CAM242 : CNC Lathe Computer Aided Manufacturing Laboratory

General Information

Author:	• Jorge Palma
Course Code (CB01) :	CAM242
Course Title (CB02) :	CNC Lathe Computer Aided Manufacturing Laboratory
Department:	CAM
Proposal Start:	Spring 2025
TOP Code (CB03) :	(0956.30) Machining and Machine Tools
CIP Code:	(48.0501) Machine Tool Technology/Machinist.
SAM Code (CB09) :	Clearly Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000626428
Curriculum Committee Approval Date:	05/22/2024
Board of Trustees Approval Date:	07/16/2024
Last Cyclical Review Date:	05/22/2024
Course Description and Course Note:	CAM 242 provides practice using computer-aided manufacturing (CAM) software, which will allow students to complete complex CNC lathe projects of their own choosing to further develop their CAM and CNC lathe setup and programming skills.
Justification:	Mandatory Revision
Academic Career:	• Credit
Mode of Delivery:	
Author:	
Course Family:	

Academic Senate Discipline

Primary Discipline:	• Machine Tool Technology (Tool and die making)
Alternate Discipline:	No value
Alternate Discipline:	No value

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

☐ Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

Not applicable.

Grading Basis

- Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is not a support course

General Education and C-ID

General Education Status (CB25)

Not Applicable

Transferability

Transferable to CSU only

Transferability Status

Approved

Units and Hours

Summary

Minimum Credit Units (CB07)	1
Maximum Credit Units (CB06)	1
Total Course In-Class (Contact) Hours	54
Total Course Out-of-Class Hours	0
Total Student Learning Hours	54

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Funding Agency Category (CB23)

Not Applicable.

☐ Cooperative Work Experience Education Status (CB10)

☐ Variable Credit Course

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	0	0
Laboratory Hours	3	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	54
Course In-Class (Contact) Hours	
Lecture	0
Laboratory	54
Studio	0
Total	54
Course Out-of-Class Hours	
Lecture	0
Laboratory	0
Studio	0
Total	0

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

Advisory

CAM241 - Advanced Mastercam Lathe (in-development)

Objectives

- Create complex 3D geometry and toolpaths for Mastercam lathe.
- Set up a Computer Numerical Control (CNC) lathe machine with live tooling.
- Choose proper set-up tools for milling.
- Demonstrate roughing and finishing.
- Demonstrate drilling and boring on C-axis and Y-axis.
- Explain sub spindle machining.
- Identify automatic part handling toolpaths for second set-up.

Entry Standards

Entry Standards

Course Limitations

Cross Listed or Equivalent Course

Specifications

Methods of Instruction

Methods of Instruction	Laboratory
Methods of Instruction	Multimedia
Methods of Instruction	Demonstrations

Out of Class Assignments

- Computer Numerical Control (CNC) programming assignments
- Reading assignments

Methods of Evaluation	Rationale
Exam/Quiz/Test	Quizzes
Exam/Quiz/Test	Evaluation of laboratory work (e.g. programming, setup, production, inspection)
Exam/Quiz/Test	Final project (e.g. contouring, pocket milling, drilling, and tapping)

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Mastercam	Mastercam 2021 Lathe C and Y Axis Toolpaths Tutorial	In-House Solutions	2020	978-1-77146-920-3

Other Instructional Materials (i.e. OER, handouts)

No Value

Materials Fee

No value

Learning Outcomes and Objectives

Course Objectives

Create a series of advanced parts and tool paths using Mastercam to machine parts on the Computer Numerical Control (CNC) Lathe.

Perform advanced drawings of geometric shapes and translate them into the proper numerical format required by the equipment.

Demonstrate the principles required to successfully complete advanced Computer Numerical Control (CNC) programming projects.

Demonstrate knowledge of CNC systems and perform projects on the Computer Numerical Control (CNC) milling machine.

SLOs

Perform computer machining programs with precision and accuracy using a range of techniques. Expected Outcome Performance: 70.0

ILOs Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.
CAM A.S. Computer Numerical Control Technician	Apply various software programs to write CNC code for the production of manufactured parts.
	Use manual machine and CNC machine tools to produce manufactured parts.

Course Content

Lecture Content

No value

Laboratory/Studio Content

Introduction to Course (3 hours)

- Selection of projects
- Review of Mastercam software fundamentals
- Review of Computer Numerical Control (CNC) lathe
- Review of Computer Numerical Control (CNC) control panel

Laboratory Practice (51 hours)

- Mastercam software
- Computer Numerical Control (CNC) lathe

Total hours: 54

Additional Information

Is this course proposed for GCC Major or General Education Graduation requirement? If yes, indicate which requirement in the two areas provided below.

No

GCC Major Requirements

No Value

GCC General Education Graduation Requirements

No Value

Repeatability

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Resources

Did you contact your departmental library liaison?

No

If yes, who is your departmental library liason?

No Value

Did you contact the DEIA liaison?

No

Were there any DEIA changes made to this outline?

No Value

If yes, in what areas were these changes made:

No Value

Will any additional resources be needed for this course? (Click all that apply)

No Value

If additional resources are needed, add a brief description and cost in the box provided.

No Value