

# Advanced Sheet Metal Mfg

## Three Rivers Community College

IDS MFG 131, CRN 33046/33050, Section T1 & T1A , Credits 4  
Spring 2017

**Instructor:** Bucky Gernhard  
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**Telephone:** (860) 823-7822  
**Class Hours:** 3:45 p.m. – 9:51 p.m., Wednesday  
**Office Hours:** By appointment before or after class  
**Required Text:** Readings will be provided

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### Course Description:

In this continuation of the fundamentals course, students gain further skills in metal fabrication techniques. Advanced cutting and bending are covered. Through lab projects, they develop skills learned in previous classes, such as using blueprints and taking accurate measurements. Labs allow for experimentation with fabrication tools, especially automated devices, such as shears, lasers and press brakes, as well as those that use computer numerical control (CNC). Embedded in the course will be additional lessons on metallurgy, quality control, application of lean principals, and following work place standard operating procedures, such as work order instruction and employment standards.

### Course Objectives:

Information covered in class and assigned projects are intended to further develop your knowledge of basic and advanced manufacturing fundamentals including shop safety, materials, hardware and fabrication techniques including the proper use of hand tools, automated machinery and inspection equipment. This knowledge will be applied to hands on work of fabrication projects utilizing knowledge gained from this course, Sheet Metal Layout, Lean and Quality / Metrology.

1. Further develop and demonstrate necessary sheet metal fundamental knowledge and skills that are applicable to the manufacturing process.
2. Develop and demonstrate the ability to think critically and identify evaluate and solve technical and nontechnical problems.
3. Develop and demonstrate the ability to work independently and as a team.

Course Outcomes: Upon successful completion of MFG 131 students should be able to:

### **Understand, demonstrate, and apply fundamental sheet metal competencies, including:**

- Understand and demonstrate equipment and shop safety requirements
- Identify different types of materials and their characteristics
- Understand and demonstrate the ability to use inspection equipment
- Understand the intended use of and safely operate hand and automated equipment
- Demonstrated ability to use hand and automated equipment to meet part specification per the blueprint
- Inspect parts for compliance in accordance to blueprint specifications

- Work independently and as a team to meet fabrication requirements

### **Disabilities Statement:**

Students with disabilities are guaranteed reasonable accommodation under the provisions of the Americans with Disabilities Act of 1992. Disclosure of a disability must be voluntary. For further assistance, please contact Matt Liscum in the Office of Disability Services at 860.215.9265 or [mliscum@threerivers.edu](mailto:mliscum@threerivers.edu). Please note that an instructor cannot provide disability accommodations until a student provides the necessary paperwork from the college's Office of Disability Services.

### **Academic Integrity:**

Academic integrity is essential to a useful education. Failure to act with academic integrity severely limits a person's ability to succeed in the classroom and beyond. Furthermore, academic dishonesty erodes the legitimacy of every degree awarded by the College. In this class and in the course of your academic career, present only your own best work; clearly document the sources of the material you use from others; and act at all times with honor.

### **Plagiarism:**

Plagiarism is the unacknowledged use of another person's work or ideas in your writing. It is often known as copying word-for-word. However, even paraphrasing without acknowledgement or using the ideas of peers garnered from class discussion or a study group is considered plagiarism. Whether it is conscious or unconscious, plagiarism is a serious academic offense. Your writing for this course, and any other course at TRCC, is expected to be original, and the product of your own thinking. A student who has plagiarized will receive a ZERO on his/her assignment and will be reported to both the Academic Dean and Student Services Dean for disciplinary action.

### **Technology Statement:**

The use of cell phones or other technological devices is not permitted during class time, unless deemed appropriate by the instructor.

### **Electronic Learning Portfolios:**

All students are required to maintain an online learning portfolio in [Digication](#) that uses the college template. Through this electronic tool students will have the opportunity to monitor their own growth in college-wide learning. The student will keep his/her learning portfolio and may continue to use the Digication account after graduation. A Three Rivers General Education Assessment Team will select and review random works to improve the college experience for all. Student work reviewed for assessment purposes will not include names and all student work will remain private and anonymous for college improvement purposes. Students will have the ability to integrate learning from the classroom, college, and life in general, which will provide additional learning opportunities. If desired, students will have the option to create multiple portfolios.

### **Email:**

Correspondence by email is considered a method of formal communication. Emailing an instructor is not the same as emailing or texting a friend. Please use a proper salutation, complete sentences, punctuation, proper spelling and identify yourself by name in the body of the email. **Students must use their [college issued email account](#). College issued email is the official mode of communication used by the college to contact students.**

### **Class Cancellation:**

To determine if the college is closed, please visit the TRCC webpage at <http://www.trcc.commnet.edu/> and/or sign-up for notification through MyCommNet ALERT.

### **College Withdrawal Policy:**

Course withdrawals are accepted up until the week before classes end. Withdrawal forms are available online or at the Registrar's office. The withdrawal does not have to be signed by the instructor but it is strongly advised that you speak with your instructor before withdrawing. If necessary, you can withdraw over the phone by calling the Registrar's Office at 860.215.9064. Emails and faxes are also accepted. If you are receiving financial aid, it is strongly recommended that you contact the [Financial Aid Office](#) before withdrawing. Withdrawal may affect your financial aid for current and/or future semester(s). It is your responsibility to confirm that the withdrawal has been received.

### **Class Attendance and Homework:**

Being prepared for class: Must have notebook, pens/pencils, required lab equipment (IE, Calipers, Square, etc) and be ready to learn.

Class Attendance is expected and vital (see Classroom Participation below). Missing class will negatively impact your grade. You are expected to arrive on time and ready to get to work at the beginning of each class.

### **Evaluation Criteria:**

This course demands active involvement in the learning experience.

**The following criteria will be considered in evaluating student performance:**

- a. **Classroom attendance and participation**
  - b. **Fabrication Projects**
  - c. **Midterm exam**
  - d. **Final exam**
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- a. **Classroom participation and in-class assignments**

Lateness and absences will have a negative impact on your grade. If attendance becomes an issue and you decide not to return to class, it is YOUR responsibility to officially withdraw from the course. If absent, Fabrication Projects and Exams cannot be made up unless time allows and arrangements have been made with the instructor.
  - c. **Fabrication Projects**

Fabrication Projects will provide opportunities to fabricate parts on the equipment you are learning how to use. Fabricated projects will assess your application and knowledge of manufacturing equipment to meeting the documented specifications of those projects.

**d. Midterm and final exams**

During the semester there will be a midterm and final exam. Exams will consist of hands-on fabrication projects.

**Grade Computation:**

The following is an approximate breakdown of the final grade (percentage values and content subject to change at the discretion of the instructor):

a. Class attendance and in-class participation	30%
b. Fabrication Projects (6 @ 5% each)	30%
c. Midterm Exam	20%
d. <u>Final exam</u>	20%
<b>TOTAL</b>	<b>100%</b>

Rubric				
Criteria	Value			
Attendance	30%	20 points per class (15 classes)	5-1/2 Grading Hours @ 3.63 points per 1/2 Hour	
Fabrication Projects	30%	6 Fabrication Project / Assembly at 5 points each (Assemblies will be considered as 1 complete project)	Accuracy, 50 Points (5 Inspection locations @ 10 Points each) Inspection Report, 25 Points (5 Inspection Locations @ 5 Points Each)	
Midterm	20%	1 Fabrication Project / Assembly @ 20 Points (Assemblies will be considered as 1 complete project)	G-Code / Layout, 15 Points Completeness / Appearance, 10 Points	
Final	20%	1 Fabrication Project / Assembly @ 20 Points (Assemblies will be considered as 1 complete project)		

**Grading Distribution:**

A	94-100	C	73-76
A-	90-93	C-	70-72
B+	87-89	D+	67-69
B	83-86	D	63-66
B-	80-82	D-	60-62
C+	77-79	F	0-59

“Setting goals is the first step in turning the invisible into the visible.”

~ Tony Robbins

“An individual can never fix what it takes a team to see.”

~Joseph Rosenberger