

**FREEHOLD REGIONAL HIGH SCHOOL DISTRICT**

**OFFICE OF CURRICULUM AND INSTRUCTION**

**TECHNOLOGY EDUCATION DEPARTMENT**

# **ARCHITECTURE 1**

Grade Level: 9-12

Credits: 5

**BOARD OF EDUCATION ADOPTION DATE:**

**AUGUST 26, 2013**

[SUPPORTING RESOURCES AVAILABLE IN DISTRICT RESOURCE SHARING](#)

APPENDIX A: ACCOMMODATIONS AND MODIFICATIONS

APPENDIX B: ASSESSMENT EVIDENCE

APPENDIX C: INTERDISCIPLINARY CONNECTIONS

# **FREEHOLD REGIONAL HIGH SCHOOL DISTRICT**

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# Architecture I

## Course Philosophy

Architecture I is an introductory course that will provide students with experience in construction methods, material science, aesthetic design, and responsible home ownership. Students will develop the skills they need to be productive members of the design and industrial worlds. Through the use of traditional methods and hands-on problem solving, students will be engaged in a host of real world architectural design activities. By engaging in experiences that mimic the career, students will be better prepared to continue their education in this field and have an understanding for how the world around them is designed and produced. Skills in communication, mathematics, science, leadership, teamwork, and problem solving are reinforced in this course.

## Course Description

Architecture I is a one-year, five-credit course designed for students who may be considering post-secondary education programs or employment in related areas. The course is focused on the principals, concepts, and the use of graphic tools in the fields of architecture, structural systems, and construction. This program will provide an understanding of construction methods and basic drawing fundamentals. The students will prepare working drawings, including floor plan, wall section and elevation drawings using traditional and computer-assisted design (CAD) methods. The students learn by developing residential plans and constructing models/prototypes. This course will enhance the students' awareness of various facets of the architectural field, including construction techniques, historical perspectives, landscape design, architectural styles, building codes, and structural design. Students will be able to communicate architectural ideas in an understandable, efficient, and accurate manner.

## Course Map

Relevant Standards	Enduring Understandings	Essential Questions	Common Assessments
9.1.12.B.3 9.1.12.F.2 9-10.RST.3 11-12.RST.3	Following safety procedures and using personal protection equipment will reduce the risk of injury.	<p>What are the safety concerns to be considered when working in a lab setting in school or on the job?</p> <p>What protection can be used in a laboratory environment?</p> <p>What characteristics are essential for an effective safety program and job environment?</p>	<a href="#">Safety Performance Test</a>
1.1.12.D.1 1.3.12.D.2 1.4.12.B.1,3 8.1.12.C.1 8.2.12.A.1 8.2.12.B.1,2 8.2.12.C.2 8.2.12.F.3 8.2.12.G.1 9.1.12.D.1 8.2.12.G.1 9-10.RST.1, 4, 7, 10 9-10.WHST. 1, 4, 7, 9, 10	Computer-aided design (CAD) and traditional technical drawing are both important and have varied applications in today's workplace.	<p>How are CAD and technical drawing used in today's workplace?</p> <p>What are some applications of CAD and technical drawing?</p>	<a href="#">Hand Drawing vs. CAD</a> <a href="#">One-Story Home Design</a> <a href="#">Architect-Client Role-play</a> <a href="#">Elevation Drawings</a> <a href="#">Recycled Material Model</a>
8.1.12.F.2 8.2.12.B.3 8.2.12.C.2 8.2.12.F.2 9-10.RST.3	Design is influenced by several factors including historical trends, financial resources, environmental considerations, family needs, and availability of resources.	<p>How does the environment influence building designs?</p> <p>What is the difference between artistic design and engineering design?</p> <p>How is design influenced by financial resources, environmental considerations, family needs, and availability of resources?</p>	<a href="#">Regional Home Style Comparison/Contrast</a>
1.3.12.D.2 1.4.12.B.3 8.2.12.B.2 8.2.12.F.3 9-10.RST.4, 7	Architectural floor plans are the most important architectural drawing from which all other plans are derived.	<p>What are floor plans?</p> <p>Why are floor plans dimensioned?</p> <p>Why are floor plans the most detailed way to embody a building/house?</p>	<a href="#">One-Story Home Design</a>

## Course Map

Relevant Standards	Relevant Standards	Relevant Standards	Relevant Standards
1.1.12.D.1 1.3.12.D.2 1.4.12.B.1 9.1.12.D.1 9-10.RST.7 9-10.WHST.7	Architectural styles have identifiable characteristics that have both desirable and undesirable features for a client.	What different aspects of a home make the design desirable or undesirable to a client?  What is the difference between functional and aesthetic features?	<a href="#">Architect-Client Role-play</a>
8.1.12.A.2, 4 8.1.12.C.1 8.2.12.A.1 8.2.12.F.1-3 9-10.RST.4, 7 9-10.WHST.6	Architectural modeling provides a 3D visual opportunity to see the finished building before construction begins.	What is the purpose of creating 3D architectural models?  What tools and materials are commonly used for architectural model building?  What are some safety concerns when working on architectural models?	<a href="#">Floor Plans: Hand-Drawn to 3D</a>
8.1.12.C.1 8.2.12.A.1 8.2.12.G.1 9-10.RST.4	Elevation drawings provide the builder and client with an opportunity to view a design in its completed state, along with construction details and finishing materials.	What is an elevation drawing?  What information can be obtained from an elevation drawing?  How are floor plans used to create elevation drawings?	<a href="#">Elevation Drawings</a>
8.2.12.A.1 8.2.12.B.1 8.2.12.C.2 8.2.12.G.1 9-10.RST.1, 7,10 9-10.WHST.1,4,9,10	Materials and resources can be utilized in various ways, resulting in a more environmentally friendly and cost effective design.	What is the advantage of reusing materials?  How can a design be environmentally friendly and cost effective?  What is the importance of using LEED standards in your design?	<a href="#">Recycled Material Model</a>
8.1.12.F.2 8.2.12.B.3 9.3.12.C.1-10 9-10.RST.7 9-10.WHST.2,4,7	Architectural careers have various avenues for employment.	What are the different career paths an architectural degree can lead to?  What are the different architectural degrees one can receive?	<a href="#">Architecture Career Exploration</a>

## Enduring Understandings & Pacing

Unit Title	Unit Understandings	Recommended Duration
<a href="#">1: Introduction to Self-Management &amp; Safety</a>	Following safety procedures and using personal protection equipment will reduce the risk of injury.	2 weeks
<a href="#">2: Overview of Architectural Drawing</a>	Computer-aided design (CAD) and traditional technical drawing are both important and have varied applications in today's workplace.	4-5 weeks
<a href="#">3: Design – Art vs. Engineering</a>	Design is influenced by several factors including historical trends, financial resources, environmental considerations, family needs, and availability of resources.	4-5 weeks
<a href="#">4: Architectural Floor Plans</a>	Architectural floor plans are the most important architectural drawing from which all other plans are derived.  Computer-aided design (CAD) and traditional technical drawing are both important and have varied applications in today's workplace.	3-4 weeks
<a href="#">5: Architectural Styles</a>	Architectural styles have identifiable characteristics that have both desirable and undesirable features for a client.  Computer-aided design (CAD) and traditional technical drawing are both important and have varied applications in today's workplace.	4-5 weeks
<a href="#">6: 3D &amp; CAD Modeling</a>	Architectural modeling provides a 3D visual opportunity to see the finished building before construction begins.  Computer-aided design (CAD) and traditional technical drawing are both important and have varied applications in today's workplace.	4-5 weeks
<a href="#">7: Elevation Drawings</a>	Elevation drawings provide the builder and client with an opportunity to view the design in its completed state along with construction details and finishing materials.  Computer-aided design (CAD) and traditional technical drawing are both important and have varied applications in today's workplace.	3-4 weeks

## Enduring Understandings & Pacing

Unit Title	Unit Understandings	Recommended Duration
<a href="#">8:Sustainable Structure Design</a>	Materials and resources can be utilized in various ways, resulting in a more environmentally friendly and cost effective design. Computer-aided design (CAD) and traditional technical drawing are both important and have varied applications in today's workplace.	3-4 weeks
<a href="#">9: Careers in Architecture</a>	Architectural careers have various avenues for employment.	2 weeks

**ARCHITECTURE I****UNIT 1: INTRODUCTION TO SELF-MANAGEMENT AND SAFETY****SUGGESTED DURATION: 2 weeks****UNIT OVERVIEW**

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Following safety procedures and using personal protection equipment will reduce the risk of injury.	<p>What are the safety concerns to be considered when working in a lab setting in school or on the job?</p> <p>What protection can be used in a laboratory environment?</p> <p>What characteristics are essential for an effective safety program and job environment?</p>

**LEARNING TARGETS**

NJCCCS/CCSS	COMMON ASSESSMENT	LEARNING GOALS
9.1.12.B.3 9.1.12.F.2 9-10.RST.3 11-12.RST.3	Performance test to include procedures, operations, and applications through manipulation of materials. Reading passages with text-based questions and hands-on lab practical should be included.	<p>The proficient student will be able to:</p> <ul style="list-style-type: none"> <li>• demonstrate knowledge of safety procedures, operations;</li> <li>• practice correct safety procedures through hands-on manipulatives;</li> <li>• utilize varied equipment properly;</li> <li>• dress appropriately for the equipment being utilized;</li> <li>• comprehend complex informational text by drawing relevant evidences to construct effective arguments and analyses.</li> </ul>

**SUGGESTED STRATEGIES**

ACTIVITIES	DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE
Students will create posters illustrating and explaining room safety procedures.	Utility knife Hot glue gun Safety glasses Cutting mat Blade-safe container Blood-borne pathogens	<ul style="list-style-type: none"> <li>• Identify locations of needed supplies and materials.</li> <li>• Demonstrate proper protocol for blood-borne pathogens.</li> <li>• Demonstrate proper protocol for use of tools, equipment, and safety gear.</li> </ul>
Students will engage in a live role-play based on assigned tool, demonstrating proper and improper use.		<ul style="list-style-type: none"> <li>• Identify proper hand placement using hand tools.</li> <li>• Demonstrate proper use and then disposal of used blades.</li> <li>• Demonstrate personal responsibility for using tools.</li> </ul>



SUGGESTED STRATEGIES		
ACTIVITIES	DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE
Students will read and answer text-based questions from a technical manual involving blood-borne pathogens from PEOSH, OSHA, CDC, or Red Cross.	Blood-borne pathogen Direct/indirect contact Respiratory droplet transmission Vector-borne transmission OESHA CDC PEOSH Disposable glove	<ul style="list-style-type: none"> <li>• Demonstrate safe practices when biological substances are present.</li> <li>• Identify guidelines for preventing infection.</li> <li>• Comprehend science/technical text independently.</li> <li>• Follow precisely a complex multistep procedure when performing technical tasks.</li> </ul>

SUGGESTED MODIFICATIONS	
TECHNOLOGY INTEGRATION	
<b>Activity Alternatives</b> Students can create a podcast or radio PSA instead of creating a poster. Students can create a safety video instead of a live sketch.	<b>Student Monitoring</b> Students will participate in online quizzes with QuizStar to formatively assess understanding of safety.
DIFFERENTIATION	
Teacher can group students based on learning level, age, or grade level in order to optimize learning.	
Students performing at a higher level can: <ul style="list-style-type: none"> <li>• Incorporate more depth into their safety video.</li> <li>• Be given a more complicated tool to explain.</li> </ul>	
Students performing at a lower level could be: <ul style="list-style-type: none"> <li>• Provided with an outline for a video.</li> <li>• Provided with specific resources to support the creation of a poster.</li> </ul>	

**ARCHITECTURE I****UNIT 2: OVERVIEW OF ARCHITECTURAL DRAWING****SUGGESTED DURATION: 4-5 weeks****UNIT OVERVIEW**

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Computer-aided design (CAD) and traditional technical drawing are both important and have varied applications in today's workplace.	How are CAD and technical drawing used in today's workplace? What are some applications of CAD and technical drawing?

**LEARNING TARGETS**

NJCCCS/CCSS	COMMON ASSESSMENT	LEARNING GOALS
8.2.12.A.1 9.1.12.A.1 9-10.RST.3, 4 11-12.RST.3, 4	Students will read technical manuals that identify various advantages and disadvantages of hand drawings vs. CAD. Students will then create the same drawing via hand drawing and CAD, then write a reflection on the advantages and disadvantages of both.	the proficient student will be able to: <ul style="list-style-type: none"> <li>analyze tools for specific uses;</li> <li>demonstrate the safe use and care of drawing tools;</li> <li>accurately create drawings within a specific scale;</li> <li>describe and/or demonstrate various applications of CAD and technical drawing.</li> </ul>

**SUGGESTED STRATEGIES**

ACTIVITIES	DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE
Students will research different avenues toward a career of CAD and technical drawing in order to prepare for a mock interview. Students will create drawings using both methods in order to place in their portfolios and bring to the mock interview.	CAD Architect Landscape architect Civil engineer Interior design Building trades	<ul style="list-style-type: none"> <li>Demonstrate research techniques using classroom technology.</li> <li>Describe a career that architectural knowledge would be utilized.</li> <li>Conduct short and sustained research projects to answer a question or solve a problem.</li> </ul>

**SUGGESTED STRATEGIES**

ACTIVITIES	DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE
Students will measure a given object to 1/16" accuracy and be able to recreate the object to a given scale.	Architectural scale Ruler SI units	<ul style="list-style-type: none"> <li>Demonstrate measurement of designated objects.</li> <li>Demonstrate understanding of unit conversions.</li> </ul>

SUGGESTED STRATEGIES		
ACTIVITIES	DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE
Students create basic page layout including a border and title block incorporating the proper information.	Compass T-square Triangle Lead pointer Drafting tape/dots Drawing board	<ul style="list-style-type: none"> <li>Exhibit the ability to draw straight and consistent lines.</li> <li>Display proper usage of tools to establish neatness.</li> </ul>

SUGGESTED MODIFICATIONS	
TECHNOLOGY INTEGRATION	
<p><b>Activity Alternatives</b></p> <p>Students can utilize CAD instead of hand drawings.</p> <p>Students can collaborate using Today's Meeting regarding the differences between CAD and technical drawing.</p> <p>Guest speakers can visit students through videoconference to discuss professional aspects of architectural drawing.</p>	<p><b>Student Monitoring</b></p> <p>The teacher will monitor student activity and facilitate on an online discussion board on the given CAD topic.</p>
DIFFERENTIATION	
<p>Students performing at a higher level could be asked to measure to a higher degree of precision.</p> <p>Students performing at a lower level could be given basic objects to measure.</p> <p>Students can measure objects around the school, comparing accuracy and SI units.</p>	

**ARCHITECTURE I****UNIT 3: DESIGN - ART VS. ENGINEERING****SUGGESTED DURATION: 4-5 WEEKS****UNIT OVERVIEW**

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Design is influenced by several factors including historical trends, financial resources, environmental considerations, family needs, and availability of resources.	<p>How does the environment influence building designs?</p> <p>What is the difference between artistic design and engineering design?</p> <p>How is design influenced by financial resources, environmental considerations, family needs, and availability of resources?</p>

**LEARNING TARGETS**

NJCCCS/CCSS	COMMON ASSESSMENT	LEARNING GOALS
8.1.12.F.2 8.2.12.B.3 8.2.12.C.2 8.2.12.F.2 9-10.RST.3	Students will create a multimedia presentation, presenting two particular home styles in different parts of the country, comparing/contrasting the impact of resources, environment, family needs, etc.	<p>The proficient student will be able to:</p> <ul style="list-style-type: none"> <li>• classify various home styles in different regions;</li> <li>• analyze differences between the four basic home designs;</li> <li>• discuss the strategy behind material choice in various regions;</li> <li>• use technology, including the Internet, to display information dynamically.</li> </ul>

**SUGGESTED STRATEGIES**

ACTIVITIES	DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE
Students will break into teams. Teacher will give a précis of home styles, as well as a collection of photos. Teams will try to properly categorize the photographs, competing to see which team is the most accurate.	Ranch Cape Cod Two story Split level	<ul style="list-style-type: none"> <li>• Classify home styles into categories.</li> <li>• Describe characteristics of home designs.</li> </ul>
Students design and create an advertisement based on assigned element that influences design, having the ability to choose from environment, financial influences, family needs, historical trends, availability of resources.	Northeast Southeast Midwest West Southwest Pacific Northwest	<ul style="list-style-type: none"> <li>• Assess home designs based on material availability of the region.</li> <li>• Examine the necessity of material usage in regions.</li> </ul>

<b>SUGGESTED MODIFICATIONS</b>	
<b>TECHNOLOGY INTEGRATION</b>	
<p><b>Activity Alternatives</b>            Students can create an online portfolio instead of creating a written portfolio.            Guest speakers can visit students through videoconference to discuss nuances of design and resources.</p>	<p><b>Student Monitoring</b>            Students can participate in an online discussion board about specific design aspects on class website.</p>
<b>DIFFERENTIATION</b>	
<p>Students performing at a lower level can be provided with guided research ideas.            Students performing at a lower level can be provided with specific websites and prompted worksheets.            Students performing at a lower level can create a portfolio from a provided template.            Students can be given the choice to choose their region.            Students can be given the option to work in partners or individually.</p>	

**ARCHITECTURE I****UNIT 4: ARCHITECTURAL FLOOR PLANS****SUGGESTED DURATION: 3-4 weeks****UNIT OVERVIEW**

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Architectural floor plans are the most important architectural drawing from which all other plans are derived.	What are floor plans? Why are floor plans dimensioned? Why are floor plans the most detailed way to embody a building/house?
Computer-aided design (CAD) and traditional technical drawing are both important and have varied applications in today's workplace.	How are CAD and technical drawing used in today's workplace?

**LEARNING TARGETS**

NJCCCS/CCSS	COMMON ASSESSMENT	LEARNING GOALS
1.3.12.D.2 1.4.12.B.3 8.2.12.B.2 8.2.12.F.3 9-10.RST.4, 7	Students will complete a simple one story home design and classify the three areas of a home.	The proficient student will be able to: <ul style="list-style-type: none"> <li>• categorize various rooms in a home;</li> <li>• create a simple floor plan using a scale;</li> <li>• create a basic page layout with a title block.</li> </ul>

**SUGGESTED STRATEGIES**

ACTIVITIES	DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE
Students will create a detailed floor plan with furniture and proper clearances based on a teacher assigned room.	Living area Service area Sleeping area Architectural scale Drawing board Drafting dots T-square Templates	<ul style="list-style-type: none"> <li>• Develop a functional floor plan based on given dimensions and constraints.</li> <li>• Demonstrate proper protocol for creating a floor plan.</li> </ul>
Students will complete activities based on examining the traffic circulation patterns of a home.	Traffic circulation Movement patterns Work triangle	<ul style="list-style-type: none"> <li>• Develop a functional traffic pattern.</li> <li>• Explain what encompasses a functional traffic pattern.</li> </ul>

## SUGGESTED MODIFICATIONS

### TECHNOLOGY INTEGRATION

#### Activity Alternatives

Students can research online for an appropriate floor plan to model.  
Students can render a portion of their design in a CAD program and present to the class via PowerPoint or Prezi.  
Guest speakers can visit students through videoconference to discuss common issues that arise with floor plan creation.

#### Student Monitoring

Students can answer question based on traffic circulation through Socrative.

### DIFFERENTIATION

Students can have the option to choose a floor plan from the Internet.  
Students of higher ability levels can be directed to more challenging floor plans.  
Students of a lower ability level can be directed to floor plans that include all dimensions and are mostly square or rectangular.  
Students can have the option to participate in a class field trip to an architectural firm to discuss the importance of a floor plan.

**ARCHITECTURE I****UNIT 5: ARCHITECTURAL STYLES****SUGGESTED DURATION: 4-5 weeks****UNIT OVERVIEW**

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Architectural styles have identifiable characteristics that have both desirable and undesirable features for a client.	What different aspects of a home make the design desirable or undesirable to a client? What is the difference between functional and aesthetic features?
Computer-aided design (CAD) and traditional technical drawing are both important and have varied applications in today's workplace.	What are some applications of CAD and technical drawing?

**LEARNING TARGETS**

NJCCCS/CCSS	COMMON ASSESSMENT	LEARNING GOALS
1.1.12.D.1 1.3.12.D.2 1.4.12.B.1 9.1.12.D.1 9-10.RST.7 9-10.WHST.7	Students will be placed with a partner to create a list of specific client demands (each partner creates their own) and then a sketch based on their partner's demands.	The proficient student will be able to: <ul style="list-style-type: none"> <li>design to client's specifications;</li> <li>accurately depict a specific architectural style;</li> <li>communicate effectively and professionally with a client.</li> </ul>

**SUGGESTED STRATEGIES**

ACTIVITIES	DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE
Students will work with partners to research architectural styles and present to class. Students can post their presentation on a discussion board to discuss their architectural style.	Victorian / Gothic / Georgian / Colonial / Federal / Tudor Contemporary Craftsman	<ul style="list-style-type: none"> <li>Explain how a particular architecture style was developed.</li> <li>Distinguish characteristics of particular style.</li> <li>Synthesize information about the architectural style.</li> </ul>
Students will create a poster that identifies key facts and characteristics of specific architectural style.	Frieze Half-timbering Columns Portico Roof types Window styles	<ul style="list-style-type: none"> <li>Synthesize information about the architectural style.</li> <li>Create a visual representation of the architectural style.</li> </ul>
Students will read technical articles on specific architectural styles and compare/contrast their characteristics.	Symmetry Asymmetry	<ul style="list-style-type: none"> <li>Examine differences in architectural styles.</li> </ul>



## SUGGESTED MODIFICATIONS

### TECHNOLOGY INTEGRATION

#### Activity Alternatives

Students can create PowerPoint or Prezi instead of creating a poster.

Students can create a video instead of presenting to the class.

Guest speakers can visit students through videoconference to discuss their preferred architectural style versus meeting client and regional tastes.

#### Student Monitoring

Students will participate in online quizzes with QuizStar to formatively assess understanding of presentations/architectural styles.

### DIFFERENTIATION

Students can choose the manner in which they present their information.

Students can be guided to appropriate architectural style choices.

**ARCHITECTURE I****UNIT 6: 3D AND CAD MODELING****SUGGESTED DURATION: 4-5 WEEKS****UNIT OVERVIEW**

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Architectural modeling provides a 3D visual opportunity to see the finished building before construction begins.	<p>What is the purpose of creating 3D architectural models?</p> <p>What tools and materials are commonly used for architectural model building?</p> <p>What are some safety concerns when working on architectural models?</p>

**LEARNING TARGETS**

NJCCCS/CCSS	COMMON ASSESSMENT	LEARNING GOALS
<p>8.1.12.A.2, 4</p> <p>8.1.12.C.1</p> <p>8.2.12.A.1</p> <p>8.2.12.F.1-3</p> <p>9-10.RST.4, 7</p> <p>9-10.WHST.6</p>	Create a floor plan in a CAD program (Autodesk Revit) based off the students' own hand-drawn design.	<p>The proficient student will be able to:</p> <ul style="list-style-type: none"> <li>• create a new CAD document;</li> <li>• lay out all basic rooms in appropriate locations;</li> <li>• place windows, doors and rooms so that traffic can circulate;</li> <li>• appropriately place furniture within the CAD program;</li> <li>• translate technical information expressed in words into visual form;</li> <li>• practice all appropriate safety guidelines, utilize equipment properly, and don personal safety equipment (when necessary).</li> </ul>

**SUGGESTED STRATEGIES**

ACTIVITIES	DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE
Design model of a kitchen in a CAD program (Autodesk Revit).	<p>Work triangle</p> <p>Parametric modeling</p> <p>Constraints</p> <p>Corridor</p> <p>Island</p> <p>Peninsula</p> <p>Straight line</p> <p>L-Shape / U-Shape</p>	<ul style="list-style-type: none"> <li>• Model the design of a hand-drawn kitchen using a computer to aid design.</li> <li>• Demonstrate knowledge of design specifications and constraints for traffic circulation.</li> </ul>
Build a scale model of kitchen using provided materials.	<p>Utility knife</p> <p>Rabbit joint</p> <p>Jorgensen clamps</p> <p>C-clamps</p>	<ul style="list-style-type: none"> <li>• Demonstrate quality craftsmanship by having straight cuts and cleaning off excess glue.</li> <li>• Demonstrate safety practices while creating models.</li> </ul>

<b>SUGGESTED MODIFICATIONS</b>	
<b>TECHNOLOGY INTEGRATION</b>	
<p><b>Activity Alternatives</b>            Use online collaboration tools such as ThingLink or CloudMe.            Guest speakers can visit students through videoconference to discuss and display professional 3D models.</p>	<p><b>Student Monitoring</b>            Students will take a screen capture of their progress daily and submit.            Teacher can use ImageQuiz to assess students on CAD terms and processes.</p>
<b>DIFFERENTIATION</b>	
<p>Students can choose the manner in which they place items in their rooms.            Students who perform at a lower level could receive a reference sheet of common tasks.            Students can choose to work in pairs or individually.</p>	

**ARCHITECTURE I**  
**UNIT 7: ELEVATION DRAWINGS**

**SUGGESTED DURATION: 3-4 WEEKS**

**UNIT OVERVIEW**

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Elevation drawings provide the builder and client with an opportunity to view a design in its completed state, along with construction details and finishing materials.	<p>What is an elevation drawing?</p> <p>What information can be obtained from an elevation drawing?</p> <p>How are floor plans used to create elevation drawings?</p>
Computer-aided design (CAD) and traditional technical drawing are both important and have varied applications in today's workplace.	<p>What are some applications of CAD and technical drawing?</p>

**LEARNING TARGETS**

NJCCCS/CCSS	COMMON ASSESSMENT	LEARNING GOALS
<p>8.1.12.C.1</p> <p>8.2.12.A.1</p> <p>8.2.12.G.1</p> <p>9-10.RST.4</p>	<p>Students will use specific floor plans in order to create elevation drawings.</p>	<p>The proficient student will be able to:</p> <ul style="list-style-type: none"> <li>accurately transfer dimensions from a floor plan to elevations;</li> <li>draw components of the house in detail;</li> <li>incorporate design constraints into elevation drawing.</li> </ul>

**SUGGESTED STRATEGIES**

ACTIVITIES	DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE
<p>Students will study sample elevation drawings and answer questions pertaining to their specific drawing.</p>	<p>Fascia board</p> <p>Window sills</p> <p>Aluminum siding</p> <p>Brick</p> <p>Stone</p>	<ul style="list-style-type: none"> <li>Interpret symbols and dimensions on an elevation drawing.</li> <li>Describe characteristics of assigned elevations.</li> <li>Determine the meaning of symbols used in a technical context.</li> <li>Translate quantitative or technical information expressed visually or mathematically from a text into words.</li> </ul>

<b>SUGGESTED MODIFICATIONS</b>	
<b>TECHNOLOGY INTEGRATION</b>	
<p><b>Activity Alternatives</b>            Students can create elevations using CAD instead hand drawing.            Guest speakers can visit students through videoconference to discuss the process of designing from a floor plan to an elevation model.</p>	<p><b>Student Monitoring</b>            Students can participate in an online critique, such as ThingLink.            Students can post renderings on to a class website for peer and teacher review.</p>
<b>DIFFERENTIATION</b>	
<p>Teachers can set expectations for drawings of various difficulty levels.            Students who have difficulty can use templates to aid in the neatness of their drawings.</p>	

**ARCHITECTURE I****UNIT 8: SUSTAINABLE STRUCTURE DESIGN****SUGGESTED DURATION: 3-4 WEEKS****UNIT OVERVIEW**

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Materials and resources can be utilized in various ways, resulting in a more environmentally friendly and cost effective design.	<p>What is the advantage of reusing materials?</p> <p>How can a design be environmentally friendly and cost effective?</p> <p>What is the importance of using LEED standards in your design?</p>
Computer-aided design (CAD) and traditional technical drawing are both important and have varied applications in today's workplace.	<p>How are CAD and technical drawing used in today's workplace?</p>

**LEARNING TARGETS**

NJCCCS/CCSS	COMMON ASSESSMENT	LEARNING GOALS
<p>8.2.12.A.1</p> <p>8.2.12.B.1</p> <p>8.2.12.C.2</p> <p>8.2.12.G.1</p> <p>9-10.RST.1, 7,10</p> <p>9-10.WHST.1,4,9,10</p>	<p>Design and create a model of a structure using only recycled material, then draft a proposal how their structure meets LEED standards and discuss the ethical implications of LEED standards.</p>	<p>The proficient student will be able to:</p> <ul style="list-style-type: none"> <li>• accurately identify qualifications for LEED certification;</li> <li>• investigate possible materials for reuse;</li> <li>• model a structure using environmentally friendly material and techniques.</li> </ul>

**SUGGESTED STRATEGIES**

ACTIVITIES	DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE
<p>Students will participate in a research project that investigates famous environmentally friendly structures. Students will then create a digital presentation explaining why the structure is famous and what classifications the structure meets in order to qualify as environmentally friendly.</p>	<p>LEED</p> <p>Sustainability</p> <p>Recycling</p> <p>Atmosphere</p> <p>Longevity</p> <p>Equity</p>	<ul style="list-style-type: none"> <li>• Describe what qualifies a building to become LEED certified.</li> <li>• Summarize the components necessary for a sustainable design.</li> </ul>
<p>Students design and create a model of a functional "green" roof.</p>	<p>Drainage</p> <p>Flat roof</p> <p>American Society of Landscape Architects</p> <p>Soil pH</p> <p>Urban island heat effect</p>	<ul style="list-style-type: none"> <li>• Describe the benefits of having a "green" roof.</li> <li>• Distinguish materials for possible use in sustainable design.</li> </ul>

**SUGGESTED MODIFICATIONS**

**TECHNOLOGY INTEGRATION**

**Activity Alternatives**  
Students can investigate articles on sustainable design and post them to a class web site discussion board.  
Guest speakers can visit students through videoconference to discuss advantages and drawbacks of LEED standards.

**Student Monitoring**  
Students can use Edmodo to comment on work as it progresses.

**DIFFERENTIATION**

Students can work in partners or groups.  
Students performing at a lower level can have materials suggested to them.  
Students can choose the digital platform for their presentations to achieve different levels of detail and sophistication.  
Students performing at a high lever can incorporate more aspects into their project.

**ARCHITECTURE I**  
**UNIT 9: CAREERS IN ARCHITECTURE**

**SUGGESTED DURATION: 2 WEEKS**

**UNIT OVERVIEW**

ENDURING UNDERSTANDINGS	ESSENTIAL QUESTIONS
Architectural careers have various avenues for employment.	What are the different career paths an architectural degree can lead to? What are the different architectural degrees one can receive?

**LEARNING TARGETS**

NJCCCS/CCSS	COMMON ASSESSMENT	LEARNING GOALS
8.1.12.F.2 8.2.12.B.3 9.3.12.C.1-10 9-10.RST.7 9-10.WHST.2,4,7	Students will complete a research project based on a specific field of architecture, including educational requirements. Students will apply for a mock job in the field they researched, going through the process of creating a cover letter, resume, and preparing and sitting for an interview.	The proficient student will be able to: <ul style="list-style-type: none"> <li>• identify several fields of architecture;</li> <li>• describe differences in the fields of architecture;</li> <li>• communicate appropriately with clients.</li> </ul>

**SUGGESTED STRATEGIES**

ACTIVITIES	DECLARATIVE KNOWLEDGE	PROCEDURAL KNOWLEDGE
Students will research college degree programs in the field of architecture.	Masters of Architecture Bachelors of Architecture Portfolio ARE NAAB	<ul style="list-style-type: none"> <li>• Gather information from multiple sources to compare and contrast various degree programs.</li> <li>• Analyze graduation and job statistics.</li> </ul>
Students watch a film and complete a worksheet that coincides with the film on possible architectural careers. Students will then use their research worksheet to complete an assignment for their portfolios.	Landscape architect Commercial architect Contractor Civil engineer	<ul style="list-style-type: none"> <li>• Identify responsibilities of a career in architecture.</li> <li>• Compare and contrast salaries in various architecturally-related fields.</li> </ul>



<b>SUGGESTED MODIFICATIONS</b>	
<b>TECHNOLOGY INTEGRATION</b>	
<p><b>Activity Alternatives</b></p> <p>Students can create a mock resume on Google Drive.</p> <p>Students can create a digital advertisement for a mock architectural college.</p> <p>Guest speakers can visit students through video-conference to discuss their training, education, and professional experiences.</p>	<p><b>Student Monitoring</b></p> <p>Students can use TitanPad to collaborate ideas.</p>
<b>DIFFERENTIATION</b>	
<p>Students can work in partners or groups.</p> <p>Students can create a digital portfolio or other expression (song, etc.) instead of a resume.</p> <p>Students can take on different roles—interviewer, interviewee, etc.—throughout the projects in this unit.</p> <p>Students can go on a field trip to an architectural firm.</p>	