Orange High School

Course Syllabus

Graphic Arts Production

Course Information
Credits: 2.5
Marking Period: Full Year Course
Program: CTE – **Graphic Arts**
Class Location: 171

Teacher Information
Name: **Ms. F. Martin**
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E-Mail: martinfe@orange.k12.nj.us

Instructor: Ms. F. Martin - MA New York University, BA Rutgers University.

Course Description:

Maturity and ability to execute projects to completion must be demonstrated. Students will build on previous Graphic Arts and Web Design knowledge and gain advanced skills in the Adobe Creative Suite. The course will focus on the design of graphics and marketing materials such as illustrations, animations, t-shirts, brochures, books, and 3D printed objects. Students will also learn to prepare documents for professional printing and mass production via the OHS Printshop. A digital portfolio of work will be developed demonstrating and highlighting special talent. The experience and skills in this course are aimed at helping advanced students obtain employment as production artists and gain entry into art and design college programs in order to become professional graphic artists and designers.

Course Competencies/ Learning Objectives:

Students will be able to:

Collaborate to research and identify graphic designs illustrating the fundamental elements of 2D design.
Create a composite image demonstrating one or more elements of design.
Analyze graphic designs targeting various audiences.
Create original designs targeting a wide range of audiences.
Create t-shirt designs in Photoshop with a minimum of 2 composite images and special effects in JPEG format.
Analyze the damage of a photograph and determine appropriate restoration steps.
Develop restoration plans with effective Photoshop techniques and tools.
Create a restored version of a damaged photograph by removing scratches, dents, scrapes, stains, and/or replacing tears with content from the same photo in Adobe Photoshop.
Create an original illustration based on a personal photograph in Adobe Photoshop and Adobe Illustrator.
Assign document layers to different sections of an illustration file.
Create organized files by painting each section of an illustration in separate layers and name sections accordingly.
Independently manage the creation of an illustration by deciding when to alter between brush settings depending upon desired effect.
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 jpegs, and manage images in a timeline where sequencing and frame rates are set; format completed projects for distribution in GIF format.
Analyze the elements of typography, hierarchy, and the grid within a layout.
Direct and collaborate with OHS CTE students on a photoshoot.
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.
Create the design layout for an original book.
Create a 3D print for an adolescent or adult demographic.
Create a 3D design in a 3D rendering program according to specified parameters (depending upon 3D printer capacities).
Generate visual forms via typography.
Create typographic abstraction using photography as a reference.
Research manually-constructed typefaces.
Design a theme for an original typeface based on preferred found materials.
Digitally create a typeface theme based on organic or mechanical forms.
Create consistent shapes and curves throughout all characters of a typeface.

Student Evaluation

The grading system for the Career and Technical Education Department at Orange High School is as follows:

Authentic Assessments (9)	-	25%
Tests (4)	-	25%
Quizzes (4)	-	20%
Classwork Assignments and Class Participation	-	20%
Homework (9)	-	10%

<u>Attendance Policy:</u>

Purpose of the Student Attendance Policy

The purpose of the Orange High School Attendance Policy is to have each student attend all classes, arriving on time and participating fully. Students and parents should familiarize themselves with the provision and procedures of the policy. It is expected that parents will support the intent of the policy and encourage their children to maintain good attendance. Official school attendance is taken during the attendance period daily. Classroom attendance is taken every period.

Students are expected to attend every class, study hall, independent study and homeroom period. Board Policy requires each student to be present for at least 90% of class meetings in order to be eligible to receive credit. The number of absences in each class **MAY NOT EXCEED:**

18 Cumulative Absences Full Year Course
9 Cumulative Absences Semester Course
5 Cumulative Absences Quarter Course (Health)
14 Cumulative Absences Physical Education

Classroom Expectations:

1. Students will come to class on time prepared and ready to learn.
2. Students will complete all assignments, including homework, by all deadlines. Make-up work is only accepted after an excused absence. It is your responsibility to see me for your work before or after school.
3. All students will be silent and respectful while other students presenting their projects/films.
4. The teachers and students will work together for a respectful, safe classroom.
5. Participation in class discussions will enhance all students' learning experiences.
6. Students are expected to have all assigned projects completed; this may require some reading to be completed outside of the classroom.
7. Cell phones, iPods, mp3 players, and any other personal electronic items are prohibited in class at any time.

Class Requirements:

Students will be required to complete and pass writing assignments, research projects, tests/exams, and homework. Students will also be required to complete projects outside of class, participate meaningfully and respectfully in classroom discussions, maintain good attendance, have a respectful and positive attitude, and come to class ready to learn!

Academic Dishonesty:

Pupils are expected to be honest in all of their academic work. To ensure the integrity of Orange High School's educational program, a strict adherence to our district policy of academic dishonesty will be enforced. Students are expected to be honest in order to learn and grow as responsible and ethical citizens. Any breach of this standard endangers the learning process and impugns the integrity of the entire school community. The purpose of education is to prepare students to become lifelong learners, and dishonesty undermines and inhibits that process. No forms of personal and/or academic misrepresentation are permitted. A student, whether cheating alone or helping another person to cheat, will be subject to the disciplinary procedure.

Students will be expected to:

1. Complete his/her own academic work;
2. Refrain from sharing assignments unless authorized to do so;
3. Refrain from engaging in plagiarism when doing research; and
4. Adhere to classroom academic standards when testing.

The District subscribes to Turnitin.com, an electronic resource for helping to detect and prevent plagiarism. If required to do so by their teachers, students must submit their work to the website before presenting the work to their teacher.

Definition:

Cheating: is defined as any misrepresentation of one's academic work.

Personal Misrepresentation: includes attendance records; presenting falsified notes, passes or names; and any other deliberate misrepresentation to school authorities, other than academic work.

Academic Misrepresentation: includes but is not limited to, stealing, copying or providing answers on any homework, quiz, test, exam, report, essay or other school assignments, and using sources without proper documentation (plagiarism) as well as changing grades.

Methodology
A combination of lecture, class discussion, presentations, videos, cooperative learning, and problem-based learning will be used in this course. Grades will be determined by the satisfactory and timely completion of assignments. The grade of each assignment is based on the prerequisite given for each assignment. Below is an overview of topic/ units and major assessments/assignments for this course. Please note dates/timeframes are subject to change and are an estimate.

Unit/ Topic	Course Activities	Assessments/Assignments	Timeframe
Typography Texture and Abstraction	Generate visual forms via typography. Create typographic abstraction using photography as a reference. Construct a landscape scene comprised of typographic texture and abstraction via repetition, density, value, shape, size, position, and weight.	Research and projects.	1-2 weeks
Typeface Design	Research manually-constructed typefaces. Design a theme for an original typeface based on preferred materials. Digitally create a typeface theme based on organic or mechanical forms. Create consistent shapes and curves throughout all characters of a typeface.	Research and projects.	1-2 weeks
Elements of Design	Collaborate to research and identify graphic designs illustrating the fundamental elements of 2D design.	Research and projects.	1-2 weeks
Photo Editing	Analyze graphic designs targeting various audiences. Create original designs targeting a wide range of audiences. Create t-shirt designs in Photoshop with a minimum of 2 composite images and special effects in JPEG format.	Research and projects.	2 weeks

Photo Restoration	Analyze the damage of a photograph and determine appropriate restoration steps. Develop restoration plans with effective Photoshop techniques and tools. Create a restored version of a damaged photograph by removing scratches, dents, scrapes, stains, and/or replacing tears with content from the same photo in Adobe Photoshop.	Research and projects.	3-4 Weeks
Illustration	Create an original illustration based on a personal photograph in Adobe Photoshop and Adobe Illustrator. Assign document layers to different sections of an illustration file. Create organized files by painting each section of an illustration in separate layers and name sections accordingly. Independently manage the creation of an illustration by deciding when to alter between brush settings depending upon desired effect.	Research and projects.	4 weeks
Digital Animation	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 jpegs, and manage images in a timeline where sequencing and frame rates are set; format completed projects for distribution in GIF format.	Research and projects.	5 weeks

Book Layouts	Analyze the elements of typography, hierarchy, and the grid within a layout. Direct and collaborate with OHS CTE students on a photoshoot. Create one or more original page layouts in Adobe InDesign for a book consisting of photos, typography, margins, pagination, and other content corresponding to the book section assigned. Create the design layout for an original book and format for printing.	Research and projects.	5 weeks - 1 Quarter (Duration contingent upon scope of project)
3D Printing	Create a 3D print for an adolescent or adult demographic. Create a 3D design in a 3D rendering program according to specified parameters (depending upon 3D printer capacities).	Research and projects.	4 weeks

Please acknowledge that you have read and understand the information explained above. Students will return this page to their teachers one week from the date the syllabus is received by the student.

_____ _____

Student Signature Print Name

_____ _____

Parent/Guardian Signature Print Name

CTE Addendum/ Standards - Graphic Arts Production

Unit 1 - Typography Texture & Abstraction in Graphic Art for Fashion

CTE 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:

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

1.2.12acc.Cr1a: Strategically use generative methods to create multiple ideas and refine artistic goals that increase aesthetic depth.
1.5.12acc.Re7b: Evaluate the effectiveness of visual artworks to influence ideas, feelings, and behaviors of specific audiences.
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.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.

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

Career Readiness, Life Literacies, and Key Skills

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

9.4.12.IML.9: Analyze the decisions creators make to reveal explicit and implicit messages within information and media (e.g., 1.5.12acc.C2a, 7.1.IL.IPRET.4).

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).

9.4.12.IML.4: Assess and critique the appropriateness and impact of existing data visualizations for an intended audience (e.g., S-ID.B.6b, HS-LS2-4).

Technology/Computer Science and Design Thinking

9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).
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.

Interdisciplinary Standards

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).

Unit 2 - Photo Restoration

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.

1.5.12acc.Cr2a: Through experimentation, practice and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.
1.2.12acc.Cr1a: Strategically use generative methods to create multiple ideas and refine artistic goals that increase aesthetic depth.
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.

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).

9.4.12.IML.9: Analyze the decisions creators make to reveal explicit and implicit messages within information and media (e.g., 1.5.12acc.C2a, 7.1.IL.IPRET.4).

9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).

Technology/Computer Science and Design Thinking

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

Interdisciplinary Standards

8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations. a. Lines are transformed to lines and line segments to line segments of the same length b. Angles are transformed to angles of the same measure c. Parallel lines are transformed to parallel lines.

8.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).
8.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).

Unit 3 - Layouts

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.

1.5.12acc.Re7b: Evaluate the effectiveness of visual artworks to influence ideas, feelings, and behaviors of specific audiences.
1.2.12acc.Cr1a: Strategically use generative methods to create multiple ideas and refine artistic goals that increase aesthetic depth.
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.
1.5.12acc.Cr2c: Redesign an object, system, place, or design in response to contemporary issues.

9.4.12.IML.9: Analyze the decisions creators make to reveal explicit and implicit messages within information and media (e.g., 1.5.12acc.C2a, 7.1.IL.IPRET.4).

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).

Technology/Computer Science and Design Thinking

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 specified 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)

Interdisciplinary Standards

RI.2.7. Explain how specific illustrations and images (e.g., a diagram showing how a machine works) contribute to and clarify a text.

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).

Unit 4 - Illustration

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.

1.5.12acc.Cr2a: Through experimentation, practice and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.
1.2.12acc.Cr1a: Strategically use generative methods to create multiple ideas and refine artistic goals that increase aesthetic depth.
1.5.12acc.Re7b: Evaluate the effectiveness of visual artworks to influence ideas, feelings, and behaviors of specific audiences.
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.

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

9.4.12.IML.9: Analyze the decisions creators make to reveal explicit and implicit messages within information and media (e.g., 1.5.12acc.C2a, 7.1.IL.IPRET.4).

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).

9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).

9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).

9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).

Technology/Computer Science and Design Thinking

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

Interdisciplinary Standards

8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations. a. Lines are transformed to lines and line segments to line segments of the same length b. Angles are transformed to angles of the same measure c. Parallel lines are transformed to parallel lines.

8.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).

8.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).

Unit 5 - Animation

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.

1.5.12acc.Cr2a: Through experimentation, practice and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.
1.2.12acc.Cr1a: Strategically use generative methods to create multiple ideas and refine artistic goals that increase aesthetic depth.
1.5.12acc.Re7b: Evaluate the effectiveness of visual artworks to influence ideas, feelings, and behaviors of specific audiences.
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.
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.

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

9.4.12.IML.9: Analyze the decisions creators make to reveal explicit and implicit messages within information and media (e.g., 1.5.12acc.C2a, 7.1.IL.IPRET.4).

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).

9.4.12.IML.4: Assess and critique the appropriateness and impact of existing data visualizations for an intended audience (e.g., S-ID.B.6b, HS-LS2-4).

Technology/Computer Science and Design Thinking

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

Interdisciplinary Standards

8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations. a. Lines are transformed to lines and line segments to line segments of the same length b. Angles are transformed to angles of the same measure c. Parallel lines are transformed to parallel lines.
8.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).

8.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).

Unit 6 - 3D Printing

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.

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.

1.5.12acc.Cr2a: Through experimentation, practice and persistence, demonstrate acquisition of skills and knowledge in a chosen art form.
1.2.12acc.Cr1a: Strategically use generative methods to create multiple ideas and refine artistic goals that increase aesthetic depth.
1.5.12acc.Re7b: Evaluate the effectiveness of visual artworks to influence ideas, feelings, and behaviors of specific audiences.
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.

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

9.4.12.CI.1: Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).

9.4.12.CI.2: Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).

9.4.12.CI.3: Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).

9.4.12.CT.1: Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).

9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task (e.g., W.11-12.6.).

Technology/Computer Science and Design Thinking

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.

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 modification 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.

Interdisciplinary Standards

8.G.A.1 Verify experimentally the properties of rotations, reflections, and translations. a. Lines are transformed to lines and line segments to line segments of the same length b. Angles are transformed to angles of the same measure c. Parallel lines are transformed to parallel lines.

8.G.CO D. Make geometric constructions 12. Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.

8.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).

8.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).