

**Southern Illinois University Carbondale**  
**Department of Technology**  
**IT 465**  
**Lean Manufacturing**  
**Fall 2011**



**Catalog Description:**

465-3 Lean Manufacturing. This course will cover the principles and techniques of lean manufacturing. Major topics covered include lean principles, 5S, value stream mapping, total productive maintenance, manufacturing/office cells, setup reduction/quick changeover, pull system/Kanbans, continuous improvement/ Kaizen, lean six sigma, lean simulation, and other modern lean manufacturing techniques and issues.

**Course Objectives:**

- Explain the importance of implementing lean manufacturing.
- Describe the five key principles that guide lean thinking.
- Describe the eight general types of waste.
- Describe customer satisfaction and how higher customer satisfaction leads to lower cost.
- Describe 5S and its implementation steps.
- Describe 5 Whys.
- Explain the differences between value-added and non-value-added work.
- Describe VSM and demonstrate how to carryout this process.
- Describe and compute Takt time.
- Describe Poka-Yoke.
- Describe Total Productive Maintenance and its implementation steps.
- Compute Equipment Availability, Equipment Quality Performance, and Equipment Efficiency Performance.
- Describe various maintenance strategies.
- Describe the benefits of manufacturing cells.
- Describe setup reduction and its implementation steps.
- Explain how setup reduction reduces inventory and improves quality.
- Explain the differences between internal setup and external setup.
- Describe inventory kanbans and the implementation steps.
- Explain the kanban systems and how they reduce waste.
- Describe kaizen and its implementation steps.
- Explain the differences between kaikaku and kaizen.
- Describe implementation of lean manufacturing and six sigma.
- Describe lean simulation and its benefits.

**Important Dates/Times:**

Class meets Saturday and Sunday 10/1-2, 10/15-16, and 10/29-30 from 8:00am-4:30pm

Test 1 – 10/2

Test 2 – 10/16

Test 3 – 10/30

**Assessment Methods:**

Grade scale 90/80/70/60

1. 3 Exams (100 points each, all comprehensive)
  2. 3 Homeworks (10 points each)
  3. Lean paper (70 points)
  4. No late work accepted
  5. Class participation (attendance)
- Total Points = 400 points

**Note: College policy on cheating and plagiarism will be adhered to.**

**Topical Outline:**

Chapters Intro,1 through 4	Test 1
Chapters 5 through 7	Test 2
Chapters 8 through 10	Test 3

**Text and Supplies:**

Required:

- Lean Thinking: Banish Waste and Create Wealth in Your Corporation, Revised and Updated, Second Edition, by James P. Womack and Daniel T. Jones, Free Press, 2003. ISBN 0-7432-4927-5
- Implementing World Class Manufacturing (Includes Lean Enterprise), Second Edition, by Larry Rubrich and Madelyn Watson, Wcm Associates, 2004. ISBN 0-9662906-1-5
- The Lean Pocket Guide, by Donald M. Tapping, MCS Media, Inc., 2003. ISBN 0-9725728-0-5
- Scientific calculator (must have average, standard deviation, etc)

Recommended: Microsoft Office or other similar programs

**Class Layout:**

Homework assignment – Q/A – Lecture – Exercise/Exam

**Instructor:**

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**Disclaimer:**

Circumstances may require some changes to this syllabus.