

MACHINE TECHNOLOGY PACING GUIDE

SEPTEMBER

Mach Tech I

Introduction to the Class
 Student information paperwork
 TNCC Dual Enrollment paperwork
 TNCC College Placement Testing
 NHREC and TNCC Shop Tours
Shop Safety Orientation
Machine Shop Housekeeping
Introductory Vocabulary
Fractions to Decimals / Decimals to Fractions
Simple Bench work with hand tools

Mach Tech II

Metallurgy Remediation
Basic Individual Conventional Projects

NOVEMBER

NASA Machine Shop Field Trip
Pumping Engine Project

Mach Tech I

Basic Interview Skills
Introduction to the Conventional Lathe
4 Jaw Chuck Skills
 Live Center Project
Turning Between Centers
Knurling on the Lathe
Introduction to the Conventional Mill
 Tramming in the Table and Head
 Squaring Stock
 Simple Work holding

Mach Tech II

2 1/2 D Milling
Advance Speeds and Feeds
First CNC Project
 Hand Writing G&M Codes

OCTOBER

Mach Tech I

Short-Term Career Goals (2 year Plan)
Basic Resume Writing Skills
Personal Finance - Savings, Checking, and Credit
Measuring Tools
Introduction to Quality Assurance (QA)
Basic Shop Math
Basic Geometry
Basic Layouts
Introduction to the Drill press
Introduction to the Band saw

Mach Tech II

CNC History
Introduction to CNC Mills
Simple CNC Coordinate Concepts
Simple G&M Coding

DECEMBER

Allied Aerospace Field Trip
Santa's Helpers Community Service
Pumping Engine Project

Mach Tech I

Basic Blueprint Reading
 Understanding Orthographic Drawings
 Sketching Orthographic and Isometric Drawings
Basic Process Planning
Basic Decision Making
Introduction to Machining Statistics
Hammer Handle Project

Mach Tech II

Advanced Blueprint Reading
 Understanding GD&T
 Form and Fit
Introduction to Computer Aided Manufacturing (CAM)
Second CNC Project
 CAM Based Parts

MACHINE TECHNOLOGY PACING GUIDE

JANUARY

Core Six Field Trip (?)

Pumping Engine Project

Mach Tech I

Introduction to Metallurgy

Heat Treating with Torch

Rockwell Testing

Tool Selection Based on Metallurgy

Introduction to Speeds and Feeds

Introduction to Cutting Fluids

Basic Trigonometry

Hammer Head Project

Sine Bar Tactics

Mach Tech II

Introduction to the CNC Lathe

Third CNC Project

Boring and Outside Turning

Introduction to Computer Aided Drafting (CAD)

MARCH

Modern Machine Field Trip

SkillsUSA State Championships

NOCTI Exam

Mach Tech I

Working as part of a Team

Cooperative Machining and Manufacturing

Response to Engineering Changes

Correcting QA Failures

Advanced Precision Tolerances

Gears, Splines, and Cams

Dividing Head Tactics

Introduction to the Horizontal Mill

Mach Tech II

Intermediate Lathe Tactics

Outside Threading

Inside Threading

Advanced Precision Tactics

Introduction to the 4th Axis

Creating Crankshafts and Cams

FEBRUARY

Howmet Field Trip (?)

SkillsUSA District Championships

Internal Combustion Engine Project

Mach Tech I

Introduction to Student Organization - SkillsUSA

Brazing and Welding

Introduction to Tool Grinding

Intermediate Lathe Tactics

Intermediate Mill Tactics

Outside Cylinder Project

Power Tapping

Mach Tech II

Intermediate Mill Tactics

Importing CAD files to CAM

Fourth CNC Project

Working in 3D

APRIL

Liebherr Field Trip

Internal Combustion Engine Project

Mach Tech I

Precision Boring on the Lathe

Intermediate Job Planning

Complex shapes on the Lathe

Work holding Complicated Parts

Advanced Projects

High Precision V Blocks - Reamed and Tapped

High Precision Angle Block - Slotted and Tapped

Surface grinding on the Lathe

Mach Tech II

Creating small parts

Carburetor Jets

Intake and Exhaust Valves

Heat Treating Small Parts

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MAY

Advanced Technology Inc. Field Trip
Internal Combustion Engine Project

Mach Tech I

Introduction to Millwright
Machine Shop Maintenance
Working With Exotic Materials
 Vacuum forming plastics
 Making and Using Molds
 Introduction to Composite Materials

Mach Tech II

Introduction to Water Jet
Introduction to EDM
Introduction to Rapid Prototyping
CNC Lab Maintenance

JUNE

SkillsUSA National Championships

Mach Tech I

Machine Shop Maintenance

Mach Tech II

CNC Lab Maintenance