

# Course Outline

Engineering and Architecture

REVISED: August/2023

**Job Title**

Blueprint Reader

**Career Pathway:**

Architectural Design

**Industry Sector:**

Engineering and Architecture

**O\*NET-SOC CODE:**

17-3019.00

**CBEDS Title:**

Blueprint Reading

**CBEDS No.:**

5710

**74-25-60**

## Blueprint Reading Fundamentals

**Credits:** 5

**Hours:** 60

**Course Description:**

This competency-based course is designed for blueprint reading and provides students with project-based experiences in basic drafting and blueprint reading. Instruction includes orientation, safety, blueprint reading, basic drafting techniques, dimensioning, tolerance, section and auxiliary views, drawing types and references, and employability skills and resume preparation. The competencies in this course are aligned with the California High School Academic Content Standards and the California Career Technical Education Model Curriculum Standards.

**Prerequisites:**

None.

**NOTE:** For Perkins purposes this course has been designated as an **introductory** course.

This course **cannot** be repeated once a student receives a Certificate of Completion.



## **COURSE OUTLINE COMPETENCY-BASED COMPONENTS**

A course outline reflects the essential intent and content of the course described. Acceptable course outlines have six components. (Education Code Section 52506). Course outlines for all apportionment classes, including those in jails, state hospitals, and convalescent hospitals, contain the six required elements:

(EC 52504; 5CCR 10508 [b]; Adult Education Handbook for California [1977], Section 100)

### **COURSE OUTLINE COMPONENTS**

### **LOCATION**

#### **GOALS AND PURPOSES**

Cover

The educational goals or purposes of every course are clearly stated, and the class periods are devoted to instruction. The course should be broad enough in scope and should have sufficient educational worth to justify the expenditure of public funds.

The goals and purpose of a course are stated in the COURSE DESCRIPTION. Course descriptions state the major emphasis and content of a course and are written to be understandable by a prospective student.

#### **PERFORMANCE OBJECTIVES OR COMPETENCIES**

pp. 7-12

Objectives should be delineated and described in terms of measurable results for the student and include the possible ways in which the objectives contribute to the student's acquisition of skills and competencies.

Performance Objectives are sequentially listed in the COMPETENCY-BASED COMPONENTS section of the course outline. Competency Areas are units of instruction based on related competencies. Competency Statements are competency area goals that together define the framework and purpose of a course. Competencies fall on a continuum between goals and performance objectives and denote the outcome of instruction.

Competency-based instruction tells a student before instruction what skills or knowledge they will demonstrate after instruction. Competency-based education provides instruction which enables each student to attain individual goals as measured against pre-stated standards.

Competency-based instruction provides immediate and continual repetition and In competency-based education the curriculum, instruction, and assessment share common characteristics based on clearly stated competencies. Curriculum, instruction, and assessment in competency-based education are explicit, known, agreed upon, integrated, performance oriented, and adaptive.

**COURSE OUTLINE COMPETENCY-BASED COMPONENTS**  
**(continued)**

<b>COURSE OUTLINE COMPONENTS</b>	<b>LOCATION</b>
<p><b>INSTRUCTIONAL STRATEGIES</b></p> <p>Instructional techniques or methods could include laboratory techniques, lecture methods, small-group discussion, grouping plans, and other strategies used in the classroom.</p> <p>Instructional strategies for this course are listed in the TEACHING STRATEGIES AND EVALUATION section of the course outline. Instructional strategies and activities for a course should be selected so that the overall teaching approach considers the instructional standards of a particular program, i.e., English as a Second Language, Programs for Adults with Disabilities.</p>	p. 14
<p><b>UNITS OF STUDY, WITH APPROXIMATE HOURS ALLOTTED FOR EACH UNIT</b></p> <p>The approximate time devoted to each instructional unit on the course, as well as the total hours for the course, is indicated. The time in class is consistent with the needs of the student, and the length of the class should be so that it ensures the student will learn at an optimum level.</p> <p>Units of study, with approximate hours allotted for each unit are listed in the COMPETENCY AREA STATEMENT(S) of the course outline. The total hours of the course, including work-based learning hours (community classroom and cooperative vocational education) are listed on the cover of every CBE course outline. Each Competency Area listed within a CBE outline is assigned hours of instruction per unit.</p>	Cover  pp. 7-12
<p><b>EVALUATION PROCEDURES</b></p> <p>The evaluation describes measurable evaluation criteria clearly within the reach of the student. The evaluation indicates anticipated improvement in performance as well as anticipated skills and competencies to be achieved.</p> <p>Evaluation procedures are detailed in the TEACHING STRATEGIES AND EVALUATION section of the course outline. Instructors monitor students' progress on a continuing basis, assessing students on attainment of objectives identified in the course outline through a variety of formal and informal tests (applied performance procedures, observations, and simulations), paper and pencil exams, and standardized tests.</p>	p. 14
<p><b>REPETITION POLICY THAT PREVENTS PERPETUATION OF STUDENT ENROLLMENT</b></p> <p>After a student has completed all the objectives of the course, he or she should not be allowed to reenroll in the course. There is, therefore, a need for a statement about the conditions for possible repetition of a course to prevent perpetuation of students in a particular program for an indefinite period of time.</p>	Cover

## **ACKNOWLEDGMENTS**

Thanks to BENJAMIN FLORES and JIHAD WEHBE for developing and editing this curriculum. Acknowledgment is also given to ERICA ROSARIO for designing the original artwork in the course cover designs.

ANA MARTINEZ  
Specialist  
Career Technical Education

MATTHEW OBERLANDER  
Director, Equity, and Instruction  
Division of Adult and Career Education

ROSARIO GALVAN  
Administrator  
Division of Adult and Career Education

APPROVED:

RENNY NEYRA  
Executive Director  
Division of Adult and Career Education

# **CALIFORNIA CAREER TECHNICAL EDUCATION MODEL CURRICULUM STANDARDS**

## ***Engineering and Design Industry Sector***

### ***Knowledge and Performance Anchor Standards***

#### **1.0 Academics**

Analyze and apply appropriate academic standards required for successful industry sector pathway completion leading to postsecondary education and employment. Refer to the Engineering and Architecture academic alignment matrix for identification of standards.

#### **2.0 Communications**

Acquire and accurately use Engineering and Architecture 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 Engineering and Architecture sector workplace environment.

#### **5.0 Problem Solving and Critical Thinking**

Conduct short, as well as more sustained research projects to create alternative solutions to answer a question or solve a problem unique to the Engineering and Architecture 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 Engineering and Architecture sector workplace environment pertaining to the Occupational Safety and Health Administration (OSHA).

#### **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 Engineering and Architecture 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 as practiced in the SkillsUSA career technical student organization.

#### **10.0 Technical Knowledge and Skills**

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

#### **11.0 Demonstration and Application**

Demonstrate and apply the knowledge and skills contained in the Engineering and Architecture anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings, and through the SkillsUSA career technical student organization.

## ***Engineering and Architecture Pathway Standards***

### **C. Engineering Design Pathway**

The Engineering Design pathway provides learning opportunities for students interested in preparing for careers in the design and production of visual communications.

Sample occupations associated with this pathway:

- ◆ Mechanical/Electrical Drafter
- ◆ Design Engineer
- ◆ Manufacturing Design Engineer
- ◆ Project Architect

C1.0 Understand historical and current events related to engineering design and their effects on society.

C2.0 Understand the effective use of engineering design equipment.

C3.0 Understand the sketching process used in concept development.

C4.0 Understand measurement systems as they apply to engineering design.

C5.0 Use proper projection techniques to develop orthographic drawings.

C6.0 Understand the applications and functions of sectional views.

C7.0 Understand the applications and functions of auxiliary views.

C8.0 Understand and apply proper dimensioning standards to drawings.

C9.0 Understand the tolerance relationships between mating parts.

C10.0 Understand the methods of applying text to a drawing.

C11.0 Understand the methods of creating both written and digital portfolios.

**CBE**  
**Competency-Based Education**

**COMPETENCY-BASED COMPONENTS**  
**for the Blueprint Reading Fundamentals Course**

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
<p><b>A. ORIENTATION</b></p> <p>Understand, apply, and evaluate classroom and workplace policies and procedures.</p> <p>(1 hour)</p>	<ol style="list-style-type: none"> <li>1. Describe the scope and purpose of the course.</li> <li>2. Discuss the development of graphic language in relation to blueprint reading.</li> <li>3. Discuss, identify, research, and draw conclusions on the different career paths, occupations, employment outlook, career advancements, which have an impact on the role of blueprint readers.</li> <li>4. Explain and recognize the importance of ethics, teamwork, respecting individual and cultural differences and diversity in the workplace.</li> <li>5. Describe the opportunities available for promoting gender equity and the representation of non-traditional populations in blueprint reading.</li> <li>6. Review Schoology and basic computer skills and practice safe, legal, and responsible use of digital media.</li> <li>7. Describe the importance of classroom policies and procedures.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 3, 4, 8, 9, 11</p> <p><b>CTE Anchor:</b> Academics: 1.0 Communications: 2.1, 2.3, 2.5, 2.6 Career Planning and Management: 3.1, 3.2, 3.3, 3.4, 3.5, 3.9 Technology: 4.2 Ethics and Legal Responsibilities: 8.3, 8.4, 8.5, 8.6 Leadership and Teamwork: 9.3, 9.6</p> <p><b>CTE Pathway:</b> C1.2</p>
<p><b>B. SAFETY</b></p> <p>Understand safety procedures and techniques.</p>	<ol style="list-style-type: none"> <li>1. Discuss and identify classroom and workplace first aid and emergency procedures based on the American Red Cross (ARC) standards.</li> <li>2. Explain the impact of Environmental Protection Agency (EPA) legislation on practices in protecting and preserving the environment.</li> <li>3. Describe and demonstrate the use of the Safety Data Sheet (SDS) as it applies to blueprint reading.</li> <li>4. Describe the provisions of the California Title 24 Energy Efficiency Standards (a.k.a. 2019 California Green Building Standards Code) and historical relevance.</li> <li>5. Define, discuss, and describe the California Occupational Safety and Health Administration (Cal/OSHA) and its laws governing blueprint reading.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 10, 12</p> <p><b>CTE Anchor:</b> Academics: 1.0 Communications: 2.1, 2.3 Health and Safety: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(2 hours)	<ol style="list-style-type: none"> <li>6. Describe how each of the following insures a safe workplace:               <ol style="list-style-type: none"> <li>a. employees' rights as they apply to job safety</li> <li>b. employees' obligations as they apply to safety</li> <li>c. safety laws applying to electrical tools</li> </ol> </li> <li>7. Pass the LAUSD safety test with 100% accuracy.</li> </ol>	Technical Knowledge and Skills: 10.1, 10.2 Demonstration and Application: 11.1  <b>CTE Pathway:</b> C1.1
<b>C. BLUEPRINT READING</b>  Understand, apply, and evaluate how to read basic blueprints.	<ol style="list-style-type: none"> <li>1. Define the following:               <ol style="list-style-type: none"> <li>a. blueprint</li> <li>b. scale</li> <li>c. sketches</li> <li>d. plans</li> <li>e. shop drawings</li> <li>f. elevation</li> <li>g. section</li> <li>h. details</li> <li>i. specifications</li> </ol> </li> <li>2. Describe the following as they apply to blueprints:               <ol style="list-style-type: none"> <li>a. sketches</li> <li>b. plans</li> <li>c. shop drawings</li> <li>d. elevation</li> <li>e. sections</li> <li>f. details</li> </ol> </li> <li>3. Define/identify and describe the following:               <ol style="list-style-type: none"> <li>a. four information blocks                   <ol style="list-style-type: none"> <li>i. title block</li> <li>ii. change block</li> <li>iii. notes</li> </ol> </li> <li>b. views or projections</li> <li>c. types of lines                   <ol style="list-style-type: none"> <li>i. outline or visible</li> <li>ii. section</li> <li>iii. hidden</li> <li>iv. center</li> <li>v. dimension</li> <li>vi. cutting plane</li> <li>vii. break lines</li> </ol> </li> <li>d. dimension using the following terms:                   <ol style="list-style-type: none"> <li>i. fractional</li> <li>ii. decimal</li> <li>iii. angular</li> </ol> </li> <li>e. tolerance using the following terms:                   <ol style="list-style-type: none"> <li>i. fractional</li> <li>ii. decimal</li> <li>iii. angular</li> </ol> </li> </ol> </li> </ol>	<b>Career Ready Practice:</b> 1, 2, 10  <b>CTE Anchor:</b> Academics: 1.0 Communications: 2.1, 2.3 Technical Knowledge and Skills: 10.1, 10.3 Demonstration and Application: 11.1  <b>CTE Pathway:</b> C4.1, C4.2, C8.1, C8.2, C10.1, C10.2



COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(15 hours)	<ul style="list-style-type: none"> <li>f. symbols and abbreviations used in blueprint reading</li> <li>4. Describe and demonstrate the following:               <ul style="list-style-type: none"> <li>a. drawing a blueprint for a simple object</li> <li>b. drawing a simple object at 1/8 the scale</li> <li>c. drawing a simple object at 1/4 the scale</li> <li>d. distinguishing different types of specifications found in blueprints</li> </ul> </li> <li>5. Pass a blueprint reading assessment with an 80% score or higher.</li> </ul>	
<p><b>D. BASIC DRAFTING TECHNIQUES</b></p> <p>Understand and evaluate basic drafting techniques.</p> <p>(5 hours)</p>	<ul style="list-style-type: none"> <li>1. Define the following:               <ul style="list-style-type: none"> <li>a. isometric drawings</li> <li>b. dimensioning</li> </ul> </li> <li>2. Identify and describe the purpose of dimensioning.</li> <li>3. Form teams and describe general drafting practices</li> <li>4. Pass a basic drafting technique assessment with an 80% score or higher.</li> </ul>	<p><b>Career Ready Practice:</b> 1, 2, 9, 10</p> <p><b>CTE Anchor:</b> Academics: 1.0 Communications: 2.1, 2.3 Leadership and Teamwork: 9.3, 9.7 Technical Knowledge and Skills: 10.1, 10.3 Demonstration and Application: 11.1</p> <p><b>CTE Pathway:</b> C3.1, C3.2, C8.1, C8.2, C10.1, C10.2</p>
<p><b>E. DIMENSIONING</b></p> <p>Understand and evaluate dimensioning techniques on drawings.</p>	<ul style="list-style-type: none"> <li>1. Define the following dimensions:               <ul style="list-style-type: none"> <li>a. unidirectional</li> <li>b. aligned</li> <li>c. decimal</li> <li>d. baseline</li> <li>e. tabular</li> </ul> </li> <li>2. Describe, demonstrate, and problem solve the following to an object adding listed dimensions:               <ul style="list-style-type: none"> <li>a. unidirectional</li> <li>b. aligned</li> <li>c. decimal</li> <li>d. baseline</li> <li>e. tabular</li> </ul> </li> <li>3. Pass a dimensioning assessment with an 80% score or higher.</li> </ul>	<p><b>Career Ready Practice:</b> 1, 2, 5, 10</p> <p><b>CTE Anchor:</b> Academics: 1.0 Communications: 2.1, 2.3 Problem Solving and Critical Thinking: 5.2, 5.4 Technical Knowledge and Skills: 10.1, 10.3</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(3 hours)		Demonstration and Application: 11.1  <b>CTE Pathway:</b> C4.1, C8.1, C8.2
<b>F. TOLERANCE</b>  Understand and evaluate the importance of tolerance drafting.	<ol style="list-style-type: none"> <li>1. Define tolerance.</li> <li>2. Describe the following:               <ol style="list-style-type: none"> <li>a. need for tolerance allowances in drafting</li> <li>b. limits on how tolerances should be set</li> <li>c. specialized terminology used in setting tolerances</li> </ol> </li> <li>3. Describe the following drawings and interpret information to draw conclusions on:               <ol style="list-style-type: none"> <li>a. proper tolerance notations</li> <li>b. proper tolerance locations</li> </ol> </li> <li>4. Pass a tolerance assessment with an 80% score or higher.</li> </ol>	<b>Career Ready Practice:</b> 1, 2, 5  <b>CTE Anchor:</b> Academics: 1.0 Communications: 2.1, 2.3 Problem Solving and Critical Thinking: 5.1, 5.4 Technical Knowledge and Skills: 10.1  <b>CTE Pathway:</b> C8.1, C9.2, C9.3
<b>G. SECTIONAL VIEWS</b>  Understand sectional views in drafting.	<ol style="list-style-type: none"> <li>1. Define sectional views.</li> <li>2. Describe the following:               <ol style="list-style-type: none"> <li>a. types of sectional views</li> <li>b. applications for sectional views</li> <li>c. conventional breaks</li> <li>d. use of rotation in sectional views</li> </ol> </li> <li>3. Comply with rules, regulations of architectural standards.</li> <li>4. Describe drawing sectional views.</li> <li>5. Pass a sectional view assessment with an 80% score or higher.</li> </ol>	<b>Career Ready Practice:</b> 1, 2  <b>CTE Anchor:</b> Academics: 1.0 Communications: 2.1, 2.3 Technical Knowledge and Skills: 10.1, 10.2  <b>CTE Pathway:</b> C4.1, C5.3, C6.1, C6.2

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
<p><b>H. AUXILIARY VIEWS</b></p> <p>Understand and apply auxiliary views in drafting.</p> <p>(8 hours)</p>	<ol style="list-style-type: none"> <li>1. Define the following:               <ol style="list-style-type: none"> <li>a. auxiliary views</li> <li>b. secondary auxiliary views</li> </ol> </li> <li>2. Identify and describe the applications for auxiliary views.</li> <li>3. Draw an object using auxiliary views as part of the auxiliary view assessment with an 80% score or higher.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2</p> <p><b>CTE Anchor:</b> Academics: 1.0 Communications: 2.1, 2.3 Technical Knowledge and Skills: 10.1</p> <p><b>CTE Pathway:</b> C7.1, C7.2</p>
<p><b>I. DRAWING TYPES AND REFERENCES</b></p> <p>Understand and evaluate the different drawing types and references used in drafting.</p> <p>(10 hours)</p>	<ol style="list-style-type: none"> <li>1. Define the following drawing:               <ol style="list-style-type: none"> <li>a. working</li> <li>b. assembly</li> </ol> </li> <li>2. Identify the following:               <ol style="list-style-type: none"> <li>a. types of drafting references available</li> <li>b. types of trade publications</li> <li>c. types of web-based drafting references</li> </ol> </li> <li>3. Describe the following publications and codes:               <ol style="list-style-type: none"> <li>a. American National Standards Institute (ANSI) publications</li> <li>b. American Institute of Architects (AIA) drawing and design standards</li> <li>c. California Building, Mechanical, Electrical, Green Building, Plumbing, Energy, and Fire Codes</li> </ol> </li> <li>4. Describe, demonstrate and problem solve predictable and unpredictable work-related problems for the following:               <ol style="list-style-type: none"> <li>a. a working drawing</li> <li>b. an isometric drawing</li> </ol> </li> <li>5. Pass a drawing type assessment with an 80% score or higher.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 5, 10</p> <p><b>CTE Anchor:</b> Academics: 1.0 Communications: 2.1, 2.3 Problem Solving and Critical Thinking: 5.1, 5.2 Technical Knowledge and Skills: 10.1, 10.2, 10.3 Demonstration and Application: 11.1</p> <p><b>CTE Pathway:</b> C2.1, C2.2, C2.3, C3.1, C4.1, C5.1, C8.1, C8.2</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
<p><b>J. EMPLOYABILITY SKILLS AND RESUME PREPARATION</b></p> <p>Understand, apply, and evaluate the employability skills and resume preparation required in the computer drafting field.</p> <p>(5 hours)</p>	<ol style="list-style-type: none"> <li>1. Define and understand employer requirements for soft skills such as:               <ol style="list-style-type: none"> <li>a. attitude toward work</li> <li>b. communication and collaboration</li> <li>c. critical thinking, problem solving, and decision-making</li> <li>d. customer service</li> <li>e. diversity in the workplace</li> <li>f. flexibility and adaptability</li> <li>g. interpersonal skills</li> <li>h. leadership and responsibility</li> <li>i. punctuality and attendance</li> <li>j. quality of work</li> <li>k. respect, cultural and diversity differences</li> <li>l. teamwork</li> <li>m. time management</li> <li>n. trust and ethical behavior</li> <li>o. work ethic</li> </ol> </li> <li>2. Create/revise a resume, cover letter and/or portfolio.</li> <li>3. Demonstrate, analyze, research, and review the role of online job searching platforms and career websites to compare to make informed decisions.</li> <li>4. Understand the importance of reviewing social media accounts for professionalism.</li> <li>5. Understand the importance of historical trends, career interests and pathway.</li> <li>6. Demonstrate and complete and/or review an on-line job application.</li> <li>7. Understand and demonstrate interview skills to get the job:               <ol style="list-style-type: none"> <li>a. do's and don'ts for job interviews</li> <li>b. how to dress for the job</li> </ol> </li> <li>8. Demonstrate and create sample follow-up letters.</li> <li>9. Understand the importance of the continuous upgrading of job skills as it relates to:               <ol style="list-style-type: none"> <li>a. certification, licensure, and/or renewal</li> <li>b. professional organizations/events</li> <li>c. industry associations and/or organized labor</li> <li>d. self-employment</li> </ol> </li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 3, 4, 5, 7, 8, 9, 10, 11</p> <p><b>CTE Anchor:</b> Academics: 1.0 Communication: 2.1, 2.3, 2.4 Career Planning and Management: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9 Technology: 4.1, 4.2, 4.3 Problem Solving and Critical Thinking: 5.1, 5.4 Responsibility and Flexibility: 7.2, 7.3, 7.4, 7.7 Ethics and Legal Responsibilities: 8.3, 8.4 Leadership and Teamwork: 9.1, 9.2, 9.3, 9.4, 9.6 Technical Knowledge and Skills: 10.1, 10.3 Demonstrate and Application: 11.1, 11.5</p> <p><b>CTE Pathway:</b> C11.1</p>

## ***SUGGESTED INSTRUCTIONAL MATERIALS and OTHER RESOURCES***

### **TEXTBOOKS**

Huth, Mark W. Understanding Construction Drawings, 7<sup>th</sup> Edition. Cengage Learning, 2018.

Brown, Walter C., Dorfmueller, Daniel P. Print Reading for Construction, 8<sup>th</sup> Edition, Goodheart Willcox, 2021

### **RESOURCES**

Employer Advisory Board members

CTE Model Curriculum Standards

<http://www.cde.ca.gov/ci/ct/sf/documents/enginearchit.pdf>

### **COMPETENCY CHECKLIST**

## ***TEACHING STRATEGIES and EVALUATION***

### **METHODS AND PROCEDURES**

- A. Lecture and discussion
- B. Multimedia presentations
- C. Demonstrations and participations
- D. Individualized instruction
- E. Peer teaching
- F. Role-playing
- G. Guest speakers
- H. Field trips and field study experiences
- I. Projects

### **EVALUATION**

SECTION A – Orientation – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION B – Safety – Pass the safety test with 100% accuracy.

SECTION C – Blueprint Reading – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION D – Basic Drafting Techniques – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION E – Dimensioning – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION F – Tolerance – Pass all assignments and exams e with a minimum score of 80% or higher.

SECTION G – Sectional Views – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION H –Auxiliary Views – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION I – Drawing Types & References – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION J – Employability Skills and Resume Preparation – Pass all assignments and exams with a minimum score of 80% or higher.

## ***Standards for Career Ready Practice***

**1. Apply appropriate technical skills and academic knowledge.**

Career-ready individuals readily access and use the knowledge and skills acquired through experience and education. They make connections between abstract concepts with real-world applications and recognize the value of academic preparation for solving problems, communicating with others, calculating measures, and performing other work-related practices.

**2. Communicate clearly, effectively, and with reason.**

Career-ready individuals communicate thoughts, ideas, and action plans with clarity, using written, verbal, electronic, and/or visual methods. They are skilled at interacting with others: they are active listeners who speak clearly and with purpose, and they are comfortable with terminology that is common to workplace environments. Career-ready individuals consider the audience for their communication and prepare accordingly to ensure the desired outcome.

**3. Develop an education and career plan aligned with personal goals.**

Career-ready individuals take personal ownership of their educational and career goals and manage their individual plan to attain these goals. They recognize the value of each step in the educational and experiential process, and they understand that all career paths require ongoing education and experience to adapt to practices, procedures, and expectations of an ever-changing work environment. They seek counselors, mentors, and other experts to assist in the planning and execution of education and career plans.

**4. Apply technology to enhance productivity.**

Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring and using new technology. They understand the inherent risks—personal and organizational—of technology applications, and they take actions to prevent or mitigate these risks.

**5. Utilize critical thinking to make sense of problems and persevere in solving them.**

Career-ready individuals recognize problems in the workplace, understand the nature of the problems, and devise effective plans to solve the problems. They thoughtfully investigate the root cause of a problem prior to introducing solutions. They carefully consider options to solve a problem and, once agreed upon, follow through to ensure the problem is resolved.

**6. Practice personal health and understand financial literacy.**

Career-ready individuals understand the relationship between personal health and workplace performance. They contribute to their personal well-being through a healthy diet, regular exercise, and mental health activities. Career-ready individuals also understand that financial literacy leads to a secure future that enables career success.

**7. Act as a responsible citizen in the workplace and the community.**

Career-ready individuals understand the obligations and responsibilities of being a member of a community and demonstrate this understanding every day through their interactions with others. They are aware of the impacts of their decisions on others and the environment around them, and they think about the short-term and long-term consequences of their actions. They are reliable and consistent in going beyond minimum expectations and in participating in activities that serve the greater good.

**8. Model integrity, ethical leadership, and effective management.**

Career-ready individuals consistently act in ways that align with personal and community-held ideals and principles. They employ ethical behaviors and actions that positively influence others. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the direction and actions of a team or organization, and they recognize the short-term and long-term effects that management's actions and attitudes can have on productivity, morale, and organizational culture.

**9. Work productively in teams while integrating cultural and global competence.**

Career-ready individuals contribute positively to every team, as both team leaders and team members. To avoid barriers to productive and positive interaction, they apply an awareness of cultural differences. They interact effectively and sensitively with all members of the team and find ways to increase the engagement and contribution of other members.

**10. Demonstrate creativity and innovation.**

Career-ready individuals recommend ideas that solve problems in new and different ways and contribute to the improvement of the organization. They consider unconventional ideas and suggestions by others as solutions to issues, tasks, or problems. They discern which ideas and suggestions may have the greatest value. They seek new methods, practices, and ideas from a variety of sources and apply those ideas to their own workplace practices.

**11. Employ valid and reliable research strategies.**

Career-ready individuals employ research practices to plan and carry out investigations, create solutions, and keep abreast of the most current findings related to workplace environments and practices. They use a reliable research process to search for new information and confirm the validity of sources when considering the use and adoption of external information or practices.

**12. Understand the environmental, societal, and economic impacts of decisions.**

Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact other people, organizations, the workplace, and the environment. They are aware of and utilize new technologies, understandings, procedures, and materials and adhere to regulations affecting the nature of their work. They are cognizant of impacts on the social condition, environment, workplace, and profitability of the organization.



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## Statement for Civil Rights

All educational and vocational opportunities are offered without regard to race, color, national origin, gender, or physical disability.

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