

TEng2121: AIR CONDITIONING AND VENTILATION

Department of Textile Engineering Wollo University				
Course Number	TEng2121			
Course Title	Air Conditioning and ventilation			
Degree Program	B. Sc. in Textile Engineering			
Module	12: General Textile Engineering			
Module Coordinator	N.N.			
Lecturer	N.N.			
ECTS Credits	4			
Contact Hours (per week)	Lecture	Tutorial	Laboratory or Practice	Home study
	2	3	0	3
Course Objectives & Competences to be Acquired	This course aims that the students will understand and apply the basic principles of Air conditioning, Humidification and Ventilation as applied to textile industries. The students will be able to develop realistic scenarios from the requirement of illumination in the different sections of textile industries.			
Course Description/ Course Contents	Air-conditioning Physical Properties of air; composition of air, air pressure, air temperature, air humidity, heat contents of air, measurement of humidity. Principles of air conditioning, comfort and industrial air-conditioning. Basic heat transfers and mass transfer, application to textile industry. Refrigeration equipment, primary and secondary refrigerants, Psychometric chart and its use, calculation of requirements, complete calculation of the simple air-conditioning system. Air distribution systems, duct design, distribution equipment.			

	Design of an air conditioning plant for a textile industry. Humidification: Humidity, measurement of humidity, automatic temperature and humidity control; pneumatic, electric and hydraulic systems. Dehumidification. Equipment selection and design, humidifiers, dehumidifiers, fans and diffusers, prevention of noise and vibration, cooling towers. Ventilation Hygienic aspects of ventilation; aims of ventilation, Industrial health hazards (dust, high temperature, high humidity, deleterious gases, and liquids), types of ventilation: general air change ventilation, local ventilation, cleaning air of suspended matter: dry cleaning, wet cleaning. System of air change in textile mill ventilation: upper-level delivery, low-level delivery, active system of delivery, dustless system of delivery, features of air delivery and removal from windowless buildings. Equipment. Ventilating, humidifying and air conditioning installations employed in textile mills processing different Fibers Illumination Introduction, requirement of illumination in the different sections of textile Industry, effect of illumination on working efficiency. Practical: Practical work will be based on the contents of the course.
Pre-requisites	None
Semester	2nd Semester, 2nd year
Status of Course	Compulsory
Teaching & Learning Methods	Lectures and Tutorials supported by assignments
Assessment/	The Lecture and Tutorial parts of the course will each be

Evaluation & Grading System	evaluated separately for 100 % and the final marks will be arrived at by giving weights according to the hours allocated to the Lecture and Tutorial parts. The details are given below : <table><thead><tr><th colspan="2"><u>Lecture Part (Weight 40%)</u></th><th colspan="2"><u>Tutorial Part (Weight 60%)</u></th></tr></thead><tbody><tr><td>Mid-Term Examination:</td><td>40 %</td><td>Assignment (Minimum 3):</td><td>30 %</td></tr><tr><td>Final Examination:</td><td>60 %</td><td>Quiz (Minimum 3):</td><td>30 %</td></tr><tr><td>Total</td><td>100 %</td><td>Project/Seminar:</td><td>40 %</td></tr><tr><td></td><td></td><td>Total</td><td>100%</td></tr></tbody></table>	<u>Lecture Part (Weight 40%)</u>		<u>Tutorial Part (Weight 60%)</u>		Mid-Term Examination:	40 %	Assignment (Minimum 3):	30 %	Final Examination:	60 %	Quiz (Minimum 3):	30 %	Total	100 %	Project/Seminar:	40 %			Total	100%
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Attendance Requirements	A minimum of 85 % attendance during lecture and tutorial sessions																				
Literature	1. Sorokin, N., <i>Ventilation, Air Conditioning and Heating in Textile Mills</i>, Mir Publishers, Moscow, 1967 2. Norman, C. Harris, <i>Modern Air Conditioning Practice</i>, Glenco, New York, 1990 3. Andrew, D., Althouse and Carl H. Turnquist, <i>Modern Refrigeration and Air Conditioning</i>, Wilcox Co., Chicago, 1968																				