



# SACRAMENTO CITY UNIFIED SCHOOL DISTRICT BOARD OF EDUCATION

Agenda Item# 13.1q

**Meeting Date:** June 22, 2023

**Subject:** Approve request to amend hours for Council on Occupational Education programs in Charles A. Jones Career and Education Center Manufacturing Training Center: Introduction to Manufacturing; Electro-Mechanical Assembly; Material Handling and Logistics

- Information Item Only
- Approval on Consent Agenda
- Conference (for discussion only)
- Conference/First Reading (Action Anticipated: \_\_\_\_\_)
- Conference/Action
- Action
- Public Hearing

**Division:** Academic Office

**Recommendation:** Approve amending hours for CAJ Manufacturing programs

**Background/Rationale:** During the 2022-23 school year, CAJ has implemented several new SCUSD Board approved and Council on Occupational Education approved programs in the CAJ Regional Manufacturing Training Center (RMTTC). During the year, it was determined that there is a need to fine tune program instructional hours for some programs to meet industry standards. CAJ is requesting changes to the hours of instruction for three of the RMTTC programs: Introduction to Manufacturing (Increase from 80 hours to 90 hours to include forklift training); Electro-Mechanical Assembly (Increase from 40 to 60 hours to provide more in-depth instruction on required components); Material Handling and Logistics (Reduce from 40 to 30 hours, which is sufficient to prepare students for work in the pathway, as program components take less time than originally planned). CAJ continues to partner with Sacramento Valley Manufacturing Alliance (SVMA) and other manufacturing partners in the area who sit on the manufacturing advisory committees. The respective Occupational Advisory Committees have reviewed the proposed program changes and have approved.

**Financial Considerations:** None.

**LCAP Goal(s):** College, Career and Life Ready Graduates, Operational Excellence

**Documents Attached:**

1. Signature pages - (3) - for approvals to amend CAJ Manufacturing programs: Introduction to Manufacturing (90 hours); Electro-Mechanical Assembly (60 hours); Material Handling and Logistics (30 hours)
2. Occupational Advisory Committee Minutes for programs: Introduction to Manufacturing; Electro-Mechanical Assembly; Material Handling and Logistics

**Estimated Time of Presentation:** N/A

**Submitted by:** Yvonne Wright, Chief Academic Officer

**Approved by:** Jorge A. Aguilar, Superintendent

**Charles A. Jones Career and Education Center – 323100**  
**Request for Program Changes Under 25%**

Program Name	NCES Classification of Instructional Programs (CIP) Code
Introduction to Manufacturing	48.0503

Old Program hours	80
<b>New Program hours</b>	<b>90</b>

The changes herein are approved as noted:

\_\_\_\_\_  
**Chinua Rhodes, Board President (Trustee Area 5)**  
Sacramento City Unified School District

\_\_\_\_\_  
Date

\_\_\_\_\_  
**Jorge A. Aguilar, Superintendent**

\_\_\_\_\_  
Date

**Charles A. Jones Career and Education Center – 323100**  
**Request for Program Changes Under 25%**

Program Name	NCES Classification of Instructional Programs (CIP) Code
Electro-Mechanical Assembly	15.0699

Old Program hours	40
New Program hours	<b>60</b>

The changes herein are approved as noted:

\_\_\_\_\_  
**Chinua Rhodes, Board President (Trustee Area 5)**  
**Sacramento City Unified School District**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Jorge A. Aguilar, Superintendent**

\_\_\_\_\_  
**Date**

**Charles A. Jones Career and Education Center – 323100**  
**Request for Program Changes Under 25%**

Program Name	NCES Classification of Instructional Programs (CIP) Code
Material Handling and Logistics	52.0203

Old Program hours	40
New Program hours	<b>30</b>

The changes herein are approved as noted:

\_\_\_\_\_  
**Chinua Rhodes, Board President (Trustee Area 5)**  
Sacramento City Unified School District

\_\_\_\_\_  
Date

\_\_\_\_\_  
**Jorge A. Aguilar, Superintendent**

\_\_\_\_\_  
Date



## CAJ CTE Occupational Advisory Meeting Minutes – (Introduction to Manufacturing)

**Date:** February 7, 2023

(Must be at least 3 months between meetings)

**Time:** 4:30 PM

**Location:** Charles A. Jones Career & Education Center, 5451 Lemon Hill Avenue, Sacramento, CA 95824

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**Meeting called by:** Todd Frazee & Angela Hatter

**Type of Meeting:** Advisory Meeting

**Facilitator:** Todd Frazee

**Meeting Minutes:** Dean Peckham/Angela Hatter

External Advisory Members Attendees (Required 3 – one can be virtual):	In Person	Virtual (Describe)	Title/Organization:
1. Austin Provost	X		Technical Sales Engineer / Lincoln Electric
2. Dean Peckham	x		Executive Director / Sacramento Valley Manufacturing Alliance (SVMA)
3. Kevin McGrew	x		Director of Quality Management / Siemens Mobility
4. Randy Hackett	x		Account Manager / Airgas
5. Scott Fredricks	x		Manager of Quality Assurance / Siemens Mobility
6. Bill VanDyck	x		Manufacturing Training Manager / Blue Diamond Growers
7. May-Va Vang	x		Workforce Development Specialist / Sacramento Job Corps
8. Shlisa Jefferson	x		CTT Manager / Sacramento Job Corps
9. Peter DeLap	x		Assembly Trainer / Siemens Mobility
10. Derek Moore	x		Assembly Trainer / Siemens Mobility
<b>Community Members/Internal Attendees:</b>			<b>Title/Organization:</b>
11. Todd Frazee	In-Person		Manufacturing Teacher / CAJ
12. Angela Hatter	In-Person		Site Administrator / CAJ
13. Rebecca Cantaberry	In-Person		Manufacturing Teacher / CAJ
13. Donovan Corbitt	In-Person		Manufacturing Technician Student / CAJ

<b>AGENDA ITEM</b>	<b>DISCUSSION</b>	<b>ACTION STEPS</b>
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**Introduction to Manufacturing  
Occupational Advisory MEETING MINUTES  
February 7th, 2023, 4:30 PM - 4:45 PM**

<p>1. Welcome – Introduction</p>	<p>All advisory members introduce themselves.</p>	<p>None.</p>
<p>2. Review Admissions &amp; Prerequisites</p>	<p>Todd Frazee reviews the admission requirements of CASAS scores of Reading: 239 and Math 236. Both are set at a 9th-grade proficiency level. The reading level for ToolingU is rated at 9th grade, but math is not rated by ToolungU.</p> <p>Math level was informally reviewed by CAJ GED teacher as approximately 9th grade.</p> <p>Program math modules include fractions, decimals, and units of measure in both Imperial and Metric standards</p> <p>The admission requirements for the Introduction to Manufacturing Program are identical to the Manufacturing Technician Program.</p> <p>There are no prerequisites for this introductory program are as follows:</p> <p>Todd Frazee:</p> <p>Our recommendation is to maintain the current admissions and prerequisite requirements without change for this program:</p> <p>I would like to ask for comments.</p> <p>Kevin McGrew: We have a diverse workforce with a large working population of English Learners. Maybe lowering the bar for English skills is something to consider.</p> <p>May-Va Vang: As someone who was an English Learner, English requirements at the 9<sup>th</sup>-grade level seems very high for English Learners.</p> <p>Todd: The English CASAS test scores for the program are set at the 9<sup>th</sup>-grade level because we use SME TooliungU in lieu of a textbook, and SME rates the</p>	<p>The Review Admissions &amp; Prerequisites</p> <p>Todd will forward samples of program math lessons to Angela for academic evaluation.</p> <p>Todd will request statistical records of CASAS math scores for prospective students expressing interest in the manufacturing programs.</p> <p>Todd will add reporting and review of math admission requirements to the agenda for the next advisory meeting</p> <p>No changes are to be made to the Admission and Prerequisites at the present time.</p>

**Introduction to Manufacturing  
Occupational Advisory MEETING MINUTES  
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English level of the content at the 9<sup>th</sup>-grade level. We want the students to be successful in the program especially considering the massive amount of industry terminology required to learn the subject. If we lower the English test score requirements, we would need to replace SME ToolingU, and I don't know of a similar resource at this time.

We do have our Integrated Education Training (IET) Manufacturing Pre-Apprenticeship For English Learners Program. The course is a 14-week program that pairs an ESL teacher with me as the CTE teacher. In this program, the ESL teacher works with the students for four daily lessons to prepare them for a weekly technical lesson with the CTE Teacher. The technical side of the course is identical to Introduction to Manufacturing course. Introduction to Manufacturing is the initial course block in the Manufacturing Technician Program and a prerequisite for all other courses that follow in the program except the Material Handling and Logistics course Block.

Angela Hatter: The IET program is intended to bridge our robust ESL programs and the Manufacturing Technician program.

Todd: Yes. The Introduction to Manufacturing course block contains over 30 pages of industry-specific vocabulary, which is challenging for a native English speaker to learn. The block is designed to prepare students to pass the SME Certified Manufacturing Associate (CMfgA) exam. In our pilot run of the IET program, we had a 100% CMfgA exam pass rate, which is a testament to the effectiveness of the scaffolding the program provides.



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	<p>The advisory group discusses the program's English test score required for Admissions, and the consensus is to accept the standard for the program.</p> <p>Todd: We have considered lowering the score to facilitate enrollment for the CASAS math requirement. We have the math score set at the 9<sup>th</sup>-grade level, but we are not certain that it is correct because SME does not rate the level of the math ToolingU content. The math level is based on which the teacher assigns SME ToolingU lessons. The math we teach in the program approaches low-level Trigonometry to solve angles, but the student does not need to be at that level to enter the program. The concern is that we have the math level set too high and are screening out viable program candidates. Angela, we have discussed having the math content officially evaluated by a curriculum specialist. Is that something we can do?</p> <p>Angela: We can look into having the content evaluated if you can send me samples.</p> <p>Todd: I propose we leave the math assessment level unchanged for now and have the math content evaluated before our next advisory meeting in the fall. We can add the topic to the agenda for the next meeting.</p> <p>The advisory group discusses the program's Admissions Prerequisites, and the consensus is to accept the proposed standards for the 2023-2024 school year.</p>	
<p>3. Review program content, program length, program objectives, competency tests, learning activities, and instructional materials</p>	<p>Todd Frazee reviews program content, program length, program objectives, competency tests, learning activities, and instructional materials.</p>	<p>The program content, program length, program objectives, competency tests, learning activities, and instructional materials for the Introduction to Manufacturing Program was reviewed with the advisory group.</p>

**Introduction to Manufacturing  
Occupational Advisory MEETING MINUTES  
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	<p>Todd introduces changes to the draft outline that proposes the following changes:</p> <ol style="list-style-type: none"> <li>1. Program Objectives: Add a statement to the description clarifying the source of program objectives are CCTEMCS for the program:</li> <li>2. Program Length Revision the duration of the program from 80 to 90 hours</li> <li>3. Program Content Revision: <ul style="list-style-type: none"> <li>• Collapse Forklift Operator Block down into the outline for the Introduction to Manufacturing Block.</li> </ul> </li> </ol> <p>I would like to ask for comments.</p> <p>Bill VanDyck: To clarify, now that you have run through these classes, once you have found that, you need to make adjustments to the instructional time for the individual topics.</p> <p>Todd: Correct. The overall program duration remains unchanged.</p> <p>The advisory group discussed the proposed changes to the program content, program length, program objectives, competency tests, learning activities, and instructional materials, and the consensus is to move forward with changes for the 2023-2024 school year.</p>	<p>Todd will implement proposed changes to the course outline for board approval and the program schedule for classes to be offered in the 2023-2024 school year</p>
<p>4. Review method of evaluation</p>	<p>Todd Frazee reviews the methods of evaluation for the program. Aligns to industry certification. Applied projects. Using Tooling U for evaluation. Current ToolingU Coursework is mapped to more than one NIMS certification exam, and we intend to work towards being</p>	<p>The methods of evaluation for the Introduction to Manufacturing Program were reviewed with the advisory group.</p> <p>Todd will gather examples of lab assignment documentation for advisory review and add the topic to</p>

**Introduction to Manufacturing**  
**Occupational Advisory MEETING MINUTES**  
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	<p>able to offer NIMS exams at CAJ. We will also be adding AWS SENSE academic certification tests to the program this year. The certification standards vary in requirements, but CAJ students must pass at a mastery level of 5% greater on in-class assessments than the given certification exam so they are well prepared for the certification exams.</p> <p>Methods of evaluation include Computer-based module exams for each SME ToolingU module, periodic mid-unit formative assessments, and end-of-unit assessments based on specific unit topics. Industry certification exams are offered at appropriate program milestones.</p> <p>The skills listed are from the California CTE curriculum model. It's what the K-12 system uses. We are also referencing SMEs' competency mode.</p> <p>Assessments may be in the form of paper or computer-based tests, hands-on skills demonstration activities, and unit signature projects.</p> <p>All instruction is now in person, with online work completed in a supervised computer lab.</p> <p>Grading is 50% based on exams and quizzes and 50% on lab-based activities.</p> <p>Overall mastery is a score of 75% to complete the program successfully. The mastery of individual industry certification exams is governed by the accrediting organization and may vary by organization but typically range from 70%-80%.</p> <p>The advisory group discussed the Review method of evaluation, and the consensus is to move forward with the current methods for the 2023-2024 school year.</p>	<p>the agenda for the next advisory meeting.</p>
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**Introduction to Manufacturing  
Occupational Advisory MEETING MINUTES  
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<p>5. Review skills and/or proficiency required for completion</p>	<p>Todd Frazee reviewed the completion requirements for the program, which are:</p> <ul style="list-style-type: none"> <li>● 90% Attendance</li> <li>● Complete all program projects</li> <li>● Complete all program final exams</li> <li>● SME CMfgA Certification</li> <li>● Forklift Operator Certification</li> </ul> <p>Discussion:</p> <p>The advisory group discussed the Review skills and/or proficiency required for completion, and the consensus is to move forward with aligning the program with appropriate industry certifications but not to any other changes for the 2023-2024 school year.</p>	<p>The Skills and/or proficiency required for completion of the Introduction to Manufacturing Program were reviewed with the advisory group.</p> <p>No further action is to be taken.</p>
<p>6. Review Appropriateness of instructional delivery method for the program</p>	<p>Todd Frazee reviews the methods of institutional delivery</p> <p>All instruction is currently In-Person. Some instructional content is delivered through completing self-directed work in SME ToolingU, Canvas, or CAD/CAM software.</p> <p>All self-paced computer-based learning is in-person during the scheduled in-person computer lab.</p> <p>Discussion: In general, the advisory group responded positively to the current state of the instructional delivery and method, returning to a traditional In-Person classroom and lab format after going to a hybrid format initiated due to the response to the COVID-19 Pandemic.</p> <p>The advisory group discussed the Appropriateness of the instructional delivery method for the program consensus is to continue with the current method for the 2023-2024 school year.</p>	<p>The Appropriateness of instructional delivery method for the Introduction to Manufacturing Program was reviewed with the advisory group</p> <p>No further action is to be taken.</p>
<p>7. Review program equipment and facilities</p>	<p>Todd Frazee reviews the program equipment and facilities needs of</p>	<p>The program equipment and facilities for the Introduction to Manufacturing</p>

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<ul style="list-style-type: none"> <li>● Facility needs</li> <li>● Equipment Needs</li> </ul>	<p>the program.</p> <p>Todd reviews:</p> <ul style="list-style-type: none"> <li>● Update on facility equipment status <ul style="list-style-type: none"> <li>○ All equipment under power</li> <li>○ New donation of HEM Vertical Bandsaw Saw from American Metals pending Delivery.</li> </ul> </li> <li>● Overview of facility spaces</li> <li>● Lease new Class I electric and Class IV LPS forklifts to replace existing machines</li> </ul> <p>Equipment Needs include: [Needs update by Todd]</p> <ul style="list-style-type: none"> <li>● The current complement of hand tools and machine tools is adequate to serve up to 6 students per learning session. Additional funds are required to ramp up a class size to 15</li> <li>● Hand tools for nine students @ ~\$6K per student.</li> <li>● (1) Manual manual mill</li> <li>● (4) Manual lathes needed</li> <li>● (1) Hydraulic/Power Shear</li> <li>● (1-2) Power Brake presses</li> <li>● (1-2) Tumblers</li> <li>● (2-3) additional grinders/buffers of different types</li> <li>● (1) CNC Punch</li> <li>● Cutting and grinding equipment to support welding processes</li> <li>● Material storage equipment</li> </ul> <p>Needed equipment repairs:</p> <ul style="list-style-type: none"> <li>● Compressor Refrigeration Air Dryer</li> <li>● Ironworker (electrical &amp; mechanical)</li> <li>● The mechanical Shear needs a new blade</li> <li>● Box/Pan brake missing a lever</li> <li>● Finger break missing a lever</li> <li>● The hydraulic press needs</li> </ul>	<p>Program were reviewed with the advisory group.</p> <p>Todd Frazee will continue to develop the equipment needs budget and plan facility improvement when funds allow.</p>
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	<p style="text-align: center;">repair</p> <p>Discussion.</p> <p>The advisory group discussed the Review program equipment and facilities for the program. Fundraising concepts were discussed.</p>	
<p>8. Adjourn</p>	<p>Todd Frazee: If we don't have further comments tonight, can we ask for a motion to adjourn?</p>	<p>Austin Provost makes a motion to Adjourn. Randy Hackett seconds the motion. The meeting adjourns at 6:15 PM</p>

**Introduction to Manufacturing (80 hr.)  
Occupational Advisory Meeting**

**February 7, 2023 4:30 PM**

*Agenda*

1. Welcome – Introduction
2. Review Admissions & Prerequisites
3. Review program content, program length, program objectives, competency tests, learning activities, instructional materials
  - Program Length
    - Revert program duration from 80 to 90 hours
  - Program Objectives
    - Add a statement to the description clarifying the source of program objectives are CCTEMCS
  - Proposed changes to program curriculum
    - Add the forklift operator class outline for the Introduction to Manufacturing Program
4. Review method of evaluation of skills and/or proficiency required for completion
5. Review skills and/or proficiency required for completion
6. Review the appropriateness of the instructional delivery method for the program
7. Review program equipment and facilities
  - Lease new Class I electric and Class IV LPS forklifts to replace existing machines
8. Adjourn

Sacramento City Unified School District

**ADULT EDUCATION COURSE OUTLINE**

**PROGRAM AREA:** Career Technical Education **COURSE NUMBER:** \_\_\_\_\_  
**ADULT SCHOOL:** Sacramento City Unified School District **UPDATED:** February 18, 2023  
**SCHOOL SITE:** Charles A. Jones Career and Education Center **TOTAL HOURS:** 90

**COURSE TITLE:** Introduction to Manufacturing

**COURSE DESCRIPTION:**

The Introduction to Manufacturing class is a component of the Manufacturing Technician Program and a pre-requisite for three program pathways: Welder, Machinist, and Manufacturing Engineering Technician. The course consists of 90 hours of classroom and practical exercises touching on various manufacturing topics, including safety, blueprint reading, tool identification, and an overview manufacturing process. The training covers fundamental knowledge and skills through classroom lectures and hands-on activities in the manufacturing lab. Successful students earn industry-recognized training certificates through California/Occupational Safety and Health Administration (Cal/OSHA) and the Society of Manufacturing Engineers (SME). The students who complete the program will gain foundational skills to prepare them for entry-level roles in manufacturing companies in welding, assembly, machining, quality, and material handling.

**I. ADMISSION REQUIREMENTS**

- High school diploma
- Right to Work documentation
- Assessment test with a passing score of 239 for reading and 236 for math
- Cal Jobs registration
- SETA Job Center intake and required workshops
- Attend the one-time Orientation Session on the Charles A. Jones Career and Education Center campus



**II. PROGRAM CONTENT THAT IS CONSISTENT WITH DESIRED STUDENT LEARNING OUTCOMES:**

To provide students with the essential manufacturing skill and knowledge to enter the workforce as an entry-level manufacturing technician, and earn industry-recognized certifications. Successful students will earn a 10-hr Cal/OSHA General Industry Safety and Health training card and the SME Certified Manufacturing Associate (CMfgA) certification. The students will be able to interpret manufacturing documentation to set up, operate, and troubleshoot manufacturing equipment. The students who complete the program will have the foundational skills to prepare them for entry-level manufacturing technician roles and identify areas for further training in welding, assembly, machining, quality, and material handling.

**III. PROGRAM LENGTH:**

The Introduction to Manufacturing course is 90 hours in length, over approximately 3 instructional weeks.

**IV. PROGRAM OBJECTIVES:**

Upon successful completion of this course, the student will gain the skills and knowledge necessary to perform the following manufacturing tasks in alignment with the California Career Technical Education Model Curriculum Standards (CCTEMCS) for the Manufacturing and Product Development (MPD) standards for Machining And Forming Technologies, Welding and Material Joining pathways and select standards from Transportation (T) Operations pathway:

- A. Acquire and accurately use manufacturing sector terminology and protocols at the career readiness level for communicating effectively in verbal and written formats. (CCTEMCS.MPD.AS.2.0)
- B. Demonstrate understanding of the safety principles in written and verbal form by earning a 10-hr. Cal/OSHA General Industry training card (CCTEMCS.MPD.AS.6.1, 6.2, 6.8 & 11.2)
- C. Demonstrate an understanding of fundamental manufacturing processes and terminology in written and verbal form by passing the Society of Manufacturing Engineers (SME) ToolingU exam (CCTEMCS.MPD.AS.11.2).
- D. Analyze given design documentation defining a part, verbally describe the process sequence, and apply manufacturing skills required to manufacture the part in a practical lab setting (CCTEMCS.MPD.AS.5.0)..
- E. Use existing and emerging technology to produce products and services required in the manufacturing workplace environment (CCTEMCS.MPD.AS.4.0).
- F. 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 manufacturing workplace environment (CCTEMCS.MPD.AS.6.0).
- G. Apply essential technical knowledge and skills common in the manufacturing sector, following procedures when performing technical tasks (CCTEMCS.MPD.AS.10.0).
  - H. Demonstrate and apply the knowledge and skills contained in industry standards in the classroom, laboratory, and workplace settings (CCTEMCS.MPD.AS.11.0).
  - I. Validate that a provided part meets specifications from its engineering drawing by comparing specifications by demonstrating proper technique using appropriate precision measuring tools (CCTEMCS.MPD.PS.B1.0).
  - J. Describe and layout a project according to specifications or engineering drawings (CCTEMCS.MPD.PS.B2.0).
  - K. Research and compare the properties of two metals using two different material specifications and a process specification (CCTEMCS.MPD.PS.B3.0).
  - L. Demonstrate a saw operation(s) to produce a length of bar stock to specification (CCTEMCS.MPD.PS.B4.0).
  - M. Demonstrate bending, shaping, other metal forming, and fabrication techniques, including basic hand filing and cold form bending with cold forming machinery (CCTEMCS.MPD.PS.B5.0)..

## V. **STANDARDS**

### A. CCTEMCS Manufacturing and Product Development Standards

#### Anchor Standards:

- CCTEMCS.MPD.AS.2.0
- CCTEMCS.MPD.AS.4.0
- CCTEMCS.MPD.AS.5.0
- CCTEMCS.MPD.AS.6.0
- CCTEMCS.MPD.AS.10.0
- CCTEMCS.MPD.AS.11.0

#### Pathway Standards:

- CCTEMCS.MPD.PS.B1.0
- CCTEMCS.MPD.PS.B2.0
- CCTEMCS.MPD.PS.B3.0
- CCTEMCS.MPD.PS.B5.0
- CCTEMCS.MPD.PS.C2.0
- CCTEMCS.MPD.PS.C3.0
- CCTEMCS.MPD.PS.C4.0
- CCTEMCS.MPD.PS.C5.0

- CCTEMCS.MPD.PS.C8.0

## B. CCTEMCS Transportation Standards

### Pathway Standards:

- CCTEMCS.T.PS.A1.1
- CCTEMCS.T.PS.A1.3
- CCTEMCS.T.PS.A1.4
- CCTEMCS.T.PS.A2.2
- CCTEMCS.T.PS.A2.4
- CCTEMCS.T.PS.A3.0
- CCTEMCS.T.PS.A6.0

## C. Industry Standards

### 29 Code of Federal Regulations (CFR) Part 1910 OSHA General Industry Regulations & Standards

- 29 CFR 1910.178(I)(2)
- 29 CFR 1910.178(I)(3)
- 29 CFR 1910.178(I)(4)

### Cal/OSHA General Industry Safety Order (GISO) Standards

- Title 8, Chapter 4, Sub-Chapter 7

### Society of Manufacturing Engineers (SME)

- SME Certified Manufacturing Associate (CMfgA) core competency model

## VI. **COMPETENCY TESTS:**

Students will complete online unit module exams for online lessons in SME ToolingU. Students also complete separate written exams and competency evaluations for certification to the SME Certified Manufacturing Associate and 10-hr. Cal/OSHA General Safety and Health Program. The final exam for this course is the SME CMfgA practice exam with a 75% mastery level. The instructor also observes student performance and learning through informal formative assessment.

## VII. **LEARNING ACTIVITIES:**

**(NOTE: These are ESTIMATED times and can fluctuate based on student performance and industry (advisory committee) input)**

**Units of Instruction and total hours of instruction**

**1. Introduction To Manufacturing (90 hrs.)**

- 1.1. Manufacturing and Manufacturing Skills
  - 1.1.1. Introduction to the five major types of manufacturing processes
    - 1.1.1.1. Additive
    - 1.1.1.2. Subtractive
    - 1.1.1.3. Forming
    - 1.1.1.4. Joining
    - 1.1.1.5. Surface finishing
    - 1.1.1.6. Demonstrate safe operation and use of general hand & power tools
  - 1.1.2. Terminology & common components
  - 1.1.3. Overview of quality
  - 1.1.4. Overview of manufacturing operations
  - 1.1.5. Prepare for the SME Certified Manufacturing Associate (CMfgA) exam
- 1.2. Cal/OSHA 10 General Safety Card Class
  - 1.2.1. Introduction to OSHA and Cal/OSHA
  - 1.2.2. Injury and Illness Prevention Program (IIPP) and Heat Illness Prevention
  - 1.2.3. Walking & Working Surfaces, including Fall Protection
  - 1.2.4. Exit Routes, Emergency Action Plans, Fire Prevention Plans, & Fire Protection
  - 1.2.5. Electrical Hazards
  - 1.2.6. Personal Protective Equipment
  - 1.2.7. Hazard Communication
  - 1.2.8. Health Hazards
  - 1.2.9. Tools and Equipment
  - 1.2.10. Material Handling
- 1.3. Forklift Operator Class
  - 1.3.1. Instruction and assessment on principles of safe operation of counterbalanced industrial lift trucks
  - 1.3.2. Demonstration of safe operation of counterbalance industrial lift trucks
  - 1.3.3. Practical exercise operating counterbalance lift trucks
  - 1.3.4. Assessment of individual students operating counterbalance lift trucks on a qualification driving course under the observation of a qualified instructor.

**Total program hours 90**

**VIII. INSTRUCTIONAL MATERIALS:**

Various instructional techniques are used, including instructor demonstrations, computer-based tutorials, multimedia presentations, and individual and group projects. Software resources for the shop floor and material resource management will also be used to provide an authentic real-life experiential learning environment in the lab. Raw materials and components to support lab activities and manipulatives for demonstration.

**IX. EQUIPMENT:**

The following types of equipment used throughout the course:

- Horizontal and Vertical Bandsaws
- Drill Presses
- Sheers
- Pan Break
- Hydraulic press
- Sheet metal roll
- Ironworker
- Notchers
- Manual Lathes
- Manual Mills
- CNC Lathes
- CNC Mills
- CNC plasma cutters
- CNC waterjet
- Arc welders
- Soldering Irons
- 3D printers
- Laser engravers
- Metrology bench tools
- Hand tools for machine shop, assembly, and welding shops
- Blasting and finishing equipment

**X. METHOD OF PROGRAM EVALUATION:**

Students complete online module exams for each online module in the SME ToolingU and have both periodic mid-unit formative assessments and end-of-unit assessments based on specific unit topics. Industry certification exams based on SME and Cal/OSHA are offered at appropriate program milestones. Assessments may be in the form of paper or computer-based tests, hands-on skills demonstration activities, and unit signature projects. The last unit in the program is a culminating capstone project that tests the program's skills that

simulate an authentic, real-world manufacturing project. Grading is 50% based on exams and quizzes and 50% on lab-based activities.

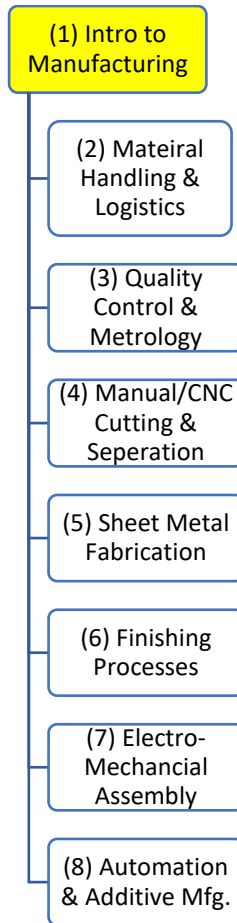
**XI. LEVEL OF SKILLS AND/OR PROFICIENCY REQUIRED FOR COMPLETION:**

Each student must achieve a score of 75% overall mastery to complete the program successfully. The mastery of individual industry certification exams is governed by the accrediting organization and may vary by organization but typically range from 70%-90%. Program completion is not required to sign up for industry certification examinations. However, we highly recommend that students finish the program to prepare them to perform well on the exams.

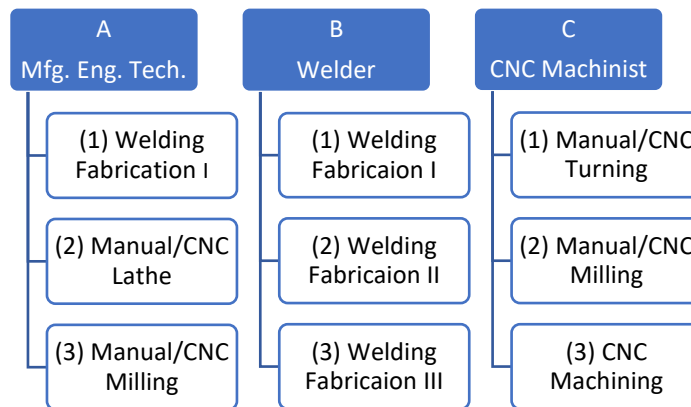
**XII. APPROPRIATE DELIVERY FORMATS FOR THE SUBJECT MATTER BEING TAUGHT:**

Course content delivery is through a traditional classroom and laboratory format. The program includes computer-based instruction, which students will complete according to a defined schedule in a supervised computer lab. Copies of computer-based instructional materials are available upon request. Students will also have instructional time performing hands-on applications in the manufacturing lab, simulating the documentation and software used in a modern manufacturing environment.

## CORE BLOCKS



## SPECIALTY TRACK BLOCKS



## CAPSTONE BLOCKS





## CAJ CTE Occupational Advisory Meeting Minutes – (Electro-Mechanical Assembly)

**Date:** February 7, 2023

(Must be at least 3 months between meetings)

**Time:** 5:00 PM

**Location:** Charles A. Jones Career & Education Center, 5451 Lemon Hill Avenue, Sacramento, CA 95824

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**Meeting called by:** Todd Frazee & Angela Hatter

**Type of Meeting:** Advisory Meeting

**Facilitator:** Todd Frazee

**Meeting Minutes:** Dean Peckham/Angela Hatter

External Advisory Members Attendees (Required 3 – one can be virtual):	In Person	Virtual (Describe)	Title/Organization:
1. Austin Provost	X		Technical Sales Engineer / Lincoln Electric
2. Dean Peckham	x		Executive Director / Sacramento Valley Manufacturing Alliance (SVMA)
3. Kevin McGrew	x		Director of Quality Management / Siemens Mobility
4. Randy Hackett	x		Account Manager / Airgas
5. Scott Fredricks	x		Manager of Quality Assurance / Siemens Mobility
6. Bill VanDyck	x		Manufacturing Training Manager / Blue Diamond Growers
7. May-Va Vang	x		Workforce Development Specialist / Sacramento Job Corps
8. Shlisa Jefferson	x		CTT Manager / Sacramento Job Corps
9. Peter DeLap	x		Assembly Trainer / Siemens Mobility
10. Derek Moore	x		Assembly Trainer / Siemens Mobility
<b>Community Members/Internal Attendees:</b>			<b>Title/Organization:</b>
11. Todd Frazee	In-Person		Manufacturing Teacher / CAJ
12. Angela Hatter	In-Person		Site Administrator / CAJ
13. Rebecca Cantaberry	In-Person		Manufacturing Teacher / CAJ
13. Donovan Corbitt	In-Person		Manufacturing Technician Student / CAJ

<b>AGENDA ITEM</b>	<b>DISCUSSION</b>	<b>ACTION STEPS</b>
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**Electro-Mechanical Assembly Program**  
**Occupational Advisory MEETING MINUTES**  
**February 7th, 2023, 5:00 PM - 5:15 PM**

<p>1. Welcome – Introduction</p>	<p>All advisory members introduce themselves.</p>	<p>None.</p>
<p>2. Review Admissions &amp; Prerequisites</p>	<p>Todd Frazee reviews the admission requirements of CASAS scores of Reading: 239 and Math 236. Both are set at a 9th-grade proficiency level. The reading level for ToolingU is rated at 9th grade, but math is not rated by ToolungU.</p> <p>Math level was informally reviewed by CAJ GED teacher as approximately 9th grade.</p> <p>Program math modules include fractions, decimals, and units of measure in both Imperial and Metric standards</p> <p>The admission requirements for the Electro-Mechanical Assembly Program are identical to the Manufacturing Technician Program.</p> <p>Prerequisites within the program are as follows:</p> <p>Introduction to Manufacturing Block or Program is a prerequisite this program. CAJ former Manufacturing Pre-Apprenticeship Program is accepted as equivalent to Introduction to Manufacturing</p> <p>Todd Frazee:</p> <p>Our recommendation is to maintain the current admissions and prerequisite requirements without change for this program:</p> <p>I would like to ask for comments.</p> <p>Kevin McGrew: We have a diverse workforce with a large working population of English Learners. Maybe lowering the bar for English skills is something to consider.</p> <p>May-Va Vang: As someone who was an English Learner, English requirements at the 9<sup>th</sup>-grade level seems very high for English</p>	<p>The Review Admissions &amp; Prerequisites</p> <p>Todd will forward samples of program math lessons to Angela for academic evaluation.</p> <p>Todd will request statistical records of CASAS math scores for prospective students expressing interest in the manufacturing programs.</p> <p>Todd will add reporting and review of math admission requirements to the agenda for the next advisory meeting</p> <p>No changes are to be made to the Admission and Prerequisites at the present time.</p>

**Electro-Mechanical Assembly Program**  
**Occupational Advisory MEETING MINUTES**  
**February 7th, 2023, 5:00 PM - 5:15 PM**

	<p>Learners.</p> <p>Todd: The English CASAS test scores for the program are set at the 9<sup>th</sup>-grade level because we use SME TooliungU in lieu of a textbook, and SME rates the English level of the content at the 9<sup>th</sup>-grade level. We want the students to be successful in the program especially considering the massive amount of industry terminology required to learn the subject. If we lower the English test score requirements, we would need to replace SME ToolingU, and I don't know of a similar resource at this time.</p> <p>We do have our Integrated Education Training (IET) Manufacturing Pre-Appenticeship For English Learners Program. The course is a 14-week program that pairs an ESL teacher with me as the CTE teacher. In this program, the ESL teacher works with the students for four daily lessons to prepare them for a weekly technical lesson with the CTE Teacher. The technical side of the course is identical to Introduction to Manufacturing course. Introduction to Manufacturing is the initial course block in the Manufacturing Technician Program and a prerequisite for all other courses that follow in the program except the Material Handling and Logistics course Block.</p> <p>Angela Hatter: The IET program is intended to bridge our robust ESL programs and the Manufacturing Technician program.</p> <p>Todd: Yes. The Introduction to Manufacturing course block contains over 30 pages of industry-specific vocabulary, which is challenging for a native English speaker to learn. The block is designed to prepare students to pass the SME Certified</p>	
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**Electro-Mechanical Assembly Program**  
**Occupational Advisory MEETING MINUTES**  
**February 7th, 2023, 5:00 PM - 5:15 PM**

	<p>Manufacturing Associate (CMfgA) exam. In our pilot run of the IET program, we had a 100% CMfgA exam pass rate, which is a testament to the effectiveness of the scaffolding the program provides.</p> <p>The advisory group discusses the program's English test score required for Admissions, and the consensus is to accept the standard for the program.</p> <p>Todd: We have considered lowering the score to facilitate enrollment for the CASAS math requirement. We have the math score set at the 9<sup>th</sup>-grade level, but we are not certain that it is correct because SME does not rate the level of the math ToolingU content. The math level is based on which the teacher assigns SME ToolingU lessons. The math we teach in the program approaches low-level Trigonometry to solve angles, but the student does not need to be at that level to enter the program. The concern is that we have the math level set too high and are screening out viable program candidates. Angela, we have discussed having the math content officially evaluated by a curriculum specialist. Is that something we can do?</p> <p>Angela: We can look into having the content evaluated if you can send me samples.</p> <p>Todd: I propose we leave the math assessment level unchanged for now and have the math content evaluated before our next advisory meeting in the fall. We can add the topic to the agenda for the next meeting.</p> <p>The advisory group discusses the program's Admissions Prerequisites, and the consensus is to accept the proposed standards for the 2023-2024 school year.</p>	
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**Electro-Mechanical Assembly Program**  
**Occupational Advisory MEETING MINUTES**  
**February 7th, 2023, 5:00 PM - 5:15 PM**

<p>3. Review program content, program length, program objectives, competency tests, learning activities, and instructional materials</p>	<p>Todd Frazee reviews program content, program length, program objectives, competency tests, learning activities, and instructional materials.</p> <p>Todd introduces changes to the draft outline that proposes the following changes:</p> <ol style="list-style-type: none"> <li>1. Program Objectives: Add a statement to the description clarifying the source of program objectives are CCTEMCS to the program.</li> <li>2. Program Length Revision the duration of the program from 40 to 60 hours</li> <li>3. Program Content Revision:</li> </ol> <p>No changes to Program Content proposed.</p> <p>I would like to ask for comments.</p> <p>Bill VanDyck: To clarify, now that you have run through these classes, once you have found that, you need to make adjustments to the instructional time for the individual topics.</p> <p>Todd: Correct. The overall program duration remains unchanged.</p> <p>Peter Delap: Do you pull test the wiring for your Electro-Mechanical Assembly units, and what type of assembly instructions do the students use?</p> <p>Todd: We do not currently pull testing the wiring harnesses, but we intend to implement the process when funding allows us to acquire the equipment. I documented the pull tester you used at Siemens during my last visit, and I thought we</p>	<p>The program content, program length, program objectives, competency tests, learning activities, and instructional materials for the Electro-Mechanical Assembly Program was reviewed with the advisory group.</p> <p>Todd will gather examples of lab assignment documentation for advisory review and add the topic to the agenda for the next advisory meeting.</p> <p>Todd will implement proposed changes to the course outline for board approval and the program schedule for classes to be offered in the 2023-2024 school year</p>
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**Electro-Mechanical Assembly Program  
Occupational Advisory MEETING MINUTES  
February 7th, 2023, 5:00 PM - 5:15 PM**

	<p>would emulate the equipment and procedures you use at your facility to the best of our ability.</p> <p>For most of the exercises in the program, we try to emulate work instructions as you would see in private industry. I know you don't use Travelers with Routings at Siemens, but most of the other SVMA partners do, so we use routing-based travelers. We do show examples of Work orders and work instructions you shared with us so the students are exposed to documentation from Siemens.</p> <p>You bring up some very good points Peter. If you would like to see examples of our lesson documentation, I can put that on the agenda for the next meeting.</p> <p>Peter: It would be great to see examples so we can collaborate.</p> <p>The advisory group discussed the proposed changes to the program content, program length, program objectives, competency tests, learning activities, and instructional materials, and the consensus is to move forward with changes for the 2023-2024 school year.</p>	
<p>4. Review method of evaluation</p>	<p>Todd Frazee reviews the methods of evaluation for the program. Aligns to industry certification. Applied projects. Using Tooling U for evaluation. Current ToolingU Coursework is mapped to more than one NIMS certification exam, and we intend to work towards being able to offer NIMS exams at CAJ. We will also be adding AWS SENSE academic certification tests to the program this year. The certification standards vary in requirements, but CAJ students must pass at a</p>	<p>The methods of evaluation for the Electro-Mechanical Assembly Program were reviewed with the advisory group.</p> <p>No further action is to be taken.</p>

**Electro-Mechanical Assembly Program**  
**Occupational Advisory MEETING MINUTES**  
**February 7th, 2023, 5:00 PM - 5:15 PM**

	<p>mastery level of 5% greater on in-class assessments than the given certification exam so they are well prepared for the certification exams.</p> <p>Methods of evaluation include Computer-based module exams for each SME ToolingU module, periodic mid-unit formative assessments, and end-of-unit assessments based on specific unit topics. Industry certification exams are offered at appropriate program milestones.</p> <p>Assessments may be in the form of paper or computer-based tests, hands-on skills demonstration activities, and unit signature projects.</p> <p>All instruction is now in person, with online work completed in a supervised computer lab.</p> <p>Grading is 50% based on exams and quizzes and 50% on lab-based activities.</p> <p>Overall mastery is a score of 75% to complete the program successfully. The mastery of individual industry certification exams is governed by the accrediting organization and may vary by organization but typically range from 70%-80%.</p> <p>The advisory group discussed the Review method of evaluation, and the consensus is to move forward with the current methods for the 2023-2024 school year.</p>	
<p>5. Review skills and/or proficiency required for completion</p>	<p>Todd Frazee reviewed the completion requirements for the program, which are:</p> <ul style="list-style-type: none"> <li>● 90 Attendance</li> <li>● Complete all program block projects</li> <li>● Complete all program block final exams</li> </ul> <p>Discussion:</p>	<p>The Skills and/or proficiency required for completion of the Electro-Mechanical Assembly Program were reviewed with the advisory group.</p> <p>Rebecca Cantaberry will pursue AWS SENSE registration for CAJ</p> <p>No further action is to be taken.</p>

**Electro-Mechanical Assembly Program**  
**Occupational Advisory MEETING MINUTES**  
**February 7th, 2023, 5:00 PM - 5:15 PM**

	<p>The advisory group discussed the Review skills and/or proficiency required for completion, and the consensus is to move forward with aligning the program with appropriate industry certifications but not to any other changes for the 2023-2024 school year.</p>	
<p>6. Review Appropriateness of instructional delivery method for the program</p>	<p>Todd Frazee reviews the methods of institutional delivery</p> <p>All instruction is currently In-Person. Some instructional content is delivered through completing self-directed work in SME ToolingU, and Canvas.</p> <p>All self-paced computer-based learning is in-person during the scheduled in-person computer lab.</p> <p>Discussion: In general, the advisory group responded positively to the current state of the instructional delivery and method, returning to a traditional In-Person classroom and lab format after going to a hybrid format initiated due to the response to the COVID-19 Pandemic.</p> <p>The advisory group discussed the Appropriateness of the instructional delivery method for the program consensus is to continue with the current method for the 2023-2024 school year.</p>	<p>The Appropriateness of instructional delivery method for the Electro-Mechanical Assembly Program was reviewed with the advisory group</p> <p>No further action is to be taken.</p>
<p>7. Review program equipment and facilities</p> <ul style="list-style-type: none"> <li>● Facility needs</li> <li>● Equipment Needs</li> </ul>	<p>Todd Frazee reviews the program equipment and facilities needs of the program.</p> <p>Todd reviews:</p> <ul style="list-style-type: none"> <li>● Overview of facility spaces</li> </ul> <p>Equipment Needs include: [Needs update by Todd]</p> <ul style="list-style-type: none"> <li>● The current complement of hand tools and machine tools is adequate to serve up to 6 students per learning session. Additional</li> </ul>	<p>The program equipment and facilities for the Electro-Mechanical Assembly Program were reviewed with the advisory group.</p> <p>Todd Frazee will continue to develop the equipment needs budget and plan facility improvement when funds allow.</p>

**Electro-Mechanical Assembly Program  
Occupational Advisory MEETING MINUTES**

**February 7th, 2023, 5:00 PM - 5:15 PM**

	<p style="text-align: center;">funds are required to ramp up a class size to 15</p> <ul style="list-style-type: none"> <li>● Hand tools for nine students @ ~\$6K per student.</li> </ul> <p>Discussion.</p> <p>The advisory group discussed the Review program equipment and facilities for the program. Fundraising concepts were discussed.</p>	
<p>8. Adjourn</p>	<p>Todd Frazee: If we don't have further comments tonight, can we ask for a motion to adjourn?</p>	<p>Austin Provost makes a motion to Adjourn. Randy Hackett seconds the motion. The meeting adjourns at 6:15 PM</p>



**Electro-Mechanical Assembly (40 hr.)  
Occupational Advisory Meeting**  
February 7, 2023 5:00 pm  
*Agenda*

1. Welcome – Introduction
2. Review Admissions
3. Review program content, program length, program objectives, competency tests, learning activities, instructional materials
  - Program Objectives
    - Add a statement to the description clarifying the source of program objectives are CCTEMCS
  - Proposed changes to program duration
    - Electro-Mechanical Assembly Program: Revert from 30 back to 60 hrs.
4. Review method of evaluation of skills and/or proficiency required for completion
5. Review skills and/or proficiency required for completion
6. Review the appropriateness of the instructional delivery method for the program
7. Review program equipment and facilities
8. Adjourn

Sacramento City Unified School District

**ADULT EDUCATION COURSE OUTLINE**

**PROGRAM AREA:** Career Technical Education **COURSE NUMBER:** \_\_\_\_\_  
**ADULT SCHOOL:** Sacramento City Unified School District **UPDATED:** February 18, 2023  
**SCHOOL SITE:** Charles A. Jones Career and Education Center **TOTAL HOURS:** 60

**COURSE TITLE:** Electro-Mechanical Assembly

**COURSE DESCRIPTION:**

The Electro-Mechanical Assembly class is a component of the Manufacturing Technician Program. The training contains fundamental knowledge of assembly processes, including identifying and applying essential hand tools techniques, safe operation presses, engraving machines, and in-process and final inspection techniques. Identification and application of mechanical assembly hardware such as threaded and non-threaded fasteners and mechanical components, will be covered in the class. Students will perform pressing interference fit hardware and learn the basics of lubricants, adhesives, sealants, and thread-locking compounds. Students will also learn the safe operation of soldering and heat shrinking and crimping equipment. In the lab, students build wiring harnesses and test the continuity of constructed projects by interpreting engineering drawings and specifications. After completing the training, students will have the knowledge and technical competency for entry-level employment in the manufacturing industry, trade apprenticeships, and industry-standard certifications through further study. The students who complete the program will have the foundational skills to prepare them for entry-level assembly technician roles. The Introduction to Manufacturing or Manufacturing Pre-Apprenticeship are prerequisite classes for this course.

**I. ADMISSION REQUIREMENTS**

- High school diploma
- Right to Work documentation
- Assessment test with a passing score of 239 for reading and 236 for math
- Cal Jobs registration
- SETA Job Center intake and required workshops

- Attend the one-time Orientation Session on the Charles A. Jones Career and Education Center campus
- Completion of either Introduction to Manufcatruon or Manufacturing Pre-Apprenticeship class

**II. PROGRAM CONTENT THAT IS CONSISTENT WITH DESIRED STUDENT LEARNING OUTCOMES:**

To provide students with the basic manufacturing skill and knowledge to enter the workforce as entry-level manufacturing technicians, enter an employer-sponsored apprenticeship program, and earn industry-recognized certifications. The students will be able to interpret manufacturing documentation to set up, build and troubleshoot electro-mechanical assemblies. The students who complete the program will have the foundational skills to prepare them for an entry-level role as an assembly technician.

**III. PROGRAM LENGTH:**

The manufacturing Technician course is 40 hours in length, over approximately 2 instructional weeks.

**IV. PROGRAM OBJECTIVES:**

Upon successful completion of this course, the student will gain the skills and knowledge necessary to perform the following manufacturing tasks in alignment with the California Career Technical Education Model Curriculum Standards (CCTEMCS) for the Manufacturing and Product Development (MPD) standards for Machining And Forming Technologies and Welding and Joining Technologies pathway:

- A. Acquire and accurately use manufacturing sector terminology and protocols at the career readiness level for communicating effectively in verbal and written formats.
- B. Use existing and emerging technology to produce products and services required in the manufacturing workplace environment.
- C. Create alternative solutions to solve a problem unique to the manufacturing sector using critical and creative thinking, logical reasoning, and problem-solving techniques.
- D. 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 manufacturing workplace environment.
- E. Apply essential technical knowledge and skills common in the manufacturing sector, following procedures when performing technical tasks.

- F. Demonstrate and apply the knowledge and skills contained in industry standards in the classroom, laboratory, and workplace settings.
- G. Describe and layout a project according to specifications or engineering drawings.

**V. COMPETENCY TESTS:**

Students will complete online unit module exams for online lessons in SME ToolingU, separate written exams, and hands-on competency evaluations. Final exams are conducted at the course. The instructor also observes student performance and learning through informal formative assessment.

**VI. LEARNING ACTIVITIES:**

**(NOTE: These are ESTIMATED times and can fluctuate based on student performance and industry (advisory committee) input)**

**Units of Instruction and total hours of instruction**

**1. Electro-Mechanical Assembly (60 hrs.)**

[Prerequisite: Intro to Manufacturing or Manufacturing Pre-Appenticeship]

- 1.1.1. Overview of electro-mechanical processes
- 1.1.2. Identify and apply basic hand tools associated with mechanical assembly
- 1.1.3. Demonstrate safe operation manual machines:
  - 1.1.3.1. Presses (arbor, hydraulic)
- 1.1.4. Demonstrate safe operation of CNC cutting machines
  - 1.1.4.1. CNC laser engraving
- 1.1.5. Perform in-process and final inspection techniques for mechanical assembly processes
- 1.1.6. Identify and apply mechanical assembly hardware and fabrication techniques
  - 1.1.6.1. Advanced threaded and non-threaded fasteners
  - 1.1.6.2. Mechanical components
  - 1.1.6.3. Pressing interference fit hardware
  - 1.1.6.4. Basics of lubricants, adhesives, sealants, and thread locking compounds
- 1.1.7. Identify and apply basic hand tools associated with electro-mechanical assembly
- 1.1.8. Demonstrate safe operation manual machines:
  - 1.1.8.1. Soldering irons & soldering guns
  - 1.1.8.2. Digital Multi-Meters (DMMs)
  - 1.1.8.3. Heat shrink and crimping equipment
- 1.1.9. Perform in-process and final inspection techniques for electro-mechanical assembly processes
- 1.1.10. Identify and apply electro-mechanical assembly hardware and processes
  - 1.1.10.1. Circuit boards and solid-state hardware

- 1.1.10.2. Wiring harness connectors
- 1.1.10.3. Heat shrinking
- 1.1.10.4. Wire labeling
- 1.1.10.5. Crimping hardware
- 1.1.10.6. Basics of soldering, de-soldering, fluxes, and insulating compounds
- 1.1.11. Troubleshoot electrical connections through continuity testing
- 1.1.12. Construct projects by interpreting drawings and manufacturing specifications

**Total program hours 60**

## **VII. INSTRUCTIONAL MATERIALS:**

Various instructional techniques are used, including instructor demonstrations, computer-based tutorials, multimedia presentations, and individual and group projects. Software resources for shop floor and material resource management will also be used to provide an authentic real-life experiential learning environment in the lab. Raw materials and components to support lab activities and manipulatives for demonstration.

## **VIII. EQUIPMENT:**

The following types of equipment used throughout the course:

- Horizontal and Vertical Bandsaws
- Drill Presses
- Arc welders
- Soldering Irons
- Laser engravers
- Metrology bench tools
- Hand tools for assembly
- DMMs
- Blasting and finishing equipment

## **IX. METHOD OF PROGRAM EVALUATION:**

Students complete online module exams for each online module in the SME ToolingU and have periodic mid-unit formative assessments, and end-of-unit assessments based on specific unit topics covered by lecture topics. Assessments may be in the form of paper or computer-based tests, hands-on skills demonstration activities, and unit signature projects. Students' skills are tested through simulated and authentic, real-world manufacturing projects. Grading is 50% based on exams and quizzes and 50% on lab-based activities.

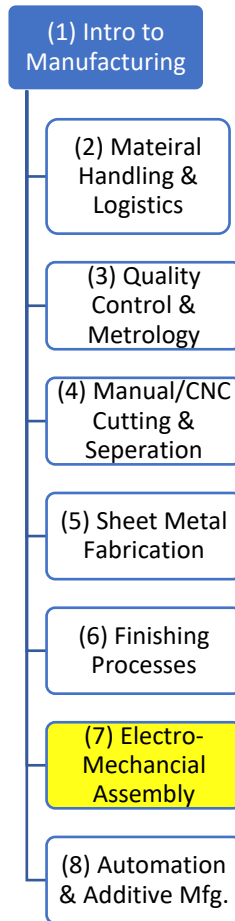
**X. LEVEL OF SKILLS AND/OR PROFICIENCY REQUIRED FOR COMPLETION:**

Each student must achieve a score of 75% overall mastery to complete the program successfully. If offered, the mastery of individual industry certification exams is governed by the accrediting organization and may vary by organization but typically range from 70%-80%. Program completion is not required to sign up for industry certification examinations. However, we highly recommend that students finish the program to prepare them to perform well on the exams

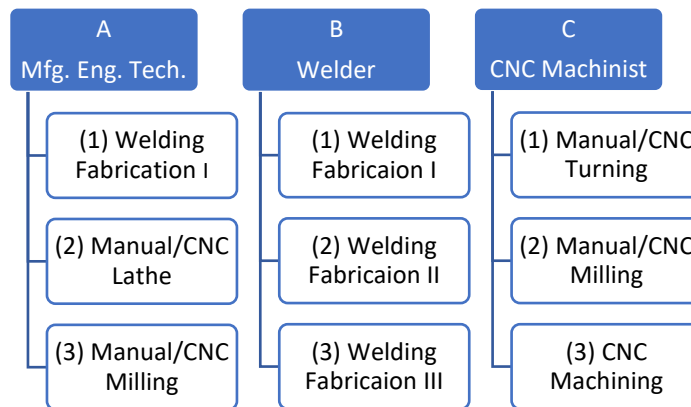
**XI. IX. APPROPRIATE DELIVERY FORMATS FOR THE SUBJECT MATTER BEING TAUGHT:**

Course content delivery is through a traditional classroom and laboratory format. The program includes computer-based instruction, which students will complete according to a defined schedule in a supervised computer lab. Copies of computer-based instructional materials are available upon request. Students will also have instructional time performing hands-on applications in the manufacturing lab, simulating the documentation and software used in a modern manufacturing environment.

## CORE BLOCKS



## SPECIALTY TRACK BLOCKS



## CAPSTONE BLOCKS





## CAJ CTE Occupational Advisory Meeting Minutes – (Material Handling and Logistics)

**Date:** February 7, 2023

(Must be at least 3 months between meetings)

**Time:** 4:45 PM

**Location:** Charles A. Jones Career & Education Center, 5451 Lemon Hill Avenue, Sacramento, CA 95824

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**Meeting called by:** Todd Frazee & Angela Hatter

**Type of Meeting:** Advisory Meeting

**Facilitator:** Todd Frazee

**Meeting Minutes:** Dean Peckham/Angela Hatter

External Advisory Members Attendees (Required 3 – one can be virtual):	In Person	Virtual (Describe)	Title/Organization:
1. Austin Provost	X		Technical Sales Engineer / Lincoln Electric
2. Dean Peckham	x		Executive Director / Sacramento Valley Manufacturing Alliance (SVMA)
3. Kevin McGrew	x		Director of Quality Management / Siemens Mobility
4. Randy Hackett	x		Account Manager / Airgas
5. Scott Fredricks	x		Manager of Quality Assurance / Siemens Mobility
6. Bill VanDyck	x		Manufacturing Training Manager / Blue Diamond Growers
7. May-Va Vang	x		Workforce Development Specialist / Sacramento Job Corps
8. Shlisa Jefferson	x		CTT Manager / Sacramento Job Corps
9. Peter DeLap	x		Assembly Trainer / Siemens Mobility
10. Derek Moore	x		Assembly Trainer / Siemens Mobility
<b>Community Members/Internal Attendees:</b>			<b>Title/Organization:</b>
11. Todd Frazee	In-Person		Manufacturing Teacher / CAJ
12. Angela Hatter	In-Person		Site Administrator / CAJ
13. Rebecca Cantaberry	In-Person		Manufacturing Teacher / CAJ
13. Donovan Corbitt	In-Person		Manufacturing Technician Student / CAJ

<b>AGENDA ITEM</b>	<b>DISCUSSION</b>	<b>ACTION STEPS</b>
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**Material Handling and Logistics**  
**Occupational Advisory MEETING MINUTES**  
**February 7th, 2023, 4:45 PM - 5:00 PM**

<p>1. Welcome – Introduction</p>	<p>All advisory members introduce themselves.</p>	<p>None.</p>
<p>2. Review Admissions &amp; Prerequisites</p>	<p>Todd Frazee reviews the admission requirements of CASAS scores of Reading: 239 and Math 236. Both are set at a 9th-grade proficiency level. The reading level for ToolingU is rated at 9th grade, but math is not rated by ToolungU.</p> <p>Math level was informally reviewed by CAJ GED teacher as approximately 9th grade.</p> <p>Program math modules include fractions, decimals, and units of measure in both Imperial and Metric standards</p> <p>The admission requirements for the Material Handling and Logistics Program are identical to the Manufacturing Technician Program Prerequisites within the program are as follows:</p> <p>Material Handling and Logistics Block prerequisite is a valid Forklift operator training card. If the card is issued by an entity other than CAJ, Operator competency on CAJ vehicles must be evaluated by a qualified CAJ instructor to certify the student is authorized to operate CAJ equipment. Record of student's training card and CAJ evaluation to be kept as a record.</p> <p>Todd Frazee:</p> <p>Our recommendation is to maintain the current admissions and prerequisite requirements without change for this program:</p> <p>I would like to ask for comments.</p> <p>Kevin McGrew: We have a diverse workforce with a large working population of English Learners. Maybe lowering the bar for English skills is something to consider.</p>	<p>The Review Admissions &amp; Prerequisites</p> <p>Todd will forward samples of program math lessons to Angela for academic evaluation.</p> <p>Todd will request statistical records of CASAS math scores for prospective students expressing interest in the manufacturing programs.</p> <p>Todd will add reporting and review of math admission requirements to the agenda for the next advisory meeting</p> <p>No changes are to be made to the Admission and Prerequisites at the present time.</p>

**Material Handling and Logistics**  
**Occupational Advisory MEETING MINUTES**  
**February 7th, 2023, 4:45 PM - 5:00 PM**

	<p>May-Va Vang: As someone who was an English Learner, English requirements at the 9<sup>th</sup>-grade level seems very high for English Learners.</p> <p>Todd: The English CASAS test scores for the program are set at the 9<sup>th</sup>-grade level because we use SME TooliungU in lieu of a textbook, and SME rates the English level of the content at the 9<sup>th</sup>-grade level. We want the students to be successful in the program especially considering the massive amount of industry terminology required to learn the subject. If we lower the English test score requirements, we would need to replace SME ToolingU, and I don't know of a similar resource at this time.</p> <p>We do have our Integrated Education Training (IET) Manufacturing Pre-Appenticeship For English Learners Program. The course is a 14-week program that pairs an ESL teacher with me as the CTE teacher. In this program, the ESL teacher works with the students for four daily lessons to prepare them for a weekly technical lesson with the CTE Teacher. The technical side of the course is identical to Introduction to Manufacturing course. Introduction to Manufacturing is the initial course block in the Manufacturing Technician Program and a prerequisite for all other courses that follow in the program except the Material Handling and Logistics course Block.</p> <p>Angela Hatter: The IET program is intended to bridge our robust ESL programs and the Manufacturing Technician program.</p> <p>Todd: Yes. The Introduction to Manufacturing course block contains over 30 pages of industry-specific vocabulary, which is</p>	
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challenging for a native English speaker to learn. The block is designed to prepare students to pass the SME Certified Manufacturing Associate (CMfgA) exam. In our pilot run of the IET program, we had a 100% CMfgA exam pass rate, which is a testament to the effectiveness of the scaffolding the program provides.

The advisory group discusses the program's English test score required for Admissions, and the consensus is to accept the standard for the program.

Todd: We have considered lowering the score to facilitate enrollment for the CASAS math requirement. We have the math score set at the 9<sup>th</sup>-grade level, but we are not certain that it is correct because SME does not rate the level of the math ToolingU content. The math level is based on which the teacher assigns SME ToolingU lessons. The math we teach in the program approaches low-level Trigonometry to solve angles, but the student does not need to be at that level to enter the program. The concern is that we have the math level set too high and are screening out viable program candidates. Angela, we have discussed having the math content officially evaluated by a curriculum specialist. Is that something we can do?

Angela: We can look into having the content evaluated if you can send me samples.

Todd: I propose we leave the math assessment level unchanged for now and have the math content evaluated before our next advisory meeting in the fall. We can add the topic to the agenda for the next meeting.

The advisory group discusses the program's Admissions

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	<p>Prerequisites, and the consensus is to accept the proposed standards for the 2023-2024 school year.</p>	
<p>3. Review program content, program length, program objectives, competency tests, learning activities, and instructional materials</p>	<p>Todd Frazee reviews program content, program length, program objectives, competency tests, learning activities, and instructional materials.</p> <p>Todd introduces changes to the draft outline that proposes the following changes:</p> <ol style="list-style-type: none"> <li>1. Program Objectives: Add a statement to the description clarifying the source of program objectives are CCTEMCS for the program: <ul style="list-style-type: none"> <li>• Program Length Revision the duration of the program from 40 to 30 hrs.</li> <li>• Finishing Processes from 40 to 30 hrs.</li> </ul> </li> <li>2. Program Content Revision: <ul style="list-style-type: none"> <li>• Add Class III forklifts to the Prerequisites</li> </ul> </li> </ol> <p>I would like to ask for comments.</p> <p>Bill VanDyck: To clarify, now that you have run through these classes, once you have found that, you need to make adjustments to the instructional time for the individual topics.</p> <p>Todd: Correct. The overall program duration remains unchanged.</p> <p>The advisory group discussed the proposed changes to the program content, program length, program objectives, competency tests, learning activities, and instructional materials, and the consensus is to</p>	<p>The program content, program length, program objectives, competency tests, learning activities, and instructional materials for the Material Handling and Logistics Program was reviewed with the advisory group.</p> <p>Todd will implement proposed changes to the course outline for board approval and the program schedule for classes to be offered in the 2023-2024 school year</p>

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	<p>move forward with changes for the 2023-2024 school year.</p>	
<p>4. Review method of evaluation</p>	<p>Todd Frazee reviews the methods of evaluation for the program. Aligns to industry certification. Applied projects. Using Tooling U for evaluation. Current ToolingU Coursework is mapped to more than one NIMS certification exam, and we intend to work towards being able to offer NIMS exams at CAJ. We will also be adding AWS SENSE academic certification tests to the program this year. The certification standards vary in requirements, but CAJ students must pass at a mastery level of 5% greater on in-class assessments than the given certification exam so they are well prepared for the certification exams.</p> <p>Methods of evaluation include Computer-based module exams for each SME ToolingU module, periodic mid-unit formative assessments, and end-of-unit assessments based on specific unit topics. Industry certification exams are offered at appropriate program milestones.</p> <p>The skills listed are from the California CTE curriculum model. It's what the K-12 system uses. We are also referencing SMEs' competency mode.</p> <p>Assessments may be in the form of paper or computer-based tests, hands-on skills demonstration activities, and unit signature projects.</p> <p>All instruction is now in person, with online work completed in a supervised computer lab.</p> <p>Grading is 50% based on exams and quizzes and 50% on lab-based activities.</p> <p>Overall mastery is a score of 75% to</p>	<p>The methods of evaluation for the Material Handling and Logistics Program were reviewed with the advisory group.</p> <p>No further action is to be taken.</p>

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	<p>complete the program successfully. The mastery of individual industry certification exams is governed by the accrediting organization and may vary by organization but typically range from 70%-80%.</p> <p>The advisory group discussed the Review method of evaluation, and the consensus is to move forward with the current methods for the 2023-2024 school year.</p>	
<p>5. Review skills and/or proficiency required for completion</p>	<p>Todd Frazee reviewed the completion requirements for the program, which are:</p> <ul style="list-style-type: none"> <li>● 90% Attendance</li> <li>● Complete all program projects</li> <li>● Complete all program final exams</li> </ul> <p>Discussion:</p> <p>The advisory group discussed the Review skills and/or proficiency required for completion, and the consensus is to move forward with aligning the program with appropriate industry certifications but not to any other changes for the 2023-2024 school year.</p>	<p>The Skills and/or proficiency required for completion of the Material Handling and Logistics Program were reviewed with the advisory group.</p> <p>No further action is to be taken.</p>
<p>6. Review Appropriateness of instructional delivery method for the program</p>	<p>Todd Frazee reviews the methods of institutional delivery</p> <p>All instruction is currently In-Person. Some instructional content is delivered through completing self-directed work in SME ToolingU, Canvas, or CAD/CAM software.</p> <p>All self-paced computer-based learning is in-person during the scheduled in-person computer lab.</p> <p>Discussion: In general, the advisory group responded positively to the current state of the instructional delivery and method, returning to a traditional In-Peson classroom and lab format after going to a hybrid format initiated due to the response</p>	<p>The Appropriateness of instructional delivery method for the Material Handling and Logistics Program was reviewed with the advisory group</p> <p>No further action is to be taken.</p>

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	<p>to the COVID-19 Pandemic.</p> <p>The advisory group discussed the Appropriateness of the instructional delivery method for the program consensus is to continue with the current method for the 2023-2024 school year.</p>	
<p>7. Review program equipment and facilities</p> <ul style="list-style-type: none"> <li>● Facility needs</li> <li>● Equipment Needs</li> </ul>	<p>Todd Frazee reviews the program equipment and facilities needs of the program.</p> <p>Todd reviews:</p> <ul style="list-style-type: none"> <li>● Overview of facility spaces</li> <li>● Lease new Class I electric and Class IV LPS forklifts to replace existing machines</li> </ul> <p>Equipment Needs include: [Needs update by Todd</p> <ul style="list-style-type: none"> <li>● Material storage equipment</li> </ul> <p>Discussion.</p> <p>The advisory group discussed the Review program equipment and facilities for the program. Fundraising concepts were discussed.</p>	<p>The program equipment and facilities for the Material Handling and Logistics Program were reviewed with the advisory group.</p> <p>Todd Frazee will continue to develop the equipment needs budget and plan facility improvement when funds allow.</p>
<p>8. Adjourn</p>	<p>Todd Frazee: If we don't have further comments tonight, can we ask for a motion to adjourn?</p>	<p>Austin Provost makes a motion to Adjourn. Randy Hackett seconds the motion. The meeting adjourns at 6:15 PM</p>

**Material Handling and Logistics (40 hr.)  
Occupational Advisory Meeting**

February 7, 2023 4:45

*Agenda*

1. Welcome – Introduction
2. Review Admissions
3. Review program content, program length, program objectives, competency tests, learning activities, instructional materials
  - Program Length
    - Change program duration from 40 to 30 hours
  - Program Objectives
    - Add a statement to the description clarifying the source of program objectives are CCTEMCS
  - Proposed changes to the program curriculum
    - Add Class III Forklifts to the Pre-Requisite
4. Review method of evaluation of skills and/or proficiency required for completion
5. Review skills and/or proficiency required for completion
6. Review the appropriateness of the instructional delivery method for the program
7. Review program equipment and facilities
  - Lease new Class I electric and Class IV LPS machines to replace existing machines.
8. Adjourn



Sacramento City Unified School District

**ADULT EDUCATION COURSE OUTLINE**

**PROGRAM AREA:** Career Technical Education **COURSE NUMBER:** \_\_\_\_\_

**ADULT SCHOOL:** Sacramento City Unified School District **UPDATED:** February 18, 2023

**SCHOOL SITE:** Charles A. Jones Career and Education Center **TOTAL HOURS:** 30

**COURSE TITLE:** Material Handling and Logistics

**COURSE DESCRIPTION:**

The Material Handling and Logistics class is a component of the Manufacturing Technician Program. This program prepares the student with the principles and technical skills to work in material handling and logistics in a manufacturing operation. The training contains fundamental knowledge of material handling and logistics principles, including an overview of manufacturing operations flow and essential functions of inventory systems, such as receiving, Work In Progress (WIP), finished goods, and shipping transactions. Material handling activities included forklift, packaging, physical inventory, lifting, and tool room management through hands-on learning in the manufacturing training lab. This program's core competencies are based on industry practices, California/Occupational Safety and Health Administration (Cal/OSHA), and Society of Manufacturing Engineers (SME) standards. The students who complete the program will have the foundational skills to prepare them for an entry-level role in material handling. Current operator training certification for Class I & IV forklifts is required for this class.

**I. ADMISSION REQUIREMENTS**

- High school diploma
- Right to Work documentation
- Assessment test with a passing score of 239 for reading and 236 for math
- Cal Jobs registration
- SETA Job Center intake and required workshops
- Attend the one-time Orientation Session on the Charles A. Jones Career and Education Center campus
- Current operator training certification for Class I & IV forklifts

**II. PROGRAM CONTENT THAT IS CONSISTENT WITH DESIRED STUDENT LEARNING OUTCOMES:**

This program provides students with the essential skill and knowledge to enter the workforce as an entry-level position in a logistics department at a manufacturer, enter an employer-sponsored apprenticeship program, and complete one core component in the Manufacturing Technician program. Students will learn foundational skills for entry-level manufacturing roles in material handling, logistics, stock room, and tool room management.

**III. PROGRAM LENGTH:**

The manufacturing Technician course is 30 hours long, over approximately 1 instructional week

**IV. PROGRAM OBJECTIVES:**

Upon successful completion of this course, the student will gain the skills and knowledge necessary to perform the following manufacturing tasks in alignment with the California Career Technical Education Model Curriculum Standards (CCTEMCS) for the Manufacturing and Product Development (MPD) standards for Machining And Forming Technologies pathway, and select standards from Transportation (T) Operations pathway:

- A. Acquire and accurately use manufacturing sector terminology and protocols at the career readiness level for communicating effectively in verbal and written formats.
- B. Use existing and emerging technology to produce products and services required in the manufacturing workplace environment.
- C. 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 manufacturing workplace environment.
- D. Apply essential technical knowledge and skills common in the manufacturing sector, following procedures when performing technical tasks.
- E. Demonstrate and apply the knowledge and skills contained in industry standards in the classroom, laboratory, and workplace settings.

**V. COMPETENCY TESTS:**

Students will complete online unit module exams for online lessons in SME ToolingU. Students also complete separate written exams and hands-on competency evaluations for material handling and logistics-related topics. The instructor also observes student performance and learning through informal formative assessment.

**VI. LEARNING ACTIVITIES:**

**(NOTE: These are ESTIMATED times and can fluctuate based on student performance and industry (advisory committee) input)**

**Units of Instruction and total hours of instruction**

**1. Material Handling and Logistics (30 hrs.)**

[Pre-requisite: current operator training certification for Class I & IV forklifts]

- 1.1. Overview of manufacturing operations flow
  - 1.1.1. Estimating and Quoting
  - 1.1.2. Order entry
  - 1.1.3. Purchasing, Purchase orders (PO)
  - 1.1.4. Project planning, Work orders (WO) & traveler packages
  - 1.1.5. Packing Slips (PS)
  - 1.1.6. Bills of Lading (BL)
  - 1.1.7. Essential functions of Material/Enterprise Resource Planning (MRP/ERP) systems
- 1.2. Logistics
  - 1.2.1. Inventory system transactions
  - 1.2.2. Receiving
  - 1.2.3. Work In Progress (WIP) transactions
  - 1.2.4. Finished goods inventory
  - 1.2.5. Shipping
- 1.3. Material Handling
  - 1.3.1. Forklift activities
  - 1.3.2. Packaging
  - 1.3.3. Lifting (hoists, cranes, and slings)
  - 1.3.4. Physical inventory
  - 1.3.5. Tool crib (room) management

**Total program hours 30**

**VII. INSTRUCTIONAL MATERIALS:**

Various instructional techniques are used, including instructor demonstrations, computer-based tutorials, multimedia presentations, and individual and group projects. Software resources for CAD/CAM programming, CNC code editing, shop floor, and material resource management will also be used to provide an authentic real-life experiential learning environment in the lab. Raw materials and components to support lab activities and manipulatives for demonstration.

**VIII. EQUIPMENT:**

The following types of equipment used throughout the course:

Class I Industrial Lift Truck  
Class IV Industrial Lift Truck  
Pallets  
Traffic cones  
Pallet Racks  
Mock stockroom and inventory  
Material banding kit and staps  
Lifting attachments  
Inventory system computers.  
Labeling and bar code scanning equipment  
Packaging workstation  
Laser engraver

**IX. METHOD OF PROGRAM EVALUATION:**

Students complete online module exams for each online module in the SME ToolingU and have both periodic mid-unit formative assessments and end-of-unit assessments based on specific unit topics covered by lecture topics. Assessments may be in the form of paper or computer-based tests, hands-on skills demonstration activities, and unit signature projects. Skills tests simulate authentic, real-world manufacturing scenarios. Grading is to be 50% based on exams and quizzes and 50% on lab-based activities.

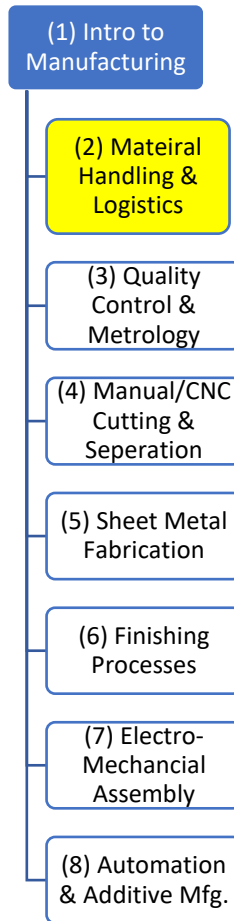
**X. LEVEL OF SKILLS AND/OR PROFICIENCY REQUIRED FOR COMPLETION:**

Each student must achieve a score of 75% overall mastery to complete the program successfully. . If offered, the mastery of individual industry certification exams is governed by the accrediting organization and may vary by organization but typically range from 70%-80%. Program completion is not required to sign up for industry certification examinations. However, we highly recommend that students finish the program to prepare them to perform well on the exams.

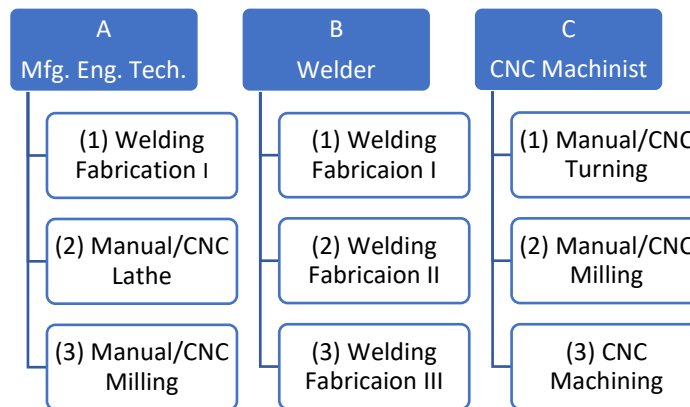
**XI. APPROPRIATE DELIVERY FORMATS FOR THE SUBJECT MATTER BEING TAUGHT:**

Course content delivery is through a traditional classroom and laboratory format. The program includes computer-based instruction, which students will complete according to a defined schedule in a supervised computer lab. Copies of computer-based instructional materials are available upon request. Students will also have instructional time performing hands-on applications in the manufacturing lab, simulating the documentation and software used in a modern manufacturing environment.

## CORE BLOCKS



## SPECIALTY TRACK BLOCKS



## CAPSTONE BLOCKS

