

MANUFACTURING TECHNOLOGY SYLLABUS

The Metal Fabrication pathway is designed as a secondary program for preparation to enter the field of metalworking. The Metal Fabrication program includes an introduction to the basic machining metalworking processes as well as an introduction to the basic welding profession. The purpose of the course is to prepare students to continue study in a postsecondary manufacturing program (Welding or Machine Tool Operation) or to begin work at the entry level in a metal occupation. This curriculum is written to the National Institute for Metalworking Skills (NIMS) certification standards.

COURSE DESCRIPTION: The Metal Fabrication pathway is designed as a secondary program for preparation to enter the field of metalworking. The Metal Fabrication program includes an introduction to the basic machining metalworking processes as well as an introduction to the basic welding profession. The purpose of the course is to prepare students to continue study in a postsecondary metals program (Welding or Machine Tool Operation) or to begin work at the entry level in a metal occupation. The machining courses in this curriculum is written to the National Institute for Metalworking Skills (NIMS) credentialing standards and the welding courses are written to the National Center for Construction Education and Research (NCCER) certification standards.

TEACHING FORMAT: Lectures, class discussions, reading, writing, group work, presentations and lab work will be used to make sure that students are prepared for employment or continued education in the occupations of manufacturing and construction.

TEXTBOOKS AND SUPPLIES: Textbooks will be provided by the Indianola Career and Technical Center and will remain in the classroom. The students will need the following items daily for this class:

- Notebook paper
- Pens and pencils
- Folder

GRADING CRITERIA: Each student is graded according to the Indianola School District's grading policy. Your grade will be based on how much and how well you complete your class work and projects. Each nine weeks grade is broken down into the following percentages:

- 25% for daily work which will include classroom participation and class work
- 50% for major work which will include projects, presentations, and tests
- 25% for your nine weeks exam/project

ATTENDANCE AND MAKE-UP POLICY: Students should attend class daily; however, when a student is absent, the following procedures will be taken for missed assignments:

1. Students that are absent one (1) day should check the assignments box/crate to get the assignments from the previous day. The assignments should be completed and turned in on the next day. For example, if a student is absent on Monday, he/she will get the assignment on Tuesday to be turned in on Wednesday.
2. Students who are absent over a three day period for a serious illness or family situation (flu, severe cold, chicken pox, death of a loved one) will be given all missed assignments. The assignments should be completed within one (1) week of his/her return to school. For example, if a student is absent for several days and returns to school on a Wednesday, he/she will have until the following Wednesday to complete and turn in the missed assignments.
3. Students who know that they will be out of school ahead of time for surgery or some other major illness must make arrangements in the office to receive their weekly assignments. The assignments must be completed during their stay at home and returned during the following week. Additional assignments will be given once the original assignments are returned.
4. Students who fail to turn in an assignment on the due date will have three (3) days to turn in the assignment before the grade turns into a zero (0).
5. ALL assignments should be turned in on the due date. However if they are not, the following grades will be given:

- Assignments one (1) day late will receive a grade of 75 if the assignment is completed correctly.
- Assignments two (2) days late will receive a grade of 70 if the assignment is completed correctly.
- Assignments three (3) days late will receive a grade of 65 if the assignment is completed correctly.

Please realize that if the assignment is late and not completed correctly that your grade will be even lower than those given above.

STRATEGIES FOR SUCCESS IN MANUFACTURING I: These are some helpful tips that if you often will make your year in Metal Fabrication I a successful one.

Use time wisely.

Begin assignments in a timely manner to make sure the assignments are completed by the due date.

Ask questions when you do not understand.

Keep necessary school/classroom supplies.

Complete ALL assignments given by the teacher.

PACING GUIDES: The chart below gives you information on what units will be taught in class. The charts also give you the major assignments for each unit. If you use this chart wisely, you will be on target with your class work.

Unit	Title	Assignments
1	Orientation, Leadership, and Basic Safety	Safety Poster
2	Manufacturing Fundamentals - Math, Measuring Tools, and Instruments	Shop calculations for project Measurement tape reading
3	Manufacturing Fundamentals - Introduction to Blueprints and Hand and Power Tools	Interpret blueprint Design a blueprint Complete project layout
4	Power Machinery - Lathe Theory and Operation	Identify parts of lathe Operate lathe
5	Power Machinery - Milling Machine Theory and Operation	Identify machine parts/accessories Operate milling machine
6	Power Machinery - Grinding Operations	Operate grinding machines

STUDENT ORGANIZATION: Students enrolled in Metal Fabrication are encouraged to join Skills USA. Skills USA provides students with experiences in leadership, teamwork, citizenship and character development. It emphasizes total quality at work, high ethical standards, superior work skills, life-long education, and pride in the dignity of work. Skills USA also promotes understanding of the free-enterprise system and involvement in community service.

CPAS: All students will be required to take this exam during the fourth nine weeks. Scores from this exam will count as your fourth nine weeks exam, 25% of your fourth nine weeks grade.

METAL FABRICATION SYLLABUS

The Metal Fabrication pathway is designed as a secondary program for preparation to enter the field of metalworking. The Metal Fabrication program includes an introduction to the basic machining metalworking processes as well as an introduction to the basic welding profession. The purpose of the course is to prepare students to continue study in a postsecondary manufacturing program (Welding or Machine Tool Operation) or to begin work at the entry level in a metal occupation. This curriculum is written to the National Institute for Metalworking Skills (NIMS) certification standards.

COURSE DESCRIPTION: Metal Fabrication II is a continuation of the emphasis on welding and computerized numerical control. Welding topics include employability skills, safety, basic oxy-fuel cutting, plasma arc cutting (PAC), gas metal arc welding (GMAW), flux core arc welding (FCAW), gas tungsten arc welding (GTAW), and shielded metal arc welding (SMAW). The course should be taken after the student has successfully passed Manufacturing I.

TEACHING FORMAT: Lectures, class discussions, reading, writing, group work, presentations and lab work will be used to make sure that students are prepared for employment or continued education in the occupations of manufacturing and construction.

TEXTBOOKS AND SUPPLIES: Textbooks will be provided by the Indianola Career and Technical Center and will remain in the classroom. The students will need the following items daily for this class:

- Notebook paper
- Pens and pencils
- Folder

GRADING CRITERIA: Each student is graded according to the Indianola School District's grading policy. Your grade will be based on how much and how well you complete your class work and projects. Each nine weeks grade is broken down into the following percentages:

- 25% for daily work which will include classroom participation and class work
- 50% for major work which will include projects, presentations, and tests
- 25% for your nine weeks exam/project

ATTENDANCE AND MAKE-UP POLICY: Students should attend class daily; however, when a student is absent, the following procedures will be taken for missed assignments:

1. Students that are absent one (1) day should check the assignments box/crate to get the assignments from the previous day. The assignments should be completed and turned in on the next day. For example, if a student is absent on Monday, he/she will get the assignment on Tuesday to be turned in on Wednesday.
2. Students who are absent over a three day period for a serious illness or family situation (flu, severe cold, chicken pox, death of a loved one) will be given all missed assignments. The assignments should be completed within one (1) week of his/her return to school. For example, if a student is absent for several days and returns to school on a Wednesday, he/she will have until the following Wednesday to complete and turn in the missed assignments.
3. Students who know that they will be out of school ahead of time for surgery or some other major illness must make arrangements in the office to receive their weekly assignments. The assignments must be completed during their stay at home and returned during the following week. Additional assignments will be given once the original assignments are returned.
4. Students who fail to turn in an assignment on the due date will have three (3) days to turn in the assignment before the grade turns into a zero (0).
5. ALL assignments should be turned in on the due date. However if they are not, the following grades will be given:
 - Assignments one (1) day late will receive a grade of 75 if the assignment is completed correctly.

- Assignments two (2) days late will receive a grade of 70 if the assignment is completed correctly.
- Assignments three (3) days late will receive a grade of 65 if the assignment is completed correctly.

Please realize that if the assignment is late and not completed correctly that your grade will be even lower than those given above.

STRATEGIES FOR SUCCESS IN MANUFACTURING II: These are some helpful tips that if you often will make your year in Metal Fabrication II a successful one.

Use time wisely.

- Begin assignments in a timely manner to make sure the assignments are completed by the due date.
- Ask questions when you do not understand.
- Keep necessary school/classroom supplies.
- Complete ALL assignments given by the teacher.

PACING GUIDES: The chart below gives you information on what units will be taught in class. The charts also give you the major assignments for each unit. If you use this chart wisely, you will be on target with your class work.

Unit	Title	Assignments
7	Orientation, Advanced Leadership, and Employability Skills	
8	Basic Safety (Review and Reinforcement)	Safety poster
9	Power Machinery – Computerized Numerical Control	
10	Gas Welding/Cutting Processes - Basic Oxy-fuel Cutting and Plasma Arc Cutting (PAC)	Identify parts of cutting torch
11	Gas Welding/Cutting Processes - Gas Metal Arc Welding (GMAW) and Flux Core Arc Welding (FCAW)	
12	Gas Welding/Cutting Processes - Introduction to Gas Tungsten Arc Welding (GTAW)	Identify parts of welding machine
13	Gas Welding/Cutting Processes - Shielded Metal Arc Welding (SMAW)	

STUDENT ORGANIZATION: Students enrolled in Manufacturing are encouraged to join Skills USA. Skills USA provides students with experiences in leadership, teamwork, citizenship and character development. It emphasizes total quality at work, high ethical standards, superior work skills, life-long education, and pride in the dignity of work. Skills USA also promotes understanding of the free-enterprise system and involvement in community service.

CPAS: All students will be required to take this exam during the fourth nine weeks. Scores from this exam will count as your fourth nine weeks exam, 25% of your fourth nine weeks grade.

CERTIFICATE OF COMPLETION: Second year students who successfully complete 720 hours of training, including classroom and lab exercises, and who receive a passing score of 60 on the state mandated CPAS exam for the first and second year combined will receive a certificate of completion.