar and structure

5. To learn and apply WH-signs and facial expressions

6. To understand iconic and non-iconic signs

💻 Unit Assignment(s):

1. Take the Unit Two Exam

2. Create a signed presentation with a partner for their expressive evaluation

Unit Three: ASL Skills

1. To expand ASL skills and topics of conversation

2. To understand topic-comment structure

3. To incorporate numbers into conversation

4. To understand how ASL name signs are made

5. To use possessive signs and deixis appropriately

6. To talk about favorites

💻 Unit Assignment(s):

1. Take the Unit Three Exam

2. Create a signed presentation with a partner for their expressive evaluation

3. Share a dialogue to incorporate numbers in a conversation.

Unit Four: Gender Distinction

1. To recognize and use gender distinction in ASL

2. To understand and use contrastive structure

3. To gain exposure to Deaf art

4. To sign about family, friends and relationships

5. To use pronoun signs appropriately

⊒ **Unit Assignment(s):**

1. Take the Unit Four Exam

2. Create a signed presentation with a partner for their expressive evaluation

3. Describe a Deaf art piece.

Unit Five: Conversational Skills

1. To improve conversational skills

2. To sign about school and school life

3. To identify and use the Agent Marker appropriately

4. To understand contemporary Deaf education options

5. To understand and use these classifiers ^, 1, 3

6. To tell time and sign about time-related issues

⊒ **Unit Assignment(s):**

1. Take the Unit Five Exam

2. Create a signed presentation with a partner for their expressive evaluation

Unit Six: Sign about Sports

1. To sign about sports

2. To understand the Five Parameters of ASL

3. To understand the different types of ASL literature

4. To expand classifier skills

5. To use the past, present, and future tenses

6. To understand and use the Rule of 9

⊐ **Unit Assignment(s):**

1. Take the Unit Six Exam

2. Create a signed presentation with a partner for their expressive evaluation

Unit Seven: Daily Routines and Activities

1. To sign about daily routines and activities

2. To identify and understand noun-verb pairs in ASL

3. To describe clothing

4. To learn and use spatial organization

5. To apply turn-taking strategies in conversations

6. To understand the sign language continuum

⊐ **Unit Assignment(s):**

1. Take the Unit Seven Exam

2. Create a signed presentation with a partner for their expressive evaluation

Unit Eight: People's Physical Appearance

1. To describe people's physical appearances

2. To describe personality traits and characteristics

3. To improve ASL narrative skills

4. To learn about Deaf-Blind communication

5. To discuss health issues

6. To describe the natural world and environment

⊐ **Unit Assignment(s):**

1. Take the Unit Eight Exam

2. Create a signed presentation with a partner for their expressive evaluation

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Unit Nine: Home and Community

1. To describe your home and community

2. To sign money using the Money Spot and Dollar Twise

3. To describe objects using spatialization techniques

4. To understand and give street directions

5. To understand how social changes affect the Deaf World

6. To learn and apply non-manual signals

⊐ **Unit Assignment(s):**

1. Take the Unit Nine Exam

2. Create a signed presentation with a partner for their expressive evaluation

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Unit Ten: Occupations and Fields of Study

1. To converse about occupations and fields of study

2. To use become and to be in conversation

3. To discuss food

4. To describe animals and a trip to the zoo

5. To expand visualization and description skills using classifiers

⊐ **Unit Assignment(s):**

1. Take the Unit Ten exam

2. Create a signed presentation with a partner for their expressive evaluation

---

Assessments

1. Students will complete a 100 point exam (receptive) after each unit.

2. Students will create a dialogue (expressive exam) based on guidelines that is given out in class after completing each unit. This exam is worth 100 points.

3. Students will complete a binder which will includes all the notes, quizzes, exams, handouts, and the class syllabus.

⌑ Unit Assignment(s):

1. Students will create a poster on a Famous Deaf person and include several facts such as: name of Famous Deaf person, year of birth/year of death, history of his/her family, occupation, and why he/she was famous.

2. Students will present their poster in ASL.

Reception

Students will:

1. Demonstrate good comprehension of a short passage, dialogue or conversation

2. Describe the characters, situation and action after viewing a lecture

3. Indicate accurate responses after viewing a videotape and question its contents

4. Discriminate among the different handshapes of ASL Delivery Students will:

5. sign dialogues as naturally as possible, including handshapes, facial expressions, and rhythm.

6. Answer questions that demonstrate comprehension of what is presented in the dialogue.

7. Prepare and give a speech on a given topic.

8. Give an impromptu talk on a given topic.

9. Sign the finger alphabet fluently.

10. Participate effectively in class discussion and conversation, demonstrating the ability to initiate conversation and pose questions.

11. Prepare and conduct an interview with another student.

12. Talk about themselves using the grammatical structures and vocabulary of the basic passages in each chapter. Reading Students will:

13. Understand the written form of ASL, including all coded markers.

14. Given a written text, translate that into signing using all coded markers.

15. Identify correctly and incorrectly used coded markers given a set of circumstances.

16. Discriminate among similar coded markers of implied meaning.

Writing Students will:

17. Write basic dialogues.

18. Write accurate dictations in coded ASL and conversational English translations.

Grammar Skills Students will:

19. Identify correct topic-comment sentence structure.

20. Correctly use pronominalizations.

21. Demonstrate the difference among types of questions.

22. Explain the subtle difference between delivery of a noun sign and its verb counterpart.

23. Deliver both directional and nondirectional verbs. 24. Recognize conditional components of a sentence.

⊐ Unit Assignment(s):

Critical Thinking Skills Students will:

1. Expand their cognitive abilities in writing, reading, receiving, and delivering in the following cognitive domains: a. comparison and contrast b. analysis c. synthesis d. evaluation Testing Skills Students will:

2. Demonstrate their testing taking skills by: a. viewing and following directions b. finger spelling correctly c. learning to work within a time limit d. applying use of context clues e. Recognizing the value of test items and pacing self accordingly.

ourse Materials

Textbooks

Title	Author	Publisher	Edition	Website	Primary
Master ASL Level One	Zinza	Sign Media	1st Edition	[empty]	Yes

Additional Information

Course Author:

Christina Brennen
Teacher
cbrennen@smjuhsd.org
8059372051 ext. 2324

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the University of
California

SMJUHSD Course Description
(Must be accompanied by a Course Adoption Form)

Full Course Title: Math 121 Trigonometry

School Associated with course:	DHS	ERHS	✔ PVHS	SMHS

School Contact Brooke Baarstad

Name: Brooke Baarstad   **Title/Position:** Math Department Chair

E-mail: bbaarstad@smjuhsd.org   **Phone:** (805) 922-1305   **Ext:** 5209

Department:
Mathematics

Transcript Course Code(s) / Number(s):

Subject Area:

- [ ] English Requirement
- [ ] World History
- [ ] US History
- [ ] Government
- [ ] Economics

- [x] Mathematics
- [ ] Physical Science
- [ ] Life Science
- [ ] Physical Education
- [ ] Visual & Performing Arts

- [ ] Foreign Language
- [ ] CTE
- [ ] Health
- [ ] Elective

Grade Level(s)

- [ ] 9
- [ ] 10
- [x] 11
- [x] 12

Vocational Education (CTE) [ ] Yes [x] No

Career Pathway:

Industrial Sector:

- [ ] Concentrator [ ] Completer

Unit Value

- [x] Semester (5 units)
- [P] Year A/B (5 units per semester)
- [ ] Year A/B (two-period course, 10 units per semester)

Pre-Requisites:
Algebra 2 or Integrated Math III (H)

Co-Requisites:

Course Purpose: *What is the purpose of this course?*
This is a college concurrent course that will provide students the opportunity to earn college credit and to fulfill high school graduation requirements through the study of directed angles, degree/radian measures of angles, trigonometric functions of angles and of numbers, solutions of right and oblique triangles, identities, functions of composite angles, graphs, equations, inverse functions, vectors and complex numbers.

Course Outline: A *detailed descriptive summary of all topics covered. All historical knowledge is expected to be empirically based, give examples. (i.e. California State Standards).*
The study of directed angles, degree/radian measures of angles, trigonometric functions of angles and of numbers, solutions of right and oblique triangles, identities, functions of composite angles, graphs, equations, inverse functions, vectors and complex numbers.

Lecture content:
1. Rectangular coordinates, angles, and circular/radian measure
2. Definitions of six trigonometric functions according to the right triangle, the unit circle and the rectangular coordinate system
3. Applications of the right triangle
4. Simplification of trigonometric expressions
5. Proofs of trigonometric identities
6. Graphs of trigonometric functions: period, amplitude, phase shift, asymptotes
7. Inverse trigonometric functions and their graphs
8. Trigonometric equations
9. Solving triangles: Law of Sines and Lay of Cosines
10. Polar coordinates and equations
11. DeMoivre's Theorem and applications
12. Introduction to vectors

Book Title:	**Course:**

Type of book adoption request:
- [x] Basic/Multiple Textbook
- [ ] Supplementary Textbook
- [ ] Reference Book
- [ ] Curriculum Software [ ] NEW [ ] REPLACE

Aligned with Standards? [ ] YES [ ] NO

Replacement for *(Book title & copyright)*:

_____
_____
_____

Author: _____

Publisher: Cengage

Student's Edition: List Price: $ 375.95 or rent 44.9

Teacher's Edition: List Price: $ _____

Edition: 8e

Copyright: 2017

ISBN #: 9781305652224 (textbook)

ISBN #: 9781337249201 (eBook)

Book Title:	**Course:**

Type of book adoption request:
- [ ] Basic/Multiple Textbook
- [ ] Supplementary Textbook
- [ ] Reference Book
- [ ] Curriculum Software [ ] NEW [ ] REPLACE

Aligned with Standards? [ ] YES [ ] NO

Replacement for *(Book title & copyright)*:
Math 121 Trigonometry

_____
_____

Author: _____

Publisher: _____

Student's Edition: List Price: $ _____

Teacher's Edition: List Price: $ _____

Edition: _____

Copyright: _____

ISBN #: _____

ISBN #: _____

Book Title:	**Course:**

Type of book adoption request:
- [ ] Basic/Multiple Textbook
- [ ] Supplementary Textbook
- [ ] Reference Book
- [ ] Curriculum Software [ ] NEW [ ] REPLACE

Aligned with Standards? [ ] YES [ ] NO

Replacement for *(Book title & copyright)*:

Author: _____

Publisher: _____

Student's Edition: List Price: $ _____

Teacher's Edition: List Price: $ _____

Edition: _____

Copyright: _____

ISBN #: _____

ISBN #: _____

The following teacher has reviewed the above text(s) and finds it appropriate for the course.

_____
Recommending Teacher Signature   School   Date

Supplemental Instructional Material: *Please Describe. If using online text or non-standard material, please provide the title of the material or webpage and the URL link.*

Kuta Math Software

Instructional Methods and/or Strategies:

Direct Instruction and Resource Notes

Assessment Methods and/or Tools:

Tests/Quizzes

Activities: *(If applicable)*

Certificate: *(If applicable)*

Rev: 3/15/18

SMJUHSD Course Description
(Must be accompanied by a Course Adoption Form)

Full Course Title: Math 131 College Algebra

School Associated with course:	DHS	ERHS	✔ PVHS	SMHS

School Contact Brooke Baarstad

Name: Brooke Baarstad   **Title/Position:** math Department Chair

E-mail: bbaarstad@smjuhsd.org   **Phone:** (805) 922-1305   **Ext:** 5209

Department:
Mathematics

Transcript Course Code(s) / Number(s):

Subject Area:

- [ ] English Requirement
- [ ] World History
- [ ] US History
- [ ] Government
- [ ] Economics

- [x] Mathematics
- [ ] Physical Science
- [ ] Life Science
- [ ] Physical Education
- [ ] Visual & Performing Arts

- [ ] Foreign Language
- [ ] CTE
- [ ] Health
- [ ] Elective

Grade Level(s)

- [ ] 9
- [ ] 10
- [x] 11
- [x] 12

Unit Value

- [x] Semester (5 units)
- [P] Year A/B (5 units per semester)
- [ ] Year A/B (two-period course, 10 units per semester)

Vocational Education (CTE) [ ] Yes [ ] No

Career Pathway:

Industrial Sector:

[ ] Concentrator [ ] Completer

Pre-Requisites:
Algebra 2 or Integrated Math III (H)

Co-Requisites:

Course Purpose: *What is the purpose of this course?*
This is a college concurrent course that will provide students the opportunity to earn college credit and to fulfill high school graduation requirements through the study of college level algebra for majors in science ,technology, engineering, and mathematics: polynomials, rational, radical, exponential, absolute value, and logarithmic functions; systems of equations; theory of polynomial equations; analytic geometry.

B. COURSE CONTENT

Course Outline: A *detailed descriptive summary of all topics covered. All historical knowledge is expected to be empirically based, give examples. (i.e. California State Standards).*
College level course in algebra for majors in science, technology, engineering, and mathematics: polynomials, rational, radical, exponential, absolute values, and logarithmic functions; systems of equations; theory of polynomial equations; analytic geometry.

1. Functions including linear, polynomial, rational, radical exponential, absolute value, logarithmic: definitions, evaluation, domain and range.
2. Inverses of functions
3. Algebra of functions
4. Graphs of functions including asymptotic behavior, intercepts, vertices
5. Transformations of quadratic, absolute value, radical, rational, logarithmic, exponential functions
6. Equations including rational, linear, polynomial, radical, exponential, absolute value, logarithmic
7. Linear, nonlinear, and absolute value inequalities
8. Systems of equations and inequalities
9. Characterization of the zeros of polynomials
10. Properties and applications of complex numbers
11. Properties of conic sections and
12. Sequences and series

Book Title: College Algebra	Course: AHC Math 131CC

Type of book adoption request:
- [✔] Basic/Multiple Textbook
- [ ] Supplementary Textbook
- [ ] Reference Book
- [ ] Curriculum Software [ ] NEW [ ] REPLACE

Aligned with Standards? [ ] YES [ ] NO

Replacement for *(Book title & copyright)*:
_____
_____
_____

Author: Blitzer _____ **Edition:** 8th _____

Publisher: Pearson _____ **Copyright:** 2022 _____

Student's Edition: List Price: $ 74.99 _____ **ISBN #:** 9780136922148 _____

Teacher's Edition: List Price: $ _____ **ISBN #:** _____

Book Title:	Course:

Type of book adoption request:
- [ ] Basic/Multiple Textbook
- [ ] Supplementary Textbook
- [ ] Reference Book
- [ ] Curriculum Software [ ] NEW [ ] REPLACE

Aligned with Standards? [ ] YES [ ] NO

Replacement for *(Book title & copyright)*:

Math 131 College Algebra _____
_____

Author: _____ **Edition:** _____

Publisher: _____ **Copyright:** _____

Student's Edition: List Price: $ _____ **ISBN #:** _____

Teacher's Edition: List Price: $ _____ **ISBN #:** _____

Book Title:	Course:

Type of book adoption request:
- [ ] Basic/Multiple Textbook
- [ ] Supplementary Textbook
- [ ] Reference Book
- [ ] Curriculum Software [ ] NEW [ ] REPLACE

Aligned with Standards? [ ] YES [ ] NO

Replacement for *(Book title & copyright)*:

Author: _____ **Edition:** _____

Publisher: _____ **Copyright:** _____

Student's Edition: List Price: $ _____ **ISBN #:** _____

Teacher's Edition: List Price: $ _____ **ISBN #:** _____

The following teacher has reviewed the above text(s) and finds it appropriate for the course.

_____   _____   _____
Recommending Teacher Signature   School   Date

Rev: 3/15/18

Supplemental Instructional Material: *Please Describe. If using online text or non-standard material, please provide the title of the material or webpage and the URL link.*

Kuta math software

Instructional Methods and/or Strategies:

Direct Instruction and Resource Notebook

Assessment Methods and/or Tools:

Test/Quizzes

Activities: *(If applicable)*

Certificate: *(If applicable)*

Course Outline

ENGL 101 - Freshman Composition: Exposition

Discipline Placement:
English (Masters Required)

Department
English

Prefix ENGL

Course Number 101

Full (Catalog) Course Title Freshman Composition: Exposition

Banner Course Title Freshman Comp: Exposition

Units and Hours

	Hours per Week	Total Hours per Term (Based on 16-18 Weeks)	Total Units
Lecture	4.0	64.0 - 72.0	
Lab	0.0	0.0 - 0.0	
Outside-of-Class Hours	8.0	128.0 - 144.0	
Total Student Learning Hours	12.0	192.0 - 0.0	4.0
Total Contact Hours	4.0	64.0 - 0.0	

Number of Times Course may be Repeated 0.00

Grading Method Letter Grade Only

Requisites

1. **Prerequisite**

   Non Course Requirement (Do not enter AHC courses into textbox)
   Placement based upon Allan Hancock College's placement policy.

   Group Title

Subject

Requisite Course

Entrance Skills

Entrance Skills Other (Legacy)

Catalog Description

Designed to help students enhance their analytical reading and writing skills using a wide variety of texts. Emphasizes college-level expository essay construction, communication, and research methods leading to the preparation and writing of a research paper.

Course Content

Lecture Content

1. Introduction to Basic Principles of Reading, Writing, and Discussing Texts. Evaluation of Writing, Reading, and Information Technology skills.
2. Methods of Exposition
    1. Students will write a range of 6,000 to 8,000 words of discipline-appropriate text for a variety of essays and other assignments, including a documented research paper. The approaches used for these assignments will be determined by purpose and audience. The precise nature of assignments and the amount of time spent on each will vary. Course content usually includes information literacy and critical thinking; rhetorical concepts such as the modes of discourse (e.g. description, narration, exposition, argument); methods of exposition (e.g. identification, definition, illustration, analysis, classification, comparison and contrast); sentence and paragraph development; research and citation techniques; and principles of grammar usage and style.
    2. Emphasis will be placed on developing and improving critical college-level reading skills by methods such as, but not limited to, discussing texts in the classroom and in online discussion forums, taking quizzes based on course content, and producing writing that reflects

textual understanding. Sustained readings will include, but are not limited to, novels, textbooks, articles, electronic texts, book-length works, and/or other media. Reading selections should be guided by rigor and diversity of authorship.

3. Substantial class and outside assignment time will be devoted to practicing effective research methodologies and incorporating research into the essay using the MLA style. Emphasis will be placed on information competency, including internet-based research using library, and other, databases, with added emphasis on using information ethically, evaluating secondary sources, and avoiding plagiarism.

Lab Content

Course Objectives

1. learn to read critically and to perceive the significance and meaning between structure and content in texts of varying lengths

2. think critically about their own ideas, beliefs, and assumptions as they examine and compare those of different writers.

3. improve writing skills and techniques.

4. effectively interact and communicate with varied audiences from a rhetorical and thematic perspective.

5. conduct research effectively including investigation, collection, evaluation, and documentation, and present the findings in acceptable written form.

6. access and use information ethically and effectively.

7. identify both discipline specific and other information technology resources.

Methods of Instruction

- **Discussion**

  Detail

- **Lecture**

Detail

- **Methods of Instruction Description:**

  Detail

  Lecture is combined with instructor-monitored group work, discussion, and participation.

Assignments

1. **Outside Assignments**

   Assignment Text

   Outside assignments will include: college level essays, written homework, written critiques, guided/unguided journals, portfolios, term or research papers, reading textbooks, articles, reference materials, manuals, periodicals, preparing presentations, group activities, self and peer assessments.

Methods of Evaluation

- Exams/Tests
- Quizzes
- Research Projects
- Portfolios
- Papers
- Oral Presentation
- Projects
- Group Projects
- Class Participation
- Class Work
- Home Work
- Class Performance
- Writing Requirements

Students will be evaluated on: college level essays, written homework, critiques, guided/unguided journals, portfolios, term or research papers, and presentations.

Texts and Other Instructional Materials

Representative Text(s)

1. **Author** McQuade, Donald and Antwon, Robert

    Title The Writer's Presence: A Pool of Readings

    Edition 9th

    Year 2018

    Rationale

2. **Author** Richard Bullock, Michal Brody, Francine Weinberg

    Title The Little Seagull

    Edition 4th

    Year 2021

    Rationale

Text Other

1. **Text Other**
    Additional readings will also include, but are not limited to, novels, textbooks, articles, electronic texts, book-length works, and/or other media. Reading selections should be guided by rigor and diversity of authorship. Examples of such readings are: Educated, Persepolis, In Cold Blood, Outliers, Habits of Mind, OER textbooks, and/or anthologies.

Other Materials

Student Learning Outcomes

1. **ENGL101 SLO1 - Critically read and compare different writers' ideas and rhetorical techniques in course readings.**

2. **ENGL101 SLO2 - Write effective fully-developed, thesis-driven essays in concrete and standard English and interact and communicate with others in an academic forum using appropriate language, tone, and style.**

3. **ENGL101 SLO3 - Locate, evaluate, and integrate primary and secondary source material effectively, according to MLA-style guidelines to avoid plagiarism.**

Distance Education

Course Distance Learning

1. This is a new proposal for Distance Learning or an existing course that has been substantively changed and its approval as Distance Learning should be revisited. The faculty member completing this form will be teaching the course in the Distance Learning modality and has met with the Distant Learning Coordinator.

2. This course has already been approved by the Curriculum Committee as Distance Learning. No substantive changes have been made to the course outline that would affect the Distance Learning modality (i.e. units, hours, objectives, content, assignments, evaluation modalities).

Distance Learning Approval Status (please look above for the complete option)

2. This course has already been approved by the Curriculum Committee as Distance Learning...

Distance Learning:

By selecting "Yes", you state that your delivery method is Distance Learning, this course will satisfy federal definitions for Distance Education, and this course will satisfy the following:

- This course requires regular and substantive interaction between instructor and students.
- In this course interaction will be initiated by the instructor.
- This course is not self-paced.

Distance Learning Yes

Correspondence Education:

By selecting "Yes", you state that your delivery method is Correspondence Education, this course will satisfy federal definitions for this delivery of course content, and this course will satisfy the following:

- This course does not require regular and substantive interaction between instructor and students.
- In this course interaction will be initiated by the student.
- This course is self-paced.

Correspondence Education No

Distance Education Delivery Method

- As the initiator, you will be required to reflect these statements in your proposal.
- DE synchronous and asynchronous

Other No

Explain.

Course/Contact Hours

Instructor-initiated contact per week must minimally match the number of units per week. For example, in a three-unit course, an instructor should initiate a minimum of three hours of contact with students per week, using a variety of methods such as email, discussion boards, announcements, and review sessions.

Instructor Initiated Contact Hours Per Week 4.000

Distance Learning Request - Proposed Changes

Explain how this course meets requirements for an existing degree, certificate, or GE pattern as established in the most recent AHC catalog; or explain how the course meets a formal (documented) continuing education offering within a discipline.

Degree, Certificate, or GE pattern

n/a

Identify how this course fits into the overall plan for distance education development within your department. Attach supporting documentation of program review data, annual program review data, or other sources as necessary.

Distance Ed Development

n/a

If this is a new course [not an existing course undergoing DL conversion], identify the staffing plan for this course as an additional offering with the department over the next year and three-year period.

Staffing Plan

n/a

Describe below the adjustments you will make to the type of assignments students will have to complete on the DL course [as opposed to the face-to-face course].

Adjustments to Assignments
- Assignments will be submitted primarily through the district Course Management System (CMS).
- Students can submit multiple files types, type in a textbox to submit their assignments, or submit links to their work in the cloud or other web related service such as Google Docs.
- Students can also submit assignments through district email or the messaging service in the district CMS.
- The district CMS contains many tools instructors can use to facilitate different assignment types.

- Instructors may use the assignments tool and/or discussion tool to facilitate student to student interaction.
- Instructors may use the feedback features of the district CMS to facilitate instructor-initiated contact.
- When appropriate, instructors may use group assignments.

List of possible tools employed to adjust for ERT/DL course may include but not limited to:

- District CMS assignments
- Threaded discussion forums
- District Email
- District CMS messaging service
- Announcements in the district CMS
- Feedback of student work through use of Speed Grader or other tools
- Synchronous audio/videoconferencing (Zoom, Cranium Café)

- Interactive mobile technologies
- Chat, text, Twitter
- Telephone
- Virtual offices hours

Describe below the adjustments you will make to the type of evaluation tools you will use to assess students' performance and progress in the DL course [as opposed to the face-to-face course].

Adjustments to Evaluation Tools
This course will be able to use interactive quizzes which allow for automated assessment performance for certain question types, and the use of the mastery gradebook.

If the assessment requires necessary student authentication, the instructor can employ machine automated proctoring services available through the current district CMS.

Use of these features (quizzes, discussions, and assignments) provide the necessary tools to evaluate student progress toward the objectives of the course.

You will need to meet with the Adaptive Technology/Internet Access specialist to describe below the strategies that will be used to make the course accessible to students with disabilities, and to ensure that the opportunity for participation for the disabled students is as effective as that provided to others.

Strategies to Make Course Accessible to Disabled Students

1. <u>Images, graphs, charts or animation</u>. A text equivalent or <u>alt text</u> is provided for every non-text element, including all types of images and animated objects. *This will enable a screen reader to read the text equivalent to a blind student.*

2. <u>Multimedia.</u> Equivalent alternatives for any multimedia presentation are synchronized with the presentation. Videos and live audio must be closed captioned. For archived audio, a transcript maybe sufficient.

3. <u>Documents and other learning materials</u>. <u>PDFs, Microsoft Word documents</u>, <u>PowerPoint presentations</u>, <u>Adobe Flash</u> and other content must be as accessible as possible. If it cannot be made accessible, consider using HTML or, if no other option is available, provide an accessible alternative. PDF documents must be properly tagged for accessibility.

4. <u>Timed quizzes/exams.</u> Extended time on quizzes and exams is one of the most common accommodations. <u>Instructions for extending time in Canvas.</u>

5. <u>Outside webpages and links</u>

   1. Ensure that all webpages meet 508 standards by testing through <u>Cynthia Says</u>. Follow the Accessibility Guidelines <u>WCAG 2.0 Level AA</u>

   2. Ensure links make sense out of context. Every link should make sense if the link text is read by itself. *Screen reader users may choose to read only the links on a web page. Certain phrases like "click here" and "more" must be avoided.*

6. <u>Applications, software, and outside learning systems</u>. All required outside applications and/or learning systems (e.g MyMathLab, Aleks, etc.) are accessible OR an alternative is provided. Test with <u>WebAIM WAVE toolbar</u>.

7. <u>Avoid text images.</u> Images of text are avoided OR an alternative is provided. (Examples of images of text are PDFs made from scanned pages, and word art.)

8. <u>Color contrast.</u> Text and background color have sufficient contrast on all documents, PowerPoints, and webpages both inside and outside of the LMS.

9. <u>Text objects</u>. If the shape, color, or styling of any text object conveys information, that information is conveyed in plain text as

well.

10. [Disability statement.](#) The course syllabus contains the college's [suggested Disability Statement](#) as well as current information on the location and contact information for the [Learning Assistance Program (LAP).](#)

Indicate the nature of the technical assistance that will be required to offer this course and make it ADA compliant

ADA Compliance

All web and electronic content that is public facing as well as any online course content will be compliant with [Section 508 of the Rehabilitation Act of 1973](#) and the [WCAG 2.0 AA guidelines](#).

Describe below how you will inform students about on-line services for students.

Inform Students

Information about online services is available to students via the course syllabus, email, and CMS announcements,

DL Certification

What DL training and/or expertise does the initiator have in order to teach this course? Please be aware that such training must also be in place for any other instructor teaching the course besides the course initiator. (State here any training obtained prior to designing proposed DL Request.)

Prior Training

see initial proposal

What DL training and/or expertise does the initiator plan to have once the DL Request is approved? Please be aware that such training must also be in place for any other instructor teaching this DL course besides the course initiator. (State here any training needed for the continued success of this DL Request. Indicate here plans for continued training in evolving educational technologies.)

Continued Training

see initial proposal

Additional Comments

Review Dates

- ERT
  05/06/2020
- Academic Senate
  03/29/2022

- Board of Trustees

  03/16/1982

- CC Approval

  02/17/2022

- DL Conversion

  03/13/2013

- Technical Review

  05/05/2021

- Last Outline Revision

  02/24/2022

- PCA Established

  04/19/2022

Mathematics (MATH) 2100 Analytic Geometry and Calculus I (5 Units) CSU:UC
[formerly Mathematics 3A]

Prerequisite: Successful completion of Mathematics 1540 with a 'C' or better or equivalent.

Prerequisite knowledge/skills: Before entering the course, the student should be able to:

1.   Graph functions and relations in rectangular coordinates and polar coordinates;
2.   Synthesize results from the graphs and/or equations of functions and relations;
3.   Apply transformations to the graphs of functions and relations;
4.   Recognize the relationship between functions and their inverses graphically and algebraically;
5.   Solve and apply equations including rational, linear, polynomial, exponential, absolute value, radical, and logarithmic, and solve linear, nonlinear, and absolute value inequalities;
6.   Solve systems of equations and inequalities;
7.   Apply functions to model real world applications;
8.   Identify special triangles and their related angle and side measures;
9.   Evaluate the trigonometric function of an angle given in degree and radian measure;
10. Manipulate and simplify a trigonometric expression;
11. Solve trigonometric equations, triangles, and applications;
12. Graph the basic trigonometric functions and apply changes in period, phase and amplitude to generate new graphs; and
13. Prove trigonometric identities

Total Hours: 80 hours lecture

Catalog Description: This course is a beginning course in calculus and analytic geometry including functions, limits and continuity, derivatives, integrals, applications of derivatives and integrals, transcendental functions, and Fundamental Theorem of Calculus. This course is primarily for Science, Technology, Engineering and Math majors, and is taught with a computer component (Maple). C-ID: MATH 211.

Type of Class/Course: Degree Credit

Text: Briggs, William, L. Cochran and B. Gillett. *Calculus*. Upper Saddle River: Pearson Addison-Wesley, 2011. Print.

Additional Instructional Materials: none.

Course Objectives:

By the end of the course, a successful student will be able to:

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1. understand the use of functional notation,
2. plot and interpret graphs of functions,
3. differentiate algebraic, trigonometric, exponential, logarithmic and hyperbolic functions,
4. apply derivatives, and
5. find the integrals of basic functions (this topic is continued in Math 3B) and
6. complete items 1-5 above by both hand computations and computer assisted (Maple) Compute the limit of a function at a real number;
7. Determine if a function is continuous at a real number;
8. Find the derivative of a function as a limit;
9. Find the equation of a tangent line to a function;
10. Compute derivatives using differentiation formulas;
11. Use differentiation to solve applications such as related rate problems and optimization problems;
12. Use implicit differentiation;
13. Graph functions using methods of calculus;
14. Evaluate a definite integral as a limit;
15. Evaluate integrals using the Fundamental Theorem of Calculus; and
16. Use the definite integral to find areas and volumes

Course Scope and Content:

Unit I Functions & Graphs
   A. Identify graphs of polynomial functions
   B. Identify horizontal and vertical translations
   C. Identify the effect of the magnitude and sign of leading coefficients on the graph of a polynomial
   D. Construct and graph piecewise and composite functions
   E. Identify local minimums and maximums

Unit II Limits & Continuous Functions
   A. Find limits graphically and numerically
   B. Evaluate limits analytically
   C. Identify continuity of functions on open and closed intervals
   D. Determine when functions have infinite limits and interpret the meaning of an infinite limit

Unit III Derivative
   A. Demonstrate an understanding of the derivative as it pertains to the tangent line problem
   B. Identify and appropriately apply basic rules of differentiation as they pertain to rates of change
   C. Identify and appropriately apply the power, constant, product, and quotient rule for first and higher-order derivatives
   D. Differentiation formulas: constants, power rule, product rule, quotient rule and chain rule
   E. Demonstrate a working knowledge of related rates of change
   F. Determine the differentiability of functions
   G. Determine a derivative as a limit

Unit IV Application of Derivatives
   A. Use derivatives to identify and appropriately interpret local extrema
   B. Identify intervals where functions are increasing/decreasing based on derivatives
   C. Identify regions of concavity
   D. Identify asymptotic behavior based on limits
   E. Use derivatives for optimization problems

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F. Apply Newton's Method where appropriate
G. Utilize differentials as they pertain to calculating maximum error propagation
H. Use derivatives as a tool to graph functions
I. Intermediate and Mean Value Theorem

Unit V Definite Integral
A. Calculate antiderivatives and apply to Indefinite Integration
B. Calculate area under a curve by Reimann sums and The Fundamental Theorem of Calculus
C. Demonstrate power rule for integration
D. Demonstrate integration by substitution and numerical integration
E. Demonstrate the use of integrals to calculate volume

Unit VI Topics in Differential Calculus
A. Demonstrate applications of logarithmic differentiation and integration
B. Demonstrate applications of differentiation and integration of inverse functions
C. Demonstrate applications of differentiation and integration of exponential functions
D. Apply differential equations in growth and decay models
E. Demonstrate applications of differentiation and integration of Inverse Trigonometric Hyperbolic functions

Learning Activities Required Outside of Class:

The students in this class will spend a minimum of 10 hours per week outside of the regular class time doing the following:

1. Studying
2. Answering questions
3. Skill practice
4. Completing required reading
5. Problem solving activity or exercise with and without computer assistance

Methods of Instruction:

1. Lecture-demonstrations and sample problems solved by the instructor
2. Computer modeling and exploration

Methods of Evaluation:

1. Computational or non-computational problem-solving demonstrations, including:
    a. Exams
    b. homework problems
    c. quizzes

Supplemental Data:

TOP Code:	170100 Mathematics

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SAM Priority Code:	E: Non-Occupational
Funding Agency:	Y: Not Applicable
Program Status:	1: Program Applicable
Noncredit Category:	Y: Not Applicable
Special Class Status:	N: Course is not a special class
Basic Skills Status:	N: Not Applicable
Prior to College Level:	Y: Not Applicable
Cooperative Work Experience:	N: Course is not a part of a cooperative education program
Eligible for Credit by Exam:	Yes
Eligible for Pass/No Pass:	Yes

Reviewed by: D. Mitchell
Reviewed by: D. Jones
Reviewed by: M. Mayfield
Date reviewed: Fall 2018
C & GE Approved: September 28, 2018
Board Approved: October 10, 2018
Semester effective: Fall 2019

Statistics (STAT) 1510 Elementary Statistics (5 Units) CSU: UC
[formerly Statistics 10]

Prerequisite: Successful completion in Mathematics 1060 or the equivalent.

Prerequisite knowledge/skills: Before entering the course the student should be able to:

1.   identify numbers as belonging to specified sets, and graph discrete and continuous sets of real numbers,
2.   perform the basic arithmetic operations with positive and negative real numbers,
3.   know and apply the rules of exponents and the order of operations in algebraic expressions,
4.   use the properties of addition and multiplication for real numbers,
5.   solve linear equations and inequalities in one variable,
6.   solve and graph the solutions of compound inequalities or absolute value inequalities in one variable,
7.   perform addition, subtraction, multiplication and division of polynomials,
8.   factor simple polynomials, with special emphasis on quadratic trinomials, and solve related polynomial equations,
9.   add, subtract, multiply and divide rational algebraic expressions, and reduce to lowest terms,
10.   solve equations involving rational algebraic expressions, and analyze and solve word problems leading to such equations,
11.   simplify radical expressions involving numbers and/or variables,
12.   use fractional exponents,
13.   perform addition, subtraction, multiplication and division of expression involving radicals and complex numbers and simplify the results, including rationalization of denominators,
14.   solve equations that involve radicals,
15.   solve quadratic equations in one variable, and quadratic equations by factoring, completing the square, and the quadratic formula,
16.   analyze and solve application problems requiring the use of quadratic equations,
17.   solve and graph quadratic inequalities in one variable,
18.   graph points in the rectangular coordinate system, and straight lines from ordered pairs obtained from a linear equation,
19.   determine the slope of the line between any given pair of points,
20.   know the slope formulas for the equation of a straight line, and be able to determine the equation of a particular straight line from specified input information,
21.   solve and graph linear inequalities in two variables,
22.   solve linear systems of equations in two or three variables algebraically, and solve two dimension systems graphically,
23.   analyze and solve application problems requiring the use of linear systems of equations in two or three variables,
24.   evaluate determinants and use them to solve linear systems of equations,
25.   determine whether or not a specified relation is a function,

26.   for a function, compute the value of the function given the value of the independent variable, and be able to construct the inverse of simple functions in numeric or algebraic terms,

27.   identify the quadratic equation representing a specific conic section, and be able to draw the graph of a conic section by analyzing its equation, or to write the equation of a specified conic section,

28.   solve nonlinear systems of equation involving the intersection of two conic sections or a conic section and a straight line,

29.   compute and graph specified exponential and logarithmic functions,

30.   know the properties of logarithms (product, quotient, power and change of base rules) and be able to use them in practical numerical computations using a table of common logarithms or a calculator, and

31.   solve simple exponential and logarithmic equations.

Hours and Units Calculations: 80 hours lecture. 160 Outside of class Hours (240 Total Student Learning Hours)

Catalog Description: This course emphasizes descriptive statistics including the use of probability techniques, hypothesis testing, and predictive techniques to facilitate decision-making. Topics include descriptive statistics; probability and sampling distributions; statistical inference; correlation and linear regression; analysis of variance, chi-square and t-tests; and application of technology for statistical analysis including the interpretation of the relevance of the statistical findings. Applications using data from disciplines including business, social sciences, psychology, life science, health science, and education, sampling, sampling distributions, measures of central tendency and measures of dispersion, introductory treatment of probability and statistical inference with one and two sample problems, confidence intervals and hypothesis testing regarding means and proportions, and correlation and linear regression, ANOVA and nonparametric techniques such as the one-sample sign test, Wilcoxon rank-sum, Spearman's correlation, odds ratios and Kruskal-Wallis. C-ID: MATH 110.

Type of Class/Course: Degree Credit

Text: Jean, Brian, et al. *Data Analysis - An Applied Approach to Statistics With Technology*. 3 Ring Publishing, 2017.

Additional Instructional Materials:

Course Objectives:

By the end of the course, a successful student will be able to:

1.   perform a statistical experiment,
2.   present data in a variety of ways,
3.   do descriptive analysis on single and bivariate data,
4.   apply the rules of probability,
5.   perform hypothesis tests,
6.   calculate confidence intervals,
7.   test inferences involving one and two populations,
8.   perform chi-square tests and analysis of variance,
9.   perform linear regression analysis, and
10.   perform selected nonparametric statistical tests.

11. Distinguish among different scales of measurement and their implications;
12. Interpret data displayed in tables and graphically;
13. Apply concepts of sample space and probability;
14. Calculate measures of central tendency and variation for a given data set;
15. Identify the standard methods of obtaining data and identify advantages and disadvantages of each;
16. Calculate the mean and variance of a discrete distribution;
17. Calculate probabilities using normal and student's t-distributions;
18. Distinguish the difference between sample and population distributions and analyze the role played by the Central Limit Theorem;
19. Construct and interpret confidence intervals;
20. Determine and interpret levels of statistical significance including p-values;
21. Interpret the output of a technology-based statistical analysis;
22. Identify the basic concept of hypothesis testing including Type I and II errors;
23. Formulate hypothesis tests involving samples from one and two populations;
24. Select the appropriate technique for testing a hypothesis and interpret the result;
25. Use linear regression and ANOVA analysis for estimation and inference, and interpret the associated statistics; and
26. Use appropriate statistical techniques to analyze and interpret applications based on data from disciplines including business, social sciences, psychology, life science, health science, and education.

Course Scope and Content:

Unit   I   Statistics
             A.   Basic terms
             B.   Random Sampling

Unit   II   Descriptive Analysis - Single Variable Data
             A.   Measurements of Central Tendency
             B.   Measurements of Dispersion
             C.   Graphical Displays of Data

Unit   III   Descriptive Analysis - Bivariate Data
             A.   Linear and nonlinear (monotonic) correlation
             B.   Linear Regression

Unit   IV   Probability
             A.   Simulation
             B.   Empirical Probabilities
             C.   Theoretical Probabilities
             D.   Rules of Probability

Unit   V   Probability Distributions
             A.   Random Variables
             B.   Mean and Variance of a Discrete Distribution

Unit   VI   Binomial Probability Distribution
             A.   Probabilities
             B.   Mean and Standard Deviation

Unit VII   Normal Probability Distribution
    A.   Properties
    B.   Standard Normal Distribution
    C.   Non-Standard Normal Distribution

Unit VIII   Sample Variability
    A.   Central limit theorem
    B.   Sampling Distributions

Unit IX   Statistical Inference
    A.   Hypothesis testing and confidence intervals for:
        1.   one population mean
        2.   two population means
        3.   one proportion
        4.   two proportions
        5.   one variance
        6.   two variances
        7.   odds ratios
    B.   Inferences Based on Non-Parametric Techniques

Unit X   Chi Square
    A.   Tests of independence
    B.   Contingency tests
    C.   Goodness of Fit

Unit XI   Analysis of Variance
    A.   Variance Stabilizing Transformations
    B.   Multiple Comparisons
    C.   Kruskal-Wallis

Unit XII   Linear Correlation and Regression Analysis
    A.   Parameter Estimates
    B.   Using The Regression Line

Learning Activities Required Outside of Class:

The students in this class will spend a minimum of 10 hours per week outside of the regular class time doing the following:

1.   Studying,
2.   Answering questions,
3.   Skill practice,
4.   Completing required reading,
5.   Watching instructional videos, and
5.   Problem solving activity or exercise

Methods of Instruction:

1.   Lecture-demonstrations and sample problems solved by the instructor
2.   Occasional lab activities on the computer

Methods of Evaluation:

1. Computational or non-computational problem-solving demonstrations, including:
    a. exams,
    b. homework problems, and
    c. quizzes

Supplemental Data:

TOP Code:	170100: Mathematics, General
SAM Priority Code:	E: Non-Occupational
Distance Education:	Online; Offline
Funding Agency:	Y: Not Applicable(funds not used)
Program Status:	1: Program Applicable
Noncredit Category:	Y: Not Applicable, Credit Course
Special Class Status:	N: Course is not a special class
Basic Skills Status:	N: Course is not a basic skills course
Prior to College Level:	Y: Not applicable
Cooperative Work Experience:	N: Is not part of a cooperative work experience education program
Eligible for Credit by Exam:	E: Credit By Exam
Eligible for Pass/No Pass:	NO
Taft College General Education:	CSB4: CSU Area B4 IG2A: IGETC Area 2A LCAT: Local GE Communication

Reviewed by: G. Dyer
Reviewed by: K. Carlson
Reviewed by: D. Kerr
Reviewed by: C. Chung-Wee
Reviewed by: B. Devine
Reviewed by: S. Wallace
Novel &/or Text update: Fall 2020
Date Reviewed: Spring 2020
C & G Ed approval: February 21, 2020
Board approval: March 11, 2020

English (ENGL) 1600 Critical Thinking, Literature, and Composition (4 Units) CSU: UC
[formerly English 1B]

Prerequisite: Successful completion in English 1500 with a grade of "C" or better

Prerequisite knowledge/skills: Before entering the course the student should be able to:

1.   write good expository prose,
2.   read good prose intelligently,
3.   demonstrate techniques in library research and in writing a term paper,
4.   show competency in writing within the four modes of discourse: narration, description, exposition, persuasion,
5.   demonstrate a vocabulary enriched by several hundred new words,
6.   exhibit an understanding of connotation and denotation of meaning in context,
7.   demonstrate understanding of grammar and mechanics.

Hours and Unit Calculations:
64 hours lecture. 128 Outside of class hours. (192 Total Students Learning Hours) 4 Units

Catalog Description: This course focuses on critical thinking and composition through reading of essays, poetry, drama, and fiction. It introduces critical evaluation, develops techniques of analytical, critical and argumentative writing, explores inference, evidence, inductive and deductive reasoning, identification of assumptions, underlying conclusions and other terms of logical thinking, and continues expository writing (8,000 word minimum). C-ID: ENGL 105, ENGL 110, ENGL 120

Type of Class/Course: Degree Credit

Texts:
Bennett, Tonya Long. *Writing and Literature: composition as Inquiry, Learning, Thinking, and Communication*. University of North Georgia. 2017.

Carlson, Kamala, and Jessica Grimes. *Grammar Cards: Supersonic Writing Tips*. Carlson and Grimes, 2019.

Roberts, Edgar V. *Literature: Introduction to Reading and Writing.* **10** ed. Upper Saddle River, NJ: Prentice Hall, 2009.
(This is a critical writing and thinking reader which includes ethnically/culturally diverse readings and has exercises and applications that develop abilities to analyze, argue, reason effectively, and identify

assumptions on which conclusions depend.)

Guerin, Wilfred, Earle Labor, Lee Morgan, Jeanne Reesman, and John Willingham. *Handbook of Critical Approaches to Literature.* 6th Ed. New York: Oxford University Press, 2010 .

Paul, Richard, and Linda Elder. *The Thinker's Guide to Fallacies: The Art of Mental Trickery and Manipulation.* Tomales, CA: Foundation for Critical Thinking, 2012.

The Thinker's Guide to Fallacies: https://thebestschools.org/magazine/15-logical-fallacies-know/

Additional Required Materials: At least one literary text from the following list:

Kesey, Ken. *One Flew over the Cuckoo's Nest.* New York: Signet, 1963.

Shakespeare, William. *Hamlet.* New York: Washington Square Press, 1992.

---. Much Ado about Nothing. Open Source Shakespeare, 2019.

Shelley, Mary. *Frankenstein.* New York: Bantam Classics, 2003

Twain, Mark. *Huckleberry Finn.* Bedford, MA: St. Martin's, 2007.

Voltaire. *Candide.* Penguin Classics, 2005.

Walker, Alice. *The Color Purple.* Orlando, FL: Houghton Mifflin, 1982.

The Color Purple: https://s3.amazonaws.com/scschoolfiles/112/the-color-purple-alice-walker.pdf

Course Objectives:

By the end of the course, successful students will be able to:

1.   demonstrate critical thinking skills
    a. Use inductive reasoning to support a thesis with cogent textual analysis
    b. Identify and avoid logical fallacies

2.   read analytically so that they can:
    a.   evaluate college-level material from a variety of sources,
    b.   analyze critically and interpret and explain connotations, denotations, implications
    c.   identify the major literary genres,
    d.   identify, interpret, and evaluate components of literary content such as themes, figurative language, symbolism, characterization, and narrative,
    e.   identify and evaluate components of literary form, such as structures of narrative, poetic forms, use of dialog, and set directions,
    f.   contrast interpretations of the same literary text through different critical lenses or from different critical approaches,
    g.   find, evaluate and use outside sources including professional criticism to develop their own writing, and

3.   write essays in which they:
    a.   use a clear thesis, good organization, and logical support,

b. develop an argument using persuasion, deductive and inductive reasoning, draw inferences, and make conclusions,
c. use developing and supporting details, examples, data and evidence, and substantiate their interpretations with specific evidence from text,
d. analyze, comment on, and relate evidence to claims,
e. use outside sources, carefully researched and correctly documented,
f. improve and correct logic, style and mechanics of their writing, and
g. revise content after considering instructor's and peers' written comments.

Course Scope and Content:

Unit I Critical Thinking
a. Inductive reasoning
b. Interpretation
c. Formal Analysis
d. Evidence
e. Logical fallacies

Unit II Literature
a. Interpret and analyze literature from multiple genres and from diverse cultures and time periods.
b. Use primary and secondary sources to identify text's historical and cultural context.
c. Respond to scholarly criticism of primary texts.
d. Apply critical approaches such as feminism, formalism, deconstructionism, structuralism, or others to literary texts.

Unit III Writing
a. Write about the four genres using the elements of fiction
b. Analyze pieces of literature using interpretation, analysis, comparison contrast, synthesis, causes and results, and evaluation.
c. Use criticism in writing
d. Summarize pieces of literature and criticism

Assignments:

1. Critical Thinking: All assignments fulfill the critical thinking focus.
2. Reading: See Course Content
3. Writing: 8,000 to 10,000 words
    a. precis
    b. of fallacies associated with inductive and deductive reasoning
    c. argumentative essays
    d. analysis of literature in various genres
    e. A research paper
4. Oral: In two presentations students will:
    a. show understanding of secondary sources and ability to synthesize secondary materials and present them to classmates coherently, and
    b. work with a panel/group of other students to critically evaluate a current work of literature.

Methods of Evaluation:

Students will be evaluated on critical thinking, writing and reading as demonstrated in class (group

discussions, oral presentations, in-class writings and quizzes) in essay assignments in a variety of formats including expository, persuasive, comparison/contrast, and analytical, and on a ~~10 page~~ research paper. The primary method of evaluation will be through writing assignments graded on critical reasoning, observational skills, logic, sufficient and sound supporting argumentation based on knowledge of deductive and inductive reasoning and the formal and informal fallacies associated with them. Students must show continued progressive improvement in developing writing skills. Word total is 8,000 to 10,000.

Methods of Instruction:

1.   Close critical reading of assigned and self-selected literature
2.   Lectures on critical thinking, backgrounds of works studied, use of language and rhetoric
3.   Class and small group discussions of critical thinking in literature; of ideas for essays; of writing assignments
4.   Group and individual panels and presentations
5.   Writing and rewriting of essays (short themes, research papers, and longer critical analyses of work read; word total 8,000 to 10,000) under close supervision of instructor. Participation in teacher and group feedback at all stages of writing process, from conception, theme statement, presenting of evidence, and peer readings and responses
6.   Films and records

Methods to Achieve Critical Thinking:

1.   formulate and express judgments based on ideas from readings, discussion and personal experience
2.   explain and support theses with relevant information
3.   evaluate and re-evaluate soundness of judgments based on information and on other points of view

Supplemental Data:

TOP Code:	150100: English
SAM Priority Code:	E: Non-Occupational
Distance Education:	Online; Offline
Funding Agency:	Y: Not Applicable(funds not used)
Program Status:	1: Program Applicable
Noncredit Category:	Y: Not Applicable, Credit Course
Special Class Status:	N: Course is not a special class

Basic Skills Status:	N: Course is not a basic skills course
Prior to College Level:	Y: Not applicable
Cooperative Work Experience:	N: Is not part of a cooperative work experience education program
Eligible for Credit by Exam:	NO
Eligible for Pass/No Pass:	C: Pass/No Pass
Taft College General Education:	CSA3: CSU Area A3 CSC2: CSU Area C2 IG1B: IGETC Area 1B LEC: Local GE English Comp LHUM: Local GE Humanities
Discipline	English