OFFICE OF CONSULTATION & TRAINING
College of Engineering and Petroleum

Kuwait University- College of Engineering & Petroleum - Mechanical Engineering- OCT

ME001- Subtractive Manufacturing for Oil & Gas Innovation (Long Course)

Contact

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Course objectives

This hands-on course provides comprehensive training on subtractive manufacturing technologies for prototyping and precision part production. Participants will learn CAD/CAM workflows and gain practical experience with water jet cutting, laser cutting, and CNC milling operations.

Training course duration:

Five days

Timing:

8 a.m. - 2 p.m. Daily

Course outline :

Day one topics:

CAD Foundations & 2D Profile Design

- Overview of subtractive manufacturing processes and applications
- CAD strategies for 2D cutting vs 3D machining
- Design for manufacturing principles and material considerations
- Nesting optimization and material utilization
- Hands-on: Create multi-process designs requiring various cutting methods

Day two topics:

Water Jet Cutting Systems

- Water jet cutting principles, abrasive selection, and pierce dynamics
- Plasma cutting fundamentals and gas selection criteria

- Material compatibility and thickness limitations
- Kerf compensation and edge quality optimization
- Hands-on: Cut metal brackets using both water jet and plasma systems

Day three topics:

CO2 Laser Processing

- Laser cutting physics and power density calculations
- Material interactions: cutting, engraving, and marking parameters
- Ventilation requirements and safety protocols
- Advanced techniques for living hinges and press-fit assemblies
- Hands-on: Create an interlocking assembly.

Day Four/Five topics:

CAM and CNC Milling Fundamentals

- Introduction to desktop mill setup and operation
- Tool selection, speeds, feeds, and chip load calculations
- CAM software workflow from model to G-code
- Work holding strategies and fixture design
- Hands-on: Machine a precision component with multiple features

Fees:

KD 4,000

Instructor(s):

Dr. Ali AlSaibie
Mechanical Engineer, College of Engineering & Petroleum, Kuwait University

Dr. Abdulaziz Alawadhi
Mechanical Engineer, College of Engineering & Petroleum, Kuwait University

Eng. Saleh Aljemaz
Mechatronics Engineer, College of Engineering & Petroleum, Kuwait University