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MFG 221- Production Manufacturing 2- Chris Dodson- Part A- Winter 2026

*** Part A: Your Plan DIRECTIONS 1. Choose three of your course outcomes to assess and report on this term (these will also be used in your Student Course Evaluation survey): Outcome #1**

Understand CNC Operation and Programming.

*** Outcome #2**

Demonstrate knowledge of feed speed and circular interpolation.

*** Outcome #3**

Produce product from existing 3d solid model and tolerance.

Have you completed an assessment for this course prior to this term?

Yes

If yes, are you assessing different outcomes?

Yes

Comments:

(No response)

2. To which degree(s) or certificate(s) does your course map? Degree, Certificate, & Program Outcomes

ENGINEERING, MANUFACTURING & INDUSTRY, Advanced Manufacturing Technology

*** Method of Assessment 3. What methods will be used to assess individual student understanding of each of these outcomes? (Please be specific.) Outcome #1: Method to assess student understanding**

Students will utilize Computer Aided Manufacturing Software to program CNC Vertical Milling Centers with project completion evaluated by producing 3D Models in physical form. Students will take their programs from the digital simulation workspace, and utilizing CNC Equipment they will produce real life versions of digital designs. Each project will carry out the process to its entirety. These projects increase in difficulty over the course, with projects being evaluated in physical form to varying degrees of accuracy, precision, and allowable deviations.

*** Outcome #2: Method to assess student understanding**

Students are assigned projects in which they will calculate feed rates, spindle speeds, and arc movements. They will demonstrate their understanding of these principles in each project through the creation of physical parts or components machined from aluminum, plastics, steels, and other machinable materials.

*** Outcome #3: Method to assess student understanding**

Students will provide physical examples of their projects in accordance with blueprinted tolerances along with first article inspection reports, and in process inspection reporting. Their reports will be evaluated by the instructor and compared to physical parts and CAD models for validation of measurements.

*** 4. How will you know if you were successful in your efforts to teach this outcome? Outcome #1:**

Successful completion of physical component creation showcases CNC Operational procedures are understood and followed. The students' use of iterative processes to create components that fit within the envelope of allowable tolerances will showcase their understanding of programming tactics, adaptations, adjustments, and process control.

*** Outcome #2: How will you know if you were successful in your efforts to teach this outcome?**

With successful completion of physical representations, and iterations of these components. Through the process of moving from calculated and simulated product creation, to physical sample creation. This will be seen in visual aspects of components, as well as measured values.

*** Outcome #3: How will you know if you were successful in your efforts to teach this outcome?**

Student product samples will clearly indicate student understanding of the challenges attributed to material conditions, cutting tool conditions, and machine parameters. In creating successful products, students will have had to apply cutting strategies, compensations, systematic programming adjustments in order to minimize imperfections in a production setting.

5. Instructor Questions: Create two course specific questions to be included on the Student Course Evaluation. Question #1

With the application of CNC Manufacturing, time is always against us. Do you feel that there was adequate time available for each projects completion?

Question #2

At the scrifice of time, to you feel that there was enough variety of projects available to broaden your scope of CNC Manufacturing?

Do you require the names of students who complete the course evaluation survey? (Please note: names will be sent to instructors the Thursday before term ends)

NO

Reminder, when completing Part B, instructors will be asked the following questions: Describe anything you did to assist the institutional effort to support students in improving achievement of the specified criteria for the following Institutional Learning Outcomes (ILO): 1. ILO#1 - Communication - "Content Development" and/or "Control of Syntax and Mechanics" 2. ILO#2 - Critical Thinking/Problem Solving - "Evidence" and/or "identify strategies" 3. ILO#4 - Intercultural Knowledge and Competence - "Openness" (Encouraging our students to "Initiate and develop interactions with culturally different others") 4. ILO#5 - Community and Environmental Responsibility 5. ILO#3 - Quantitative Literacy - "Assumptions"

(No response)