# CLYDE C. MILLER CAREER ACADEMY

***Every Student, Career and College Ready!***

# newphoenix

# COURSE SYLLABUS

Manufacturing Engineering 1& 2 / Precision Machining & Technology

*Fall-Spring Semester 2014-15*

***Instructor:***

Derwin Crosby, MA

Room #006

314.371.0394 X-61006

Derwin.Crosby@slps.org

**Planning Periods**: ***A-Days: 12:30-2:07 PM***.

Classification: **Junior**

**1.5 Credits per semester**

**COURSE DESCRIPTION:**

To help students understand and build a strong foundation in the field of automated manufacturing. Students will be introduced to basic hand tools and power equipment. Students will learn machine shop safety and best practices. Students will be introduced to AutoDesk Inventor (AutoCAD) 3-D modeling. . Students will be provided extensive hands-on experience with Computer Numerically Controlled (CNC) lathes and Computer Integrated Manufacturing (CIM).

## **COURSE GOALS:**

At the end of this course, you will have advanced introductory skills enabling students to enter post-secondary training and eventually a position in the manufacturing industry using highly developed multi-faced skills, with the ability to operate the current machinery being used n industry that require a combination of computer, robotic and general machining and welding proficiency.

* To familiarize students with careers associated with manufacturing and enable intelligent choices for their personal lives
* To be familiar with the terminology, concepts, devices, laws, and processes used in the field of manufacturing engineering.
* To prepare students for entry level manufacturing positions and/or entry into advanced level courses in technical and/or community colleges.
* To enable students to gain skills in working collaboratively to investigate, experiment, test, troubleshoot and solve problems.
* To enable students to become familiar with various methods used to mange, control and monitor manufacturing systems.
* To enable students to be familiar with basic machining technologies used in industry.
* To enable students to effectively interpret and read part prints used n the manufacture of components.

### **COURSE SCHEDULE**

*Junior classes will be held on B-Days in the Block schedule. Periods 5 & 6.*

**Course Outline: Fall Semester**

1. Obj, #1: Mathematical Calculations – Students will be able to perform mathematical calculations commonly used in manufacturing process, material selection, tolerances and projects. *Project-based activities*.
2. Obj. #2: Manufacturing Careers & History – Students will be able to identify careers, trends, past history, and qualifications’ needed for employment in manufacturing. *Do-Now*.
3. Obj. #3: Manufacturing Safety – Students will apply safe practices and adhere to known guidelines for insuring safety while working in the manufacturing lab. *Daily*
4. Obj. #8: Tooling – Students will demonstrate competency in performing various types of bench work procedures and skills. *Project-based activities.*

 **Spring Semester:**

1. Obj, #1: Mathematical Calculations – Students will be able to perform mathematical calculations commonly used in manufacturing process, material selection, tolerances and projects. *Project-based activities*.
2. Obj. #2: Manufacturing Careers & History – Students will be able to identify careers, trends, past history, and qualifications’ needed for employment in manufacturing. *Do-Now*.
3. Obj. #3: Manufacturing Safety – Students will apply safe practices and adhere to known guidelines for insuring safety while working in the manufacturing lab. *Daily*
4. Obj. #4: Production Processes – Students will be able to analyze and appraise the capability of production of parts and determine the performance sequencing of maneuvers to enhance production speed and quality of finished product. *Lab- work.*
5. Obj. #6: CNC Lathe – Students will be able to set-up and operate and maintain CNC machinery and apply skills needed to assure safe operation, quality of product, reliability of pre-planning steps and adherence to given tolerances as accepted by industry standards and guidelines. *Project-based activities*.
6. Obj. #8: Tooling – Students will demonstrate competency in performing various types of bench work procedures and skills. *Project-based activities.*

**Grading Policies:**

The grade percentages will be assessed as follows:

* Tests & Quizzes: 50%
* Lab Work/Assignments: 15%
* Work Ethic/Participation: 20%
* Classwork/Homework: 15%

*Important factors*:

* If a student has an unexcused absence, their missing assignment cannot be made up.
* If a student has an excused absence, make-up work will be issued and must be completed by due date set by the teacher.
* Missed labs cannot be made-up, no exceptions; unless approved prior.

**Grading Scale:**

A ……………. 90 – 100%

B ……..………. 80 – 89%

C ………..……. 70 – 79%

D ……………... 60 – 69%

F ……………..Below 60%

**Assessments**:

Students will be assessed using: A.) Test and quizzes

 B.) Class Assignments and Projects

 C.) Lab assignments and Participation

 D.) Exit Tickets

**Attendance:**

Students are expected to attend classes daily and be engaging in the daily learning process. Regular attendance is very important, and essential for the success of the student and school. Clyde Miller’s Attendance goal is **90%** or higher for all students. Absences could adversely affect your grade.

***Make-Up Work:***

The make-up work guidelines are set forth by the CTE Pathway policy. Any work missed is automatically entered as a zero.

Students are responsible for contacting the instructor to determine missed assignments and deadlines.

**Excused** (Parent Excused, Excused, Medical, Field Trips, ISS, OSS) and Verified Absences

* All missed work may be made up at full credit.
* It is the student’s responsibility to initiate contact with the teacher to get make up work.
* Work must be made up in a timely fashion, within the same number of days as the absence (e.g. absent 2 days, work must be made up in 2 days).
* Students may possibly make up lab time by working in the classroom/shop/lab outside of class time or through alternate assignments determined by the instructor. However, some class experiences are limited and opportunities to repeat them are not available.

**Unexcused** (Not verified by parents or school)

* Missed work/assignments/quizzes/tests may be made up at partial credit: 50%
* It is the student’s responsibility to initiate contact with the teacher to get make up work.
* Work must be made up in a timely fashion, generally within the same number of days as the absence (e.g. absent 2 days, work must be made up in 2 days). Instructors may expect students to make up work during suspension and submit upon returning to school.
* Lab assignments may not be made up.
* Students may be permitted to take exams or turn in homework for 80% of the grade.

**ACADEMIC INTEGRITY/PLAGIARISM:**

The integrity of the academic program and the evaluation of each student’s achievement are of primary concern to educational institutions. Cheating on an educational exercise not only reflects dishonesty on the part of the student, but also diminishes the value of the work done by his/her classmates. Students who cheat or plagiarize (using another’s words, ideas or writing as one’s own without giving credit to the source) shall be subject to the following:

* A grade of zero (0%) being awarded on the relevant portion of the assignment (research paper, etc)
* A grade of zero (0%) being awarded on the in-class assignment (such as a “do now” assignment)
* A grade of zero (0%) being given on any quiz, test, or exam
* Parental Contact
* Any additional penalty outlined in the Career Academy handbook.

**Classroom & Technical Expectations:**

All classes strive to prepare students for adult life by teaching skills and behaviors that will be valued in the workplace. The following expectations are stressed and graded in all Precision Machining & Technology classes. Your instructor will review these, provide instructions in all areas and answer any questions.

* *Attendance* – Be here on time each day, prepared to work, and dressed appropriately in school required uniforms.
* *Respect* – Use appropriate language, be honest and truthful, and be respectful of peers and adults.
* *Safety* – Follow safety rules and procedures, keep work area orderly.
* *Responsibility* – Complete work on time, follow directions, use resources to answer questions, ask for help when needed, and contribute to class discussion.
* *Quality* – Show determination to complete tasks, be consistent in quality, and focus on the task at hand.
* *Team* – Work as a productive team member in a variety of roles, communicate in a sensitive way.

**Classroom Environment:**

**\*Machine Shop – LAB\***

Students will be graded on classroom participation for work assignment/clean-up duties in the Manufacturing Lab. There will be a duty roster displayed, with a rotational schedule of the cleaning assignments for the week. Each student will have the opportunity to perform all assigned duties. *There will be no exceptions to opt-out of this activity.*

#### **NEEDS AND RESOURCES**

### **Required Background**

### To successfully complete this course, you must have a desire to learn and a will to work independently.

### **Required Materials**

### To successfully complete this course, you will need [Insert bulleted list of required materials, including textbook name and author, technology availability, and so on as well as easily accessible source of those materials.]

* Graph Paper
* Binder 1”: 3-ring w/ Pockets : Engineering Notebook
* 2G Flash drive
* Mechanical Pencils (.5MM)
* Computer w/ Internet access

##### Additional Print Resources

* Machine Tools Practice
* Technology of Machine Tools
* Machining and CNC Technology
* Handbook of Machining & Metalworking Calculations
* Journal of Technology Education

##### Online Resources

* Autodesk Inventor Software (CAD)
* Master Cam software
* OSHA Safety Regulations (Occupational Safety & Health Administration)
* www.jte.org
* www.bureauoflaborstatistics.org
* Teacher Tube/YouTube

#### **POLICIES AND PROCEDURES**

***Classroom Rules and Procedures:***

* Students are expected to come to class everyday prepared to learn, with the required materials.
* Students are expected to begin their “Do-Now” upon entering the classroom.
* Students are not allowed to leave the classroom without permission. Students who do this, will be considered truant, and report immediately.
* Students are expected to leave the classroom in the same conditions it was, when arrived.
* Students are expected to follow the instructor’s instructions during class the class period, no exceptions.
* Students are required to pass a written safety test, with achievement of 100 % before operating any power equipment.
* Students are expected to show ***RESPECT*** to all teachers and fellow students while in this class.
* Students are not allowed to use cell phones in class, without the teacher’s permission.

#### **ADDITIONAL INFORMATION**

***General Safety Rules:***

Students are expected to wear closed toed shoes to class. Students will need to have their hair tied behind their head; for safety reason, while working in the lab. This class will involve the use of moveable machine tools and safety will NOT be altered for anyone. Students will be provided aprons/smocks to wear while working in the lab. Students are not allowed to wear watches, rings, or other loose jewelry while operating machinery.

#### Please Note: Teamwork and Collaboration will be vital to the passing of this class.

#### **CONTACT INFORMATION**

* Derwin Crosby, Instructor
* 314-371-0394 X- 61006 6:55 AM – 2:30 PM
* Derwin.Crosby@slps.org

Student Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_

Parent Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_