

# BUSINESS AND TECHNOLOGY (BI)

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**BI100: Introduction to the Workplace and Safety**

This course provides essential safety instructions, covering Occupational Safety and Health Administration (OSHA) requirements and other critical concerns. You will gain practical workplace safety, record-keeping, and compliance knowledge. Key topics include Material Safety Data Sheets (MSDS), general OSHA requirements, and critical safety concepts.

Quarter Credit Hours: 5 | Prerequisite: None

**BI101: Foundations of Industrial and Manufacturing Work**

This course prepares learners to understand and apply foundational concepts in fluid (hydraulic) and air (pneumatic) powered systems, industrial electronics, digital automation controls (PLC and CNC programming), and lean concepts. This course introduces you to learning in a virtual environment by putting an emphasis on study, communication, and thinking skills that support academic success.

Quarter Credit Hours: 2 | Prerequisite: None

**BI150: Introduction to Plant Floor and Computer Numerical Control (CNC) Principles**

Explore the fundamental concepts of manufacturing operations and plant floor layout in the production environment. This course provides a solid foundation for machining processes, focusing on Computer Numerical Control (CNC) applications for milling, lathe, and turning operations.

Quarter Credit Hours: 5 | Prerequisite: None

**BI200: Introduction to Print Reading**

This course equips you with the skills to interpret machine shop symbols, machining blueprints, and working drawings commonly used in trades and crafts. Focusing on dimension, shape, fabrication, and assembly, the course also integrates basic mathematics for effective print interpretation.

Quarter Credit Hours: 5 | Prerequisite: None

**BI210: Fundamentals of Hydraulics and Pneumatics**

This course delves into the fundamentals of fluid power, offering hands-on learning about hydraulic and pneumatic systems. You will explore system components, design, safety, maintenance, and troubleshooting techniques.

Quarter Credit Hours: 5 | Prerequisite: None

**BI211: Introduction to Industrial Electronics**

This course provides a foundational understanding of industrial electronics, from the basics of electricity to the intricacies of power systems and motor controls. Topics covered include electricity fundamentals, resistors and Ohm's Law, circuit analysis, power systems, electric motors, and electrical safety.

Quarter Credit Hours: 5 | Prerequisite: None

**BI212: Programmable Logic Controllers (PLC) and Computer Numerical Control (CNC) in Industrial Manufacturing**

This course provides an in-depth look at the role of Programmable Logic Controllers (PLC) and Computer Numerical Control (CNC) in modern industrial manufacturing. Topics covered include manufacturing processes, automation fundamentals, PLC and CNC concepts and components, basic programming and logic, and CNC programming.

Quarter Credit Hours: 5 | Prerequisite: BI211

**BI250: Manufacturing Automation**

Explore the world of manufacturing automation in this course. From the historical context of robotics to practical safety measures, you will gain essential knowledge for a career in automation. Topics include robot safety, coordinate systems, end effectors, factory automation, and the role of Programmable Logic Controller (PLC) systems.

Quarter Credit Hours: 5 | Prerequisite: None

**BI260: Production Machine Tooling**

Explore the essential concepts of production machine tooling setup and adjustments in this course. You will delve into tooling used for both milling and turning processes, with a focus on understanding American National Standards Institute (ANSI) standards. The course covers key topics such as tool geometries, drill and tap requirements, major milling cutter components, turning tools for boring holes, and safety considerations. By the end of the course, you will be well-equipped to apply these principles in practical machining scenarios.

Quarter Credit Hours: 5 | Prerequisite: None

**BI270: Computer-Aided Design Fundamentals**

Explore the foundational principles of computer-aided design (CAD) in this fundamental course. Through hands-on experience with CAD software, you will gain practical skills and knowledge essential for working with two-dimensional (2D) drawings. The course covers CAD components, file management, input methods, basic drawing creation, and adherence to drafting standards.

Quarter Credit Hours: 5 | Prerequisite: None

**BI400: Industry 4.0 Principles and Technologies**

This course provides a comprehensive understanding of Industry 4.0, including its principles, technologies, and challenges. You will delve into the convergence of physical and digital systems, exploring how cyber-physical systems, the Internet of Things (IoT), cloud computing, big data analytics, artificial intelligence (AI), machine learning (ML), smart manufacturing, and digital transformation are reshaping modern industries.

Quarter Credit Hours: 6 | Prerequisite: None

**BI497: Undergraduate Business and Technology Internship I**

This course provides you with an opportunity to gain hands-on experience in your chosen undergraduate field of business, accounting, or technology through an immersive internship at an approved organization. The course aims to bridge academic learning with real-world application, allowing you to apply theoretical knowledge and develop practical skills in a professional setting. This experience will improve your skills and understanding of the expertise needed for career success.

Quarter Credit Hours: 3 | Prerequisite: Completion of core courses in field of study or permission from the Dean of the School of Business and Information Technology

**BI498: Undergraduate Business and Technology Internship II**

This course provides you with an opportunity to gain hands-on experience in your chosen undergraduate field of business, accounting, or technology through an immersive internship at an approved organization. The course aims to bridge academic learning with real-world application, allowing you to apply theoretical knowledge and develop practical skills in a professional setting. This experience will improve your skills and understanding of the expertise needed for career success.

Quarter Credit Hours: 3 | Prerequisite: BI497

**BI499: Bachelor's Capstone in Applied Manufacturing**

The Bachelor's Capstone in Applied Manufacturing is designed to demonstrate your foundation in manufacturing technology principles, lean manufacturing, supply chain management, quality control, and advanced technologies, including robotics, artificial intelligence, and the Internet of Things.

Quarter Credit Hours: 6 | Prerequisite: Last term or permission from the Program Chair