Orange Public Schools
Office of Innovation

Graphic Arts Production

Board Approval Date: November 9, 2021

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"GOOD TO GREAT"

Revised: 8/17/21

Graphic Arts Production Grade 11-12

Course Description: This is the production course for Graphic Arts and gives students the opportunity to participate in advanced projects as well as work based learning situations related to Graphic Communications. Students produce page designs and write, edit, and proofread copy, captions, and headlines. Students will have the opportunity to build their portfolios.

Scope and Sequence

Timeline	Concepts
Marking Period 1 3 - 4 Weeks 15-20 Class Periods – 41 mins per Class Period 4 Weeks 20 Class Periods – 41 mins per Class Period	**Unit 1: Typography Texture & Abstraction in Graphic Arts for Fashion** Typography Design to Express Visual Concepts, Formatting Files for Printing on Fabric, Developing Designs Featuring Abstraction and Texture in Adobe Photoshop **Unit 2: Photo Restoration** Digital Photo Restoration in Adobe Photoshop of Damaged Photos, Assessing Damage, Developing Restoration Plans, Analysis of Tools and Functions for Restoration Strategies, Preserving Images, Formatting Files
Marking Period 2 8 - 9 weeks 35 - 40 Class Periods - 41 mins per Class Period	**Unit 3: Layouts** Layouts for Books, Magazines and Other Printed Materials in Adobe InDesign, Editing and Importing Text, Designing Typography for Layouts, Sourcing Images for Layouts, Managing Multiple File Formats, Delivering Documents, Printing Collaboration with OHS Printshop
Marking Period 3 5 - 6 Weeks: 25-30 Class Periods – 41 mins per Class Period 4 - 5 Weeks: 25 Class Periods – 41 mins per Class Period	**Unit 4: Illustration** Original Character Illustration and Manga Illustration Techniques in Adobe Photoshop, Sketching, Line Drawing Methods, Development of Shape and Color, Development Through Iterations **Unit 5: Animation** Digital Animation Techniques in Adobe Photoshop Based on Illustration and Photography, Fundamentals of Motion Graphics, Sequencing, Timing, File Management, Problem-Solving Skills
Marking Period 4 8 - 9 weeks 35 - 40 Class Periods - 41 mins per Class Period	**Unit 6: 3-D Printing** 3D Printing Industry Research, Aerospace and Medical 3D Printing, Developing 3D Sketches and Prototypes, 3D Printing Methods with Dedicated Software, Hardware, and Filaments of Varying Materials

Unit 1	Typography Texture & Abstraction in Graphic Art for Fashion	Grade(s)	11-12

Overview/Rationale

Students will learn the advantages of utilizing typography design to express visual concepts in t-shirt art. Developing the skills to create designs featuring abstraction and texture will be the primary focus.

New Jersey Student Learning Standards

Career & Technical Education Standards

9.3.12.AR.1 Analyze the interdependence of the technical and artistic elements of various careers within the Arts, A/V Technology & Communications Career Cluster.

9.3.12.AR.2 Analyze the importance of health, safety and environmental management systems, policies and procedures common in arts, audio/video technology and communications activities and facilities.

9.3.12.AR.3 Analyze the lifestyle implications and physical demands required in the arts, audio/visual technology and communications workplace.

9.3.12.AR.4 Analyze the legal and ethical responsibilities required in the arts, audio/visual technology and communications workplace.

9.3.12.AR.5 Describe the career opportunities and means to achieve those opportunities in each of the Arts, A/V Technology & Communications Career Pathways.

9.3.12.AR.6 Evaluate technological advancements and tools that are essential to occupations within the Arts, A/V Technology & Communications Career Cluster.

9.3.12.AR-VIS.3 Analyze and create two and three-dimensional visual art forms using various media.

9.3.12.AR-VIS.2 Analyze how the application of visual arts elements and principles of design communicate and express ideas.

9.3.12.AR-TEL.3 Demonstrate decision making, problem-solving techniques and communication skills when providing services for customers.

9.3.12.AR-PRT.1 Manage the printing process, including customer service and sales, scheduling, production and quality control.

9.3.12.AR-PRT.2 Demonstrate the production of various print, multimedia or digital media products.

9.3.12.AR-PRT.3 Perform finishing and distribution operations related to the printing process.

Visual and Performing Art Standards

Anchor Standard 1: Generating and conceptualizing ideas.

1.2.12acc.Cr1a: Strategically use generative methods to create multiple ideas and refine artistic goals that increase aesthetic depth.

1.5.12adv.Cr1a: Visualize and generate art and design that can affect social change.

1.5.12acc.Cr1b: Choose from a range of materials and methods of traditional and contemporary artistic practices to plan works of art and design.

1.5.12adv.Cr1b: Choose from a range of materials and methods of traditional and contemporary artistic practices, following or breaking established conventions, to plan the making of multiple works of art and design based on a theme, idea or concept.

Anchor Standard 2: Organizing and developing ideas.

1.5.12acc.Cr2a: Through experimentation, practice and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.

1.5.12acc.Cr2b: Demonstrate awareness of ethical implications of making and distributing creative work.

Anchor Standard 7: Perceiving and analyzing products.

1.5.12acc.Re7b: Evaluate the effectiveness of visual artworks to influence ideas, feelings, and behaviors of specific audiences.

Career Readiness, Life Literacies, and Key Skills

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas.

9.4.12.IML.9: Analyze the decisions creators make to reveal explicit and implicit messages within information and media.

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice.

9.4.12.IML.4: Assess and critique the appropriateness and impact of existing data visualizations for an intended audience.

Technology/Computer Science and Design Thinking	Interdisciplinary Standards
9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task. 8.2.12.ED.6: Analyze the effects of changing resources when designing a specific product or system (e.g., materials, energy, tools, capital, labor). 8.2.12.NT.2: Redesign an existing product to improve form or function. 8.2.12.ED.3: Evaluate several models of the same type of product and make recommendations for a new design based on a cost benefit analysis.	RL.11-12.4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (e.g., Shakespeare as well as other authors.) W.11-12.6. Use technology, including the Internet, to produce, share and update writing products in response to ongoing feedback, including new arguments or information. 7.1.IH.IPRET.5: Infer the meaning of some unfamiliar words and phrases in new formal and informal contexts. 7.1.IH.IPRET.6: Identify several of the distinguishing features of the text (e.g., type of resource, intended audience, purpose).

21st Century Skills			
	Civic Literacy	x	Communication
x	Global Awareness	x	Critical Thinking and Problem Solving
	Health Literacy	x	Collaboration
x	Financial, Economic, Business, & Entrepreneurial Literacy	x	Creativity and Innovation
x	Environmental Literacy		Other:

Essential Questions

- How can texture and abstraction created via type strengthen print and digital ads?
- How can typography direct the eye throughout a composition?
- How do designers design artwork for fashion and clothing designs?
- How do designers target fashion designs for different audiences composed of children, adolescents, or adults?

Enduring Understandings

- When photos and art are not available for use, typography can be skillfully designed.
- Well-designed typography can often communicate a message with greater poignancy than images.
- T-shirt sales are highly contingent upon the interests of specific age groups.

Student Learning Targets/Objectives

- Generate forms via typography.
- Create typographic abstraction using photography as reference.
- Construct a composition where typographic texture and abstraction is demonstrated via repetition, density, value, shape, size, position, and weight.
- Create an original 8.5 x 11inch t-shirt design for an adolescent audience and format file for printing.

Assessments

- Formative: Research advanced vocabulary in teams and utilize it in proper context within the design process.
- Authentic: Construct a composition where typographic texture and abstraction is demonstrated via repetition, density, value, shape, size, position, and weight.

Teaching and Learning Actions

Instructional Strategies	Anticipatory Sets: Do Now's/research on typography texture and abstraction. Research on various types of t-shirt art. Interdisciplinary Writing: Writing (narrative or poetry) to reflect visual themes in the design. Cooperative Learning: Research advanced vocabulary for partner's design and discuss whether mutual research results are appropriate. Task and Performance Modeling: On Adobe Photoshop or Illustrator tools & functions. Conferencing with Students: To determine personal needs and offer individual guidance and support. Utilizing Technology in the Classroom

	Inquiry-Based Instruction Reflection Exit Tickets SE & ELL– Modifications according to individual student learning needs and aptitude: Tiered Activities, Adjusted Questions, Flexible Grouping, Choice Activities, Free Study Time, Target Different Senses.
Activities: Including G/T, SE, and ELL Differentiation	Research and discuss the intersection of typography, visual texture, and abstraction. Research photography (public domain) and create an 8.5 x 11 inch file. Utilize Adobe Illustrator or Photoshop to flatten and highlight prominent forms within the photograph. Write meaningful text (phrases or poems) which corresponds to chosen themes along vector paths in one predominant color. Create texture by duplicating text layers in a range of sizes. Convert portions of text letters into large abstract types in individual projects, in a manner that creates cohesion between photo and texture. Collaborate in teams to research and find 4 examples of typography texture and abstraction and present them to the class. Collaborate with partners to research higher order vocabulary for each other's designs using an online thesaurus. Discuss appropriate selection of new words and incorporate them into the design. Collaborate with partners to create an example of typography abstraction on a random photo on the smartboard. Critique projects during formal individual presentations. High: Create a second complementary composition where typographic texture and abstraction is demonstrated via repetition, density, value, shape, size, position, and weight. Mid: Target Low: Create a composition with one typographic texture or abstraction element. Special education students: • Adhere to all modifications and health concerns stated in each IEP. • Give students a MENU options, allowing students to pick assignments from different levels based on difficulty. • Use the NEWSELA software, which can revise the reading Lexile level to meet students at current reading level.

	• Accommodating Instructional Strategies Reading Aloud, Graphic Organizers, Reading Study Guides, one-on-one instruction, class website (Google Classroom), Handouts, Definition List, Syllabus, Large Print, Outlines • Utilize Snap-n-Read and Co-Writer • English Language Learners (ELL) students: • Use the Britannica launch pack software; give students the option to change the language of the article to the student's native language for most articles. • Snap and Read Google extension addition. Will read to the student in the language selected. • Vocabulary Spelling City word banks • Use visuals whenever possible to support classroom instruction and classroom activities. • Teacher modeling and written instructions for every assignment <u>At risk of failure students:</u> • Give students a MENU options allowing students to pick activities based on interest that address the objectives and standards of the unit. • Modified Instructional Strategies, Reading Aloud, Graphic Organizers, Reading Study • Guides, small learning group instruction, class website (Google Classroom), Syllabus, inclusion of more visuals and Films, Field Trips, Google Expeditions, Peer Support, one on one instruction • Constant parental contact along with mandatory tutoring appointments. • Academic Contracts <u>Gifted and talented students:</u> • Modified instructional strategies Socratic Seminar, Group Discussion, Think-Pair-Share, Individual Assignments graded on a more rigorous rubric, Multimedia Projects, working with more primary source documents and completing Case Studies. • Student led classroom instruction also Project Based Learning. • Write HTML code to create a functional website consisting of 3 or more webpages. • Create an original typography abstraction piece for a family crest. <u>Students with a 504:</u> • Adhere to all modifications and health concerns stated in504 plan. • Assess the academics of the student to implement the necessary modifications as described in this document.
Experiences (virtual and live field trips)	Visit the Museum of Typography Museum of Typography | (typography-museum.gr) Visit OHS Printshop to explore printing methods.

Resources	
• Merriam Webster Online Dictionary and Thesaurus http://www.merriam-webster.com/ • "Typography Rules and Terms That Every Designer Must Know" (p.2, The Glossary) http://www.creativebloq.com/typography/what-is-typography-123652?page=1 • Google Images Search for texture and abstraction. • www.pixabay.com or other Public Domain photography catalogue • Instructor demonstrations on Adobe Illustrator • Adobe Illustrator, Internet, Desktop	
Pacing/ Time Frame	3-4 Weeks: (15-20 Class Periods – 41 mins per Class Period)

Unit 2	Photo Restoration	Grade(s)	11-12

Overview/Rationale

Students will learn photo-restoration techniques in Adobe Photoshop. By the end of the unit, students will be able to repair highly damaged photographs. The editing skills learned in this unit prepare the student for more refined editing methods in Adobe Photoshop.

New Jersey Student Learning Standards

Career & Technical Education Standards

9.3.12.AR.1 Analyze the interdependence of the technical and artistic elements of various careers within the Arts, A/V Technology & Communications Career Cluster.

9.3.12.AR.3 Analyze the lifestyle implications and physical demands required in the arts, audio/visual technology and communications workplace.

9.3.12.AR.4 Analyze the legal and ethical responsibilities required in the arts, audio/visual technology and communications workplace.

9.3.12.AR.5 Describe the career opportunities and means to achieve those opportunities in each of the Arts, A/V Technology & Communications Career Pathways.

9.3.12.AR.6 Evaluate technological advancements and tools that are essential to occupations within the Arts, A/V Technology & Communications Career Cluster.

9.3.12.AR-VIS.3 Analyze and create two and three-dimensional visual art forms using various media.

9.3.12.AR-VIS.2 Analyze how the application of visual arts elements and principles of design communicate and express ideas.

9.3.12.AR-VIS.1 Describe the history and evolution of the visual arts and its role in and impact on society.

9.3.12.AR-TEL.3 Demonstrate decision making, problem-solving techniques and communication skills when providing services for customers.

9.3.12.AR-PRT.1 Manage the printing process, including customer service and sales, scheduling, production and quality control.

9.3.12.AR-PRT.2 Demonstrate the production of various print, multimedia or digital media products.

9.3.12.AR-PRT.3 Perform finishing and distribution operations related to the printing process.

Visual and Performing Arts Standards

Anchor Standard 1: Generating and conceptualizing ideas.

1.2.12acc.Cr1a: Strategically use generative methods to create multiple ideas and refine artistic goals that increase aesthetic depth.

Anchor Standard 2: Organizing and developing ideas.

1.5.12acc.Cr2a: Through experimentation, practice and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.

1.5.12adv.Cr2a: Experiment, plan and make multiple works of art and design that explore a personally meaningful theme, idea, or concept.

1.5.12adv.Cr2b: Demonstrate understanding of the importance of balancing freedom and responsibility in the use of images, materials, tools and equipment in the creation and circulation of creative work.

1.5.12adv.Cr2c: Demonstrate in works of art or design how visual and material culture defines, shapes, enhances, inhibits, and/or empowers people's lives.

Career Readiness, Life Literacies, and Key Skills

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas.

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice.

9.4.12.IML.9: Analyze the decisions creators make to reveal explicit and implicit messages within information and media.

9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task.

Technology/Computer Science and Design Thinking	Interdisciplinary Standards
9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task (e.g., W.11-12.6.). 9.4.12.IML.3: Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions (e.g., S-ID.B.6a., 8.1.12.DA.5, 7.1.IH.IPRET.8) 8.2.12.NT.2: Redesign an existing product to improve form or function.	W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.) G-CO.A.4 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments. G-MG.A.1 Apply geometric concepts in modeling situations 1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder). G-MG.A.3. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

21st Century Skills

	Civic Literacy	x	Communication
x	Global Awareness	x	Critical Thinking and Problem Solving
	Health Literacy	x	Collaboration
x	Financial, Economic, Business, & Entrepreneurial Literacy	x	Creativity and Innovation

	Environmental Literacy		Other:

Essential Questions

- How do designers restore damaged photographs?
- How do photo restoration skills enhance the repertoire of editing skills for other advanced projects?
- How do graphic artists utilize Photoshop tools and functions to restore damaged photographs?

Enduring Understandings

- Designers determine which parts of a photograph can be edited and which can be utilized to correct damaged areas.
- Photo restoration techniques require patience, persistence and precision in order to master.
- Adobe Photoshop contains a variety of tools and functions specifically for editing the variety of damage which photographs may sustain.

Student Learning Targets/Objectives

- Analyze the damage of a photograph and determine appropriate restoration steps.
- Explore Photoshop tools and functions for photography restoration.
- Develop photo restoration plans with effective Photoshop techniques and tools.
- Edit and restore a highly damaged photograph by repairing a missing background area and/or one or more missing areas.

Assessments

- Formative: Edit the entire background of a damaged photograph in Photopea. ie., https://milsteadgraphics.files.wordpress.com/2015/02/damaged.jpg
- Authentic: Edit a section of a severely damaged photograph in Adobe Photoshop.

Teaching and Learning Actions

Instructional Strategies	Anticipatory Sets: Do Now's/research on photography, restoration, fees, tools, and techniques. Cooperative Learning: Observe and assist partners with editing tools and techniques. Task and Performance Modeling: on Adobe Photoshop tools & functions. Conferencing with Students: to determine personal needs and offer individual guidance and support. Utilizing Technology in the Classroom. Inquiry-Based Instruction Reflection Exit Tickets SE & ELL– Modifications according to individual student learning needs and aptitude: Tiered Activities, Adjusted Questions, Flexible Grouping, Choice Activities, Free Study Time, Target Different Senses.

Activities: Including G/T, SE, and ELL Differentiation	Discuss strategies for inspection and analysis of a damaged photograph. Observe demonstration on multiple editing tools and techniques. Determine which parts of a photograph can be utilized to correct damaged areas. Research and discuss photo restoration fees. Find sources which provide examples of quality work and pricing. Analyze damaged photos to determine which non-damaged areas would best serve to repair missing portions. Discuss strategies for creating layers and selections versus utilizing the clone stamp tool for severely damaged areas, ie. missing body parts. Edit a severely damaged photo by creating layers and utilizing the clone stamp tool. High: Repair all missing portions of damaged photos and create a new background. Mid: Target. Low: Edit a small portion of the missing photo section (25%). <u>Special education students:</u> • Adhere to all modifications and health concerns stated in each IEP. • Give students a MENU options, allowing students to pick assignments from different levels based on difficulty. • Use the NEWSELA software, which can revise the reading Lexile level to meet students at current reading level. • Accommodating Instructional Strategies Reading Aloud, Graphic Organizers, Reading Study Guides, one-on-one instruction, class website (Google Classroom), Handouts, Definition List, Syllabus, Large Print, Outlines • Utilize Snap-n-Read and Co-Writer • English Language Learners (ELL) students: • Use the Britannica launch pack software; give students the option to change the language of the article to the student's native language for most articles. • Snap and Read Google extension addition. Will read to the student in the language selected. • Vocabulary Spelling City word banks • Use visuals whenever possible to support classroom instruction and classroom activities. • Teacher modeling and written instructions for every assignment <u>At risk of failure students:</u>

	• Give students a MENU options allowing students to pick activities based on interest that address the objectives and standards of the unit. • Modified Instructional Strategies, Reading Aloud, Graphic Organizers, Reading Study • Guides, small learning group instruction, class website (Google Classroom), Syllabus, inclusion of more visuals and Films, Field Trips, Google Expeditions, Peer Support, one on one instruction • Constant parental contact along with mandatory tutoring appointments. • Academic Contracts <u>Gifted and talented students:</u> • Modified instructional strategies Socratic Seminar, Group Discussion, Think-Pair-Share, Individual Assignments graded on a more rigorous rubric, Multimedia Projects, working with more primary source documents and completing Case Studies. • Student led classroom instruction also Project Based Learning. • Write HTML code to create a functional website consisting of 3 or more webpages. • Repair missing body parts of a figure in a severely damaged photo. <u>Students with a 504:</u> • Adhere to all modifications and health concerns stated in504 plan. • Assess the academics of the student to implement the necessary modifications as described in this document.

Experiences (virtual and live field trips)	Research online photo-restoration businesses to learn industry practices.
Resources	
• Instructor demonstrations on photo restoration techniques. • Instructor demonstrations on Adobe Photoshop editing tools and functions. • Internet, Desktop, Adobe Photoshop.	
Pacing/ Time Frame	4 Weeks (20 Class Periods – 41 mins per Class Period)

Unit 3	Layouts	Grade(s)	11-12

Overview/Rationale

Students will combine a variety of design skills in multiple digital platforms to create documents for magazine layouts or books in Adobe InDesign. A knowledge of the intricacies of publishing will be acquired via a collaborative design project which will require extensive design planning, photo-editing, communication, and printing.

New Jersey Student Learning Standards

Career & Technical Education Standards

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Visual & Performing Arts Standards

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Anchor Standard 2: Organizing and developing ideas.

1.5.12adv.Cr2a: Experiment, plan and make multiple works of art and design that explore a personally meaningful theme, idea, or concept.

1.5.12adv.Cr2b: Demonstrate understanding of the importance of balancing freedom and responsibility in the use of images, materials, tools and equipment in the creation and circulation of creative work.

1.5.12adv.Cr2c: Demonstrate in works of art or design how visual and material culture defines, shapes, enhances, inhibits, and/or empowers people's lives.

1.5.12acc.Cr2b: Demonstrate awareness of ethical implications of making and distributing creative work.

1.5.12 acc.Cr2c: Redesign an object, system, place, or design in response to contemporary issues.

Anchor Standard 7: Perceiving and analyzing products.

1.5.12acc.Re7b: Evaluate the effectiveness of visual artworks to influence ideas, feelings, and behaviors of specific audiences.

Career Readiness, Life Literacies, and Key Skills

9.4.12.IML.9: Analyze the decisions creators make to reveal explicit and implicit messages within information and media.

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice.

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas.

9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task.

Technology/Computer Science and Design Thinking	Interdisciplinary Standards
8.2.12.ED.6: Analyze the effects of changing resources when designing a specific product or system (e.g., materials, energy, tools, capital, labor). 8.2.12.NT.2: Redesign an existing product to improve form or function. 9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task (e.g., W.11-12.6.). 9.4.12.IML.3: Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions (e.g., S-ID.B.6a., 8.1.12.DA.5, 7.1.IH.IPRET.8)	W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.) RL.11-12.4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (e.g., Shakespeare as well as other authors.) W.11-12.5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, trying a new approach, or consulting a style manual (such as MLA or APA Style), focusing on addressing what is most significant for a specific

	purpose and audience. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grades 11-12.) W.11-12.6. Use technology, including the Internet, to produce, share and update writing products in response to ongoing feedback, including new arguments or information. 7.1.IM.IPRET.1: Explain the main idea and some supporting details on familiar topics from sentences and series of connected sentences within texts that are spoken, written, or signed. 7.1.IM.IPRET.2: With the help of graphic organizers, compare information (i.e., main ideas, main characters, settings) in culturally authentic materials related to targeted themes. 7.1.IH.IPRET.5: Infer the meaning of some unfamiliar words and phrases in new formal and informal contexts. 7.1.IH.IPRET.6: Identify several of the distinguishing features of the text (e.g., type of resource, intended audience, purpose).

21st Century Skills			
x	Civic Literacy	x	Communication
x	Global Awareness	x	Critical Thinking and Problem Solving
	Health Literacy	x	Collaboration
x	Financial, Economic, Business, & Entrepreneurial Literacy	x	Creativity and Innovation
	Environmental Literacy		Other:

Essential Questions

- How do graphic designers create layouts for books and magazines?
- How are design applications selected and implemented to create layouts on mass scales?
- How do graphic designers multi-task between Adobe Creative Suite apps when designing layouts?

Enduring Understandings

- Carefully executed design can successfully communicate and elevate the contents of a book.
- When graphic design is unprofessional it can make the contents of a book seem unappealing.
- Book publishing requires extensive design planning, communication, and collaboration.
- Authors, editors, graphic designers, photographers, and printers are all important contributors in the process of creating an original book.
- Design professionals utilize Adobe Creative Suite apps and a range of complex tools and functions specifically tailored for creating and publishing books.

Student Learning Targets/Objectives

- Analyze the elements of typography, hierarchy, and the grid within a layout.
- Direct and collaborate on a photoshoot or sourcing of images for the layout.

- Create one or more original page layouts for an OHS book consisting of photos, typography, margins, pagination, and other content corresponding to the book section assigned.

Assessments

- Formative: Research on hierarchy and grid structure.
- Formative: Post summary notes on design research for classmates.
- Summative: Utilize InDesign Tools and editing features to edit text and typography for grammar and spelling.
- Authentic: Collaborate on photo shoots with partner(s).
- Authentic: Edit photography for consistent tonal balance and pre-determined effects.
- Authentic: Create one or more original layout pages for the book in Adobe InDesign according to specified design parameters.

Teaching and Learning Actions

Instructional Strategies	Anticipatory Sets: Do Now's/research on hierarchy and grid structure. Interdisciplinary Writing: Writing and editing to reflect appropriate content and themes in the photography-based design. Cooperative Learning: Conduct photo shoots and research design layouts. Task and Performance Modeling: Adobe InDesign tools & functions. Conferencing with Students: Determine personal needs, offer individual guidance and support. Utilizing Technology in the Classroom. Inquiry-Based Instruction Reflection Exit Tickets SE & ELL– Modifications according to individual student learning needs and aptitude: Tiered Activities, Adjusted Questions, Flexible Grouping, Choice Activities, Free Study Time, Target Different Senses.
Activities: Including G/T, SE, and ELL Differentiation	View online tutorials on Adobe InDesign. Research hierarchy and grid structures; discuss findings with classmates (reference online or print magazines and websites). Present weekly research findings in pairs to class. Post summary notes for classmates. Practice creating an original page layout consisting of an original grid structure and sound hierarchy. Cull and organize writing and data for the book. Conduct a photo shoot of relevant material. Collaborate as a class to create the overarching design direction for the book.

Create one or more original pages for the book in Adobe Indesign according to specified design parameters.

High: Create two or more original page layouts for the book; supervise and manage the editing of all photography to ensure consistency of color, tone, and lighting.

Mid: Target

Low: Design one or more elements of a page such as photography or type.

Special education students:

- Adhere to all modifications and health concerns stated in each IEP.
- Give students a MENU options, allowing students to pick assignments from different levels based on difficulty.
- Use the NEWSELA software, which can revise the reading Lexile level to meet students at current reading level.
- Accommodating Instructional Strategies Reading Aloud, Graphic Organizers, Reading Study Guides, one-on-one instruction, class website (Google Classroom), Handouts, Definition List, Syllabus, Large Print, Outlines
- Utilize Snap-n-Read and Co-Writer
- English Language Learners (ELL) students:
- Use the Britannica launch pack software; give students the option to change the language of the article to the student's native language for most articles.
- Snap and Read Google extension addition. Will read to the student in the language selected.
- Vocabulary Spelling City word banks
- Use visuals whenever possible to support classroom instruction and classroom activities.
- Teacher modeling and written instructions for every assignment

At risk of failure students:

- Give students a MENU options allowing students to pick activities based on interest that address the objectives and standards of the unit.
- Modified Instructional Strategies, Reading Aloud, Graphic Organizers, Reading Study
- Guides, small learning group instruction, class website (Google Classroom), Syllabus, inclusion of more visuals and Films, Field Trips, Google Expeditions, Peer Support, one on one instruction
- Constant parental contact along with mandatory tutoring appointments.
- Academic Contracts

Gifted and talented students:

- Modified instructional strategies Socratic Seminar, Group Discussion, Think-Pair-Share, Individual Assignments graded on a more rigorous

	rubric, Multimedia Projects, working with more primary source documents and completing Case Studies. • Student led classroom instruction also Project Based Learning. • Design one or more elements of a page such as photography or type. <u>Students with a 504:</u> • Adhere to all modifications and health concerns stated in504 plan. • Assess the academics of the student to implement the necessary modifications as described in this document.
Experiences (virtual and live field trips)	Visit OHS Printshop to view digital presses, explore paper weight options, as well as binding and finishing.
Resources	
• "Creating Exciting and Unusual Visual Hierarchies" by C.Knight, J.Glaser, *Smashing Magazine*, http://www.smashingmagazine.com/2013/02/creating-visual-hierarchies-typography/ • "Taking a Second Look at Free Fonts" Shoaf, Jerimiah, *Smashing Magazine*, http://www.smashingmagazine.com/2014/03/taking-a-second-look-at-free-fonts/ • "Letters Do Not Stand by Themselves" by Ljesnjanin, Iris, *Smashing Magazine*, http://www.smashingmagazine.com/2015/04/interview-with-akira-kobayashi/ • Infographic "The 15 Golden Rules of Visual Hierarchy" by Designmantic • Instructor demonstrations on Adobe InDesign • Adobe InDesign, Adobe Photoshop, Adobe Illustrator, Internet, Desktop.	
Pacing/ Time Frame	1 Marking Period (35 - 40 Class Periods - 41 mins per Class Period)

Unit 4	Illustration	Grade	11-12

Overview/Rationale

Students will learn to create original illustrations in Adobe Photoshop and Adobe Illustrator. Projects include work based experiences on photography and experimentation with illustration styles. A major project will also focus on the development of an original manga character.

New Jersey Student Learning Standards

Career & Technical Education Standards

9.3.12.AR.1 Analyze the interdependence of the technical and artistic elements of various careers within the Arts, A/V Technology & Communications Career Cluster.

9.3.12.AR.3 Analyze the lifestyle implications and physical demands required in the arts, audio/visual technology and communications workplace.

9.3.12.AR.4 Analyze the legal and ethical responsibilities required in the arts, audio/visual technology and communications workplace.

9.3.12.AR.5 Describe the career opportunities and means to achieve those opportunities in each of the Arts, A/V Technology & Communications Career Pathways.

9.3.12.AR.6 Evaluate technological advancements and tools that are essential to occupations within the Arts, A/V Technology & Communications Career Cluster.

9.3.12.AR-VIS.3 Analyze and create two and three-dimensional visual art forms using various media.

9.3.12.AR-VIS.2 Analyze how the application of visual arts elements and principles of design communicate and express ideas.

9.3.12.AR-PRT.2 Demonstrate the production of various print, multimedia or digital media products.

Visual & Performing Arts Standards

Anchor Standard 1: Generating and conceptualizing ideas.

1.2.12acc.Cr1a: Strategically use generative methods to create multiple ideas and refine artistic goals that increase aesthetic depth.

Anchor Standard 2: Organizing and developing ideas.

1.5.12acc.Cr2a: Through experimentation, practice and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.

1.5.12adv.Cr2a: Experiment, plan and make multiple works of art and design that explore a personally meaningful theme, idea, or concept.

1.5.12adv.Cr2c: Demonstrate in works of art or design how visual and material culture defines, shapes, enhances, inhibits, and/or empowers people's lives.

Anchor Standard 7: Perceiving and analyzing products.

1.5.12acc.Re7b: Evaluate the effectiveness of visual artworks to influence ideas, feelings, and behaviors of specific audiences.

Career Readiness, Life Literacies, and Key Skills

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas.

9.4.12.IML.9: Analyze the decisions creators make to reveal explicit and implicit messages within information and media.

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice.

9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities.

9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition.

9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task.

Technology/Computer Science and Design Thinking	Interdisciplinary Standards
9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task. 9.4.12.IML.3: Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions. 8.2.12.ED.6: Analyze the effects of changing resources when designing a specific product or system (e.g., materials, energy, tools, capital, labor). 8.2.12.NT.2: Redesign an existing product to improve form or function.	W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.) RL.11-12.4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (e.g. Shakespeare as well as other authors.) G-CO.A.4 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments. G-MG.A.1 Apply geometric concepts in modeling situations 1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder). G-MG.A.3. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

21st Century Skills

	Civic Literacy		Communication
x	Global Awareness	x	Critical Thinking and Problem Solving
	Health Literacy		Collaboration

	Financial, Economic, Business, & Entrepreneurial Literacy	x	Creativity and Innovation
	Environmental Literacy		Other:

Essential Questions

- How do graphic artists conceive of illustrated characters?
- How do graphic designers develop illustration skills and unique styles?
- How are original illustrations created in Adobe Apps?

Enduring Understandings

- Drawing and illustration methods can beautify ordinary images and make them more appealing for audiences.
- Illustration methods require attention to detail and multiple iterations for desired results.
- Adobe Apps offer a range of complex tools and functions to create original illustrations.

Student Learning Targets/Objectives

- Analyze and translate hand drawing techniques onto a digital platform.
- Research manga tutorials and practice creating digital line art and eye shapes on 2 layers for an original illustration.
- Create a digital rendering of a pair of manga style eyes with black outlines, a white highlight, and one color.
- Analyze and translate hand drawing techniques onto a digital platform.
- Create a digital rendering of a female or male head with hair, face, eyes, mouth, and nose.

Assessments

Formative: Analyze and translate hand drawing techniques onto a digital platform.
Formative: Create digital line art and eye shapes on a minimum of 3 layers for an original illustration.
Authentic: Create a digital rendering of a pair of manga style eyes with an outline, a gradient color, and a light reflection shape.
Authentic: Create a digital rendering of a female or male head with hair, face, eyes, mouth, and nose (Multiple assessments, split according to varying length of schedule and technology availability).

Teaching and Learning Actions

Instructional Strategies	Anticipatory Sets: Do Now's/research on illustration and manga drawing techniques. Task and Performance Modeling: on Adobe Photoshop tools & functions. Conferencing with Students: to determine personal needs and offer individual guidance and support. Utilizing Technology in the Classroom. Inquiry-Based Instruction Reflection Exit Tickets SE & ELL– Modifications according to individual student learning needs and aptitude: Tiered Activities, Adjusted Questions, Flexible Grouping, Choice Activities, Free Study Time, Target Different Senses.
	Discuss critical thinking necessary to apply hand drawing techniques onto digital renderings.

Activities: Including G/T, SE, and ELL Differentiation	Discuss instructions for formatting an illustration file. View tutorials as a class and discuss analysis and modification of techniques. Create a digital rendering of a pair of manga style eyes by grouping and managing layers from a single eye project. Design eye pairs by rotating and transforming layer groups. Exit: Save PSD file with proper format for future editing and verify folder location. Upload JPEG file for grading. High: Create an original digital rendering of a manga character with hair, face, eyes, mouth, nose, torso and clothing. Mid: Target Low: Create a rendering of a pair of manga character eyes. <u>Special education students:</u> • Adhere to all modifications and health concerns stated in each IEP. • Give students a MENU options, allowing students to pick assignments from different levels based on difficulty. • Use the NEWSELA software, which can revise the reading Lexile level to meet students at current reading level. • Accommodating Instructional Strategies Reading Aloud, Graphic Organizers, Reading Study Guides, one-on-one instruction, class website (Google Classroom), Handouts, Definition List, Syllabus, Large Print, Outlines • Utilize Snap-n-Read and Co-Writer • English Language Learners (ELL) students: • Use the Britannica launch pack software; give students the option to change the language of the article to the student's native language for most articles. • Snap and Read Google extension addition. Will read to the student in the language selected. • Vocabulary Spelling City word banks • Use visuals whenever possible to support classroom instruction and classroom activities. • Teacher modeling and written instructions for every assignment <u>At risk of failure students:</u> • Give students a MENU options allowing students to pick activities based on interest that address the objectives and standards of the unit.

	• Modified Instructional Strategies, Reading Aloud, Graphic Organizers, Reading Study • Guides, small learning group instruction, class website (Google Classroom), Syllabus, inclusion of more visuals and Films, Field Trips, Google Expeditions, Peer Support, one on one instruction • Constant parental contact along with mandatory tutoring appointments. • Academic Contracts <u>Gifted and talented students:</u> • Modified instructional strategies Socratic Seminar, Group Discussion, Think-Pair-Share, Individual Assignments graded on a more rigorous rubric, Multimedia Projects, working with more primary source documents and completing Case Studies. • Student led classroom instruction also Project Based Learning. • Create a pair of original manga characters; or create alternate variations of the same character by redesigning the eyes, hair, torso, and/ or clothing. <u>Students with a 504:</u> • Adhere to all modifications and health concerns stated in504 plan. • Assess the academics of the student to implement the necessary modifications as described in this document.
Experiences (virtual and live field trips)	View tutorials on drawing manga eyes and discuss potential steps and digital tools. "How to Draw Eyes" (Female) https://youtu.be/ZRaKqe-LP2Q "How to Draw Male Eyes" https://youtu.be/7pJLpg8__Hc "How to Draw Manga Eyes 8 Ways" https://youtu.be/DcI-1abQhnE "How to Draw Body Proportions" https://edpuzzle.com/media/6092bfad2913d84138dde180 "Stop Using Rulers! How to Draw Body Proportions" https://edpuzzle.com/media/6092bfad2913d84138dde180,
Resources	
• Instructor demonstrations on Adobe Photoshop editing tools and functions. • Desktop, Adobe Photoshop, Internet • Google Classroom • EdPuzzle.com video editor and assignment tool	
Pacing/ Time Frame	5-6 Weeks (25-30 Class Periods – 41 mins per Class Period)

Unit 5	Animation	Grade(s)	11-12

Overview/Rationale

Students will learn to create original animations in Adobe Photoshop and/or apps offering comparable tools. Students will learn the fundamentals of motion including timing, sequence, and spacing. Independent thinking and problem-solving skills will be strengthened. Developing further skills in file formatting and delivery will be a crucial component of this unit.

New Jersey Student Learning Standards

Career & Technical Education Standards

9.3.12.AR.1 Analyze the interdependence of the technical and artistic elements of various careers within the Arts, A/V Technology & Communications Career Cluster.

9.3.12.AR.3 Analyze the lifestyle implications and physical demands required in the arts, audio/visual technology and communications workplace.

9.3.12.AR.4 Analyze the legal and ethical responsibilities required in the arts, audio/visual technology and communications workplace.

9.3.12.AR.5 Describe the career opportunities and means to achieve those opportunities in each of the Arts, A/V Technology & Communications Career Pathways.

9.3.12.AR.6 Evaluate technological advancements and tools that are essential to occupations within the Arts, A/V Technology & Communications Career Cluster.

9.3.12.AR-VIS.3 Analyze and create two and three-dimensional visual art forms using various media.

9.3.12.AR-VIS.2 Analyze how the application of visual arts elements and principles of design communicate and express ideas.

9.3.12.AR-VIS.1 Describe the history and evolution of the visual arts and its role in and impact on society.

9.3.12.AR-TEL.3 Demonstrate decision making, problem-solving techniques and communication skills when providing services for customers.

9.3.12.AR-PRT.2 Demonstrate the production of various print, multimedia or digital media products.

Visual & Performing Arts Standards

Anchor Standard 1: Generating and conceptualizing ideas.

1.2.12acc.Cr1a: Strategically use generative methods to create multiple ideas and refine artistic goals that increase aesthetic depth.

Anchor Standard 2: Organizing and developing ideas.

1.5.12adv.Cr2a: Experiment, plan and make multiple works of art and design that explore a personally meaningful theme, idea, or concept.

1.5.12acc.Cr2a: Through experimentation, practice and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.

1.5.12adv.Cr2c: Demonstrate in works of art or design how visual and material culture defines, shapes, enhances, inhibits, and/or empowers people's lives.

1.5.12adv.Cr1a: Visualize and generate art and design that can affect social change.

1.5.12acc.Cr2b: Demonstrate awareness of ethical implications of making and distributing creative work.

1.5.12acc.Re7b: Evaluate the effectiveness of visual artworks to influence ideas, feelings, and behaviors of specific audiences.

Career Readiness, Life Literacies, and Key Skills

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas.

9.4.12.IML.9: Analyze the decisions creators make to reveal explicit and implicit messages within information and media.

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice.

9.4.12.IML.4: Assess and critique the appropriateness and impact of existing data visualizations for an intended audience.

Technology/Computer Science and Design Thinking	Interdisciplinary Standards
9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task. 9.4.12.IML.3: Analyze data using tools and models to make valid and reliable claims, or to determine optimal design solutions. 8.2.12.ED.6: Analyze the effects of changing resources when designing a specific product or system (e.g., materials, energy, tools, capital, labor). 8.2.12.NT.2: Redesign an existing product to improve form or function.	W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.) RL.11-12.4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (e.g., Shakespeare as well as other authors.) G-CO.A.4 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments. G-MG.A.1 Apply geometric concepts in modeling situations 1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder). G-MG.A.3. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

21st Century Skills			
	Civic Literacy	x	Communication
x	Global Awareness	x	Critical Thinking and Problem Solving
	Health Literacy	x	Collaboration
x	Financial, Economic, Business, & Entrepreneurial Literacy	x	Creativity and Innovation
	Environmental Literacy		Other:

Essential Questions

- How do web designers create digital animation sequences with fluid movement?
- How do animators edit illustrations and photographs to make the impossible seem to occur?
- How are animations utilized in various industries?

Enduring Understandings

- Successful animation sequences control multiple factors to create fluid motion.
- Multiple iterations must be made to create a strong animation sequence.
- Animation skills enhance a graphic designer's portfolio.

Student Learning Targets/Objectives

- Compile and manage illustration files and photography files for original animation sequences.
- Plan the sequence and timing of an animated GIF.
- Create an animated GIF by editing 3 or more jpeg photos, storing them correctly, merging them in a timeline, managing their frame rates, and following correct steps to save the file correctly in GIF format.

Assessments

- Formative: Prepare a minimum of three illustrations or photos with proper resolution, size and file type for the web.
- Formative: Sketch or outline a plan for movement sequence of objects.
- Authentic: Create an animated GIF by editing 3 or more files, storing them correctly, merging them in a timeline, managing their frame rates, and following correct steps to save the file correctly in GIF format.

Teaching and Learning Actions

Instructional Strategies	Anticipatory Sets: Do Now's/research on animation techniques. Task and Performance Modeling: on Adobe Photoshop tools & functions. Conferencing with Students: to determine personal needs and offer individual guidance and support. Utilizing Technology in the Classroom. Inquiry-Based Instruction Reflection Exit Tickets SE & ELL– Modifications according to individual student learning needs and aptitude: Tiered Activities, Adjusted Questions, Flexible Grouping, Choice Activities, Free Study Time, Target Different Senses.

Activities: Including G/T, SE, and ELL Differentiation	Create a self-portrait file (illustration or photo) at appropriate resolution. Practice animation tutorials provided in class. Discuss, outline or sketch a brief plan for the transformation which will be executed. Review file set-up steps to acquire organization skills. Create multiple layers in sequence for animation frames. Edit sequentially to ensure transition from one frame to the next. Create an animation sequence with different colors or backgrounds and experiment with a liquify tool. Analyze illustration image to conceive possible movement. Discuss personal plan to incorporate greater movement in the animation. Precisely select, copy & duplicate the part of the body that will move. Create an animation sequence with at least 8 frames by duplicating the moving body part. Research and discuss animations with moving objects. Edit a new file for new layers and moving objects. Introduce an object that interacts with the figure. Import photos into a timeline, make frames from layers, and stipulate frame animation rates. Analyze and refine frame sequence. Refine object selections; duplicate and arrange objects in the sequence of frames via layers. Polish sequencing of animation frames and movement within frames. Set timing for each frame for smooth transitions. Research online sources on creating smooth transitions between frames. Create a seamless flow from beginning to end, adding or adjusting frames as needed.

	Once the desired timing is set, ensure the file is not too large (under 1mb). Manage file properties and save a GIF for web and other devices. Analyze examples of animations posted by peers and determine which tools, frames and timelines were utilized to create the specific motion effects. Edit finishing touches for greater fluidity between frames. Discuss progress individually. Ensure that all glitches and unintended movements are adjusted and removed. Save GIF file for delivery and grading. Prepare for presentation by reviewing the animation timeline. Present individual animation projects to class. Discuss overall concept, Photoshop techniques, frames and timeline sequence. Presenter engages other students in discussion about timeline structure and frame rates. High: Create an emotionally uplifting animated meme by inserting humorous or inspirational images or text. Create an animated GIF of self utilizing photos or previously designed illustrations for a high degree of motion. Mid: Target Low: Create an animated GIF using 1 photo, changing one color, and saving it two times in different formats. <u>Special education students:</u> • Adhere to all modifications and health concerns stated in each IEP. • Give students a MENU options, allowing students to pick assignments from different levels based on difficulty. • Use the NEWSELA software, which can revise the reading Lexile level to meet students at current reading level. • Accommodating Instructional Strategies Reading Aloud, Graphic Organizers, Reading Study Guides, one-on-one instruction, class website (Google Classroom), Handouts, Definition List, Syllabus, Large Print, Outlines • Utilize Snap-n-Read and Co-Writer • English Language Learners (ELL) students:

	• Use the Britannica launch pack software; give students the option to change the language of the article to the student's native language for most articles. • Snap and Read Google extension addition. Will read to the student in the language selected. • Vocabulary Spelling City word banks • Use visuals whenever possible to support classroom instruction and classroom activities. • Teacher modeling and written instructions for every assignment <u>At risk of failure students:</u> • Give students a MENU options allowing students to pick activities based on interest that address the objectives and standards of the unit. • Modified Instructional Strategies, Reading Aloud, Graphic Organizers, Reading Study • Guides, small learning group instruction, class website (Google Classroom), Syllabus, inclusion of more visuals and Films, Field Trips, Google Expeditions, Peer Support, one on one instruction • Constant parental contact along with mandatory tutoring appointments. • Academic Contracts <u>Gifted and talented students:</u> • Modified instructional strategies Socratic Seminar, Group Discussion, Think-Pair-Share, Individual Assignments graded on a more rigorous rubric, Multimedia Projects, working with more primary source documents and completing Case Studies. • Student led classroom instruction also Project Based Learning. • Write HTML code to create a functional website consisting of 3 or more webpages. <u>Students with a 504:</u> • Adhere to all modifications and health concerns stated in504 plan. • Assess the academics of the student to implement the necessary modifications as described in this document.
Experiences (virtual and live field trips)	Virtual – Edpuzzle.com videos on animation methods and industry practices. Virtual - Leading companies and films. Research on higher education programs and major requirements.
Resources	
• Instructor demonstrations on Adobe Photoshop animation tools and functions. • Desktop, Adobe Photoshop, Internet • Google Classroom • EdPuzzle.com video editor and assignment tool.	
Pacing/ Time Frame	4-5 Week (20-25 Class Periods – 41 mins per Class Period)

Unit 6	3-D Printing	Grade(s)	11-12

Overview/Rationale

Students will research 3D printing methods and their real-world application. Exploration and experimentation with 3D files and printing materials will be followed by the development of iterations which improve upon existing designs or create an original product/design.

New Jersey Student Learning Standards

Career & Technical Education Standards

9.3.12.AR.1 Analyze the interdependence of the technical and artistic elements of various careers within the Arts, A/V Technology & Communications Career Cluster.

9.3.12.AR.2 Analyze the importance of health, safety and environmental management systems, policies and procedures common in arts, audio/video technology and communications activities and facilities.

9.3.12.AR.3 Analyze the lifestyle implications and physical demands required in the arts, audio/visual technology and communications workplace.

9.3.12.AR.4 Analyze the legal and ethical responsibilities required in the arts, audio/visual technology and communications workplace.

9.3.12.AR.5 Describe the career opportunities and means to achieve those opportunities in each of the Arts, A/V Technology & Communications Career Pathways.

9.3.12.AR.6 Evaluate technological advancements and tools that are essential to occupations within the Arts, A/V Technology & Communications Career Cluster.

9.3.12.AR-VIS.3 Analyze and create two and three-dimensional visual art forms using various media.

9.3.12.AR-VIS.2 Analyze how the application of visual arts elements and principles of design communicate and express ideas.

9.3.12.AR-VIS.1 Describe the history and evolution of the visual arts and its role in and impact on society.

9.3.12.AR-TEL.3 Demonstrate decision making, problem-solving techniques and communication skills when providing services for customers.

9.3.12.AR-PRT.1 Manage the printing process, including customer service and sales, scheduling, production and quality control.

9.3.12.AR-PRT.2 Demonstrate the production of various print, multimedia or digital media products.

9.3.12.AR-PRT.3 Perform finishing and distribution operations related to the printing process.

Visual & Performing Arts Standards

Anchor Standard 1: Generating and conceptualizing ideas.

1.2.12acc.Cr1a: Strategically use generative methods to create multiple ideas and refine artistic goals that increase aesthetic depth.

1.5.12adv.Cr1a: Visualize and generate art and design that can affect social change.

1.5.12adv.Cr1b: Choose from a range of materials and methods of traditional and contemporary artistic practices, following or breaking established conventions, to plan the making of multiple works of art and design based on a theme, idea or concept.

Anchor Standard 2: Organizing and developing ideas.

1.5.12adv.Cr2a: Experiment, plan and make multiple works of art and design that explore a personally meaningful theme, idea, or concept.

1.5.12acc.Cr2a: Through experimentation, practice and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.

1.5.12acc.Cr2b: Demonstrate awareness of ethical implications of making and distributing creative work.

1.5.12adv.Cr2c: Demonstrate in works of art or design how visual and material culture defines, shapes, enhances, inhibits, and/or empowers people's lives.

Anchor Standard 7: Perceiving and analyzing products.

1.5.12acc.Re7b: Evaluate the effectiveness of visual artworks to influence ideas, feelings, and behaviors of specific audiences.

Career Readiness, Life Literacies, and Key Skills

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas.

9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities.

9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition.

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice.

9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specific task.

Technology/Computer Science and Design Thinking	Interdisciplinary Standards
8.2.12.ED.5: Evaluate the effectiveness of a product or system based on factors that are related to its requirements, specifications, and constraints (e.g., safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, ergonomics). 8.2.12.ED.6: Analyze the effects of changing resources when designing a specific product or system (e.g., materials, energy, tools, capital, labor). 8.2.12.NT.1: Explain how different groups can contribute to the overall design of a product. 8.2.12.NT.2: Redesign an existing product to improve form or function.	W.11-12.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.) RL.11-12.4. Determine the meaning of words and phrases as they are used in the text, including figurative and connotative meanings; analyze the impact of specific word choices on meaning and tone, including words with multiple meanings or language that is particularly fresh, engaging, or beautiful. (e.g., Shakespeare as well as other authors.)

8.2.12.ED.1: Use research to design and create a product or system that addresses a problem and make modifications based on input from potential consumers. 8.2.12.ED.2: Create scaled engineering drawings for a new product or system and make modifications to increase optimization based on feedback. 8.2.12.ED.3: Evaluate several models of the same type of product and make recommendations for a new design based on a cost benefit analysis.	G-CO.A.4 Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments. G-MG.A.1 Apply geometric concepts in modeling situations 1. Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder). G-MG.A.3. Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).

21st Century Skills			
x	Civic Literacy	x	Communication
x	Global Awareness	x	Critical Thinking and Problem Solving
x	Health Literacy	x	Collaboration
x	Financial, Economic, Business, & Entrepreneurial Literacy	x	Creativity and Innovation
x	Environmental Literacy		Other:

Essential Questions

- How is 3D printing utilized in the real world?
- How is 3D printing selected as a preferable method over other manufacturing processes for certain designs?
- How do 3D rendering programs facilitate the development of 3D designs?

Enduring Understandings

- 3D printing can be utilized to create and sell functional designs.
- 3D printing is a growing profitable industry.
- 3D printing enables the creation of complex forms which would otherwise not be easily or quickly produced.

Student Learning Targets/Objectives

- Identify 3D designs for various audiences.
- Create an original 3D design that targets either an adolescent or adult audience.
- Create one 8 x 11 x 8 inch (approx) 3D design in a 3D rendering program for adolescent consumers or adults.

Assessments
Formative: Sketch an original design for 3D print. Formative: Sketch a 3D prototype for an industry of interest. Summative: Outline and discuss the various industries which employ 3D printing methods and the variety of materials utilized in each industry. Authentic: Create one 8 x 11 x 8 inch (approx) 3D design in a 3D rendering program for adolescent consumers or adults (according to specified parameters/depending upon 3D printer capacities).

Teaching and Learning Actions	
Instructional Strategies	Anticipatory Sets: Do Now's/research on 3D printing technology. Task and Performance Modeling: 3D rendering tools & functions. Perspective-Based Assignment: Approach project from perspective of real-world professional creating an original 3D printed design. Conferencing with Students: Determine personal needs, offer individual guidance and support. Utilizing Technology in the Classroom. Inquiry-Based Instruction Reflection Exit Tickets SE & ELL– Modifications according to individual student learning needs and aptitude: Tiered Activities, Adjusted Questions, Flexible Grouping, Choice Activities, Free Study Time, Target Different Senses
Activities: Including G/T, SE, and ELL Differentiation	Research 3D printing technology. Discuss various types of materials and machines involved in 3D printing. Refer to 3D printing infographic as a guideline to navigate discussion. 3D Printing news, case studies and NY Times article on 3D printing of prostheses. Discuss impact of 3D printing on medicine and other industries. View Thingiverse.com link to see actual designs of prosthetics and discuss findings. Research target demographic group. Sketch an original design based on market research of target demographic. Practice executing design in 3D rendering software. Make necessary edits. Present final project to the class for critique. High: Create two 8 x 11 x 8 inch (approx) 3D designs in a 3D rendering program for adolescent consumers and adults.

Mid: Target

Low: Edit an existing 3D print file to modify 25% of the existing forms.

Special education students:

- Adhere to all modifications and health concerns stated in each IEP.
- Give students a MENU options, allowing students to pick assignments from different levels based on difficulty.
- Use the NEWSELA software, which can revise the reading Lexile level to meet students at current reading level.
- Accommodating Instructional Strategies Reading Aloud, Graphic Organizers, Reading Study Guides, one-on-one instruction, class website (Google Classroom), Handouts, Definition List, Syllabus, Large Print, Outlines
- Utilize Snap-n-Read and Co-Writer
- English Language Learners (ELL) students:
- Use the Britannica launch pack software; give students the option to change the language of the article to the student's native language for most articles.
- Snap and Read Google extension addition. Will read to the student in the language selected.
- Vocabulary Spelling City word banks
- Use visuals whenever possible to support classroom instruction and classroom activities.
- Teacher modeling and written instructions for every assignment

At risk of failure students:

- Give students a MENU options allowing students to pick activities based on interest that address the objectives and standards of the unit.
- Modified Instructional Strategies, Reading Aloud, Graphic Organizers, Reading Study
- Guides, small learning group instruction, class website (Google Classroom), Syllabus, inclusion of more visuals and Films, Field Trips, Google Expeditions, Peer Support, one on one instruction
- Constant parental contact along with mandatory tutoring appointments.
- Academic Contracts

Gifted and talented students:

- Modified instructional strategies Socratic Seminar, Group Discussion, Think-Pair-Share, Individual Assignments graded on a more rigorous rubric, Multimedia Projects, working with more primary source documents and completing Case Studies.
- Student led classroom instruction also Project Based Learning.
- Write HTML code to create a functional website consisting of 3 or more webpages.
- Repair missing body parts of a figure in a severely damaged photo.

	Students with a 504: • Adhere to all modifications and health concerns stated in504 plan. • Assess the academics of the student to implement the necessary modifications as described in this document.
Experiences (virtual and live field trips)	3DPrinting.com News and Case Studies (Medical and Aerospace), 3D Printing - Additive Manufacturing Thingiverse.com, E-nable Prosthetic Designs http://www.thingiverse.com/search/page:1?q=e-nable&sa=
Resources	
• 3DPrinting.com News and Case Studies (Medical and Aerospace), 3D Printing - Additive Manufacturing • "Hand of a Superhero: 3D Printing Prosthetic Hands That Are Anything But Ordinary" Mroz, Jacqueline, *New York Times*, http://www.nytimes.com/2015/02/17/science/hand-of-a-superhero.html?_r=0 • Thingiverse.com, E-nable Prosthetic Designs http://www.thingiverse.com/search/page:1?q=e-nable&sa= • Infographic: 3D Printing Explained http://www.3ders.org/articles/20120810-infographic-3d-printing-explained.html • Internet, Desktop, 3D Printer, 3D rendering software	
Pacing/ Time Frame	8 - 9 weeks (35 - 40 Class Periods - 41 mins per Class Period)