

English

Standards:

- Communicate using content, form, voice, and style, appropriate to the audience and purpose.
- Use the tools and practices of inquiry and research.
- Develop powerful, creative, and critical messages in multi-genre works
- Synthesize information to generate new thinking.

All of the above standards must be met. How will you meet the standards? Figure it out...

WRITE – RESEARCH – PRESENT

- Analyze literature/Write a literary response – see terms listed below
- Write a researched persuasive essay
- Use (and provide evidence of) research in both writing and presenting
- Use research skills including properly embedding and citing quotes (internally and in a properly formatted Works Cited page) and finding/using valid and reliable sources
- Create an annotated bibliography as evidence of research
- Synthesize several sources in a formal essay
- Prepare and deliver a presentation

Sample Project Ideas...With English Language Arts Content:

TED Talk – “An idea worth spreading” - professionally executed – researched – showcases rhetorical skills – ethos, logos, pathos - visual component 10-15 minutes in length

Screenplay – TV pilot, movie, documentary, etc. -- professionally executed – with solid character development – researched – correctly formatted – has a conflict – embedded literary techniques (foreshadowing, flashback, etc.) - create a full film or trailer to accompany

Scripted news broadcast - professionally executed - with all relevant components: international, national, and local news; sports; weather; editorial commentary; interview(s) -- (consider tone consistency: serious, satirical, etc.)

Magazine – professionally executed - thematically tied together – variety of articles/genres – advertisements – researched - professional lay out

Business plan – professionally executed - for a product or service – researched – thorough – viable

Record an album – professionally executed – branded – lyrics printed - embedded literary poetry techniques (rhythm, figurative language.)

Instructional Video - professionally executed - researched - scripted - explanation/illustration of a challenging concept (i.e. math functions)

Literary Terms for Literary Analysis:

- Symbolism
- Irony: Dramatic, Situational, Verbal
 - Diction
 - Syntax
- Parallel Structure
 - Paradox
 - Parody
 - Satire
 - Allegory
 - Theme

Math

Standards:

- Represent and model real world problems with equations, graphs and tables.
- Identify and explain key properties of functions including domain, range, relative and absolute maximums and minimums, x- and y-intercepts, symmetry, increasing and decreasing, asymptotes, translations, end behavior, etc.

All of the above standards must be met. How will you meet the standards? Figure it out...

Topics and Examples:

- Quadratics (Projectile motion, revenue and profit business models, etc.)
 - Parabolic Target Shooting - design and build a catapult for target shooting.
 - Create a multimedia project with different parabolas (basketballs, water fountain) and create equations that can be used to model those pictures.
- Exponential and Logarithmic (Population Change, interest on investments, half-lives of drugs, spread of and cleanup of pollution, radioactive decay, etc.)
 - Grow your own mold - record exponential growth and create a model for the relationship
- Trigonometric (Voltage, tides, EKGs, etc.)
 - Design a working Ferris wheel that can be used to help create the sine and cosine functions.
 - Find examples of sine and cosine functions in designs in architecture.
- Conic Sections (Architecture, astronomy, satellite dishes, stadium design, etc.)
 - Create a 3-D model of a cone which can show different conic sections. Use Desmos to create different models of the conic sections and investigate how to change the shape of them.
- Sequences and Series (Art, nature, the golden ratio, etc.)
 - Find examples in nature or in other real life applications.
 - Investigate the Golden Ratio, show its connections to math and pictures of it occurring in nature and/or art.
- Rational (Medicine concentrations, economics, electronic circuits, aerodynamics, acoustics, etc.)
- Radical (Architecture, electronics, etc.)
- Data and Statistics (Measures of central tendencies, measures of spread, etc.)
 - Kite Reengineer - include statistics on flight duration, height, wind speed, etc.
 - Use statistics to investigate a problem. Analyze the data. Does the data lie along a normal curve? Design a plan to fix the problem based on data.
- Any Family of Function
 - Show an animation or print design showing how to translate any function.
 - Take a story problem, create a print design for it and then create several other similar problems that could be solved using that same idea.

Engineering Technology/Mechatronics/Electronics

Standards:

- Design, create and demonstrate a tangible product or system.
- Through the design thinking process identify key issue areas and the problem solving technique used.

Both of the above standards must be met. How will you meet the standards? Figure it out...

RESEARCH – CREATE – DEMONSTRATE

- Apply fundamental programming skills
- Demonstrate the use of pneumatic pressure
- Apply principles of Logic Control
- Demonstrate the use of circuit design principles
- Demonstrate the construction of a circuit
- Create a structure and demonstrate its integrity
- Prepare and deliver a presentation

Sample Project Ideas...

Automated System – professionally executed - well researched – showcases knowledge of automation – 3D printing - visually pleasing – marketable – reliable – demonstrate programming skills

Pressure Driven System – using proper design techniques -- professionally executed – well researched – demonstrates knowledge – 3D printing

Security System (home or product) - professionally executed – well thought out – well researched – demonstrates knowledge in the security arena – marketable – good market plan - reliable

Circuit Designs – professionally executed – well researched – professionally constructed – reliable – demonstration of proper design techniques

Structures (building or bridges) – using proper design techniques – professionally executed - well researched – proper materials – well demonstrated

Apply principles of Logic Control – professionally executed – demonstrate mapping – demonstrate programming skills – professionally constructed – well researched

Robotic Systems - professionally executed - well researched – demonstrate knowledge of technology – 3D printing – well researched

Vocab Terms:

- Energy
- Voltage
- Automation
- Pneumatics
- Beams/Trusses
 - Axis
 - Gates
- Program Logic
 - Processors
- Problem Solving
 - Robotics

Standards

- Create a visually engaging, original artwork that demonstrates effective use of the elements of art/principles of design
- Communicate a creative message, idea, story, or informative concept.
- Through research and the production/design-thinking process, improve the project over time.
- Show proficient skill in one or more of the multimedia software programs.
- Effectively present work and articulate the use of visual and thematic elements.

Creative Processes

- Production Process: ***Pre-Production / Pre-Viz - Production - Post Production***
- Design Thinking Process: ***Empathy - Define - Ideate - Prototype (create) - Feedback (test) - Reflect***

All of the above standards must be met. How will you meet the standards? Figure it out...

Possible topics and projects

Photography

- Explore a theme through photo series.
- Explore a new shooting/lighting/photo editing technique.

Graphic Design

- Character Design
- Magazine layout
- Product Design/ Marketing/ Branding

Animation

- Character animation
- Experimental animation
- Historical / Informative animation
- Text animation

Film/Video

- Narrative
- Documentary
- Experimental

Visual Effects

- Explore a new visual effect process and implement in a final.

Video Game Design

- Character design
- Environment Design
- Marketing / Branding

Software (use one or more)

- Photoshop
- Illustrator
- InDesign
- After Effects
- Audition
- After Effects
- Premier Pro
- Cinema 4D