I. **OVERVIEW**  
The following information will appear in the 2009 - 2010 catalog

**SM 331 Sheet Metal and Installation 1 3 Units**

Introduction to tools and machinery used by sheet metal trades. Training in the procedures using patterns, cutting, making seams, and riveting metals. Safety in sheet metal shop. Opportunities in the trade. Field trips might be required. Course is not applicable to the associate degree.

II. **LEARNING CONTEXT**  
Given the following learning context, the student who satisfactorily completes this course should be able to achieve the goals specified in Section III, Desired Learning:

A. **COURSE CONTENT**

1. **Required Content:**
   
a. The Sheet Metal Industry
   
   i. Characteristics of the Industry
   
   ii. Shop Safety
   
   iii. Employment Opportunities

b. Materials, Tools and Machinery
   
   i. Fitting identification
   
   ii. Types of sheet metal
   
   iii. Materials of the trade
   
   iv. Fasteners for sheet metal

c. Sheet Metal patterns and layouts

d. Procedures in cutting metal

e. Procedures in punching, drilling, and riveting

f. Procedures for folding edges and making seams

   g. Sheet metal Math--fractions and decimals

B. **HOURS AND UNITS**

<table>
<thead>
<tr>
<th>INST METHOD</th>
<th>TERM HOURS</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3 Units</td>
<td></td>
</tr>
</tbody>
</table>

Division: Technical Education
C. METHODS OF INSTRUCTION (TYPICAL)

Instructors of the course might conduct the course using the following method:

1. Related material will be presented through designated class lecture and lab demonstrations
2. Additional studies will be required from technical manuals specific to individual topics
3. Students demonstrate the mastery of each competency by the successful completion of a related project

D. ASSIGNMENTS (TYPICAL)

1. EVIDENCE OF APPROPRIATE WORKLOAD FOR COURSE UNITS

   Time spent on coursework in addition to hours of instruction (lecture hours)

   a. Weekly chapter reading assignments
   b. Weekly Chapter homework assignments
   c. Each term, 2-4 large comprehensive projects will be assigned

2. EVIDENCE OF CRITICAL THINKING

   Assignments require the appropriate level of critical thinking

   a. Describe some of the more common methods supporting air system components.
   b. Explain the purpose of selected air distribution accessories.
   c. Compare and contrast thermal and acoustic insulation.
   d. Install duct fasteners, fasteners, hangers and appropriate accessories as drafted in project 1.
   e. Students work on various projects learning how to read simple drafting symbols and schematics related to sheetmetal duct layouts for facility and HVAC projects.

E. TEXTS AND OTHER READINGS (TYPICAL)


III. DESIRED LEARNING

A. COURSE GOAL

   As a result of satisfactory completion of this course, the student should be prepared to:

   Explain the uses of the most common tools and machinery in the sheet metal industry. Develop simple pattern layouts and sheet metal patterns.

B. STUDENT LEARNING GOALS

   Mastery of the following learning goals will enable the student to achieve the overall course goal.

   1. Required Learning Goals
Upon satisfactory completion of this course, the student will be able to:

a. Identify the principles related to components and equipment used in the sheet metal trades.

b. Describe types of fasteners and their uses.

c. Design a sheet metal pattern that will incorporate several fabrication procedures.

d. Match the appropriate fitting to various types of sheet metal and tools.

e. Apply mathematical skills to the sheet metal trade.

f. Develop simple pattern layouts and fabricate introductory sheet metal fittings.

IV. METHODS OF ASSESSMENT (TYPICAL)

A. FORMATIVE ASSESSMENT

1. Review and assessment of classroom projects

2. Evaluation of homework assignments

3. Group discussions

B. SUMMATIVE ASSESSMENT

1. Mid Term Exam

2. Final Exam

3. Task performance ratings by industrial standards