Sheet Metal I

8663 36 weeks / 140 hours

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Course Description

Suggested Grade Level: 10 or 11

Students may work with materials that are cast, formed, shaped, molded, heat treated, cut, twisted, pressed, fused, or stamped. Instruction includes basic planning, manufacturing, assembling, testing, and repairing of mechanisms, machines, and structures.

As noted in Superintendent’s Memo #058-17 (2-28-2017), this Career and Technical Education (CTE) course must maintain a maximum pupil-to-teacher ratio of 20 students to one teacher, due to safety regulations. The 2016-2018 biennial budget waiver of the teacher-to-pupil ratio staffing requirement does not apply.

Task Essentials Table

- Tasks/competencies designated by plus icons (⊕) in the left-hand column(s) are essential
- Tasks/competencies designated by empty-circle icons (○) are optional
- Tasks/competencies designated by minus icons (⊖) are omitted
- Tasks marked with an asterisk (*) are sensitive.

<table>
<thead>
<tr>
<th>Task Number</th>
<th>8663</th>
<th>Tasks/Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Practicing Safety</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>+</td>
<td>Apply shop rules.</td>
</tr>
<tr>
<td>40</td>
<td>+</td>
<td>Apply personal safety rules.</td>
</tr>
<tr>
<td>41</td>
<td>+</td>
<td>Apply fire safety rules and procedures.</td>
</tr>
<tr>
<td>42</td>
<td>+</td>
<td>Apply electrical safety rules and procedures.</td>
</tr>
<tr>
<td><strong>Using Hand Tools</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>+</td>
<td>Identify and use threaded fasteners.</td>
</tr>
<tr>
<td>44</td>
<td>+</td>
<td>Identify and use hammers in sheet metal work.</td>
</tr>
<tr>
<td>45</td>
<td>+</td>
<td>Bend sheet metal with pliers.</td>
</tr>
<tr>
<td>46</td>
<td>+</td>
<td>Cut sheet metal with hand snips.</td>
</tr>
<tr>
<td>47</td>
<td>+</td>
<td>Punch holes in sheet metal using hammer and center punch.</td>
</tr>
<tr>
<td>48</td>
<td>+</td>
<td>Drill holes in sheet metal, using high speed drill.</td>
</tr>
<tr>
<td>49</td>
<td>+</td>
<td>Make a single seam.</td>
</tr>
<tr>
<td>50</td>
<td>+</td>
<td>Make a double seam.</td>
</tr>
<tr>
<td>51</td>
<td>+</td>
<td>Make flanged edges, using edging hammer and stakes.</td>
</tr>
<tr>
<td>52</td>
<td>+</td>
<td>Make wire edge, using pliers and mallet.</td>
</tr>
<tr>
<td>53</td>
<td>+</td>
<td>Set rivets, using riveting hammer.</td>
</tr>
<tr>
<td>54</td>
<td>+</td>
<td>Cut metal with a hacksaw.</td>
</tr>
<tr>
<td>55</td>
<td>+</td>
<td>Punch holes in metal, using a hand punch.</td>
</tr>
<tr>
<td>56</td>
<td>+</td>
<td>Draw lines on metal with an awl.</td>
</tr>
<tr>
<td><strong>Performing Machine Processing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>+</td>
<td>Cut sheet metal with squaring shears.</td>
</tr>
<tr>
<td>58</td>
<td>+</td>
<td>Cut sheet metal with ring and circle shears.</td>
</tr>
<tr>
<td>59</td>
<td>+</td>
<td>Crimp sheet metal pipe.</td>
</tr>
</tbody>
</table>

Legend: ☑Essential ☐Non-essential ☒Omitted

**Curriculum Framework**

**Practicing Safety**

**Task Number 39**

**Apply shop rules.**
Task Number 40
Apply personal safety rules.

Task Number 41
Apply fire safety rules and procedures.

Task Number 42
Apply electrical safety rules and procedures.

Using Hand Tools

Task Number 43
Identify and use threaded fasteners.

Task Number 44
Identify and use hammers in sheet metal work.

Task Number 45
Bend sheet metal with pliers.
Task Number 46
Cut sheet metal with hand snips.

Task Number 47
Punch holes in sheet metal using hammer and center punch.

Task Number 48
Drill holes in sheet metal, using high speed drill.

Task Number 49
Make a single seam.

Task Number 50
Make a double seam.

Task Number 51
Make flanged edges, using edging hammer and stakes.
Make wire edge, using pliers and mallet.

Task Number 53
Set rivets, using riveting hammer.

Task Number 54
Cut metal with a hacksaw.

Task Number 55
Punch holes in metal, using a hand punch.

Task Number 56
Draw lines on metal with an awl.

Performing Machine Processing

Task Number 57
Cut sheet metal with squaring shears.

Task Number 58
Cut sheet metal with ring and circle shears.

Task Number 59

Crimp sheet metal pipe.

SOL Correlation by Task

*There are no SOL correlations in this curriculum framework.*

Entreprenuership Infusion Units

Entrepreneurship Infusion Units may be used to help students achieve additional, focused competencies and enhance the validated tasks/competencies related to identifying and starting a new business venture. Because the unit is a complement to certain designated courses and is not mandatory, all tasks/competencies are marked “optional.”
Appendix: Credentials, Course Sequences, and Career Cluster Information

Industry Credentials: Only apply to 36-week courses

- College and Work Readiness Assessment (CWRA+)
- Customer Service Examination
- Customer Service Specialist (CSS) Examination
- National Career Readiness Certificate Assessment
- Professional Communications Certification Examination
- Workplace Readiness Skills for the Commonwealth Examination

Concentration sequences: A combination of this course and those below, equivalent to two 36-week courses, is a concentration sequence. Students wishing to complete a specialization may take additional courses based on their career pathways. A program completer is a student who has met the requirements for a CTE concentration sequence and all other requirements for high school graduation or an approved alternative education program.

- Sheet Metal II (8664/36 weeks, 280 hours)

Career Cluster: Manufacturing

<table>
<thead>
<tr>
<th>Pathway</th>
<th>Occupations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance, Installation, and Repair</td>
<td>Millwright</td>
</tr>
<tr>
<td>Production</td>
<td>Extruding and Drawing Machine Operator</td>
</tr>
</tbody>
</table>