

Course Name : Electrical Engineering Group
Course Code : EE/EP
Semester : Third
Subject Title : Elements of Mechanical & Civil Engineering
Subject Code : --

Teaching and Examination Scheme:

Teaching Scheme			Exam Scheme & Maximum Marks						
TH	TU	PR	PAPER HRS.	TH	TEST	PR	OR	TW	TOTAL
01	--	02	--	--	--	--	--	25@	25

Rationale:

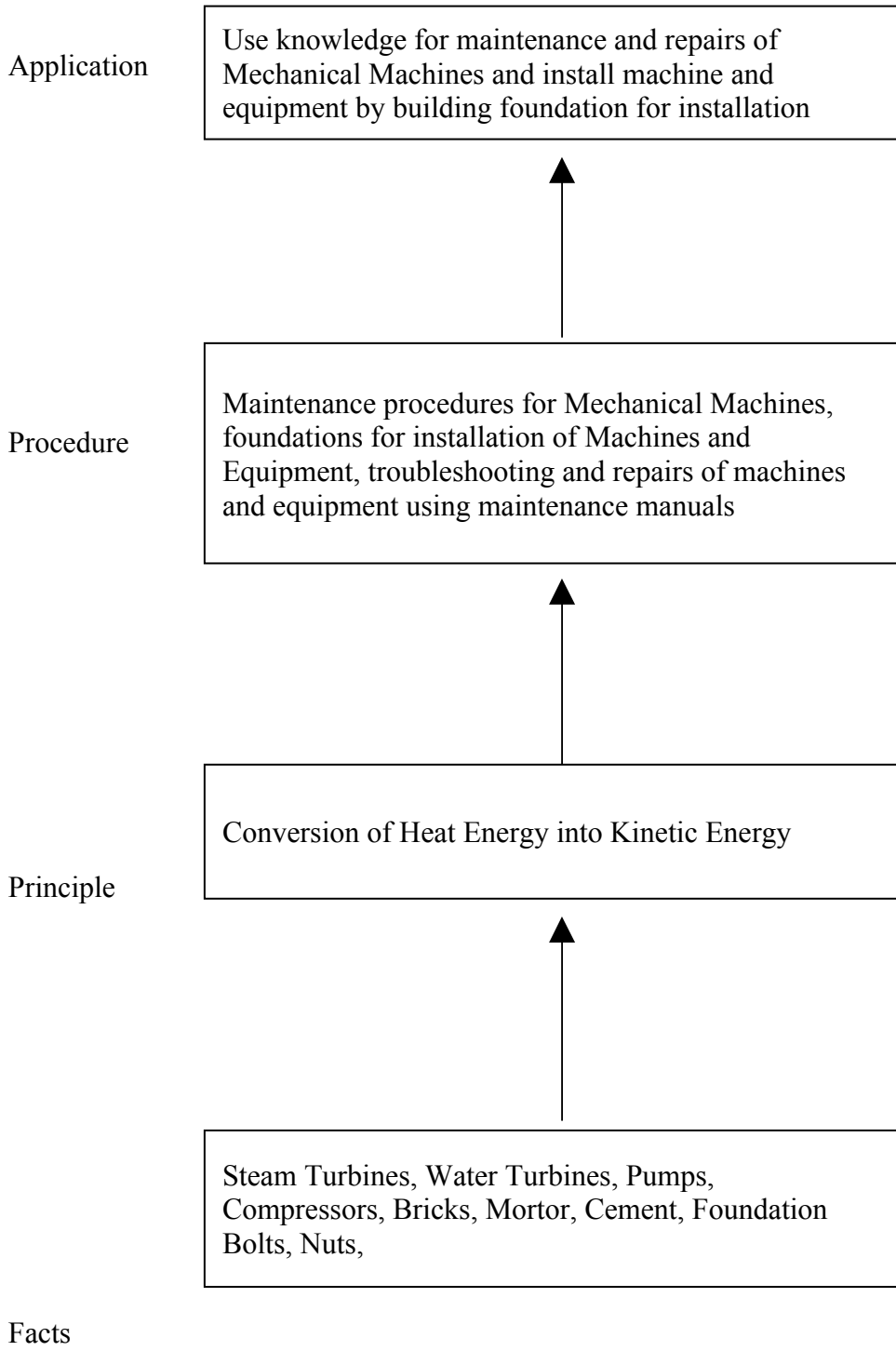
Diploma in Electrical Engineering passouts, work as Maintenance Engineers in industry. They have to look after maintenance of Mechanical Machines also. Similarly they have to install electrical machinery. For completing these tasks they need knowledge of Mechanical Machinery related to maintenance and Civil Engineering related to foundation work.

Objectives:

Student will be able to:

1. Supervise routine maintenance of Machinery such as Boilers, Turbines, Pumps, Steam Turbines
2. Supervise foundation work for installation of machinery and equipment
3. Identify faults, mal functioning of machines and equipment
4. Decide the size and type of foundation for machines

Learning Structure:



Contents: Theory

Chapter	Name of the Topic	Hours
01	Boilers, Steam Turbines, Steam Engines: 1.1 Construction & working of Cochran & Babcock & Wilcox Boilers. 1.2 Construction & working of impulse & reaction turbines. 1.3 Construction & working of steam engine 1.4 Reasons for Malfunctioning, and remedial measures for boilers and steam turbines	04
02	I.C. Engines: 2.1 Construction & working of two stroke & four stroke petrol & diesel engines 2.2 Reasons for Malfunctioning, and remedial measures for I. C. Engines	04
03	Air Compressors: 3.1 Uses of compressed air. 3.2 Construction & working of single stage & two stage reciprocating compressor. 3.3 Screw compressor & centrifugal compressor- construction, working & applications. 3.4 Reasons for Malfunctioning and remedial measures	03
04	Pumps: 4.1 Types of Pumps and their working 4.2 Reasons for malfunctioning and remedial measures	03
05	Foundation for Machines: 5.1 Need for foundation 5.2 Material required for foundation 5.3 Foundation Bolts: Types and Sizes 5.4 Criteria for Design of foundation	02
Total		16

Practicals:

Skills to be developed:

Intellectual Skills:

- Know working of boilers, steam turbine, I.C. Engines, compressors and pumps
- Diagnose faults/malfunctioning
- Select proper tools and equipment for repairs

Motor Skills:

- Disassembling and assembling of machines
- Start and run various machines

List of Practical:

1. Trace the flue gas path and water – steam circuit with help of boiler model.
2. Identify the possible location of fault/malfunctioning and decide how to repair them
3. Dismantling & assembly of Petrol/Diesel Engine.
4. Trial on single / multi cylinder petrol/ diesel engine.
5. Observe operation of Air Compressor and identify locations of fault and decide how to repair
6. Observe operation of a Centrifugal Pump and locations of fault and decide how to repair
7. Visit a thermal power station and observe functioning of Steam Turbine
8. Using Maintenance manuals prepare a maintenance schedule for a centrifugal Pump or Compressor

Learning Resources:**Books:**

Sr. No.	Author	Title	Publication
01	P.L. Ballaney	A Course in Thermal Engineering	Khanna Publishers
02	R. S. Khurmi	A test book of Thermal Engineering	S. Chand & Co. Ltd.
03	R. K. Rajput	Thermal Engineering	Laxmi Publication, New Delhi
04	Patel, Karmchandani	Heat Engine Vol. I & II	Acharya publication
05	P.K. Nag	Engineering Thermodynamics	Tata McGraw Hill