10/21/2022 DATE
☑ REQUIRED COURSE
☑ ELECTIVE COURSE

Technology DIVISION
☐ NEW COURSE
☐ REVISION

# Lake Land College

## Course Information Form

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| COURSE NUMBER: | CIM-092 | | TITLE: *(30 Characters Max)* | | Computer-Aided Manufacturing (CAM) | | | | | | |
| SEM CR HRS: | 3 | Lecture: | 2 | Lab: | 2 | | | | ECH: | 4 | |
| Course Level: | ☐ Gen Ed / IAI ☐ Baccalaureate /Non-IAI | ☑ Career/Technical ☐ Dev Ed/ Not in Degree Audit | | Clinical Practicum: | 0 | SOE/ Internship: | 0 | SOE ECH: | 0 | | |
| COURSE PCS # | 12.150499 | | IAI Code | | | | | Contact Hours (Minutes Per Week) | | | |
| Repeatable (Y/N): | N | Pass/Fail (Y/N): | N | Variable Credit (Y/N): | N | Min: | | Max: | | 16 Wks | 200 | 8 wks | 400 |
| Prerequisites: | Intro to CNC Machining CIM-060 and CAD-056 | | | | | | | | | | |
| Catalog Description: (40 Word Limit) | An introduction to the use of a CAD/CAM system. Student will learn to use a computer for design and to automatically create programs to control manufacturing equipment. | | | | | | | | | | |

| List the Major Course Segments (Units) | Contact Lecture Hours | Contact Lab Hours | Clinical Practicum | Non-Clinical Internship/ SOE |
|---|---|---|---|---|
| Introduction and Terminology | 2 | | | |
| Design Creation Tools | 2 | 3 | | |
| Design Modification Tools | 2 | 3 | | |
| Designing Mill Parts | 3 | 3 | | |
| Creating Toolpaths for the Mill | 4 | 4 | | |
| Postprocessing and Verifying Mill Programs | 4 | 4 | | |
| 3D Toolpaths | 3 | 3 | | |
| Creating Toolpaths for the Lathe | 4 | 4 | | |
| Postprocessing and Verifying Lathe Programs | 4 | 4 | | |
| Translating CAD Designs | 2 | 2 | | |
| | | | | |
| | | | | |
| TOTAL | 30 | 30 | 0 | 0 |

| EVALUATION | | | | | | | |
|---|---|---|---|---|---|---|---|
| QUIZZES | ☐ | EXAMS | ☑ | ORAL PRES | ☐ | PAPERS | ☐ |
| LAB WORK | ☑ | PROJECTS | ☑ | COMP FINAL | ☐ | OTHER | ☐ |

| COURSE MATERIALS | | |
|---|---|---|
| TITLE: | Mastercam X5 Training Guide 2D Mill | |
| AUTHOR: | Matthew Manton, Duane Weidinger | |
| PUBLISHER: | CAM Instructor Inc. | |
| VOLUME/EDITION/URL: | | |
| COPYRIGHT DATE: | 2012 | |

| MAJOR COURSE SEGMENT | HOURS | LEARNING OUTCOMES |
|---|---|---|
| | | *The student will be able to:* |
| Introduction and Terminology | 2 | Explain the terminology and purpose of Computer-Aided Manufacturing |
| Introduction and Terminology | 5 | Demonstrate the use of basic drawing commands |
| Design Modification Tools | 5 | Use basic drawing modification commands |
| Designing Mill Parts | 6 | Design parts that will be machined on a CNC machining center |
| Creating Toolpaths for The Mill | 4 | Apply contouring, profiling and drilling type toolpaths to a design |
| Assigning Machining Information | 4 | Assign tools, feedrates, cutting speeds and materials to part geometry. |
| Postprocessing Mill Programs | 2 | Use a postprocessor to generate a mill program and edit that program |
| Verifying Mill Programs | 2 | Verify a mill program with a computer simulation and on an actual machine. |

| | | |
|---|---|---|
| 3D Toolpaths | 4 | How to draw and assign toolpaths on 3D surfaces. |
| Designing Lathe Parts | 6 | Design parts that will be machined on a CNC turning center. |
| Creating Toolpaths for The Lathe | 4 | Apply rough and finish and threading toolpaths to a lathe design. |
| Assigning Machining Information | 4 | Assign tools, feedrates, cutting speeds and materials to part geometry. |
| Postprocessing Lathe Programs | 2 | Use a postprocessor to generate a lathe program and edit that program. |
| Verifying Lathe Programs | 6 | To verify a lathe program with a computer simulation and on an actual machine. |
| Translating CAD Designs | 4 | Convert various CAD drawings to a MasterCAM design format. |
| | | |
| | 60 | |

| COURSE OUTCOMES* | At the successful completion of this course, students will be able to: |
|---|---|
| • Demonstrate the use of draw and modify commands used in a CAM program. | |
| • Setup a tool library in a CAM program. | |
| • Produce tool path machining operations from CAD geometry. | |
| • Assign tool paths to machine 3D surfaces. | |
| • Demonstrate the use of a postprocessor to convert tool path information into a CNC program. | |

** Course Outcomes will be used in the Assessment Software for Outcomes Assessment. Limit to 3 - 5.*