



# DEPARTMENT OF MECHANICAL ENGINEERING, University of Engineering & Technology, Lahore (KSK- Campus)

Lab Manual

Mechanics of Materials-II

## EXPERIMENT NO. 3

### Objective:

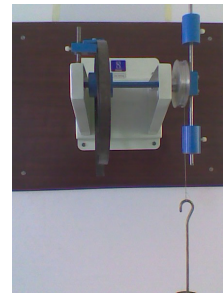
To investigate the relationship among load on spiral spring; no. of turns & degree of rotation of a coil spring.

### Apparatus:

The apparatus consists of a coil spring, which can be clamped to give a range of active coil. One end of the spring is firmly clamped to the axle which runs in ball bearings. The axle carries a pulley with a degree scale, load cord and hanger. An arm unit can be screwed to the face of the pulley. Two masses slide on the arm unit to give an adjustable inertia to the system.

### Summary of Theory:

- Spiral / coil Springs
- Types of spiral springs
- FED 9 (Spiral spring design software)



### Procedure:

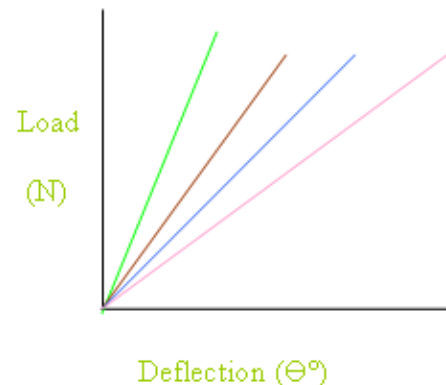
Clamp the spring to give a number of active turns from 3 to 8 inclusive. Note the initial scale reading with the load hanger on the cord. Then add a weight and note the scale reading. Tabulate your results.

### Graph:

On graph plot the deflection against load for different no. of active turns used and draw the best-fit straight lines through the points. Different colours show the graph for the different no. of active coils tabulated.

### Observations & Calculations:

Radius of the pulley = ----- mm  
Width of the spring = ----- mm  
Spring Thickness = ----- mm





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Sr. No	NO.OF ACTIVE COILS (N)	LOAD P	DEFLECTION $\theta^\circ$		
		(N)	<i>Lading</i>	<i>Unloading</i>	<i>Mean</i>
1					
2					
3					
4					
5					
1					
2					
3					
4					
5					
1					
2					
3					
4					
5					
1					
2					
3					
4					
5					

Name: \_\_\_\_\_

Reg. # \_\_\_\_\_

Date:

Report:

The laboratory report should contain the following:

1. Plot of curve between Load and Deflection as shown above.
2. Hand calculations showing all results under procedure above.
3. A discussion / comments of factors affecting the results of the experiment.
4. Practical Applications