AMMET-BAS
PROGRAM

Empowering Manufacturing Employees
with Cutting-Edge Skills

Our Advanced Manufacturing and Materials Engineering Technology (AMMET-BAS) program at Edmonds College offers working professionals a bachelor's degree focused on advanced manufacturing and management skills. Through hands-on, project-based learning with flexible scheduling (weekday evenings, Saturday mornings, and one online session), the program provides industry-relevant training specifically designed to boost aerospace innovation. A key feature is the capstone project, where students design, build, and test hybrid structures (carbon fiber, aluminum, titanium). This project can be customized to address an employer's specific needs, with industry experts providing valuable feedback on component or workflow optimization.

EMPLOYEES WILL LEARN KEY SKILLS LIKE

- Project planning and execution
- Process optimization and quality control
- Composite structures design and manufacturing
- Manufacturing tooling development
- CNC programming and automation
- Materials characterization and analysis

SOFTWARE TOOLS

- **Python, NumPy, Minitab:** Data analysis
- **Creo Parametric:** Advanced 3D design
- **ANSYS:** Finite element analysis for composites
- **Granta Selector, Odoo:** Material & ERP solutions
- **AnyLogic:** Process simulation for production optimization

LEARNING OBJECTIVES

- Design and optimize manufacturing systems
- Develop functional products and tooling
- Apply Lean, Six Sigma, and safety standards
- Research novel materials and write formal papers
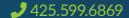- Master mathematical modeling and mechanics of materials

EARN CERTIFICATIONS LIKE

- Lean Six Sigma Green Belt
- PMI-Aligned Project Management
- OSHA 10-Hour General Industry
- CNC Milling Machining

For more information,
contact the program director, Pablo Pedrosa Diaz.

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EDMONDS
COLLEGE

AMMET Courses: Core Training Area

AMMET-302: Calculus & Advanced Math

- Master calculus, algebra, and differential equations
- Use Python, SageMath, and NumPy for analysis
- Solve real-world fluid dynamics problems
- Document work with LaTeX for professional reports

AMMET-318: Statics & Mechanics

- Analyze material behavior under loads
- Apply failure criteria (e.g., Von Mises)
- Use ANSYS for structural simulations
- Select materials with Granta Selector

AMMET-350: Manufacturing Methods

- Integrate additive and subtractive techniques
- Program CNC machines for precision parts
- Explore welding, bonding, and surface treatments
- Manufacture a complex assembly project

AMMET-351: Manufacturing Systems

- Design production facilities with AnyLogic
- Optimize operations using Odoo ERP
- Plan projects with PMI methodologies
- Propose a multi-material production facility

AMMET-383: Materials Characterization

- Evaluate metals, composites, and polymers
- Use microscopy, hardness, and thermal testing
- Follow ASTM/ISO standards for accuracy
- Analyze material properties with SEM/TEM

AMMET-400: Product Design & Tooling

- Design with Creo Parametric (Top-Down)
- Validate designs using ANSYS FEM
- Integrate standard components (e.g., bearings)
- Create a functional mechanism project

AMMET-426: Lean Manufacturing

- Apply Lean principles (e.g., 5S, kaizen)
- Earn Lean Six Sigma Green Belt certification
- Optimize production with data metrics
- Compete in a facility improvement project

AMMET-427: Quality & Improvement

- Implement Six Sigma with Minitab analysis
- Earn Green Belt certification
- Use control charts and DOE for quality
- Solve ambiguous real-world scenarios

AMMET-429: Safety in Manufacturing

- Earn OSHA 10-hour certification
- Conduct job hazard analyses (JHA)
- Identify OSHA violations in facilities
- Propose safety solutions via team project

AMMET-440: Advanced Materials

- Research biomaterials, nanomaterials, etc.
- Use Web of Science for literature review
- Write formal research papers in LaTeX
- Explore laser processing and additive methods

AMMET-454: Capstone Design

- Design hybrid structures with Creo
- Perform ANSYS FEM analysis
- Plan manufacturing with jigs and BOM
- Present to industry experts (e.g., Boeing)

AMMET-455: Capstone Manufacturing

- Fabricate components (CNC, autoclave)
- Assemble and test hybrid structures
- Validate via environmental testing
- Deliver a professional poster presentation