**Precision Machining Technology**

**Course Syllabus**

**Course Description:** Machinists are skilled metal workers who can manufacture intricate parts that meet precision specifications. Students learn proper techniques on setup and operation of machine tools. Students also learn advanced manufacturing methods that include Cad/Cam, CNC, EDM, Waterjet, and Injection Molds.

Students learn working properties of various materials including steel, aluminum, brass, plastic, graphite, nylon, stainless steel, and tool steel. Students learn to calculate speeds and feeds for these materials based on manufacturing standards used in industry.

Students consult blueprints for specifications, tools, and materials for projects. Students are guided through the manufacturing process by lectures and demonstrations that develop critical thinking and planning skills. Students also learn about accuracy and how precision affects the manufacturing process.

Safety is required and adhered to in the most rigid manner with great emphasis put on personal conduct, dress, and safety equipment.

Students can work in a variety of occupations upon completion of the course. Fields include machinist, tool and die, machine operators, press operators, CNC operators, EDM operators, CNC programmers, and surface grinders. Students can attend college for a degree in mechanical engineering, manufacturing engineering, plastic engineering, or metallurgy.

**Precision Machining Technology Instructional Philosophy:**

Precision Machining engages students with the challenges of machining both manually and with CNC equipment. Students in Precision Machining will develop the foundation for becoming lifelong learners to be successful in their field and control their destiny in an ever-increasing technological manufacturing profession.
Precision Machining Goals:

1. Demonstrate a thorough understanding of manual machines and understand the challenges encountered by a machinist.
2. Read, understand, and communicate in the language of the manufacturing field.
3. Use technology such as MasterCAM, handheld devices, word processing, and on-line research skills to complete projects.
4. Demonstrate a thorough understanding of CNC equipment such as milling machines, lathes, EDM, and waterjet.
5. Use numeracy and reading strategies such as MAX teaching to collect, analyze, and present data as it relates to the manufacturing field.

Major Course Assignments and Projects:

- In all areas, appropriate theory, safety, and support instruction will be required for performing each task.
- The instruction will include identification and use of appropriate tools, testing, and measurement equipment required to accomplish certain tasks.
- The student will complete four NIMS Level I projects toward their NIMS certification.
- The student will integrate with Pre-Engineering/CADD and Welding Technology to complete a wide range of tasks and community projects.

Assessment Plan - Students are assessed on the following:
- Hands on and NIMS based projects
- Reading assignments and oral presentations
- Tests and Quizzes
- Daily Participation Grade
- Bonus points
The way grades are entered for students in Precision Machining is slightly different than in their academic classes. Students start off each trimester with a 0%. As students complete the assigned tasks throughout the trimester, their overall percentage will increase. For example, by the middle of the trimester, students should have completed half of their assignments resulting in a 50%. At the nine week point, students should be around the 75% range and by the end of the trimester should have all of the completed tasks added into the grade book for their final grade. Depending on how quickly a student progresses and turns in tasks during the trimester will determine how quickly their grade will increase from the 0% starting point.

**Required/Recommended readings:** Precision Machining Technology. Precision Machining Technology Workbook and Projects Manual. Mathematics for Machine Technology.

**Late work Policy:**

To be regarded on time, the student must have their work completed by the beginning of the period on the day it is due. As a rule, late work will not be accepted. If a student misses a day of school, it is their responsibility to come to me and ask what they missed and what they need to do to make up the work they missed. Make-up tests/quizzes and assignments will need to be made up within 3 school days after returning to school. If the student does not turn in their missed assignments or tests/quizzes within 3 days of returning to school, the student will receive a zero for the
assignments. An alternative work assignment will be given to anyone that is not eligible to participate in a normal shop function i.e. shop work, field trip or guest speaker, that is relative to the activity. Please be advised, Mr. Barker is available mornings from 7:00AM to 7:25AM.

**Classroom rules and Behavior:**

1. All students are to be in classroom and seated by 7:25 for the start of class unless they have permission otherwise.
2. No food or drinks are permitted in the shop/classroom without permission.
3. Breaks are earned by keeping on task; students will be rewarded by going on break, as long as rules and regulations are followed.
4. Discipline will be handled as follows: 1. Verbal warning 2. Written warning, and calling of student’s parent(s)/guardian(s) and 3. Sent to the office with disciplinary referral.
5. Students will be expected to be on task and act with proper shop conduct while in shop.
6. Students will be expected to follow grading guidelines which will be given to them at the beginning of the school year.
7. There will be a minimum of 30-45min. of classroom theory 3-4 times a week consisting of learning safety, proper processes and procedures, quizzes and tests.
8. Please read your agenda concerning Lenape’s Code of Student Behavior, which we will go over on the first day of school.
9. There is an open door policy, if you have a problem, question or concern please feel free to come see me.
10. If you are absent whether it is excused or unexcused it is your responsibility to ask Mr. Barker what you need to do to make up your assignment or tasks.
11. Bonus points will be awarded to students that do any extra work or special projects.
Precision Machining Syllabus

Parents, please review the Precision Machining syllabus with your child and return the signed portion below to Mr. Barker. If you have any questions or concerns regarding the syllabus, please feel free to contact me by phone or email.

Student signature: __________________________

Date _____________

Parent signature: __________________________

Date _____________