

# ISE 403/503 – Material Handling Systems

Winter 2004

*Course:* ISE 403/503 – Material Handling Systems - 4 credit hours

03637/03653

***Catalog description:***

Provides a broad understanding of materials handling engineering from a system design and application engineering point of view. Instruction in the engineering principles, design criteria, operating parameters, performance requirements, equipment resources, and applications of engineering practices involved in the planning, design, and operation of materials handling systems for manufacturing, physical distribution, and government operations. A materials handling system design project is a required part of the course.

*Sessions:* Tu-Th 10:10-12:00, 107 Stocker

*Instructor:* Dale Masel *masel@ohio.edu*

273 Stocker Center, 593-1541

*Office hours:* MW – 9:00-10:00, T – 1:00-3:00

***Textbooks:***

Required: World-Class Warehousing and Material Handling, Edward H. Frazelle (2002)

Optional: The Essentials of Material Handling - Introductory Concepts (1996) published by Material Handling Institute

***Course objectives:***

This course will cover the different classifications of material handling equipment. Within each of these classifications, we will discuss the alternate types of equipment available and what situations are appropriate for applying the different variations. We will also discuss how to analyze the performance of equipment so that you can select the correct option for a given situation.

A special emphasis will be on the application of material handling equipment in a warehouse environment. Distribution activities are becoming a focus for many industrial engineers and the ability to apply and evaluate material handling equipment is an essential part of evaluating and managing a storage facility. In addition to traditional warehouse operations, emerging distribution systems such as cross-docking and small order fulfillment will be discussed.

A group project is also required for this course. The project will involve the design of a material handling system for a manufacturing facility. To complete the project, each group will need to select equipment, lay out the facility, and describe the operations.

***Grading policy:***

Assignments:

• Homework assignments (≈1 per week).....	25%
• Group project.....	20%
• One midterm in class—closed book (Tuesday, February 10).....	25%
• Final exam—closed-book (Thursday, March 18 at 8:00 am).....	30%
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	100%

Grading Scale:

A	90-100%	D	60-69.5%
B	80-89.5%	F	0-59.5%
C	70-79.5%		

Graduate students in this course will be graded based on the same percentages, but they will be responsible for additional homework problems and additional questions on the exams.

**Attendance policy:**

Attendance will not be taken for lecture classes, but students are expected to be present for all class periods and are responsible for all material covered in class.

**Academic misconduct:**

Cheating will not be tolerated. If you copy from another person, plagiarize, turn in someone else's work as your own, or otherwise fail to maintain a high standard of academic honesty, you will receive a 0 on the assignment and the case will be referred to the university judiciary office.

**Tentative schedule:**

<b>Week</b>	<b>Date</b>	<b>Topic(s)</b>
1	Jan. 6	Introduction to material handling classifications and concepts
	Jan. 8	Pallets, containers, and packaging – Introduction
2	Jan. 13	Conveyors – Introduction
	Jan. 15	Conveyors – Analysis
3	Jan. 20	Vehicles (AGVs, forklifts, and hand trucks) – Introduction
	Jan. 22	Vehicle systems – Analysis
4	Jan. 27	Overhead systems (cranes and hoists) – Introduction
	Jan. 29	Storage Equipment – Introduction
5	Feb. 3	Storage Equipment – Analysis <b>PROJECT ASSIGNED</b>
	Feb. 5	Warehouse Operations – Introduction
6	Feb. 10	<b>MIDTERM</b>
	Feb. 12	Warehouse Management – Data Analysis
7	Feb. 17	Warehouse Management – Storage
	Feb. 19	Warehouse Management – Order Picking
8	Feb. 24	Warehouse Management – Other Issues
	Feb. 26	TBA
9	Mar. 3	Robots and Automation
	Mar. 5	Automatic Identification
10	Mar. 10	Review <b>PROJECT DUE</b>
	Mar. 12	<b>PROJECT PRESENTATIONS</b>