

MANUFACTURING ENGINEERING TECHNOLOGY (IMT)

IMT 200 - Co-Op Assignment (0.0 hours)

Core Curriculum: EL

Full-time cooperative education assignment for manufacturing engineering technology students who alternate periods of full-time school with periods of full-time academic or career-related work in industry. Satisfactory/Unsatisfactory.

Prerequisite: Sophomore standing in the College of Engineering and Technology, 2.0 overall grade point average at Bradley, approval of engineering and technology Co-op coordinator and Co-op faculty advisor.

IMT 212 - Technical Calculus I (3.0 hours)

Core Curriculum: QR

Differentiation and integration of algebraic functions; applications to technology.

Prerequisite: Minimum grade of C in MTH 109 or 112 or a score of at least 61 in the mathematics placement exam

IMT 214 - Technical Calculus II (3.0 hours)

Core Curriculum: QR

Solution of first and second order differential equations; fourier series; polar coordinates; calculus of functions of two variables.

Prerequisite: Minimum grade of C in IMT 212.

IMT 222 - Statics (3.0 hours)

Force systems in two and three dimensions: equilibrium; structures; distributed force; moments of inertia, friction, and work.

Prerequisite: IMT 212 or MTH 115, or equivalents.

IMT 322 - Dynamics (3.0 hours)

Study of particle and rigid body motion using principles of force-mass-acceleration, work-energy, and momentum.

Prerequisite: IMT 222, IMT 214.

IMT 324 - Strength of Materials (4.0 hours)

Stresses, strains, shearing, bending moments, design of beams for strength and deflection. Combined stresses and strains, torsion, columns, and axial loaded members.

Prerequisite: IMT 222 or equivalent.

IMT 332 - Non-Metallic Materials (3.0 hours)

Properties, manufacturing techniques, and applications of nonmetallic materials including plastics, ceramics, composites, and electronic materials. Emphasizes design and processing considerations for quality products. Lecture and Lab.

Prerequisite: IMT 232.

IMT 342 - Advanced Manufacturing Processes I (3.0 hours)

Traditional forging, rolling, extrusion, and sheet forming processes; processing limits. Applications of machining processes. Analysis of tool forces, heat generation, deflection, operation parameters, and resultant surface qualities and integrity. Processing economics and optimization. Lecture and Lab.

Prerequisite: IMT 232, IMT 262, IMT 324, and IME 341.

IMT 344 - Advanced Manufacturing Processes II (3.0 hours)

Principles of metal casting and nonmetallic molding processes, powder metal processes, traditional metal joining processes, fabrication, and assembly. Tooling and equipment required, manufacturing parameters, tolerances, and economics of these operations. Lecture and Lab.

Prerequisite: IMT 232, IMT 262, IMT 324, and IME 341.

IMT 346 - Electricity & Automation (3.0 hours)

Introduction to Computer Aided Manufacturing & Automation including: single- and three-phase power systems and transformers, programmable logic controllers, sensors and transducers, DC and AC Motors and control. Overview of industrial robots, systems, concepts, end effectors, computer control, specifications, justifications, and programming. Lecture and Lab.

Prerequisite: IME 110, PHY 107

IMT 362 - Metrology and Instrumentation (3.0 hours)

Precision measurement and its relationship to Geometric dimensioning and tolerances (GD&T) and calibrations. Conduct Measurement Systems Analysis (MSA) for appropriate process measures. Statistical process control and quality assurance using automated gauges. Use of machine vision, Coordinate Measurement Machine, Robotic measurement arm, non-contact measuring systems.

Prerequisite: IME 341

Corequisite: IMT 262 or IME 302 or equivalent

IMT 366 - Manufacturing Facilities Design (3.0 hours)

Principles and practices in designing, evaluating, and organizing existing facilities or creating new facilities. Emphasis on AutoCAD/Factory CAD-based new facility design project - product design, production flow analysis, activity relationship analysis, layout deployment, materials handling, office and other service requirement design, and the necessary cost analysis for the new facility.

Prerequisite: IME 383 or IME 386, and IME 341

IMT 392 - Mechanical Component Design I (3.0 hours)

Application of design principles covering: stress analysis, deflection, failure theories, fatigue, gears. Manufacturability and the use of references and manufacturers' data.

Prerequisite: IMT 232, IMT 262, IMT 324.

IMT 394 - Dynamics of Machines (3.0 hours)

Velocities, accelerations, and forces in existing mechanisms. Design and analysis of linkages, cams, rolling contact, and drive trains.

Prerequisite: IMT 322.

IMT 409 - Selected Manufacturing Projects (1.0-4.0 hours)

Individual or small team projects. May be of an experimental, analytical, or creative nature. May be repeated for a maximum of 6 hours credit.

IMT 410 - Selected Manufacturing Topics (1.0-4.0 hours)

Topics of special interest which may vary each time course is offered. Topic is stated in current Schedule of Classes. May be repeated for a maximum of 6 hours credit.

IMT 446 - Computer Aided Manufacturing and Automation (3.0 hours)

Computer assisted process planning and estimating. Concepts of computer control and feedback mechanisms. Design considerations for machine tools, machining cells, robotics, and flexible manufacturing systems. Lecture and Lab.

Prerequisite: IMT 346, or consent of instructor

IMT 448 - Tooling Systems (3.0 hours)

Analysis, design, and layout of manufacturing tooling, including jigs and fixtures, gauging devices, and dies. Analysis of tooling for varying production volume, lead time, process capability, and cost. Laboratory in tooling and layout simulation.

Prerequisite: IME 395, IMT 346; IMT 342 or IMT 344.

IMT 498 - Senior Industrial Project (4.0 hours)

Core Curriculum: EL,WI

Application of engineering technology principles to solve a real-world problem. Student works as a member of team assigned to a problem in a manufacturing or processing organization. Requires a professional written and oral report. Cross-listed with IME 499

Prerequisite: 30 hours of IMET Department courses with a minimum 2.25 GPA; COM 103; consent of course coordinator.