

# Course Outline

Energy, Environment, and Utilities

REVISED: August/2017

**Job Title:**

Electronics Technician

**72-55-90**

**Career Pathway:**

Telecommunications

**Mobile Electronics/2**

**Industry Sector:**

Energy, Environment, and Utilities

**Credits:** 5

**Hours:** 90

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

17-3023.01

**Course Description:**

This competency-based course is the second in a sequence of two designed for mobile electronics. It provides students with project-based experiences in electromechanical installation and maintenance. Technical instruction includes an introduction and reviews of workplace safety policies and procedures, employability skills, trade mathematics, principles of electronics, types and uses of testing equipment, and auto electricity principles. Emphasis is placed on the installation, operational, and trouble-shooting techniques for mobile security systems, navigation systems, and wireless communication systems. Coverage also includes test preparation lessons for passage of the Mobile Electronics Certified Professional (MECP) examination. The competencies in this course are aligned with the California High School Academic Content Standards and the California Career Technical Education Model Curriculum Standards.

**CBEDS Title:**

Introduction to Electronics Technology

**Prerequisites:**

Enrollment requires successful completion of the Mobile Electronics/1 (72-55-80) course.

**CBEDS No.:**

5551

**NOTE:** For Perkins purposes this course has been designated as a **concentrator/capstone** 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**

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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)**

**COURSE OUTLINE COMPONENTS**

**LOCATION**

**INSTRUCTIONAL STRATEGIES**

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Instructional techniques or methods could include laboratory techniques, lecture method, small-group discussion, grouping plans, and other strategies used in the classroom.

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 takes into account the instructional standards of a particular program, i.e., English as a Second Language, Programs for Adults with Disabilities.

**UNITS OF STUDY, WITH APPROXIMATE HOURS ALLOTTED FOR EACH UNIT**

Cover

The approximate time devoted to each instructional unit within 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 that it ensures the student will learn at an optimum level.

pp. 7-13

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) is listed on the cover of every CBE course outline. Each Competency Area listed within a CBE outline is assigned hours of instruction per unit.

**EVALUATION PROCEDURES**

pp. 15-16

The evaluation describes measurable evaluation criteria clearly within the reach of the student. The evaluation indicates anticipated improvement in performances as well as anticipated skills and competencies to be achieved.

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.

**REPETITION POLICY THAT PREVENTS PERPETUATION OF STUDENT ENROLLMENT**

Cover

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.

## **ACKNOWLEDGMENTS**

Thanks to PAUL PIDOUX and MARCELA BAKER for developing and editing this curriculum. Acknowledgment is also given to ERICA ROSARIO for designing the original artwork for the course covers.

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**CALIFORNIA CAREER TECHNICAL EDUCATION MODEL CURRICULUM STANDARDS**  
**Energy, Environment and Utilities 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 Energy, Environment, and Utilities academic alignment matrix for identification of standards.

**2.0 Communications**

Acquire, and accurately use Energy, Environment, and Utilities 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 Energy, Environment, and Utilities 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 Energy, Environment, and Utilities 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 Energy, Environment, and Utilities 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 Energy, Environment, and Utilities 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 Energy, Environment, and Utilities sector.

**11.0 Demonstration and Application**

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

## ***Energy, Environment, and Utilities Sector Pathway Standards***

### ***C. Telecommunications Pathway***

The Telecommunications pathway prepares students for employment and postsecondary education and training in the wireless and fixed-line communications industries. The sharing of information is essential for personal, commercial, educational, government, and military functions. Information is stored, sent, and accessed primarily via the telecommunications industries.

Sample occupations associated with this pathway:

- ◆ Cable/Telecommunications Installation and Maintenance Technicians
- ◆ Line Workers
- ◆ Network Operators, Technicians, Designers, and Managers
- ◆ Network Security Administrator
- ◆ Satellite Systems Installation/Engineers

- C1.0 Understand the basic principles and concepts that impact the telecommunications industry, including systems, concepts, and regulations.
- C2.0 Demonstrate understanding and use of the basic and emerging technologies that impact the telecommunications industry.
- C3.0 Examine the role and functions of satellites in telecommunications.
- C4.0 Research the components, interaction, and operations of wireless telecommunications systems.
- C5.0 Research the components, interaction, and operations of fixed-wire telecommunications systems.
- C6.0 Consider privacy and security issues of the telecommunications systems.

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

**COMPETENCY-BASED COMPONENTS**  
**for the Mobile Electronics/2 Course**

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
<p>A. INTRODUCTION AND SAFETY</p> <p>Review, apply, and evaluate classroom and workplace policies and procedures used in accordance with federal, state, and local safety and environmental regulations.</p> <p>(3 hours)</p>	<ol style="list-style-type: none"> <li>1. Review the scope and purpose of the course.</li> <li>2. Review the overall course content as a part of the Linked Learning Initiative.</li> <li>3. Review classroom policies and procedures.</li> <li>4. Review the different occupations in the Energy and Utilities Industry Sector which have an impact on the role of mobile electronics technicians.</li> <li>5. Review the opportunities available for promoting gender equity and the representation of non-traditional populations in mobile electronics.</li> <li>6. Review the impact of Environmental Protection Agency (EPA) legislation on the Energy and Utilities Industry Sector practices.</li> <li>7. Review and demonstrate the procedures for contacting proper authorities for the removal of hazardous materials based on the EPA standards.</li> <li>8. Review the purpose of the California Occupational Safety and Health Administration (Cal/OSHA) and its laws governing mobile electronics technicians.</li> <li>9. Review and demonstrate the use of the Material Safety Data Sheet (MSDS) as it applies to the mobile electronics industry.</li> <li>10. Review classroom and workplace first aid and emergency procedures according to American Red Cross (ARC) standards.</li> <li>11. Review 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. employers' obligations as they apply to safety</li> <li>c. safety laws applying to electrical tools</li> </ol> </li> <li>12. Pass the safety test with 100% accuracy.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 3, 6, 8, 12</p> <p><b>CTE Anchor:</b> Communications: 2.1, 2.2, 2.3, 2.4 Career Planning and Management: 3.4, 3.5 Health and Safety: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16 Ethics and Legal Responsibilities: 8.2 Technical Knowledge and Skills: 10.1, 10.2</p> <p><b>CTE Pathway:</b> C1.1, C1.2</p>
<p>B. TRADE MATHEMATICS REVIEW</p> <p>Review, apply, and evaluate the mathematical requirements in mobile electronics work.</p>	<ol style="list-style-type: none"> <li>1. Review the practical applications of math in mobile electronics work.</li> <li>2. Review and demonstrate problem-solving techniques involving whole number problems, using arithmetic operations (addition, subtraction, multiplication, and division).</li> <li>3. Review and demonstrate problem-solving techniques involving various fraction problems using arithmetic operations.</li> <li>4. Review and demonstrate problem-solving techniques involving various decimal problems using addition, subtraction, multiplication, and division.</li> </ol>	<p><b>Career Ready Practice:</b> 1</p> <p><b>CTE Anchor:</b> Communications: 2.1, 2.2, 2.4 Problem Solving and Critical Thinking: 5.1, 5.2, 5.4</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(5 hour)	<ol style="list-style-type: none"> <li>5. Review and demonstrate techniques for changing fractions to decimals.</li> <li>6. Review and demonstrate techniques for changing decimals to fractions.</li> <li>7. Review the English system of measuring length.</li> <li>8. Review the English system of measuring weight.</li> <li>9. Review the English system of measuring volume or capacity.</li> <li>10. Review and demonstrate problem-solving techniques for various English system measuring problems using arithmetic operations.</li> <li>11. Review and demonstrate measuring techniques for objects by using the English system measuring tools common to the trade.</li> <li>12. Review and demonstrate expressing metric units in ascending and descending powers of ten.</li> <li>13. Review the conversion of the English numbering system to metric system.</li> <li>14. Review the conversion of the metric system to the English numbering system.</li> <li>15. Review the calculation of square roots of regular numbers.</li> <li>16. Review and demonstrate problem-solving techniques for geometric problems.</li> <li>17. Review and demonstrate problem-solving techniques for algebraic problems.</li> <li>18. Review and demonstrate problem-solving techniques using percentages.</li> <li>19. Review and demonstrate techniques for reading and interpreting graphs.</li> <li>20. Define and demonstrate the conversion of decimal numbers to binary numbers.</li> <li>21. Define and demonstrate the conversion of binary numbers to decimal numbers.</li> </ol>	<p>Technical Knowledge and Skills: 10.1</p> <p><b>CTE Pathway:</b> C1.5, C3.7</p>
<p>C. PRINCIPLES OF ELECTRONICS REVIEW</p> <p>Review, apply, and evaluate the basic principles and techniques used in electronics.</p>	<ol style="list-style-type: none"> <li>1. Review the definition of the following: <ol style="list-style-type: none"> <li>a. Ohm's Law</li> <li>b. Farad</li> <li>c. Henry</li> <li>d. current</li> <li>e. direct current (DC)</li> <li>f. alternating current (AC)</li> <li>g. resistors</li> <li>h. capacitors</li> <li>i. coils</li> <li>j. diodes</li> <li>k. relays</li> <li>l. transistors</li> <li>m. batteries</li> <li>n. series circuit</li> <li>o. parallel circuit</li> <li>p. series/parallel circuit</li> <li>q. schematics</li> </ol> </li> </ol>	<p><b>Career Ready Practice:</b> 1, 3</p> <p><b>CTE Anchor:</b> Communications; 2.1, 2.2, 2.3 Problem Solving and Critical Thinking: 5.1 Health and Safety: 6.6, 6.11, 6.16 Technical Knowledge and Skills: 10.1</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(10 hours)	<ol style="list-style-type: none"> <li>2. Review and demonstrate the calculation of Ohm's Law equations.</li> <li>3. Review the features and functions of the following:               <ol style="list-style-type: none"> <li>a. electronic components and symbols</li> <li>b. resistors</li> <li>c. capacitors</li> <li>d. diodes</li> <li>e. transistors</li> <li>f. power supplies</li> <li>g. DC applications</li> <li>h. series circuit</li> <li>i. parallel circuit</li> <li>j. series/parallel circuit</li> </ol> </li> <li>4. Define and demonstrate the following:               <ol style="list-style-type: none"> <li>a. reading and using schematics</li> <li>b. designing and drawing schematics</li> <li>c. identifying and making 12-volt power supply</li> </ol> </li> </ol>	<p><b>CTE Pathway:</b> C1.1, C5.6</p>
<p>C. TESTING EQUIPMENT REVIEW</p> <p>Review, apply, and evaluate the principles and techniques for using, maintaining, and storing mobile electronics testing equipment.</p> <p>(5 hours)</p>	<ol style="list-style-type: none"> <li>1. Review and demonstrate the proper use, maintenance, and storage techniques for the following:               <ol style="list-style-type: none"> <li>a. digital multimeter (DMM)</li> <li>b. signal generator</li> <li>c. battery load tester</li> </ol> </li> <li>2. Review and demonstrate the following:               <ol style="list-style-type: none"> <li>a. measuring unknown voltages with a multimeter</li> <li>b. measuring resistance with a multimeter</li> <li>c. measuring current with a multimeter</li> <li>d. proper data recording</li> <li>e. diagnosing and solving problems involving:                   <ol style="list-style-type: none"> <li>i. open circuit</li> <li>ii. short circuit</li> <li>iii. resistance in circuit</li> <li>iv. ground loops</li> <li>v. improper voltages</li> </ol> </li> </ol> </li> </ol>	<p><b>Career Ready Practice:</b> 1, 3, 4, 5</p> <p><b>CTE Anchor:</b> Communication: 2.1, 2.2, 2.3, 2.4 Problem Solving and Critical Thinking: 5.1, 5.2, 5.4 Health and Safety: 6.6, 6.8, 6.14, 6.15, 6.16 Technical Knowledge and Skills: 10.5</p> <p><b>CTE Pathway:</b> C1.1, C5.5, C5.6, C5.7, C6.3</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
<p>D. AUTO ELECTRICITY REVIEW</p> <p>Review, apply, and evaluate the basic operation of the auto electrical system as it relates to general audio and video electronics installation and repair.</p> <p>(10 hours)</p>	<ol style="list-style-type: none"> <li>1. Review the basic operation of automobile electrical systems.</li> <li>2. Review how electromagnetic interference (EMI) can cause electronic components to malfunction.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 3</p> <p><b>CTE Anchor:</b> Communications: 2.1, 2.2, 2.3, 2.4 Technical Knowledge and Skills: 10.1</p> <p><b>CTE Pathway:</b> C1.1, C5.6</p>
<p>E. SECURITY SYSTEMS</p> <p>Understand, apply, and evaluate the installation, operational, and troubleshooting principles and techniques for auto security systems.</p> <p>(15 hours)</p>	<ol style="list-style-type: none"> <li>1. Define the following: <ol style="list-style-type: none"> <li>a. auto security system components</li> <li>b. fusing</li> <li>c. programming</li> </ol> </li> <li>2. Identify several types of the following: <ol style="list-style-type: none"> <li>a. auto security systems</li> <li>b. auto alarm systems</li> <li>c. remote starting systems</li> <li>d. sensors</li> <li>e. accessories</li> </ol> </li> <li>3. Define methods to suppress engine interference.</li> <li>4. Demonstrate the following: <ol style="list-style-type: none"> <li>a. determination of vehicle security needs of customer</li> <li>b. identification of appropriate security components</li> <li>c. suggestion of various options for a vehicle security system</li> <li>d. design of a vehicle security system</li> <li>e. custom design of special vehicle security equipment</li> <li>f. identification of proper location for security equipment</li> <li>g. structural modification techniques for security equipment</li> <li>h. installation of vehicle security system</li> <li>i. verification of proper installation and operation of vehicle security system</li> <li>j. troubleshooting of auto security problems</li> </ol> </li> <li>5. Demonstrate the use of the vehicle security system to the customer.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 3, 4</p> <p><b>CTE Anchor:</b> Communications: 2.1, 2.2, 2.3, 2.4 Problem Solving and Critical Thinking: 5.1, 5.2, 5.3, 5.4 Health and Safety: 6.6, 6.11, 6.13, 6.15, 6.16 Responsibility and Flexibility: 7.5 Ethics and Legal Responsibilities: 8.1, 8.2, 8.4 Technical Knowledge and Skills: 10.1, 10.5</p> <p><b>CTE Pathway:</b> C5.2, C5.6, C5.7, C6.1, C6.2, C6.4</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
<p>F. NAVIGATION SYSTEMS</p> <p>Understand, apply, and evaluate the installation, operational, and troubleshooting principles and techniques for auto navigation systems.</p> <p>(10 hours)</p>	<ol style="list-style-type: none"> <li>1. Define Global Positioning Satellite (GPS) system.</li> <li>2. Define and demonstrate the following: <ol style="list-style-type: none"> <li>a. completion of check-out sheet while reviewing and identifying auto damages</li> <li>b. determining GPS system needs of the customer</li> <li>c. installation of GPS system</li> <li>d. checking for proper installation of GPS system</li> <li>e. checking for proper operation of GPS system</li> <li>f. troubleshooting GPS system problems</li> <li>g. demonstrating to customer the use of GPS system</li> </ol> </li> </ol>	<p><b>Career Ready Practice:</b> 1, 3, 5</p> <p><b>CTE Anchor:</b> Communications: 2.1, 2.2, 2.3, 2.4 Health and Safety: 6.6, 6.16 Responsibility and Flexibility: 7.5 Ethics and Legal Responsibilities: 8.4 Technical Knowledge and Skills: 10.1, 10.5</p> <p><b>CTE Pathway:</b> C3.1, C3.3, C3.6, C7.2, C7.3</p>
<p>G. WIRELESS COMMUNICATION SYSTEMS</p> <p>Understand, apply, and evaluate the installation and operational principles and techniques for hands-free cellular phones.</p> <p>(15 hours)</p>	<ol style="list-style-type: none"> <li>1. Define the following: <ol style="list-style-type: none"> <li>a. cell tower</li> <li>b. 2G network</li> <li>c. 3G network</li> <li>d. 4G network</li> <li>e. Bluetooth®</li> <li>f. hands-free system</li> <li>g. speakerphone</li> </ol> </li> <li>2. Describe cellular phone systems, including information such as theory, process, and basic principles.</li> <li>3. Identify various parts of a hands-free cellular phone system.</li> <li>4. Define proper locations for hands-free cellular phone installation.</li> <li>5. Define the wiring requirements for <i>Bluetooth</i>® devices</li> <li>6. Identify various accessories for a hands-free cellular phone.</li> <li>7. Define and demonstrate the following: <ol style="list-style-type: none"> <li>a. explaining the operation of a hands-free system to a customer</li> <li>b. specifically answer various customer questions</li> <li>c. check for proper function of the hands-free phone system</li> <li>d. complete and sign a check-out sheet to verify proper operation of the hands-free phone system</li> </ol> </li> </ol>	<p><b>Career Ready Practice:</b> 1, 3, 5</p> <p><b>CTE Anchor:</b> Communications: 2.1, 2.2, 2.3, 2.4 Ethics and Legal Responsibilities: 8.4 Technical Knowledge and Skills: 10.1</p> <p><b>CTE Pathway:</b> C1.1, C1.2, C1.3, C1.5, C2.3, C2.4, C2.5, C4.1, C4.2, C4.3, C4.4, C4.5, C4.8, C4.9, C6.4, C7.3</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
<p>H. MOBILE ELECTRONICS CERTIFIED PROFESSIONAL (MECP) EXAM</p> <p>Understand, apply, and evaluate the test preparation techniques used to pass the examination for the MECP Basic Installation Technician Certification.</p> <p>(10 hours)</p>	<ol style="list-style-type: none"> <li>1. Review the contents of the Basic Installation Technician Certification examination.</li> <li>2. Pass the practice MECP Basic Installation Technician Certification test with at least 80% accuracy.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 3, 7, 10</p> <p><b>CTE Anchor:</b> Communications: 2.1, 2.2, 2.3, 2.4 Career Planning and Management: 3.1, 3.2, 3.4, 3.6 Problem Solving and Critical Thinking: 5.1, 5.4 Demonstration and Application: 11.2</p> <p><b>CTE Pathway:</b> C1.1</p>
<p>I. EMPLOYABILITY SKILLS</p> <p>Understand, apply, and evaluate the employability skills required in mobile electronics work.</p>	<ol style="list-style-type: none"> <li>1. Review employer requirements for the following: <ol style="list-style-type: none"> <li>a. punctuality</li> <li>b. attendance</li> <li>c. attitude toward work</li> <li>d. quality of work</li> <li>e. teamwork</li> <li>f. timeliness</li> <li>g. communication skills</li> </ol> </li> <li>2. Update list of potential employers through traditional and internet sources.</li> <li>3. Review the role of electronic social networking in job search.</li> <li>4. Update sample résumés.</li> <li>5. Review the importance of filling out a job application legibly, with accurate and complete information.</li> <li>6. Review the common mistakes that are made on job applications.</li> <li>7. Complete sample job application forms correctly.</li> <li>8. Review the importance of enthusiasm in the interview and on a job.</li> <li>9. Review the importance of appropriate appearance in the interview and on a job.</li> <li>10. Review the importance of the continuous upgrading of job skills.</li> <li>11. Review the importance of customer service as a method of building permanent relationships between the organization and the customer.</li> <li>12. Review and demonstrate appropriate interviewing techniques.</li> <li>13. Review the informational materials and resources needed to be successful in an interview.</li> <li>14. Review and demonstrate appropriate follow-up procedures.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 3, 7, 8</p> <p><b>CTE Anchor:</b> Communications: 2.1, 2.2, 2.3, 2.4, 2.5 Career Planning and Management: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9 Technology: 4.4 Responsibility and Flexibility: 7.2, 7.4, 7.5, 7.6, 7.7 Ethics and Legal Responsibilities: 8.4 Leadership and Teamwork: 9.2, 9.4, 9.6 Technical Knowledge and Skills: 10.1 Demonstration and Application: 11.1, 11.2, 11.5</p>

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(3 hours)		<b>CTE Pathway:</b> C1.1, C7.1, C7.2, C7.3, C7.4
<p>J. ENTREPRENEURIAL SKILLS</p> <p>Review, apply, and evaluate the employability skills required in mobile electronics work.</p>	<ol style="list-style-type: none"> <li>1. Define entrepreneurship.</li> <li>2. Identify the necessary characteristics of successful entrepreneurs.</li> <li>3. Discuss the contributions of entrepreneurs to the mobile electronics industry.</li> <li>4. Explain the purpose and components of a business plan.</li> <li>5. Examine personal goals prior to starting a business.</li> <li>6. Evaluate sources of monetary investment in a business opportunity.</li> <li>7. Discuss various licensing requirements in the mobile electronics business.</li> <li>8. Develop a scenario depicting the student as the mobile electronics business owner.</li> <li>9. Differentiate between LEED business practices and standard business practices.</li> </ol>	<p><b>Career Ready Practice:</b> 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12</p> <p><b>CTE Anchor:</b>            Communications: 2.1, 2.2, 2.3, 2.4, 2.5            Career Planning and Management: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.9            Technology: 4.1, 4.2, 4.3            Problem Solving and Critical Thinking: 5.1, 5.2, 5.3, 5.4            Health and Safety: 6.6, 6.7, 6.8            Responsibility and Flexibility: 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7            Ethics and Legal Responsibilities: 8.1, 8.3, 8.4, 8.5            Leadership and Teamwork: 9.1, 9.2, 9.3, 9.4, 9.5, 9.6            Technical Knowledge and Skills: 10.1, 10.2, 10.4, 10.6            Demonstration and Application: 11.1, 11.2, 11.3, 11.4, 11.5</p> <p><b>CTE Pathway:</b>            C1.1, C7.1, C7.2, C7.3, C7.4, C7.5, C7.6</p>
(4 hours)		

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

### **TEXTS AND SUPPLEMENTAL BOOKS**

Bishop, Owen. Electronics: Circuits and Systems, 3<sup>rd</sup> Edition. Elsevier Science and Technology, 2007.

Grob, Bernard and Mitchell E. Schultz. Basic Electronics, 5<sup>th</sup> Edition. McGraw-Hill Companies, 2002.

Herrick, Clyde. Basic Electronics Math. Elsevier Science, 2007.

Schuler, Charles A. Electronics: Principles and Applications, 6<sup>th</sup> Edition. McGraw-Hill and Companies, 2002.

### **RESOURCES**

Employer Advisory Board members

CTE Model Curriculum Standards

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

California Building Standards Commission

[www.bsc.ca.gov/default.htm](http://www.bsc.ca.gov/default.htm)

Green Building Advisor.com

[greenbuildingadvisor.com](http://greenbuildingadvisor.com)

The Daily Green

[thedailygreen.com](http://thedailygreen.com)

### **COMPETENCY CHECKLIST**

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

### **METHODS AND PROCEDURES**

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

### **EVALUATION**

SECTION A – Introduction and Safety – Pass the safety test with 100% accuracy.

SECTION B – Trade Mathematics Review – Pass all assignments and exams on trade mathematics review with a minimum score of 80% or higher.

SECTION C – Principles of Electronics Review – Pass all assignments and exams on principles of electronics review with a minimum score of 80% or higher.

SECTION D – Testing Equipment Review – Pass all assignments and exams on testing equipment review with a minimum score of 80% or higher.

SECTION E – Auto Electricity Review – Pass all assignments and exams on auto electricity review with a minimum score of 80% or higher.

SECTION F – Security Systems – Pass all assignments and exams on security systems with a minimum score of 80% or higher.

SECTION G – Navigation Systems – Pass all assignments and exams on navigation systems with a minimum score of 80% or higher.

SECTION H – Wireless Communications Systems – Pass all assignments and exams on wireless communications systems with a minimum score of 80% or higher.

SECTION I – Mobile Electronics Certified Professional (MCEP) Exam – Pass the practice mobile electronics certified professional (MCEP) exam with a minimum score of 80% or higher.

SECTION J – Employability Skills Review – Pass all assignments and exams on employability skills review with a minimum score of 80% or higher.

SECTION K – Entrepreneurial Skills – Pass all assignments and exams on entrepreneurial skills with a minimum score of 80% or higher.

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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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