EXAM I REVIEW TOPICS

Manufacturing Characteristics

- Processes
  - Four Major Process Categories
- Cost
  - Manufacturing Cost Breakdown
  - Value-Added Concept
  - Value-Added Time in Manufacturing

Tooling Design

- Economic Justification of Tooling ***– Modified Formula***
- Workholding
  - Purposes – 3 purposes of workholding devices
    - Fixture purpose
    - Jig Purpose
  - Fixturing – 5 principles
  - Positioning (3-2-1)
    - Prismatic
    - Rotationally Symmetric
  - Locating Principles & Error Proofing (Poke Yoke)
  - Clamping & Supporting
  - Setup & Fixturing Reduction
    - Multipurpose / Special Purpose / Modular

Machining

- Primary Machining Parameters
- Machining Operations & Parameters
- Roughing & Finishing Cuts
- Machining Calculations
  - Turning
    - ***Use SDSM&T model for MRR!***
  - Milling
  - Drilling
- Process Planning
  - Power and Energy Relationships
  - Unit Power
  - Specific Energy
- Routing Sheets
- Make or Buy Decision

Group Technology (Parts Classification & Coding)

- Benefits of Group Technology
- Types of GT Codes (Monocode, Polycode, Hybrid)
  - Vuosa – Prahe
  - Opitz

NC Part Programming

- Benefits
- Common NC Codes
  - G00
  - G01
  - G02
  - G03
  - G28* (for OUR lathe & mill)
  - ***G40***
  - ***G41***
  - ***G42***
  - G90
  - G91
  - M02
  - M03
  - M05
  - M06
  - M13
  - M30
- Circular Interpolation Axes (Milling, only for exam)
  - I, J, K axes
- Finding the center point of the cutter from code

APT Part Programming

- Benefits (vs NC)
- Drive, Part, Check Surfaces
- Geometry Statements
- Post-Processor Statements
- Auxiliary Statements
- Motion Statements
  - FROM/
  - GO/TO
  - GOTO/
  - GOUP/
  - GODOWN/
  - GOFWD/
  - GOBACK/
  - GOLFT/
  - GORGT/
- Motion Modifiers
  - TO
  - ON
  - PAST
- Finding the center point of the cutter from statements