North Central State College

MASTER SYLLABUS	2025-2026

A. Academic Division: Engineering Technology, Business & Criminal Justice Division

B. Discipline: Manufacturing

C. Course Number and Title: MFGT1120 Advanced Machining

D. Assistant Dean: Brooke Miller, M.B.A.

E. Credit Hours: 2
Lecture: 1 hour
Laboratory: 2 hours

F. Prerequisites: MFGT1110, MECT1150

G. Last Course/Curriculum Revision Date: Fall 2025 Origin date: 07/28/2011

H. Textbook(s) Title:

Precision Machining Technology
- Author(s): Hoffman, Hopewell, Janes
- Copyright Year: 2020
- Edition: 3rd
- ISBN #: 9781337795302 Hardback
- ISBN #: 9781337795319 Paperback
- ISBN #: 9780357703571 eBook

Engineer's Black Book
- Authors: Pat Raff
- Copyright Year: 2018
- Edition: 3rd
- ISBN-13: 9780958057141

I. Workbook(s) and/or Lab Manual: None

J. Course Description: This course builds on the basic skills presented in MFGT1110. Students who complete this course will focus on the NIMS certification exams available for Vertical Milling, Drill Press, Grinding, and Turning Operations including chucking and between centers. Focus will be on safety throughout the course.

K. College-Wide Learning Outcomes:

College-Wide Learning Outcome	Assessments - - How it is met & When it is met
Communication – Written	
Communication – Speech	
Intercultural Knowledge and Competence	
Critical Thinking	
Information Literacy	

College-Wide Learning Outcome	Assessments - - How it is met & When it is met
Quantitative Literacy	

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

Outcomes	Assessments – How it is met & When it is met
1. Operate Milling Machine, Set ups and Operations	Biweekly Written Exam and lab certification project evaluated by MET TEC ADVISORY COMMITTEE
2. Operate Drill Press, Set ups and Operations	Biweekly Written Exam and lab certification project evaluated by MET TEC ADVISORY COMMITTEE
3. Operate Turning Machines, Set ups and Operations, Chucking	Biweekly Written Exam and lab certification project evaluated by MET TEC ADVISORY COMMITTEE
4. Operate Turning Machines, Set ups and Operations, Turning between centers	Biweekly Written Exam and lab certification project evaluated by MET TEC ADVISORY COMMITTEE
5. Operate Surface Grinder, Set ups and Operations	Biweekly Written Exam and lab certification project evaluated by MET TEC ADVISORY COMMITTEE

M. Recommended Grading Scale:

NUMERIC	GRADE	POINTS	DEFINITION
93–100	A	4.00	Superior
90–92	A-	3.67	Superior
87–89	B+	3.33	Above Average
83–86	B	3.00	Above Average
80–82	B-	2.67	Above Average
77–79	C+	2.33	Average
73–76	C	2.00	Average
70-72	C-	1.67	Below Average
67–69	D+	1.33	Below Average
63-66	D	1.00	Below Average
60-62	D-	0.67	Poor
00-59	F	0.00	Failure

N. College Procedures/Policies:

North Central State College believes that every student is a valued and equal member of the community.* Every student brings different experiences to the College, and all are important in enriching academic life and developing greater understanding and appreciation of one another. Therefore, NC State College creates an inclusive culture in which students feel comfortable sharing their experiences. Discrimination and prejudice have no place on the campus, and the College takes any complaint in this regard seriously. Students encountering aspects of the instruction that result in barriers to their sense of being included and respected should contact the instructor, assistant dean, or dean without fear of reprisal.

* *Inclusive of race, color, religion, gender, gender identity or expression, national origin (ancestry), military status (past, present or future), disability, age (40 years or older), status as a parent during pregnancy and immediately after the birth of a child, status as a parent of a young child, status as a foster parent, genetic information, or sexual orientation*

Important information regarding College Procedures and Policies can be found on the syllabus supplement located at https://ncstatecollege.edu/documents/President/PoliciesProcedures/PolicyManual/Final%20PDFs/14-081b.pdf

North Central State College

SYLLABUS ADDENDUM

Academic Division:	Engineering Technology, Business & Criminal Justice	**Discipline:**	Manufacturing
Course Coordinator:	Brooke Miller		
Course Number:	MFGT1120	**Course Title:**	Advanced Machining
Semester / Session:	SP 2026 / Session ___	**Start / End Date:**	01/12/2026 thru 05/08/2026

Instructor Information

Name:	Chris Harriman	**Credentials:**	State Cert and 30+ years in the field
Phone Number:	419-560-8931	**E-Mail Address:**	charriman@ncstatecollege.edu
Office Location:	023	**Office Hours:**	Varies

I. Topical Timeline / Course Calendar (Subject to Change):

Weeks	Topics	Assignment	Due Date
	Prerequisites: Print Reading		
1	***SECTION 1*** UNIT 1 - Introduction to machining UNIT 2 - Careers in Machining UNIT 3 - Workplace Skills	Homework on CANVAS Lecture	
2	***SECTION 2*** Unit 1 Introduction to Safety	Homework on CANVAS Lecture	
3	UNIT 2 - Measurement Systems and Machine Tool Math Overview UNIT 3 - Semi-Precision Measurement UNIT 4 Precision Measurement	Homework on CANVAS Lecture and in-class activities	
4	UNIT 5 - Quality Assurance, Process Planning and Quality Control UNIT 6 - Metal Composition and Classification UNIT 7 - Heat Treatment of Metals	Homework on CANVAS Lecture	
5	UNIT 8 - Maintenance, Lubrication, and Cutting Fluid Review ***SECTION 3*** UNIT 1 - Understanding Drawings UNIT 2 - Layout	Homework on CANVAS Lecture and in-class activities	
6	UNIT 3 - Hand Tools UNIT 4 - Saws and Cutoff Machines UNIT 5 - Offhand Grinding	Homework on CANVAS Lecture and in-class activities with Lab	
7	UNIT 6 - Drilling, Threading, Tapping and Reaming	Homework on CANVAS Lecture and in-class activities	
8	***MIDTERM***	Midterm on CANVAS	
9	***SECTION 4*** UNIT 1 - Intro to the Drill Press UNIT 2 - Tools, Tool holding and Work holding for the Drill Press UNIT 3 Drill Press Operations	Homework on CANVAS Lecture and in-lab activities	

Course Number: _____ **Course Title:** _____
Semester / Session: _____ **Start / End Date:** _____

Weeks	Topics	Assignment	Due Date
	Prerequisites: Print Reading		
10	***SECTION 5*** UNIT 1 - Intro to the Lathe UNIT 2 - Tools, Tool holding and Work holding for the Lathe UNIT 3 - Machining Operations of the Lathe	Homework on CANVAS Lecture and in-lab activities	
11	UNIT 4 - Manual Lathe Threading	Homework on CANVAS Lecture and in-lab activities	
12	UNIT 5 – Taper Turning ***SECTION 6*** UNIT 1 - Into to the Vertical Milling Machine UNIT 2 - Tools, Tool holding and Work holding for the Vertical Milling Machine	Homework on CANVAS Lecture and in-lab activities	
13	UNIT 3 - Vertical Milling Machine Operations UNIT 4 - Indexing and Rotary Table Operations	Homework on CANVAS Lecture and in-lab activities	
14	SECTION 7 UNIT 1 – Intro to Precision Grinding UNIT 2 – Grinding Wheels for Precision Grinding UNIT 3 – Surface Grinding Operations	Homework on CANVAS Lecture and in-lab activities	
15	Any Additional Lab time needed for projects	Machining Technologies Lab	
16	Final Exam	FINAL EXAM on CANVAS	

II. Grading and Testing Guidelines:

Final Grade Calculation

Activity	Qty	Points	Percentage
Homework			50
Midterm			25
Final Exam			25

1. **Topic description #1**
   a. Basic Machine Shop Theory
2. **Topic description #2**
   a. Lathes
3. **Topic description #3**
   a. Vertical Mills
4. **Topic description #4**
   a. Precision Grinding

III. Examination Policy:

1. The reasons for which a student will be excused from taking an examination _____
   a. Hospitalization (with documented verification)
   b. Death in the immediate family (with documented verification)
   c. Personal illness or illness in immediate family - (doctor's excuse required).
2. A student who misses an examination for any reason is responsible for _____
   a. Making up their work within 2 weeks of returning to class

Course Number: _____ **Course Title:** _____
Semester / Session: _____ **Start / End Date:** _____

IV. Class Attendance and Homework Make-Up Policy:

1. Class attendance is necessary to acquire the knowledge required to _____
2. Students are responsible for SAFETY.

V. Classroom Expectations:

1. Appropriate dress
   a. NO crocs, flip flops or open toed shoes of any kind. Steel or composite safety toed boots with slip resistant soles and puncture resistance required for Lab. Metal chips in your shoes will injure you and stepping on chips with regular shoes could cause a punctured foot injury.
   b. NO shorts. Injury to exposed leg skin can occur. NO Sweat pants or joggers. Hot chips can melt through these clothes. Denim jeans preferred with NO holes or tears. No open midriff shirts, low v neck or open sided shirts. Chips down the front of your pants/waist can injure you. NO baggy clothing. Baggy or loose clothing can get caught in rotating equipment.
   c. Long hair must be restrained on the shop floor. Hats are absolutely allowed and even recommended to keep hot metal chips from melting to hair or help restrain long hair.
2. NO horseplay
   a. Machining technology requires your undivided attention.
   b. You could get yourself or someone else injured or killed.
3. Safety glasses will be provided
   a. When any equipment in the shop is in operation, safety glasses are required.
   b. If wearing prescription glasses, over safety glasses are required. Safety prescription glasses must have side/peripheral protection.
4. Students CANNOT be under the influence.
   a. If you are taking any medication that may cause disorientation, dizziness, or drowsiness or impairing of reaction time/attention level at any level, inform professor immediately.