

Course outline				
Wollo University, Department of Textile Engineering				
Course Number: TEng3153			Course Title: Woven Fabric Manufacturing II	
Degree Program: B. Sc. in Textile Engineering			Lecturer: ABEBE.L	ECTS Credits: 5
Contact	lecture	tutorial	Laboratory or practice	Home study
Hours/week	4	0	0	6
Course Objectives& Competences to be Acquired	To give broad based knowledge on the technology and operations of automatic and shuttle less weaving machines. The students will have the required knowledge on the interactions of woven fabric production with mechanisms of looms; Limitations of shuttle looms; salient features of different types of weft insertion systems such as projectile, Rapier, water jet, air jet and multiphase weaving			
CHAPTER-ONE				
Automatic shuttle loom:				
✓ Introduction to automatic weaving machines ; ✓ Warp protector motions , ✓ Stop motion ▪ warp stop motion types of warp stop motion - mechanical warp stop motion and electric warp stop motion and ▪ weft stop motion - side weft fork motion and center weft fork motion; ✓ Weft replenishment- weft feelers, ✓ single shuttle automatic bobbin change, ✓ bobbin loaders, loom winders, ✓ looms with multiple box motions, ✓ Types of box motions, ✓ Eccle's drop box motion				
CHAPTER-TWO				
An outline to shuttle less loom:				
✓ Limitation of shuttle loom, ✓ Parameters affecting their productivity, ✓ Methods of shuttle less weft insertion, ✓ Types of selvedge, ✓ Weft accumulator				
CHAPTER-THREE				
Gripper projectile weaving machines:				
✓ Working elements in Sulzer machine, ✓ Torsion bar picking mechanism, ✓ Beat-up mechanism, ✓ Salient features of Sulzer projectile machine, ✓ Weft selection device				
CHAPTER- FOUR				
Rapier weaving machines:				
✓ Classification of rapier weaving machines, ✓ Rapier driving, ✓ Rapier heads,				

- ✓ Salient features of modern rapier machines,
- ✓ Weft selection device

CHAPTER-FIVE

Jet weaving machines

Air-jet weaving machines:

- ✓ Principles of weft insertion of Maxbo-Murata loom,
- ✓ Air requirements,
- ✓ Machine elements and their functions,
- ✓ Salient features of modern Air jet machines

Water-jet machines:

- ✓ Principles of weft insertion of Svaty water jet loom,
- ✓ Machine element and their functions,
- ✓ Salient features of modern water- jet machines

CHAPTER-SIX

Multi-phase weaving and Special weaving machines:

- ✓ Warp way multiphase weaving
- ✓ Weft way multiphase weaving-
 - Flat multiphase,
 - Circular weaving

Special weaving:

- ✓ Terry pile weaving,
- ✓ Double cloth weaving,
- ✓ Pile weaving

Assessment/ Evaluation &Grading System	1. Assignments / Project / Seminar : 20 % 2. Mid-Term Examination: 30 % 3. Final - Examination: 50 % Total 100 %
Attendance Requirements	A minimum of 85 % attendance during lecture sessions
Literature	1. Allan Ormerod and Walter S. Sondhelm, <i>Weaving Technology and Operations</i> , the Textile Institute, 1998. 2. R. Marks and A.T.C. Robinson, <i>Principle of weaving</i> , The Textile Institute, 1986. 3. M.K. Talukdar, P. K. Sriramulu and D.B. Ajgonkar, <i>Weaving machines, Mechanisms and Management</i> , Mahajan Publishers, 1998. 4. P.R. Lord and M.H. Mohamed, <i>Weaving: Conversion of yarn to fabric</i> , Merrow, 1982. 5. A. Wynne, <i>The Motive Series: Textiles</i> , Macmillan, 1997. 6. J.E. Booth, <i>Textile Mathematics</i> , Volume 3, The Textile Institute, Manchester, 1978