



**2017-2018**

# ***Construction Technology*** **OUTLINE**

## **DESCRIPTION:**

Construction Technology includes instruction in construction math, vocabulary, blueprint design and reading, introduction to tools, equipment, materials, and pre-employment skills. Construction Technology covers topic-specific competencies in layout and framing, site preparation and layout, interior carpentry, roof framing, electrical, plumbing, masonry, insulation, and exterior design. Activities in this course include work-based learning that connects students to industry and the local community. A student must successfully complete at least two years of this program as part of the minimum requirements for articulation.

## **INFORMATION:**

- A. Pre-requisite: None
- B. Length: (Up to) Four years
- C. Sector: Building & Construction Trades
- D. Pathway: Residential and Commercial Construction

<b>O*Net SOC Codes</b>	
<b>Code #</b>	<b>Title</b>
47-2013.01	Construction Carpenter
47-2031.02	Carpenter, Rough
47-3012.00	Carpenter, Helper

<b>Orientation</b>
<ul style="list-style-type: none"><li>A. Introduce the course and facilities.</li><li>B. Discuss the syllabus and major objectives.</li><li>C. Explain applicable classroom management procedures, the ROP Student Rules of Conduct, and any operational guidelines.</li><li>D. Review instructor/student expectations.</li><li>E. Explain enrollment and attendance requirements and procedures.</li><li>F. Review grading and student evaluation procedures.</li><li>G. Discuss the community classroom aspect of the program if applicable.</li><li>H. Discuss the “next steps” related to additional education, training, and employment.</li><li>I. Review classroom safety, emergency and disaster procedures.</li></ul>
<b>1. Communication Skills</b>
<ul style="list-style-type: none"><li>A. Demonstrate positive verbal communication skills using appropriate vocabulary, demeanor, and vocal tone in the classroom and/or worksite.</li><li>B. Read and interpret written information and directions.</li><li>C. Practice various forms of written communication appropriate to the occupation.</li><li>D. Practice positive body language skills.</li><li>E. Practice professional verbal skills for resolving a conflict.</li><li>F. Demonstrate active listening skills including techniques for checking for understanding, and for obtaining clarification of directions.</li></ul>
<b>2. Interpersonal Skills</b>
<ul style="list-style-type: none"><li>A. Demonstrate positive teamwork skills by contributing to a group effort.</li><li>B. Practice the importance of diversity awareness and sensitivity in the workplace.</li><li>C. Define sexual harassment in the workplace and identify the employee’s role and responsibility.</li><li>D. Practice participation skills.</li><li>E. Identify different personality types and strategies for working effectively with each type.</li><li>F. Practice business and social etiquette skills appropriate to the occupation.</li><li>G. Discuss the role of business and personal ethics in the decision-making process.</li><li>H. Evaluate various job-related scenarios and justify decisions based on ethics.</li><li>I. Demonstrate flexibility and adaptability in working with others.</li><li>J. Demonstrate the use of time management skills.</li></ul>
<b>3. Employability Skills</b>
<ul style="list-style-type: none"><li>A. Demonstrate appropriate attendance and punctuality practices for the classroom and worksite if applicable.</li></ul>

- B. Prepare a resume, cover letter, and job application forms.
- C. Demonstrate interviewing techniques using appropriate tone and body language.
- D. Demonstrate appropriate dress and grooming standards in seeking employment and for the workplace.
- E. Identify strategies for employment retention.
- F. Analyze the impact of social networking on employability.
- G. Identify the need for continuing education, professional development, and professional growth in chosen field.
- H. Identify appropriate procedures for leaving a job.
- I. Identify sources of job information, including electronic sources.
- J. Review company policies and current trends in employee compatibility screening, drug screening, and background checks.

#### 4. Leadership

- A. Define leadership and identify the responsibilities, competencies, and behaviors of successful leaders.
- B. Work with peers to promote divergent and creative perspectives.
- C. Demonstrate how to organize and structure work, individually and in teams, for effective performance and the attainment of goals.
- D. Explain multiple approaches to conflict resolution and their appropriateness for a variety of situations in the workplace.
- E. Employ ethical behaviors and actions that positively influence others.
- F. Use a variety of means to positively impact the direction and actions of a team or organization.
- G. Analyze the short-term and long-term effects a leader's actions and attitudes can have on productivity, morale, and organizational culture.

#### 5. Personal and Occupational Safety

- A. Demonstrate procedures to be followed in the case of emergencies.
- B. Discuss ways to report a potential safety hazard to a supervisor.
- C. Identify and discuss cyber ethics, cyber safety, and cyber security.
- D. Apply personal safety practices to and from the job.
- E. Describe the procedure for reporting a work-related hazard or injury.
- F. Recognize the effects of substance abuse in the workplace.
- G. Recognize good housekeeping as a safety issue.
- H. Explain importance of CAL-OSHA.
- I. Discuss the electrical hazards of working with construction equipment.

#### 6. Overview of Construction Industry

- A. Identify trends in the construction industry.
- B. Identify pre-construction activities.
- C. Explain the role of contractors and sub-contractors.

D. Discuss the role labor unions play in the construction industry.

## 7. Regulatory Constraints, Standards & Sustainability

- A. Discuss the function of the Americans with Disabilities Act.
- B. Identify the purposes of zoning ordinances and building codes.
- C. Identify sustainable building certification systems.
- D. Identify sustainable development and construction concepts.

## 8. Construction Math

- A. Measure accurately using a tape measure and/or a carpenter's rule up to increments of sixteenths.
- B. Use 3-4-5 method to layout interior partitions and to the perimeter of a building slab.
- C. Accurately compute linear, square and board feet.
- D. Practice reading and taking measurements in standard units and decimals.
- E. Add, subtract, multiply, and divide fractions.
- F. Convert between fractions, decimals, and percent.
- G. Accurately use a decimal equivalent table/chart.

## 9. Materials: Nails, Fasteners, Adhesives

- A. Distinguish different types of nails and their uses.
- B. Distinguish different types of screws and their uses.
- C. Identify staples and their uses.
- D. Distinguish types of adhesives and their appropriate and safe use.
- E. Discuss requirements of galvanized fasteners for pressure treated materials.
- F. Explain the effects of moisture to galvanized and pressure treated materials.

## 10. Materials: Wood

- A. Identify engineered wood products and other alternatives and understand their uses.
- B. Distinguish grades of woods.
- C. Correctly read grading stamps on wood.
- D. Discuss the manufacturing and grading of plywood.
- E. Identify soft woods and their characteristics.
- F. Identify hard woods and their characteristics.
- G. Recognize imperfections in wood and describe their effects.
- H. Describe the advantages and disadvantages of treating wood e.g. protection from termites, moisture, and fire.

- I. Describe the causes and effects of shrinkage.
- J. Demonstrate proper care and handling of wood on job sites.
- K. Estimate material costs.
- L. Identify standard inch lumber sizes.
- M. Locate grades of wood identified in the structural requirements of the blueprints.

## 11. Hand Tools

- A. Demonstrate the correct and safe use of measuring instruments, including measuring tapes, levels, and squares, and architect's scale.
- B. Demonstrate proper maintenance of tools.
- C. Identify correctly, and safely use and care for the following hand tools: hammers, pry-bars/CATS paw, saws, clamps, chalk line, plumb bob, screwdrivers, pliers, drill bits.
- D. Discuss the importance of investing in quality tools (cost vs. quality).

## 12. Stationary and Portable Power Tools

- A. Describe the special safety precautions necessary in using power tools.
- B. Identify correctly, and safely use and care for the following power tools: portable power saw, portable electric drill, reciprocating saw, portable power sander, stationary radial arm saw, stationary table saw, stationary drill press, pneumatic nailer, pneumatic stapler.
- C. Demonstrate proper maintenance of tools and explain the hazards associated with modifications.
- D. Discuss the importance of investing in quality tools (cost vs. quality).

## 13. Introduction to Framing

- A. Explain the influence codes and ordinances have on the design of light frame buildings.
- B. Use framing terminology correctly.
- C. Identify the methods used to construct light frame buildings.
- D. Describe the importance of careful and correct framing.
- E. Describe structural design concepts.

## 14. Floor Framing

- A. Describe and demonstrate the application and installation of sub-flooring.
- B. Compare and contrast different framing systems.
- C. Demonstrate steps in floor construction, including sill joists, bridgings, and openings.
- D. Identify materials needed and estimate costs for a job.

## 15. Wall Framing

- A. Lay out walls, studs, headers, cripples, and frames.
- B. Identify causes and effects of wood shrinkage.
- C. Define exterior walls and describe the process for their construction.
- D. Explain how to frame window openings.
- E. Explain the uses of bracing.
- F. Describe the importance of fire stops and fire caulking.
- G. Lay out doors, window openings, fire- blocks and diagonal braces.
- H. Raise a brace and plumb wall.
- I. Estimate time and material costs.
- J. Describe fire ratings for walls.

## 16. Roof Framing

- A. Demonstrate safety practices associated with roofing including procedures for safe climbing and proper use of fall protection (i.e., harnessing).
- B. Demonstrate safe techniques for use of framing square, hammers, hatchets, saws, and other related roofing tools.
- C. Develop a materials list according to the specifications.
- D. Define common terms used in roofing.
- E. Illustrate roof designs and describe their functions.
- F. Differentiate between rafters and trusses.
- G. Read and interpret blueprints and building codes.
- H. Identify the following roof covering materials and their functions: tile, fiberglass, asphalt, composition shingles, and hot mop.
- I. Determine appropriate underlayment for roof covering using specifications.
- J. Determine ventilation requirements and locations.
- K. Identify common, hip, valley, and jack rafters and their uses.
- L. Calculate correct overhang, mark and cut.
- M. Cut ridge length to plans.
- N. Cut and install purlins, gable studs and frieze blocks.
- O. Brace ridge and rafters.
- P. Install underlayment per building codes and specifications.
- Q. Cut overhangs, roof vents, and install fascia.
- R. Install crickets as needed.
- S. Perform roof repairs as required.

## 17. Site Preparation

- A. Lay out a simple building.
- B. Identify ground hazards common to preparing a site.
- C. Read a blueprint and interpret site requirements.
- D. Describe the types of heavy and light equipment commonly used in site preparation and discuss related safety issues.
- E. Describe steps for preparing the plot.
- F. Using plans and tape measures, square the building on site.
- G. Describe the materials used for layout.
- H. Explain notification procedures for underground alert.

## 18. Electrical

- A. Describe an electrical current and the difference between AC and DC current.
- B. Explain secure grounding using GFCI requirements and uses.
- C. Identify electrical design concepts.
- D. Practice safety procedures when working with or around electrical sources.
- E. Identify and explain installation of switches and outlet boxes.
- F. Identify and explain installation of cable.
- G. Identify the various sources of electrical power and how it is distributed.

## 19. Drywall & Insulation

- A. Understand codes and ratings for installation of drywall.
- B. Cut and measure accurately.
- C. Tape, mud and prep for finishes.
- D. Install corner beads.
- E. Identify appropriate types of insulation for various applications in the design of a building.
- F. Discuss heat transfer and how insulation can be used to control it.
- G. Describe problems caused by moisture penetrating the insulation.

## 20. Painting

- A. Identify the Air Quality Regulations as they apply to solvents in coatings.
- B. Identify proper disposal of paints.
- C. Utilize proper safety equipment.
- D. Tape and prep surfaces.
- E. Distinguish the difference between interior and exterior paints.
- F. Differentiate proper tools for application of finishes.

<b>21. Blueprint Reading</b>
<ul style="list-style-type: none"><li>A. Read and interpret plans and blueprint drawings.</li><li>B. Read and interpret written specifications.</li><li>C. Use an architect's scale to measure scale drawings.</li><li>D. Identify lines, symbols and abbreviations used on blueprints.</li><li>E. Draw a multi-view drawing.</li><li>F. Interpret multi-view drawings.</li><li>G. Interpret a finish schedule.</li><li>H. Read and interpret written specifications.</li><li>I. Use an architect's scale to measure scale drawings.</li></ul>
<b>22. Plumbing</b>
<ul style="list-style-type: none"><li>A. Identify proper handling techniques and storage of combustible and/or flammable materials commonly used in plumbing.</li><li>B. Identify common hazards and safety issues related to plumbing.</li></ul> <p><u>Identify and demonstrate the correct use of:</u></p> <ul style="list-style-type: none"><li>C. Hand and electric pipe threader.</li><li>D. Pipe wrenches and pipe cutters.</li><li>E. Tubing cutters.</li><li>F. Channel locks and torpedo level.</li><li>G. Saws and chisels.</li><li>H. Install fixtures for interior finish plumbing.</li><li>I. Demonstrate proper techniques for grounding all electrical tools and equipment.</li></ul>
<b>23. Concrete</b>
<ul style="list-style-type: none"><li>A. Read and interpret safety codes and guidelines for safe use of scaffolds and mortar mixer.</li><li>B. Demonstrate proper use and care of hand tools and masonry supplies such as reinforcing bars.</li><li>C. Pour concrete slab using proper finishing techniques.</li><li>D. Read and interpret building code requirements and blueprints.</li><li>E. Develop a materials list and a cost estimate as per blueprint.</li></ul>
<b>24. Insulation</b>
<ul style="list-style-type: none"><li>A. Practice safe handling of insulation including the use of gloves, long sleeves, facemask, and eye protection.</li><li>B. Describe rating values, types of insulation and their uses.</li><li>C. Demonstrate proper use of tools for safe handling, cutting, and installing of insulation materials.</li></ul>

- D. Read and interpret building codes and blueprints.
- E. Prepare a materials list from the blueprints.
- F. Describe proper ventilation practices when working with insulation in confined spaces and identify the signs of heat exhaustion.

## 25. Solar Technology

- A. Explain the difference between active and passive systems.
- B. List the advantages and disadvantages of various PV system configurations.
- C. Explain the difference between direct, indirect, and isolated passive solar systems within buildings.
- D. Identify various forms of energy.
- E. Explain what is meant by Solar Thermal systems.
- F. Identify the key differences between AC and DC power.
- G. Interpret basic electrical concepts.
- H. Describe passive solar cooling and ways to incorporate these systems into a residential home.
- I. Determine the location of the sun throughout the year for a given site.
- J. Discuss the factors affecting solar cell efficiency.
- K. List the advantages and disadvantages of the various types of solar panels.
- L. List and discuss the function of various parts of a solar thermal system.
- M. Discuss the economics of a solar thermal system.
- N. Discuss the barriers the PV industry faces in utility-scale electrical generation.
- O. Discuss the issues and options in mounting PV systems on structures.
- P. Diagram electrical circuits in parallel and in series, and explain how the different configurations will affect the output of each circuit.

## Key Assignments

Assignment	Competencies	Career Ready Practices	Anchor Standards	Pathway Standards	CCSS
1. Students will participate in mock interviews that represent current industry practices (e.g., skills demonstrations, resumes, applications, portfolios, personal websites, etc.).	1A, B, D 3B, C, D, I, J	2 3 10	2 3		LS 11-12.6 SLS 11-12.2
2. <b>BEGINNER:</b> Students will measure and layout in detail, choosing and using tools appropriately, and performing pre-determined cuts on a 2x4.	1A-F 2A, B D, E, H, I 3A, D 5A-D, G, H 6B 8A,C,D,E 9A-C 10B, E, F, G, L 11A-D 12C,D	1 2	6.0 9.0 10.0	<u>CAB:</u> A4.0	CC 3 RSIT 11-12.2 RLST 11-12.4 SEP 8
3. <b>BEGINNER:</b> Students will complete a personal project of their choice, providing research information, creating drawings with detailed measurements, and determining material needs and layout.	1A, B, C, E, F 2B 3A 5A, B, D, E 6B 8A, C, D, E 9A-E 10 A, E-I, L 11A-D 12A-D 15B 16C	1 2 5 10 11 12	5.0 6.0 10.0	<u>CAB:</u> A3.0 A4.0	CC 3, 6 RSIT 11-12.2 RLST 11-12.4 SEP 1, 3, 4, 5, 8

Assignment	Competencies	Career Ready Practices	Anchor Standards	Pathway Standards	CCSS
	20B, C, E, F 21E, F, I 22F, G, I 24E				
<p>4. <b>BEGINNER:</b> In teams, students will create drawings with detailed measurements, draw a scaled layout sheet and build a dog house exactly as depicted.</p>	1A-F 2A, D, I, J 3A, D 5A-E, G 6B 8A, C, D, E 9A, B, D, E 10 A, B, D-J, L 11A-D 12A, C, D 13B-E 14A 15A-D 16C, D, L, M 17A, G 20B, C, E, F 21 C, E, F, I 22F, G	1 2 9 12	5.0 6.0 7.0 9.0 10.0	<u>CAB:</u> A4.0 A5.0 A9.0	CC 3, 6 RSIT 11-12.2 RLST 11-12.4 SEP 4, 5, 8 SLS 11-12.1 SLS 11-12.1b
<p>5. <b>BEGINNER:</b> In teams, students will build a model scale house shell.</p>	1A-F 2A, B, D, E, I, J 3A, D 5A, B, D, E, G 6B 8A, C-E	1 2 4 5 8	5.0 6.0 7.0 9.0 10.0	<u>CAB:</u> A4.0  <u>RES:</u> D3.0	CC 3, 6 GSRT 8 RLST 11-12.2 RLST 11-12.4 RSIT 11-12.2

Assignment	Competencies	Career Ready Practices	Anchor Standards	Pathway Standards	CCSS
	9C, D 10E, F, G, J, L 11A, B, D 12A, C, D 13B-D 14A, C 15A-D, G 16C, D, F, K-M, O 17A, G 19B 21A-C, F, H, I 24E	9		D6.0	SEP 2, 3, 4, 5, 6, 8 SLS 11-12.1 SLS 11-12.1b
6. <b>ADVANCED:</b> In teams, students will build a variety of projects to meet the needs of the high school campus.	1A-F 2A, D-F, H-J 3A, D 5A-E, G, H 6B 8A, C-E 9A-D 10A-C, E-L 11A-D 12A-D 13B, E 14D 15B 17G 19B 20B-F	1 2 7 8 9 10 11 12	5.0 6.0 7.0 9.0 10.0	<u>CAB:</u> A3.0 A4.0  <u>RES:</u> D3.0	CC 3,6 RLST 11-12.2 RLST 11-12.4 RSIT 11-12.2 SEP 2, 3, 4, 5, 6, 8 SLS 11-12.1 SLS 11-12.1b

Assignment	Competencies	Career Ready Practices	Anchor Standards	Pathway Standards	CCSS
	21A-C, E, F, H, I 23A, C, E 24E				
<p>7. <b>ADVANCED:</b> In teams, students will generate drawings and build a model scale house that has rooms/partitions.</p>	1A-F 2A, B, D, E, H, I, J 3A, D 5A, B, D, E, G 6B, C 8A-E 9C, D 10E-G, I, J, L 11A, B, D 12A, C, D 13B-E 14A-D 15A-D, G 16C-F, K-M, O 17A, E, G 19B 21A-C, F, H, I 24E	1 2 4 5 8 9	5.0 6.0 7.0 9.0 10.0	<u>CAB:</u> A3.0 A4.0  <u>RES:</u> D3.0	CC 3, 6 RLST 11-12.2 RLST 11-12.4 RSIT 11-12.2 SEP 1, 2, 3, 4, 5, 6, 8 SLS 11-12.1 SLS 11-12.1b
<p>8. <b>ADVANCED:</b> As a class, students will build to scale an authentic building.</p>	1A-F 2A, B, D-J 3A, D 5A-E, G, H 6A-C	1 2 4 5	5.0 6.0 7.0 8.0	<u>CAB:</u> A3.0 A4.0 A5.0	CC 3, 6 ETS 1B PE 12.1 RIST 11-12.2

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Assignment	Competencies	Career Ready Practices	Anchor Standards	Pathway Standards	CCSS
	7A-D	7	9.0	A9.0	RLST 11-12.2
	8A, C-F	8	10.0		RLST 11-12.3
	9A-E	9		<u>RES:</u>	RLST 11-12.4
	10A-M	10		D3.0	RLST 11-12.9
	11A-D	12		D6.0	SEP 1, 2, 3, 4, 5, 6, 8
	12A-D			D7.0	SLS 11-12.1
	13A-E			D8.0	SLS 11-12.1d
	14A-D			D9.0	SLS 11-12.1b
	15A-J				
	16A-Q, S				
	17A-E, G, H				
	19A-G				
	20A-F				
	21A-I				
	22A, F, G, I				
	24A-E				
	25D, F, G				

## Standards Assessed in this Program

### Career Ready Practices

1. Apply appropriate technical skills and academic knowledge.
2. Communicate clearly, effectively, and with reason.
3. Develop an education and career plan aligned to personal goals.
4. Apply technology to enhance productivity.
5. Utilize critical thinking to make sense of problems and persevere in solving them.
6. Practice personal health and understand financial well-being.
7. Act as a responsible citizen in the workplace and the community.
8. Model integrity, ethical leadership, and effective management.
9. Work productively in teams while integrating cultural/global competence.
10. Demonstrate creativity and innovation.
11. Employ valid and reliable research strategies.
12. Understand the environmental, social, and economic impacts of decisions.

### Anchor Standards

#### 2.0 Communications

- Acquire and use accurately sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats.

#### 3.0 Career Planning and Management

- Integrate multiple sources of career information from diverse formats to make informed career decisions, solve problems, and manage personal career plans.

#### 4.0 Technology

- Use existing and emerging technology, to investigate, research, and produce products and services, including new information, as required in the sector workplace environment.

#### 5.0 Problem Solving and Critical Thinking

- Conduct short, as well as more sustained, research to create alternative solutions to answer a question or solve a problem unique to the sector using critical and creative thinking, logical reasoning, analysis, inquiry, and problem-solving techniques.

#### 6.0 Health and Safety

- Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the sector workplace environment.

#### 7.0 Responsibility and Flexibility

- Initiate, and participate in, a range of collaborations demonstrating behaviors that reflect personal and professional responsibility, flexibility, and respect in the sector workplace environment and community settings.

#### 8.0 Ethics and Legal Responsibilities

- Practice professional, ethical, and legal behavior, responding thoughtfully to diverse perspectives and resolving contradictions when possible, consistent with applicable laws, regulations, and organizational norms.

## 9.0 Leadership and Teamwork

- Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution.

## 10.0 Technical Knowledge and Skills

- Apply essential technical knowledge and skills common to all pathways in the sector following procedures when carrying out experiments or performing technical tasks.

## Pathway Standards

### Building and Construction Trades- Cabinetry, Millwork, and Woodworking Pathway

**A3.0:** Interpret and apply information to develop a bill of materials, estimate the cost of materials, and develop a plan of procedures to complete a project.

**A4.0:** Demonstrate proper selection and use of woodworking tools.

**A5.0:** Identify wood products and materials used in the furniture and cabinetmaking industry and describe their characteristics and uses.

**A9.0:** Understand finishes and when to apply paint, stains, sealers, varnishes, and catalyzed finishes, including water and oil based finishes.

### Building and Construction Trades- Residential and Commercial Construction Pathway

**D3.0:** Interpret and apply information from technical drawings, schedules, and specifications used in the construction trades.

**D6.0:** Demonstrate carpentry techniques for the construction of a single-family residence.

**D7.0:** Demonstrate proper installation techniques of interior finish materials and protective finishes.

**D8.0:** Demonstrate the application of exterior finish materials and protective finishes in building construction.

**D9.0:** Understand, integrate, and employ sustainable construction practices in the building trades.

## Common Core State Standards

### ENGLISH LANGUAGE ARTS

#### Language Standards

**LS 11-12.6:** Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the (career and college) readiness level, demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

#### Reading Standards for Literacy in Science and Technical Subjects

**RLST 11-12.2:** Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

**RLST 11-12.3:** Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks;

analyze the specific results based on explanations in the text.

**RLST 11-12.4:** Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11-12 texts and topics.

**RLST 11-12.9:** Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

## Reading Standards for Information Text

**RSIT 11-12.2:** Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.

## Speaking and Listening Standards

**SLS 11-12.1:** Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners, building on others ideas and expressing their own clearly and persuasively.

**SLS 11-12.1b:** Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.

**SLS 11-12.1d:** Respond thoughtfully to diverse perspectives, synthesize comments, claims and evidence made on all sides of an issue, resolve contradictions when possible, and determine what additional information or research is required to deepen the investigation or complete the work.

**SLS 11-12.2:** Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions, and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.

## Writing Standards

**WS 11-12.6:** Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback including new arguments and information.

**WS 11-12.7:** Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem, narrow or broaden the inquiry when appropriate, synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

## MATHEMATICS

### Geometry – Similarity, Right Triangles and Trigonometry

**GSRT 8:** Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.

## SCIENCE

### Crosscutting Concept

**CC3:** Scale, proportion, and quantity

**CC6:** Structure and function

### Engineering, Technology, and the Applications of Science

**ETS 1B:** Developing Possible Solutions

## **Scientific and Engineering Practices**

**SEP 1:** Asking questions (for science) and defining problems (for engineering)

**SEP 2:** Developing and using models

**SEP 3:** Planning and carrying out investigations

**SEP 4:** Analyzing and interpreting data

**SEP 5:** Using mathematics and computational thinking

**SEP 6:** Constructing explanations (for science) and designing solutions (for engineering)

**SEP 7:** Engaging in argument from evidence

**SEP 8:** Obtaining, evaluating, and communicating information

## **HISTORY/ SOCIAL SCIENCE**

### **Principles of Economics**

**PE 12.1:** Students understand common economic terms and concepts and economic reasoning.