WOLLO UNIVERSITY

Kombolcha Institute of Technology
Department of Garment Engineering

COURSE GUIDE BOOK			
Program	Regular		
A. Basic information		**Instructor Information**	
		Name	Rukiya Nuray (Msc)
Course Title	Lean System Engineering	Office	Engineering Collage Building
Course Code	GrEg3145	Office Consultation Hours	Monday : 2:00-6:00 am Thursday : 2:00- 6:00 am
ECTS	5	Address	E-mail: rukiyanuray@yahoo.com Cell Phone: +251901393427
Contact hour/week	Lecture Hrs: 2 Lab Hrs: 0 Tutorial Hrs: 3 Home Study: 5		
Course Type	Compulsory		
Prerequisite Course Code	None		
Academic Year	2012 E.C/2020G.C		
Semester	6		
Target Group	3rd Year Garment Engineering Students		

Course Description

Lean Manufacturing is about creating value. The Lean process starts with creating value for the ultimate customer which requires providing the right product at the right time for the specified price. While all manufacturing attempts to do this, what makes Lean Manufacturing distinct is the relentless pursuit and elimination of waste. Students will learn the concepts and tools of Lean in Garment/Apparel industry which include **types of waste, visual management, 5S, value stream mapping, JIT, & work flow.**

Course Objectives

At the end of this course, the student will be able to:

- Students will be able to present an argument on why Lean is a superior environment to Mass production.
- Compare and contrast the culture, organizational structure and leadership in Mass and Lean environments.
- List and describe the Types of Waste in Apparel industry and why waste elimination is a core component of Lean Manufacturing.
- List and describe lean functionality (i.e. quality, continuous flow, pull systems, 5S, Visual Control, KANBAN, JIT etc).
- Articulate why the "Rules in Use" were a breakthrough in understanding the Toyota Production System.
- Understand A3 thinking and draw an A3.
- Students will demonstrate the ability to draw a Value Stream Map of an actual Garment manufacturing process.

B. Tentative Schedule of lecture, activities and assignments and Readings

Week	Lecture Topics and Subtopics of each Chapters	Student activities and assignment	Reading Materials
1	**Chapter One** ➢ **The Birth of Lean manufacturing** • Definition of lean system • Craft Production and Mass Production • Ford System and other Developments • Growing Dysfunction and Worker Alienation • Birth of Lean Production • Historic Bargain , A Novel Concept and A Virtue of Necessity		• Lean production simplified pascal dennis third edition • MCW Chap 1 LTS Foreward
2 and 3	**Chapter Two** ➢ **Lean Production System** • Why Lean Production? o New Economics, Systems and Systems Thinking & The "Thinking Way" • Basic Image of Lean Production (Customer Focus)	Individual Assignment 1(20%) & quiz 1 (15%)	• Lean production simplified pascal dennis third edition • MCW Chap 2 LTS Foreward

	• MUDA:- (Motion, Delay, Conveyance. Correction, Over processing, Inventory, Overproduction, Knowledge, A Word of Caution) • MURA and MURI		
4&5	**Chapter Three** ➢ **Stability** • Lean System Standards: Visual Management • 5S System: Sort, Set in Order, Shine (and Inspect), Standardize and Sustain • Total Productive Maintenance: Key Measures, Six Big Losses, Downtime, Speed or Hidden, Losses, Defects • The Machine Loss Pyramid: Small-Group Activity	• Group assignment 1 (20%) • Individual assignment 1 submission	• Lean production simplified pascal dennis third edition MCW Chap 1 LTS Foreward
6&7	**Chapter Four** ➢ **Standardized Work** • Methods Engineering versus Lean Thinking • What Do We Have to Manage? • Why Standardized Work • Elements of Standardized Work • Charts Used to Define Standardized Work • Manpower Reduction • Overall Efficiency versus Individual Efficiency • Standardized Work and Kaizen • Common Layouts	• Group assignment 1 submission	• Lean production simplified pascal dennis third edition • MCW Chap 4 LTS Foreward
8	**MID EXAM**		

9&10	**Chapter Five** ➢ **Just-in-Time Production** • Why JIT? • Basic Principles of JIT • The JIT System • KANBAN • Expanded Role of Conveyance • Production Leveling • Three Types of Pull Systems • Value Stream Mapping		• Lean production simplified pascal dennis third edition • MCW Chap 6 LTS Foreward
11&12	**Chapter Six** ➢ **JIDOKA** • Development of the JIDOKA Concept • Why JIDOKA? • Poka-Yoke • Using Poka-Yokes • Two Types of Action • Three Paths to Poka-Yoke • Poka-Yoke Detection Methods • Implementing JIDOKA	Quiz 2 (15%)	• Lean production simplified pascal dennis third edition • MCW Chap 7 LTS Foreward
13	**Chapter seven** ➢ **The Culture of Lean Production** • What Is Lean Culture? • PDCA • Reflection—Breakfast of Champions • How Does Lean Culture Feel? • Hoshin Planning • What Is Planning? • Why Plan? • Problems with Planning	Seminar (30%) • Documentation (20%) • Presentation (10%)	• Lean production simplified pascal dennis third edition • MCW Chap 9 LTS Foreward

	• Hoshin Planning System • The Four Phases of Hoshin Planning		
14 &15	**Chapter eight** ➢ **Involvement** • Why Involvement? • Terrible Waste of Humanity • Activities Supporting Involvement • Kaizen Circle Activity • Practical Kaizen Training • Suggestion Programs	Seminar presentation	• Lean production simplified pascal dennis third edition • MCW Chap 10 LTS Foreward
15	**FINAL EXAM**		

C. Course Assessment Methods

a. TUTORIAL PART

1. 2 Assignments and 1 Seminar : **70** %
2. Two quiz : **30** %

Total **100%**

b. LECTURE PART

1. Mid exam: **40%**
2. Final - Examination: **60** %

Total **100 %**

Reference

1. Lean production simplified pascal dennis third edition
2. J.P. Womack, D.T. Jones, D. Roos, The Machine that Changed the World, Free Press, 1990 (2007 in paperback). ISBN-13: 978-0-7432-9979-4. The content is the same for both printings.
3. J.K. Liker, The Toyota Way, McGraw Hill, 2004. ISBN 0-007-139231-9
4. M. Rother, J. Shook, Learning to See, Lean Enterprise Institute, 2009.
5. ISBN: 9978-0-9667843-0-5

D. Approved

Rukiya Nuray
Course Manager Signature

Mohammed Alebachew _____
Program Head Signature