Rumson-Fair Haven Regional High School Curriculum

Course: *Graphic Design*
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Section I: Course Description

Graphic Design introduces students to a wide variety of digital communication methods. Students create digital images by using computer software such as Adobe Photoshop, Illustrator, and other computer programs. Students design and create such projects as posters, advertisements, tickets, stickers, notepads, business cards, a 3D printed object etc. All projects are composed of images and text that work together to communicate a message. Whether it is to attract attention, inform, persuade or inspire, the graphic design industry specializes in creative problem solving. Graphic designers promote brands, market ideas, and influence consumer behavior. Some of today's most dynamic fields -- advertising, publishing, interactive -- are based on this fundamental concept of graphic design.

Section II: NJSLS: New Jersey Student Learning Standards/Learning Objectives

1. **2020 New Jersey Student Learning Standards – *Computer Science and Design Thinking*:**
    - "The 'Intent and Spirit of the Computer Science and Design Thinking Standards' is to focus on deep understanding of concepts that enable students to think critically and systematically about leveraging technology to solve local and global issues. Authentic learning experiences that enable students to apply content knowledge, integrate concepts across disciplines, develop computational thinking skills, acquire and incorporate varied perspectives, and communicate with diverse audiences about the use and effects of computing prepares New Jersey students for college and careers."
2. ***2016 English Language Arts Companions for Grades 9-10 (History, Social Studies, Science and Technical Subjects):***
    - The ELA Standards were revised in 2016, with the recommendations of teams of teachers, parents, administrators, supervisors and other stakeholders and reflect the strong beliefs that, "...Literacy must be recognized and guided in content areas so that students recognize the academic vocabulary, media representations, and power of language inherent in the work of scholars and experts..."
3. ***Career Ready Practices:***
    - "Career Ready Practices describe the career-ready skills that all educators in all content areas should seek to develop in their students. They are practices that have been linked to increase college, career, and life success. Career Ready Practices should be taught and reinforced in all career exploration and preparation programs with increasingly higher levels of complexity and expectation as a student advances through a program of study."
4. ***2020 Career Readiness, Life Literacies, and Key Skills Standards (9.2 and 9.4):***
    - "Rapid advancements in technology and subsequent changes in the economy have created opportunities for individuals to compete and connect on a global scale. In this increasingly diverse and complex world, the successful entrepreneur or employee must not only possess the requisite education for specific industry pathways but also employability skills necessary to collaborate with others and manage resources effectively in order to establish and maintain stability and independence. This document outlines concepts and skills necessary for New Jersey's students to thrive in an ever-changing world. Intended for integration throughout all K–12 academic and technical content areas, the New Jersey Student Learning Standards- Career Readiness, Life Literacies, and Key Skills (NJSLS-CLKS) provides the framework for students to learn the concepts, skills, and practices essential to the successful navigation of career exploration and preparation, personal finances and digital literacy."
    - **Climate Change:** The state of New Jersey has mandated instruction in, "Climate Change across all content areas, leveraging the passion students have shown for this critical issue

and providing them opportunities to develop a deep understanding of the science behind the changes and to explore the solutions our world desperately needs."

5. ***LGBT and Disabilities Law: N.J.S.A. 18A:35-4.35:***
    - A transformative approach to the inclusion of lessons and resources/texts on the contributions and issues concerning the LGBTQ+ population and people with disabilities will be implemented across all core subjects in accordance with state law: "A board of education shall include instruction on the political, economic, and social contributions of persons with disabilities and lesbian, gay, bisexual, and transgender people, in an appropriate place in the curriculum of middle school and high school students as part of the district's implementation of the New Jersey Student Learning Standards (N.J.S.A.18A:35-4.36). A board of education shall have policies and procedures in place pertaining to the selection of instructional materials to implement the requirements of N.J.S.A. 18A:35-4.35."
6. **Acquisition/development/refinement of the higher-order critical thinking skills aligned with the *Revised Bloom's Taxonomy of Cognitive Objectives***

Section III: Curriculum Modifications

The *Graphic Design Curriculum* is subject to case-by-case modifications to support/advance the needs of all students, including special education students, English language learners, gifted students and those at risk of school failure. These modifications are based on Individualized Learning Programs (IEPs), recommendations made by the district's English Language Learners (ELL) coordinator, feedback from members of the Intervention & Referral Services Team (*I&RS*) for at-risk students, and 504 Plans.

Coursework and assessments will be modified on an individual basis for students when necessary. Modifications may include but are not limited to:

- Small group instruction
- One on one instruction
- Independent work stations
- Use of graphic organizers
- Interest inventories and questionnaires
- Audio resources to complement written texts and concepts
- Visual resources to complement written texts and concepts
- Extra time on assessments and large scale projects
- Reduced length of written assignments
- Large projects broken into smaller tasks and timelines
- Tiered Instruction
- Individual help during practice
- Diagrams and color coding for visual learners
- Verbal and written directions for visual and auditory learners
- Provided class notes
- Preferential seating
- Spelling not penalized
- Varied supplemental activities
- Assessments delivered orally

Section IV: Preparation for Standardized Testing

Instruction in Graphic Design is aligned with the requirements of state and national standardized assessments, including the *NJSLA*, the *ACT*, the *PSAT* and the *SAT*. The *End of Marking Period Assessments* for *Graphic Design* also demonstrate alignment with the aforesaid standardized assessments.

Section V: Curriculum Pacing Guide

Curriculum Pacing Guide	
Course Title: *Graphic Design*	**Grade Level:** 9th 10th 11th and 12th
Unit 1: Introduction to Graphic Design	2 Weeks
Unit 2: Typography	3 Weeks
Unit 3: Illustration Image Types	3 weeks
Unit 4: Layout	3 Weeks
Unit 5: Raster Graphics	8 Weeks
Unit 6: Vector graphics	8 weeks
Unit 7: Animation	5 weeks
Unit 8: 3D Printing	4 Weeks

Section VI: Primary Texts and Year Long Instructional Resources

The following texts and instructional resources are employed in Graphic Design.:

- *Adobe CS6 Educational Suite*
- *Auto Desk LE Autocad*
- *Google Classroom*

Section VII: Grading Formula and Assessment Modes

Marking period grades in Graphic Design are determined via a percentage weighting model. The specific grading categories and weightings of each will be determined prior to the start of each academic year and will be published in the posted/distributed course syllabi.

Section VIII: Unit Templates

The following unit templates have been established for the Graphics Design Curriculum by the *Industrial Technology* Instructional Team:

Unit 1: Introduction to Graphic Design
Unit Summary

Students entering graphic design will need to become familiar with what it is an art discipline, and how digital citizenship is important to every designer (especially the concept of copyright and fair use). An emphasis on creative problem solving, or, "design thinking" should be established early so that students develop good habits with regards to research, sketching and idea development.

Standards/Core Ideas/Performance Expectations

The state standards outlined below, and established by New Jersey Department of Education, will guide instruction throughout this unit in Graphic Design:

- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.1.12.DA.2, 8.2.12.ED.1, 8.2.12.ED.4, 8.2.12.ED.5, 8.2.12.NT.1, 8.2.12.NT.2
- *2016 New Jersey Student Learning Standards: English Language Arts Companions for Grades 9-10*
  - NJSLSA.R7, RST.9-10.3, RST.9-10.4, NJSLSA.W4, NJSLSA.W7, WHST.9-10.6, WHST.9-10.7, WHST.9-10.10
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills*
  - 9.2.12.CAP.6, 9.2.12.CAP.8, 9.4.12.CI.1, 9.4.12.CI.2, 9.4.12.CT.1, 9.4.12.CT.2, 9.4.12.DC.3, 9.4.12.DC.7, 9.4.12.TL.1, 9.4.12.TL.3, 9.4.12.TL.4, 9.4.12.IML.1, 9.4.12.IML.2
  - CRP1, CRP2, CRP3, CRP4, CRP5, CRP6, CRP7, CRP8, CRP9, CRP10, CRP11, CRP12

Unit Essential Questions	Unit Enduring Understandings
● Why is digital citizenship important in graphic design? ● Why is "Design Thinking" important? ● Why are the art elements and design principles important to graphic design? ● Why is archiving work important in graphic design?	● Digital citizenship includes the norms of appropriate, responsible technology use, especially copyright and fair use. ● Design thinking is a methodology that helps people understand and develop creative solutions to specific design challenges. ● An understanding of the elements and principles are vital in art and design, as they provide the tools to create the greatest impact on a viewer. ● Archiving art and design work helps document ideas, research, innovations, skills, and work processes.

Evidence of Learning

Formative Assessment:	Summative Assessment:	Resources Needed:
● Introduction to Digital Citizenship in Graphic Design assignment ● homework	● Intro to Design Thinking Activity	● Computer internet access ● Virtual Desktop with Adobe Suite ● Computer/Laptop

Unit 2:
Illustration Image Types

Unit Summary

Students will be presented with design challenges that can be resolved through design thinking, the use of art media and traditional illustration methods. These may include line drawing, pen Ink, Halftone, computer images, or a combination of Images and techniques. While the students may be familiar with certain types such as JPEG, PNG, GIF and TIFF, they will now be asked to build an understanding of what types work best in particular situations.

Standards/Core Ideas/Performance Expectations

The state standards outlined below, and established by New Jersey Department of Education, will guide instruction throughout this unit in Graphic Design:

- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.1.12.DA.2, 8.2.12.ED.1, 8.2.12.ED.4, 8.2.12.ED.5, 8.2.12.NT.1, 8.2.12.NT.2
- *2016 New Jersey Student Learning Standards: English Language Arts Companions for Grades 9-10*
  - NJSLSA.R7, RST.9-10.3, RST.9-10.4, NJSLSA.W4, NJSLSA.W7, WHST.9-10.6, WHST.9-10.7, WHST.9-10.10
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills*
  - 9.2.12.CAP.6, 9.2.12.CAP.8, 9.4.12.CI.1, 9.4.12.CI.2, 9.4.12.CT.1, 9.4.12.CT.2, 9.4.12.DC.3, 9.4.12.DC.7, 9.4.12.TL.1, 9.4.12.TL.3, 9.4.12.TL.4, 9.4.12.IML.1, 9.4.12.IML.2
  - CRP1, CRP2, CRP3, CRP4, CRP5, CRP6, CRP7, CRP8, CRP9, CRP10, CRP11, CRP12

Unit Essential Questions	Unit Enduring Understandings
● How can traditional art processes or materials be used to create illustrations? ● How can a concept be developed using the design thinking process? ● How can students create a final draft of their illustration?	● Fine art media and techniques such as drawing, painting, printmaking, collage, hand lettering or others can be used to develop impactful visuals that are tied to a specific concept. ● Students will be encouraged to brainstorm, sketch, research, experiment and problem solve prior to developing final illustration. ● Students will execute a final draft which demonstrates good craftsmanship, thoughtful composition and a well-developed concept.

Evidence of Learning

Formative Assessment:	Summative Assessment:	Resources Needed:
● Image identification worksheet ● homework ● Image powerpoint assignment	● Worksheets Image Types ● Image control Projects ● Tests	● Computer internet access ● Virtual Desktop with Adobe Suite ● Powerpoint ● Computer/Laptop

Unit 3:
Typography

Unit Summary

Students will complete a design that uses typography to express an idea. Typography focuses on how to present, position, and arrange text to appeal to the reader's eye. Students should combine their knowledge of typographic terms and techniques to generate an original, expressive work that shows thoughtful decisions regarding their use of text and type.

Standards/Core Ideas/Performance Expectations

The state standards outlined below, and established by New Jersey Department of Education, will guide instruction throughout this unit in Graphic Design:

- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.1.12.DA.2, 8.2.12.ED.1, 8.2.12.ED.4, 8.2.12.ED.5, 8.2.12.NT.1, 8.2.12.NT.2
- *2016 New Jersey Student Learning Standards: English Language Arts Companions for Grades 9-10*
  - NJSLSA.R7, RST.9-10.3, RST.9-10.4, NJSLSA.W4, NJSLSA.W7, WHST.9-10.6, WHST.9-10.7, WHST.9-10.10
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills*
  - 9.2.12.CAP.6, 9.2.12.CAP.8, 9.4.12.CI.1, 9.4.12.CI.2, 9.4.12.CT.1, 9.4.12.CT.2, 9.4.12.DC.3, 9.4.12.DC.7, 9.4.12.TL.1, 9.4.12.TL.3, 9.4.12.TL.4, 9.4.12.IML.1, 9.4.12.IML.2
  - CRP1, CRP2, CRP3, CRP4, CRP5, CRP6, CRP7, CRP8, CRP9, CRP10, CRP11, CRP12

Unit Essential Questions	Unit Enduring Understandings

● How can students become familiar with different type styles and categories? ● How can students create a type-based design? ● How will students learn to connect typeface to content?	● Students will learn about different type styles through introductory games, instructional videos, or research. ● Students can create type based designs in any traditional fine art medium, or digitally using pixel or vector based software. ● Students will brainstorm, sketch, research and experiment to determine which typeface fits the content, purpose or function of the design

Evidence of Learning

Formative Assessment:	Summative Assessment:	Resources Needed:
● classwork ● How Fonts feel exercise ● performance activities	● Typography quiz ● Typography project	● Computer internet access ● Virtual Desktop with Adobe Suite ● Computer/Laptop

Unit 4: Layout

Unit Summary

Students will be presented with a series of design challenges that can be resolved through the organization of information, images and text in a thematic design. These could include infographics, page layouts, posters designs, or others. Students will understand basic layout techniques of Thumbnails, Roughs and comprehensives.

Standards/Core Ideas/Performance Expectations

The state standards outlined below, and established by New Jersey Department of Education, will guide instruction throughout this unit in Graphic Design:

- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.1.12.DA.2, 8.2.12.ED.1, 8.2.12.ED.4, 8.2.12.ED.5, 8.2.12.NT.1, 8.2.12.NT.2
- *2016 New Jersey Student Learning Standards: English Language Arts Companions for Grades 9-10*
  - NJSLSA.R7, RST.9-10.3, RST.9-10.4, NJSLSA.W4, NJSLSA.W7, WHST.9-10.6, WHST.9-10.7, WHST.9-10.10
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills*
  - 9.2.12.CAP.6, 9.2.12.CAP.8, 9.4.12.CI.1, 9.4.12.CI.2, 9.4.12.CT.1, 9.4.12.CT.2, 9.4.12.DC.3, 9.4.12.DC.7, 9.4.12.TL.1, 9.4.12.TL.3, 9.4.12.TL.4, 9.4.12.IML.1, 9.4.12.IML.2
  - CRP1, CRP2, CRP3, CRP4, CRP5, CRP6, CRP7, CRP8, CRP9, CRP10, CRP11, CRP12

Unit Essential Questions	Unit Enduring Understandings
● How do students create an effective and organized layout in a design? ● How do students combine images and type in a layout? ● How do students use the design process in order to improve and revise layouts?	● Students will be introduced to basic design vocabulary and concepts through experimentation and tutorials. The concepts of visual hierarchy and basic type layout are important during this process ● Students will be introduced to a variety of options for placement by researching, experimenting and completing tutorials as they learn to combine imagery and type in a layout.

Evidence of Learning

Formative Assessment:	Summative Assessment:	Resources Needed:
● Family Business Assignment ● homework	● Thumbnails rough comprehensive exercise	● Computer internet access

	• Tests	• Virtual Desktop with Adobe Suite • Computer/Laptop

Unit 5: Raster Graphics		
Unit Summary		
Students will be presented with a series of design challenges that can be resolved through design thinking, the use of Raster graphics, and created with digital art with software such as Adobe PhotoShop. Raster graphics compose a digital image in the form of pixelated squares arranged in a grid. Students will understand the advantages and disadvantages of Raster graphics.		
Standards/Core Ideas/Performance Expectations		
The state standards outlined below, and established by New Jersey Department of Education, will guide instruction throughout this unit in Graphic Design*:* • *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking* ○ 8.1.12.DA.2, 8.2.12.ED.1, 8.2.12.ED.4, 8.2.12.ED.5, 8.2.12.NT.1, 8.2.12.NT.2 • *2016 New Jersey Student Learning Standards: English Language Arts Companions for Grades 9-10* ○ NJSLSA.R7, RST.9-10.3, RST.9-10.4, NJSLSA.W4, NJSLSA.W7, WHST.9-10.6, WHST.9-10.7, WHST.9-10.10 • *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills* ○ 9.2.12.CAP.6, 9.2.12.CAP.8, 9.4.12.CI.1, 9.4.12.CI.2, 9.4.12.CT.1, 9.4.12.CT.2, 9.4.12.DC.3, 9.4.12.DC.7, 9.4.12.TL.1, 9.4.12.TL.3, 9.4.12.TL.4, 9.4.12.IML.1, 9.4.12.IML.2 ○ CRP1, CRP2, CRP3, CRP4, CRP5, CRP6, CRP7, CRP8, CRP9, CRP10, CRP11, CRP12		
Unit Essential Questions	**Unit Enduring Understandings**	
• How can students become familiar with pixel graphic editing and drawing tools? • How can students develop their own pixel graphics? • How can students determine when pixel art is the appropriate design solution?	• Students will become familiar with the Adobe PhotoShop interface, tools, and basic drawing and editing skills through the use of video or written tutorials. • Students will brainstorm, sketch, experiment and apply what they learned in tutorials to create a draft of their Raster illustrations. • Raster graphics allow a great amount of detail, depending on the images' resolution (the number of pixels used).	
Evidence of Learning		
Formative Assessment: • Photoshop worksheets • Homework • Use of Photoshop in project completion	**Summative Assessment:** • Photoshop toolbox Quiz • Photoshop project	**Resources Needed:** • Computer internet access • Virtual Desktop with Adobe Suite, Photoshop • Computer/Laptop

Unit 6: Vector Graphics
Unit Summary
Students will be presented with design challenges that can be resolved through design thinking, the use of vector graphics, and created with digital art software such as Adobe Illustrator. Vector graphics can

inherently be used to scale the graphic. These types of graphics are not pixelated, rather every line, curve, shape, and color is defined and linked to form polygons and other shapes. Students will understand the advantages and disadvantages of Vector Graphics and compare them with Raster graphics.

Standards/Core Ideas/Performance Expectations

The state standards outlined below, and established by New Jersey Department of Education, will guide instruction throughout this unit in Graphic Design:

- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.1.12.DA.2, 8.2.12.ED.1, 8.2.12.ED.4, 8.2.12.ED.5, 8.2.12.NT.1, 8.2.12.NT.2
- *2016 New Jersey Student Learning Standards: English Language Arts Companions for Grades 9-10*
  - NJSLSA.R7, RST.9-10.3, RST.9-10.4, NJSLSA.W4, NJSLSA.W7, WHST.9-10.6, WHST.9-10.7, WHST.9-10.10
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills*
  - 9.2.12.CAP.6, 9.2.12.CAP.8, 9.4.12.CI.1, 9.4.12.CI.2, 9.4.12.CT.1, 9.4.12.CT.2, 9.4.12.DC.3, 9.4.12.DC.7, 9.4.12.TL.1, 9.4.12.TL.3, 9.4.12.TL.4, 9.4.12.IML.1, 9.4.12.IML.2
  - CRP1, CRP2, CRP3, CRP4, CRP5, CRP6, CRP7, CRP8, CRP9, CRP10, CRP11, CRP12

Unit Essential Questions	Unit Enduring Understandings
● How can students become familiar with vector graphic drawing tools? ● How can students develop their own vector illustration? ● How can students determine when vector art is the appropriate design solution?	● Students will become familiar with the Adobe Illustrator interface, tools, and basic drawing skills through the use of video or written tutorials. ● Students will brainstorm, sketch, experiment and apply what they learned in tutorials to create a draft of their vector illustration. ● Vector art is scalable, without loss of image quality, distortion or pixelation.

Evidence of Learning

Formative Assessment:	Summative Assessment:	Resources Needed:
● Illustrator assignment sheets ● homework ● Illustrator projects	● Illustrator Toolbox Quiz ● Tests	● Computer internet access ● Virtual Desktop with Adobe Suite, Illustrator ● Computer/Laptop

Unit 7:
Animation

Unit Summary

Students will trace the origins and early history of the art of animation. Students will explore how the eye and brain process moving images. The differences between past animation techniques and current animation technologies will be explored. Students will understand the differences between various types of animation. Students will use the important functions of 2D animation software to create their own animations. They will then apply graphical tools to improve the digital animations and drawings before learning to export the videos to share with the world.

Standards/Core Ideas/Performance Expectations

The state standards outlined below, and established by New Jersey Department of Education, will guide instruction throughout this unit in Graphic Design:

- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.1.12.DA.2, 8.2.12.ED.1, 8.2.12.ED.4, 8.2.12.ED.5, 8.2.12.NT.1, 8.2.12.NT.2
- *2016 New Jersey Student Learning Standards: English Language Arts Companions for Grades 9-10*

- NJSLSA.R7, RST.9-10.3, RST.9-10.4, NJSLSA.W4, NJSLSA.W7, WHST.9-10.6, WHST.9-10.7, WHST.9-10.10
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills*
  - 9.2.12.CAP.6, 9.2.12.CAP.8, 9.4.12.CI.1, 9.4.12.CI.2, 9.4.12.CT.1, 9.4.12.CT.2, 9.4.12.DC.3, 9.4.12.DC.7, 9.4.12.TL.1, 9.4.12.TL.3, 9.4.12.TL.4, 9.4.12.IML.1, 9.4.12.IML.2
  - CRP1, CRP2, CRP3, CRP4, CRP5, CRP6, CRP7, CRP8, CRP9, CRP10, CRP11, CRP12

Unit Essential Questions	Unit Enduring Understandings
● What is the difference between a bitmap image and a vector image? ● What are the pros and cons of different production processes? ● Define and explain kinematics and animatics. ● Identify the key departments in an animation studio.	● Bitmap is a pixelated image while vector is not. Students will then create animation sequences with layered drawings and backgrounds. ● Students will trace the process of CGI production from idea to theater. ● Animatics is the process of storyboarding a plan for an animation while kinematics is the process of bringing the motion to life. ● Animation studios consist of: 3D design, scriptwriter, sound designer, Directors, motion graphic designers among other departments.

Evidence of Learning

Formative Assessment:	Summative Assessment:	Resources Needed:
● 5 animation assignments ● homework ● completed animations	● Completion of animation Projects.	● Computer internet access ● Virtual Desktop with Adobe Suite, Photoshop ● Computer/Laptop

Unit 8:
3D Printing

Unit Summary

3D printing is an additive manufacturing process whereby objects are built up from plastic filament, liquid resin, layers of powder, or even bio-compatible and edible materials. Desktop 3D printing is today's printing press, putting rapid prototyping, customizable products, and individualized medical appliances. Students will be introduced to the history of 3D printing. Students will design and print their own keychain.

Standards/Core Ideas/Performance Expectations

The state standards outlined below, and established by New Jersey Department of Education, will guide instruction throughout this unit in Graphic Design:

- *2020 New Jersey Student Learning Standards: Computer Science and Design Thinking*
  - 8.1.12.DA.2, 8.2.12.ED.1, 8.2.12.ED.4, 8.2.12.ED.5, 8.2.12.NT.1, 8.2.12.NT.2
- *2016 New Jersey Student Learning Standards: English Language Arts Companions for Grades 9-10*
  - NJSLSA.R7, RST.9-10.3, RST.9-10.4, NJSLSA.W4, NJSLSA.W7, WHST.9-10.6, WHST.9-10.7, WHST.9-10.10
- *2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies and Key Skills*
  - 9.2.12.CAP.6, 9.2.12.CAP.8, 9.4.12.CI.1, 9.4.12.CI.2, 9.4.12.CT.1, 9.4.12.CT.2, 9.4.12.DC.3, 9.4.12.DC.7, 9.4.12.TL.1, 9.4.12.TL.3, 9.4.12.TL.4, 9.4.12.IML.1, 9.4.12.IML.2
  - CRP1, CRP2, CRP3, CRP4, CRP5, CRP6, CRP7, CRP8, CRP9, CRP10, CRP11, CRP12

Unit Essential Questions	Unit Enduring Understandings

● Was 3D printing historically inevitable? Why or why not? ● Has technology helped or hindered a designer's role and creativity? How? ● How does the Design Thinking process work in a 3D environment? ● Is there any such thing as a product that cannot be improved?	● Students will Explain how technology shifts throughout history have made 3D printing possible. ● Students will understand how the designer's role has evolved over time and how it is likely to change as we move toward mass customization. ● Apply principles of Design Thinking and document their design process. ● Navigate the CAD software being used for this course and investigate how products could be improved.

Evidence of Learning		
Formative Assessment: ● homework ● performance activities	**Summative Assessment:** ● Keychain Assignment ● 3D Quiz	**Resources Needed:** ● Auto Desk AutoCAD ● 3D printer ● Computer/Laptop ● Virtual Desktop ● Internet Access

Section IX: Unit Reflection

The *Industrial Technology* Instructional Team must confer upon the completion of each instructional unit in the *Graphic Design Curriculum* and rate the degrees to which the instructional units meet performance criteria established by the New Jersey Department of Education using the *Unit Reflection Form*. Completed unit reflection forms must be submitted to the Department Supervisor for approval upon completion of curriculum implementation with a complementing list of suggested modifications to the Curriculum.

Lesson Activities:	**Strongly**	**Moderately**	**Weakly**
Foster student use of technology as a tool to develop critical thinking, creativity and innovation skills;			
Are challenging and require higher order thinking and problem solving skills;			
Allow for student choice;			
Provide scaffolding for acquiring targeted knowledge/skills;			
Integrate global perspectives;			
Integrate 21st century skills;			
Provide opportunities for interdisciplinary connection and transfer of knowledge and skills;			
Are varied to address different student learning styles and preferences;			

Are differentiated based on student needs;			
Are student-centered with teacher acting as a facilitator and co-learner during the teaching and learning process;			
Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives;			
Provide opportunities for student reflection and self-assessment;			
Provide data to inform and adjust instruction to better meet the varying needs of learners;			