

# INDUSTRIAL ENGINEERING TECH (623)

Information provided includes course descriptions by subject only. For complete 2024-2025 programs/academic plans, please refer to Academic Programs (<http://catalog.blackhawk.edu/academics/>).

## 623-121 Engineering Drawing and Measurement

**Credits:** 1-3

This self-paced course provides the foundation skills needed to interpret industrial blueprints and perform basic metrological measurements. Orthographic projection, pictorial drawings, sections, auxiliary views, dimensions and tolerances, title blocks, revisions, basic GD&T symbols, and similar topics are covered. Students will also examine measurement concepts as they apply to the manufacturing environment, and perform hands-on activities using precision measuring tools.

**Aid Code:** 10 - undefined.

[Complete Course Listing](#)

## 623-122 Ergonomics and Workplace Safety

**Credits:** 1-2

The health and safety of employees within Industrial and Manufacturing facilities has been a major concern for industry across the country. How the physical tasks within a job duty are performed can impact the health of an employee. The setup of a manufacturing line, the process of material handling or the procedures to follow when working within a facility must be considered for safety and health. In Ergonomics and Workplace Safety you will identify factors that can lead to musculoskeletal disorders (MSDs), analyze and suggest improvements to job hazards on an employee's workstation, look at costs and benefits of ergonomic improvements and investigate accident reports for causes and problems related to work safety.

**Aid Code:** 10 - undefined.

[Complete Course Listing](#)

## 623-123 Quality Improvement

**Credits:** 1-3

This course investigates how to improve process and product quality through the design of experiments to find the adverse factors within a process and correct them. Students will also learn about the 7 basic quality tools, 8D problem solving and failure mode effect analysis (FMEA).

**Aid Code:** 10 - undefined.

**Co-requisites:** (623-169)

[Complete Course Listing](#)

## 623-147 Manufacturing System Design

**Credits:** 1-3

In this course students will learn and experiment with different designs of manufacturing systems. Simulation tools will be used to analyse the performance of these different systems and improve their efficiency.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (606-176)

[Complete Course Listing](#)

## 623-155 Statistical Process Control (SPC)

**Credits:** 1-3

This course offers an in-depth exploration of the principles and applications of statistical process control. Specific subject areas covered include background, basic principles, variation, histograms, probability, variable and attribute control charts, and machine and process capability. Lectures will be supplemented with in-class exercises designed to make the concepts and their application more easily understandable. These individual and group activities will be drawn from the student workbooks and from additional materials to be distributed by the instructor.

**Aid Code:** 10 - undefined.

[Complete Course Listing](#)

## 623-160 Manufacturing Materials and Processes

**Credits:** 1-3

A study is made of the various materials used in industry today and how those materials can be altered or worked to create a specific product. Various areas such as forming, casting, forging and machining are discussed.

**Aid Code:** 10 - undefined.

[Complete Course Listing](#)

## 623-165 Facilities Planning

**Credits:** 1-3

This course covers the essential elements of plant layout and materials handling. Flow patterns, material handling requirements, equipment, and storage and retrieval methods are explored. The many factors affecting an efficient facility layout are examined, as are the decision-making tools for dealing with them. The course concludes with a group project, in which learners design an actual facility to satisfy given criteria. Each group will then present its design to the rest of the class for analysis and discussion.

**Aid Code:** 10 - undefined.

[Complete Course Listing](#)

## 623-166 Industry and Quality Control

**Credits:** 1-3

This self-paced course is an overview of quality issues in the modern industrial environment. Topics include basic quality concepts, sampling and inspection, fundamentals of measurement, statistical tools, quality policies and costs, improvement projects, and comparisons of popular quality philosophies.

**Aid Code:** 10 - undefined.

[Complete Course Listing](#)

### **623-169 Lean Manufacturing Systems**

**Credits:** 1-3

In this course, learners will examine the lean tools available to identify and eliminate wastes from a process. Learners will examine the benefits and challenges of conducting a 5S implementation strategy, A3 Storyboard strategy, and root cause analysis. Learners will utilize process mapping to evaluate and develop plans to reduce and/or eliminate waste and evaluate the various approaches to continuous improvement.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (623-622)

[Complete Course Listing](#)

### **623-170 Industrial Organization and Structure**

**Credits:** 1-3

This course examines the structure of the modern manufacturing organization, and provides an overview of the interrelationship between the various functional departments and their activities. Historical background, management philosophy, planning and control requirements, labor, and human aspects of the organization are discussed.

**Aid Code:** 10 - undefined.

[Complete Course Listing](#)

### **623-180 Manufacturing Engineering Technology Capstone**

**Credits:** 1-3

In this course students will demonstrate the use of all the skills they have learned in the program to complete an all-inclusive project.

**Aid Code:** 10 - undefined.

**Pre-requisites:** (623-169)

**Co-requisites:** (664-189 or 623-123 or 606-152)

[Complete Course Listing](#)

### **623-192 Process Planning**

**Credits:** 1-3

A study is made of the principles, practices, and techniques of process planning. Using the part drawing, the student learns through systematic analysis to select the most practical and economical processes and to determine the properly sequenced series of operations to transform materials into useful products. The students also select the type of tooling and equipment needed in terms of materials, quantity, tolerances, and surface quality requirements.

**Aid Code:** 10 - undefined.

**Pre-requisites:** 623-121

[Complete Course Listing](#)

### **623-196 Standards and+C1126 Regulations**

**Credits:** 0.5-1

This self-paced course provides an overview of state and federal standards and regulations governing workplace safety and the environment. Students will learn to recognize hazards and identify applicable regulations. Emphasis is on locating standards in the code of federal regulations (CFR), applying safety and environmental standards in the workplace, and interpreting material safety data sheets (MSDS).

**Aid Code:** 10 - undefined.

[Complete Course Listing](#)

### **623-410 Manufacturing Issues**

**Credits:** 0.1-4

**Aid Code:** 47 - undefined.

[Complete Course Listing](#)

### **623-412 Strength of Materials**

**Credits:** 0.1-2.5

**Aid Code:** 47 - undefined.

[Complete Course Listing](#)

### **623-413 Failure Mode Effects Analysis**

**Credits:** 0.1-4

**Aid Code:** 47 - undefined.

[Complete Course Listing](#)

### **623-414 Quality Function Deployment**

**Credits:** 0.1-4

**Aid Code:** 47 - undefined.

[Complete Course Listing](#)

### **623-415 SPC for R & M**

**Credits:** 0.1-4

**Aid Code:** 47 - undefined.

[Complete Course Listing](#)

### **623-416 Machine Qualification Testing**

**Credits:** 0.1-4

**Aid Code:** 47 - undefined.

[Complete Course Listing](#)

### **623-417 R & M Analysis**

**Credits:** 0.1-4

**Aid Code:** 47 - undefined.

[Complete Course Listing](#)

**623-418 R & M Data Collection****Credits:** 0.1-4**Aid Code:** 47 - undefined.

Complete Course Listing

**623-419 FRACAS****Credits:** 0.1-4**Aid Code:** 47 - undefined.

Complete Course Listing

**623-420 Life Cycle Costing****Credits:** 0.1-4**Aid Code:** 47 - undefined.

Complete Course Listing

**623-421 R & M Control Plans****Credits:** 0.1-4**Aid Code:** 47 - undefined.

Complete Course Listing

**623-422 Mach Oper & Diagnostics-QC****Credits:** 0.1-4**Aid Code:** 47 - undefined.

Complete Course Listing

**623-423 Design of Experiments****Credits:** 0.1-4**Aid Code:** 47 - undefined.

Complete Course Listing

**623-424 Basics of Supply Chain Mgt****Credits:** 0.1-2.4**Aid Code:** 47 - undefined.

Complete Course Listing

**623-425 Visual Workplace-5 S's****Credits:** 0.1-2.4**Aid Code:** 47 - undefined.

Complete Course Listing

**623-426 Master Planning of Resources****Credits:** 0.1-2.4**Aid Code:** 47 - undefined.

Complete Course Listing

**623-465 Manufacturing Engineering Technology Internship****Credits:** 0.5-1

In this course students will demonstrate the use of all the skills they have learned in the program to complete an internship at a local business, or complete the internship at the college.

**Aid Code:** 10 - undefined.**Pre-requisites:** (623-622)

Complete Course Listing

**623-482 Estimating-Engineering****Credits:** 0.05-0.65**Aid Code:** 47 - undefined.

Complete Course Listing

**623-622 Lean Manufacturing****Credits:** 0.5-1

This course introduces students to basic Lean Manufacturing principles with an emphasis on quality control of maintenance operations. Students identify eight types of waste in manufacturing, perform a 5S process, and utilize Total Productive Maintenance (TPM) methodologies to monitor and improve overall equipment effectiveness (OEE).

**Aid Code:** 10 - undefined.

Complete Course Listing

**623-814 Reliability Engineering****Credits:** 1-3

In this course reliability and availability modeling and analysis methods are used to perform cost-effectiveness analysis during development of manufacturing systems, processes, and products. Preventative maintenance is also explored.

**Aid Code:** 10 - undefined.**Co-requisites:** (623-169)

Complete Course Listing