BUSINESS TRAINING CENTER
OUTLINE

COURSE TITLE: Manufacturing Skills and Knowledge
COURSE SCHEDULE: 20 Hours (2.5 hours/day, 2 days/week, 4 weeks)

REQUIRED TEXT/MATERIALS: Precision Machining Technology, 1st Edition

- Peter J. Hoffman Berks Career and Technology Center West, Leesport, Pennsylvania
- Eric S. Hopewell Berks Career and Technology Center West, Leesport, Pennsylvania
- Brian Janes Bowling Green Technical College
- Kent M. Sharp, Jr. Radford High School, Radford, Virginia
- ISBN-10: 1435447670 | ISBN-13: 9781435447677

COURSE DESCRIPTION: This course is designed to prepare students for jobs in advanced manufacturing. Topics include an introduction to safety; workplace skills; Lean manufacturing concepts; quality; understanding metals and other materials; heat treating and grinding, hand tool use; precision machining technology; careers in machining and related careers.

COURSE OBJECTIVES:
On successful completion of this course students will be able to:

1. Name the parts of various machine tools including horizontal and vertical mills and lathes.
2. Safely operate basic machine tools such as bandsaws, grinders, and milling machines
3. Have a basic knowledge of the different materials that can be machined and the properties thereof including structural properties, heat treatment and work hardening.
4. Select, properly handle, and prepare stock for machining operations.
5. Use basic hand tools for the setup, operation, and maintenance of machines.
6. Understand the basics of different types of tooling and their uses and limitations.
7. Understand the importance of lean manufacturing and quality in advanced manufacturing.
8. Explain the different tools used in Lean and Quality such as 5S, 6 sigma, TPM, continuous improvement, and Just-in-time manufacturing.
9. Perform basic part inspections including dimensional verification, surface finish, and de-burring.
10. Understand the importance of work-holding in precision manufacturing.
11. Explain different techniques and equipment used for work-holding including vices, vacuum and pneumatic fixtures, adhesives, and specialized setups.
12. Follow job instructions for different manufacturing processes.

ATTENDANCE POLICY:

You are expected to attend all classes. Students are held accountable for all classes, labs, and assigned work.

Students are expected to contact their instructor prior to missing a class.
3 days of class absence is grounds for dismissal from the class.

TEACHING METHODOLOGY:
Teaching will be hands-on, applied and integrated to the extent possible with real world examples. Quizzes and exams will also be administered.

METHOD OF EVALUATION/HOW GRADES ARE CALCULATED:

Exams (Midterm & Final)	**40%**
Quizzes (Week 1 &3)	**40%**
Homework	**20%**
Grade Total	**100%**

Students will earn full credential with a grade of 75% or better.