WARREN COUNTY SCHOOL DISTRICT

VIRTUAL PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: Manufacturing
Course Number: 10763
Course Prerequisites: None

Course Description: See Attachment

Suggested Grade Level: Grades 9-12
Length of Course: One Semester
Units of Credit: .5
PDE Certification and Staffing Policies and Guidelines (CSPG) Required Teacher Certifications:
CSPG 65
To find the CSPG information, go to https://www.education.pa.gov/Educators/Certification/Staffing%20Guidelines/Pages/default.aspx
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: 13002

To find the State Course Code, go to https://nces.ed.gov/forum/sced.asp, 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

Supplemental Materials: Edynamic (Virtual Academy)

Curriculum Document

WCSD Board Approval:
Date Finalized: 9/19/2019
Date Approved: 11/4/2019
Implementation Year: 19-20

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).

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: Lesson quizzes, projects, discussion boards, and module exams

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: Semester exams

Course **Syllabus**

What you will learn in this course

Introduction to Manufacturing: Product Design & Innovation

Think about the last time you visited your favorite store. Have you ever wondered how the products you buy make it to the store shelves? Whether it's video games, clothing, or sports equipment, the goods we purchase must go through a manufacturing process before they can be marketed and sold. In this course, you'll learn about the types of manufacturing systems and processes used to create the products we buy every day. You'll also be introduced to the various career opportunities in the manufacturing industry including those for engineers, technicians, and supervisors. As a culminating project, you'll plan your own manufacturing process for a new product or invention! If you thought manufacturing was little more than mundane assembly lines, this course will show you just how exciting and fruitful the industry can be.

Unit 1: Introduction to Manufacturing

America has been called a land of consumers. Our society has become accustomed to the luxury of purchasing commodities from retail stores in a way that is convenient and affordable. Most of us don't take the time to think much past the checkout line, however. Where do these products come from exactly? Were they made in our country or shipped in from somewhere else entirely? What machines and equipment were used to make the items we purchase? Who are the people involved in manufacturing and assembling the finished goods that line the shelves of our favorite stores? This course will give you a behind-the-scenes look at the vast industry called manufacturing. In this unit, you'll examine the basics of manufacturing, including a brief history and some of the basic processes and principles that work together to transform raw materials into useful and valuable commodities.

What will you learn in this unit?

- Identify the disciplines within the field of manufacturing—including engineering, science, and technology—and understand how they work together to achieve a final goal.
- Identify manufacturing processes, such as input, output, and feedback.

- Distinguish between different types of manufacturing methods and processes.
- Discuss the steps in the risk management process.

UNIT 1 Assignments

Assignment	Type
Unit 1 Text Questions	Homework
Unit 1 Lab	Homework
Unit 1 Activity	Homework
Unit 1 Discussion 1	Discussion
Unit 1 Discussion 2	Discussion
Unit 1 Quiz	Discussion

Unit 2: Success in Manufacturing, Part 1: Soft Skills

After learning about the various processes involved in manufacturing, you may think that strength or attention to detail is the key to being a successful employee in the manufacturing industry. Many people are surprised to learn that some of the most important skills required in this field aren’t at all physical in nature. In this unit, you’ll explore some of the "soft" skills that, when properly developed, can jump-start a career in manufacturing.

What will you learn in this unit?

- Discuss regulations and expectations in the workplace.
- Demonstrate communication techniques necessary to succeed in manufacturing.
- Define work ethic.
- Use time-management techniques.
- Explain how negotiation affects conflict resolution.

UNIT 2 Assignments

Assignment	Type
Unit 2 Text Questions	Homework
Unit 2 Lab	Homework
Unit 2 Activity	Homework
Unit 2 Discussion 1	Discussion
Unit 2 Discussion 2	Discussion
Unit 2 Quiz	Discussion

Unit 3: Success in Manufacturing, Part 2: Teamwork

Think back to a time when you were required to work alongside others to achieve a common goal. Perhaps it was a school project or an extracurricular activity, such as a sport. What challenges did you face together? Many people have experienced or witnessed conflicts with others when working in teams. These conflicts can damage relationships and keep the team from accomplishing its goals. When a team is dysfunctional at work, it can cost the company money, so good teamwork is particularly important in the workplace. In this unit, you'll learn about some of the most important teamwork skills employees need to be successful on the job, particularly in the manufacturing industry.

What will you learn in this unit?

- Describe how teams function together, solve problems, and measure results.
- Identify team roles.
- Discuss theories of motivation.
- Identify the stages of team development.

UNIT 3 Assignments

Assignment	Type

Unit 3 Text Questions	Homework
Unit 3 Lab	Homework
Unit 3 Activity	Homework
Unit 3 Discussion 1	Discussion
Unit 3 Discussion 2	Discussion
Unit 3 Quiz	Discussion

Unit 4: Success in Manufacturing, Part 3: Manufacturing Applications (Hard Skills)

As you learned in the previous units, "soft" skills are those skills necessary to work well with people. People skills aren't the only things to be concerned with in the manufacturing industry, however. Many employees who work in this field must operate machinery and equipment for manufacturing and assembling products. Others must develop strategies for manufacturing goods in a way that saves the company time and money. In this unit, you'll discover some of these "hard" skills that enable employees in the manufacturing industry to do their jobs effectively.

What will you learn in this unit?

- Discuss roles and tasks common in the manufacturing industry.
- Describe quality and how it is measured in manufacturing.
- Discuss how inventory is managed in the manufacturing industry.
- Evaluate different quality control applications in manufacturing.
- Define work systems design and human resource management.

UNIT 4 Assignments

Assignment	Type
Unit 4 Text Questions	Homework

Unit 4 Lab	Homework
Unit 4 Activity	Homework
Unit 4 Discussion 1	Discussion
Unit 4 Discussion 2	Discussion
Unit 4 Quiz	Discussion

Introduction to Manufacturing Midterm Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from the first four units in this course (Note: You will be able to open this exam only one time.)

MIDTERM Assignments

Assignment	Type
Midterm Exam	Exam
Midterm Discussion	Discussion

Unit 5: Success in Manufacturing, Part 4: Engineering Applications (Hard Skills)

As you've learned, engineering and manufacturing are closely related fields. Engineers are those men and women who work behind the scenes studying the manufacturing process, choosing the best equipment and machinery for the job, and even designing new products. While some of the tasks may overlap, engineers typically need a different skill set than manufacturing employees do. In this unit, you'll learn about some of those skills that help engineers do their jobs to the best of their abilities.

What will you learn in this unit?

- Analyze engineering concepts.
- Describe and produce engineering drawings.
- Compare and contrast lean manufacturing and lean engineering.
- Define manufacturing engineering and systems engineering.

UNIT 5 Assignments

Assignment	Type
Unit 5 Text Questions	Homework
Unit 5 Lab	Homework
Unit 5 Activity	Homework
Unit 5 Discussion 1	Discussion
Unit 5 Discussion 2	Discussion
Unit 5 Quiz	Discussion

Unit 6: Workplace Safety

There are many advantages to working in the manufacturing industry, but one of the downfalls is the exposure to risks and hazards. Because of the heavy equipment involved, manufacturing is one of the most dangerous industries there is. Each year, many workers in this field are injured and even killed on the job. Because of these serious risks, government regulations have been put into place to keep manufacturing employees safe while at work. In this unit, you'll examine some of the most important guidelines that employers must follow to protect the men and women who work for them.

What will you learn in this unit?

- Discuss workers' rights.
- Evaluate hazards manufacturing employees face.
- Identify government regulations that protect workers in the manufacturing industry.

- Explain how to identify and dispose of hazardous material.

UNIT 6 Assignments

Assignment	Type
Unit 6 Text Questions	Homework
Unit 6 Lab	Homework
Unit 6 Activity	Homework
Unit 6 Discussion 1	Discussion
Unit 6 Discussion 2	Discussion
Unit 6 Quiz	Discussion

Unit 7: Careers in Manufacturing

Over the duration of this course, you've learned about many different areas of manufacturing, from assembly line work to human resource management. Because the industry is so vast and complex, it offers many diverse career opportunities for potential employees. In this unit, you'll explore some of those career opportunities. You'll also have the chance to develop some personal career goals of your own.

What will you learn in this unit?

- Analyze the various specializations in manufacturing.
- Identify the education and training required for various careers in manufacturing.
- Report on a specific career in the manufacturing industry.
- Evaluate personal career goals.

UNIT 7 Assignments

Assignment	Type

Unit 7 Text Questions	Homework
Unit 7 Lab	Homework
Unit 7 Activity	Homework
Unit 7 Discussion 1	Discussion
Unit 7 Discussion 2	Discussion
Unit 7 Quiz	Discussion

Unit 8: Culminating Manufacturing Project

Over the duration of this course, you've learned quite a bit about the manufacturing industry. In this unit, you'll finally get to apply all that new knowledge to a project of your very own. If you've ever imagined inventing a new product, then you're in luck! For this manufacturing project, you'll be creating a new product from scratch, starting with the design and engineering process. You'll get to choose how your product is manufactured and even develop a marketing plan for selling your finished goods.

What will you learn in this unit?

- Discuss the stages of new product development.
- Examine how companies have new products manufactured.
- Describe effective marketing techniques.
- Participate in the operation of a manufacturing project.

UNIT 8 Assignments

Assignment	Type
Unit 8 Text Questions	Homework
Unit 8 Lab	Homework

Unit 8 Activity	Homework
Unit 8 Discussion 1	Discussion
Unit 8 Discussion 2	Discussion
Unit 8 Quiz	Discussion

Introduction to Manufacturing Final Exam

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from units five to eight in this course – the last four units. (Note: You will be able to open this exam only one time.)

FINAL Assignments

Assignment	Type
Final Exam	Exam
Class Reflection Discussion	Discussion