

MACH113 : * Intermediate Engine Lathe Process

General Information

Author:	• Jorge Palma
Course Code (CB01) :	MACH113
Course Title (CB02) :	* Intermediate Engine Lathe Process
Department:	MACH
Proposal Start:	Fall 2024
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) :	CCC000293807
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:	MACH 113 is a course that provides specialized training on the engine lathe processes. Building on the basic processes, this class will develop skills working on tapering, threading, grooving, contouring both inside and out. The use of the 3 and 4 jaw chucks, faceplate and collets are studied.
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 Special Class Status (CB13)	Grading Basis
Course is not a basic skills course.	Course is not a special class.	• Grade with Pass / No-Pass Option
<input type="checkbox"/> Allow Students to Gain Credit by Exam/Challenge	Pre-Collegiate Level (CB21)	Course Support Course Status (CB26)
	Not applicable.	Course is not a support course

General Education and C-ID

General Education Status (CB25)

Not Applicable

Transferability

Not transferable

Transferability Status

Not transferable

Units and Hours

Summary

Minimum Credit Units (CB07)	2
Maximum Credit Units (CB06)	2
Total Course In-Class (Contact) Hours	72
Total Course Out-of-Class Hours	36
Total Student Learning Hours	108

Credit / Non-Credit Options

Course Type (CB04)

Credit - Not Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Variable Credit Course

Funding Agency Category (CB23)

Not Applicable.

Cooperative Work Experience

Education Status (CB10)

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	1	2
Laboratory Hours	3	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	0
Course In-Class (Contact) Hours	
Lecture	18
Laboratory	54
Studio	0
Total	72
Course Out-of-Class Hours	
Lecture	36
Laboratory	0
Studio	0
Total	36

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

MACH101 - Machine Technology I (in-development)

Objectives

- Demonstrate safety practices with machinery during milling and lathe operations.
- Perform a series of fundamental machining exercises in lathe and milling operations.
- Use precision inspection equipment.
- Demonstrate drilling, reaming, tapping and knurling procedures.
- Demonstrate the setup and utilization of various lathe and milling operations and procedures.

Entry Standards

Entry Standards

Course Limitations

Cross Listed or Equivalent Course

Specifications

Methods of Instruction

Methods of Instruction	Lecture
------------------------	---------

Methods of Instruction	Laboratory
------------------------	------------

Methods of Instruction	Discussion			
Methods of Instruction	Multimedia			
Methods of Instruction	Collaborative Learning			
Methods of Instruction	Demonstrations			
Methods of Instruction	Presentations			
Out of Class Assignments				
<ul style="list-style-type: none"> • Write a manufacturing procedure detailing the process used to complete the final project • Final project (e.g. threaded spindle) 				
Methods of Evaluation	Rationale			
Exam/Quiz/Test	Quizzes			
Exam/Quiz/Test	Midterm exam			
Project/Portfolio	Final project (e.g. threaded spindle)			
Textbook Rationale				
No Value				
Textbooks				
Author	Title	Publisher	Date	ISBN
John Walker, Bob Dixon	Machining Fundamentals	Goodheart-Wilcox	2023	978-1-64925-979-0
Other Instructional Materials (i.e. OER, handouts)				
No Value				
Materials Fee				
No value				

Learning Outcomes and Objectives
Course Objectives

Demonstrate a series of advance lathe machining exercises.

Complete projects using internal and external threading, tapering and knurling.

Produce a complex project by using advanced lathe operations.

SLOs

Develop machining skills by working on tapering, threading, grooving, contouring both inside and out. Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.
<i>MACH</i> Machinist - Certificate	Demonstrate the skills required in the field of machine and manufacturing technology, such as use of manual machining equipment.
<i>MACH</i> Machinist - A.S. Degree Major	Demonstrate the skills required in the field of machine and manufacturing technology, such as use of manual machining equipment.

Compare the application of the three jaw chuck, four jaw chuck, faceplate and collets. Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.
<i>MACH</i> Machinist - Certificate	Demonstrate the skills required in the field of machine and manufacturing technology, such as use of manual machining equipment.
<i>MACH</i> Machinist - A.S. Degree Major	Demonstrate the skills required in the field of machine and manufacturing technology, such as use of manual machining equipment.

Identify safety protocols required for safe lathe operation. Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.
<i>MACH</i> Machinist - Certificate	Demonstrate the skills required in the field of machine and manufacturing technology, such as use of manual machining equipment.
<i>MACH</i> Machinist - A.S. Degree Major	Demonstrate the skills required in the field of machine and manufacturing technology, such as use of manual machining equipment.

Additional SLO Information

Does this proposal include revisions that might improve student attainment of course learning outcomes?

No

Is this proposal submitted in response to learning outcomes assessment data?

No

If yes was selected in either of the above questions for learning outcomes, explain and attach evidence of discussions about learning outcomes.

No Value

SLO Evidence

No Value

Course Content

Lecture Content

Three Jaw Chuck (2 hours)

- Construction
- Inside jaws
- Outside jaws
- Use of soft jaws

Four Jaw Chuck (2 hours)

- Construction
- Concentric rings
- reversing of jaws
- Indicating for center
- Eccentric turning

Faceplate Work (2 hours)

- Direct mounting of work
- Fixture mounting
- Counter balancing
- Offset turning

Work Holding Between Centers and Tailstock (2 hours)

- Supporting shaft work
- Turning between centers
- Follower rest

Collets (2 hours)

- Regular
- Hexagonal
- Square
- Emergency

Tapering (2 hours)

- Tapering inside and outside
- Use of compound
- Using tapering attachment
- Offset of tailstock

Grooving (2 hours)

- Thread relief
- Grinding clearance
- Inside relief

Contouring Inside (2 hours)

- Use of the compound
- Use of the tracing attachment

Contouring Outside (2 hours)

- Use of the compound
- Use of the tracing attachment
- Threading
- Grinding threading tool
- Set up of the tool
- Sharp Vee threads
- Unified threads
- Acme threads
- Square threads
- Internal threading

Total hours: 18

Laboratory/Studio Content

Three Jaw Chuck (4 hours)

- Construction
- Inside jaws
- Outside jaws
- Use of soft jaws

Four Jaw Chuck (4 hours)

- Construction
- Concentric rings
- reversing of jaws
- Indicating for center
- Eccentric turning

Faceplate Work (4 hours)

- Direct mounting of work
- Fixture mounting
- Counter balancing
- Offset turning

Work holding Between Centers and Tailstock (4 hours)

- Supporting shaft work
- Turning between centers
- Follower rest

Collets (4 hours)

- Regular
- Hexagonal
- Square
- Emergency

Tapering (4 hours)

- Tapering inside and outside
- Use of compound
- Using tapering attachment
- Offset of tailstock

Grooving (4 hours)

- Thread relief
- Grinding clearance
- Inside relief

Contouring Inside (4 hours)

- Use of the compound
- Use of the tracing attachment

Contouring Outside (22 hours)

- Use of the compound
- Use of the tracing attachment
- Threading
- Grinding threading tool
- Set up of the tool
- Sharp Vee threads
- Unified threads
- Acme threads
- Square threads
- Internal threading

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 liaison?

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