

WARREN COUNTY SCHOOL DISTRICT

PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: Manufacturing
Course Number: 00921 (1 credit); 00922 (2-credits)
Course Prerequisites: None

Course Description: WCCC Manufacturing is an elective option available to ALL students in grade 10-12. WCCC Manufacturing provides students with an opportunity to participate in a student-run enterprise revolving around all aspects of manufacturing. Students have the option of taking this elective as a one-period/1 credit course or a two-period/2 credit course. Students will learn skills in CNC machining, engineering, marketing and accounting.

Suggested Grade Level: Grades 10-12
Length of Course: One Semester
Units of Credit: 1
2 credits if taken for 2 periods.

PDE Certification and Staffing Policies and Guidelines (CSPG) Required Teacher Certifications:

Code: 2043 Machine Technology

To find the CSPG information, go to [CSPG](#)

Certification verified by the WCSD Human Resources Department: ☒ Yes ☐ No

WCSD STUDENT DATA SYSTEM INFORMATION

Course Level: Academic
Mark Types: Check all that apply.
☒ F – Final Average ☒ MP – Marking Period ☒ EXM – Final Exam

GPA Type: ☐ GPAEL-GPA Elementary ☐ GPAML-GPA for Middle Level ☒ NHS-National Honor Society
☒ UGPA-Non-Weighted Grade Point Average ☒ GPA-Weighted Grade Point Average

State Course Code: 13203

To find the State Course Code, go to [State Course Code](#), download the Excel file for SCED, click on SCED 6.0 tab, and chose the correct code that corresponds with the course.

TEXTBOOKS AND SUPPLEMENTAL MATERIALS

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Board Approved Textbooks, Software, and Materials:

Title: Precision Machining Technology – 3rd Edition
Publisher: Skills
ISBN #: 9780357395127
Copyright Date: 2020
WCSD Board Approval Date: June 12, 2023

Title: Reading for Machinists – 6th Edition
Publisher: Skills
ISBN #: 9781337810678
Copyright Date: 2019
WCSD Board Approval Date: June 12, 2023

Supplemental Materials: Student Workbook and Project Manual for Precision Machining 3rd edition – ISBN #: 97813377955319

Curriculum Document

WCSD Board Approval:

Date Finalized: 4/3/2023
Date Approved: 6/12/2023
Implementation Year: 2023-2024

SPECIAL EDUCATION, 504, and GIFTED REQUIREMENTS

The teacher shall make appropriate modifications to instruction and assessment based on a student's Individual Education Plan (IEP), Chapter 15 Section 504 Plan (504), and/or Gifted Individual Education Plan (GIEP).

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Industry or Other Standards:

HAAS certification training

OSHA – CareerSafe

Performance Indicator	PA Core Standard and/or Eligible Content	Month Taught and Assessed for Mastery
Justify the selection of a career.	13.1.11D	Sept
Analyze and evaluate complex technical tasks using sophisticated processes.	13.2.11B	All Year
Identify sources of health, safety and regulatory practices and their effect on the work environment.	13.2.11D	Sept
Analyze Performance-based assessments components.	13.2.11F	All Year
Analyze the need for manipulative/motor skills.	13.2.11G	All Year
Analyze work habits needed to advance within a career.	13.3.11A	Sept
Select and use appropriate units and tools to measure to the degree of accuracy required in particular measurement situations.	2.3.11A	Sept-Oct
Demonstrate the ability to produce measures with specified levels of precision.	2.3.11C	All Year
Present mathematical procedures and results clearly, systematically, succinctly and correctly.	2.5.11C	All Year
Discriminate among the concepts of systems, subsystems, feedback and control in solving technological problems.	3.1.10A	All Year
Identify and safely use a variety of tools, basic machines, materials and techniques to solve problems and answer questions.	3.7.10A	Sept-Nov
Apply appropriate instruments and apparatus to examine a variety of objects and processes.	3.7.10A	All Year
Evaluate appropriate instruments and apparatus to accurately measure materials and processes.	3.7.12B	All Year
Utilize computer software to solve specific problems.	3.7.12B	All Year
Read and understand essential content of informational texts and documents in all academic areas.	1.2.11A	All Year
Maintain a written record of activities, course work, experience, honors and interests.	1.4.11D	All Year
Listen to others.	1.6.11A	All Year
Orientation & Safety		
Describe the Occupational Safety and Health Administration (OSHA) and its role in the machining industry.	101	Sept

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Identify and apply general safety precautions and procedures	103	Sept
Identify location of MSDS	106	Sept
Performance Precision Measurement		
Care for precision instruments	201-301-1001-1002	All Year
Measure work on a surface plate.	203	All Year
Check work with an optical comparator.	203	All Year
Check work with plug & ring gages.	203	All Year
Check work with radius gauges.	203	All Year
Check work with a sine bar.	203	All Year
Layout work with combination square	203	All Year
Measure work with depth gages	203	All Year
Measure work with dial calipers.	203	All Year
Measure work with depth micrometer.	203	All Year
Measure work with gage blocks.	203	All Year
Measure work with height gages	203	All Year
Measure work with indicators.	203	All Year
Measure work with inside micrometer	203	All Year
Measure work with outside micrometer	203	All Year
Measure work with telescope and hole gauges.	203	All Year
METALLURGY		
Identify & explain metals classifications.	1101	Sept-Nov
Identify & explain metal property applications.	1102	Sept-Nov
Identify & explain heat-treating processes.	1103	Sept-Nov

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USE OF CHARTS AND REFERENCES		
Use the decimal equivalent chart.	1201	All Year
Use speed and feed charts.	1202	All Year
Utilize thread charts.	1203	All Year
Demonstrate use of the Machinery's Handbook.	1204	All Year
BLUEPRINT READING		
Identify & explain views and projections.	1301	Sept-Nov
Demonstrate basic sketching and dimensioning.	1301	All Year
Demonstrate basic sketching and dimensioning.	1301	All Year
Identify & explain lines, dimensions, tolerances, and fits.	1303	Sept-Nov
Calculate material sizes based upon job needs.	1305	All Year
Identify & interpret geometric dimensioning and tolerance.	1303	All Year
Identify & demonstrate use of Cartesian & polar coordinate systems.	1404	All Year
Demonstrate absolute & incremental positional.	1409	All Year
CNC PROGRAMMING		
Demonstrate CNC safety procedures	1401	Sept
Demonstrate basic use of G & M codes.	1402	Sept
Demonstrate use of numerical controls.	1402	Sept-Oct
Identify & explain advantages & disadvantages of CNC machining.	1401	Sept
Demonstrate dry run of program.	1406	
Calculate & apply machine feeds and speeds.	1411	All Year
Set part zero and tool offsets.	1409	All Year
Post & transfer files to and from a CNC machine	1411	All Year
Identify and demonstrate use of MDI applications.	1410	All Year

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Accounting		
Analyze, journalize and post transactions to general & subsidiary ledgers.	101-204	All Year
Perform accounting functions using technology as a tool.	608	All Year
Identify, calculate and record depreciation, depletion and amortization.	316	All Year
Describe, calculate and journalize the sales and costs of sales including purchases, transportation costs, sales taxes and trade discounts.	101-204-315-407-410	All Year
Describe and explain the criteria used to determine expenses and journalize the expense transactions.	101-203-204-503-504	All Year

ASSESSMENTS

PSSA Academic Standards, Assessment Anchors, and Eligible Content: The teacher must be knowledgeable of the PDE Academic Standards, Assessment Anchors, and Eligible Content and incorporate them regularly into planned instruction.

Formative Assessments: The teacher will utilize a variety of assessment methods to conduct in-process evaluations of student learning.

Effective formative assessments for this course include: Analyzing student work, strategic questioning

- Bell Ringers/POD
- Discussions
- Teacher observations/questioning
- Outlining

Summative Assessments: The teacher will utilize a variety of assessment methods to evaluate student learning at the end of an instructional task, lesson, and/or unit.

Effective summative assessments for this course include: Project bids, material completion, invoicing, CNC programing and marketing strategies.

- Performance Assessments
- ToolU on-line Assignments
- Marking period assessments
- Final Exam