6th Semester		**Experimental Stress Analysis**	**L-T-P 3-0-0**	**3 Credits**

Module I **MEASUREMENTS** **4 Hours**

Principles of measurements, Accuracy, Sensitivity and range of measurements.

Module II **EXTENSOMETERS** **6 Hours**

Mechanical, Optical, Acoustical and Electrical extensometers and their uses. Advantages and disadvantages.

Module II **ELECTRICAL RESISTANCE STRAIN GAUGES** **8 Hours**

Principle of operation and requirements of electrical strain gauges. Types and their uses, Materials for strain gauge. Calibration and temperature compensation, cross sensitivity, Rosetteanalysis. Wheatstone bridge and potentiometer circuits for static and dynamic strain measurements, strain indicators.

Module IV **PHOTOELASTICITY** **8 Hours**

Two dimensional photo elasticity, Concept of light - photo elastic effects, stress optic law, Interpretation of fringe pattern, Compensation and separation techniques, Photo elasticmaterials. Introduction to three dimensional photo elasticity.

Module V **NON - DESTRUCTIVE TESTING** **10 Hours**

Fundamentals of NDT. Radiography, ultrasonic, magnetic particle inspection, Fluorescent penetrant technique, Eddy current testing, Acoustic Emission Technique, Fundamentals of rittlecoating methods, Introduction to Moiré techniques, Holography, ultrasonic C-Scan, Thermograph,Fiber - optic Sensors.

Books

1. Srinath, Raghava, M.R., Lingaiah, K., Garagesha, G., Pant B., and Ramachandra, K., "Experimental Stress Analysis", Tata McGraw-Hill, New Delhi,

2. Dally, J.W., and Riley, W.F., "Experimental Stress Analysis", McGraw-Hill Inc., New York, 1991.

3. Hetyenyi, M., "Hand book of Experimental Stress Analysis", John Wiley and Sons Inc., New York, 1972.

4. Pollock A.A., "Acoustic Emission in Acoustics and Vibration Progress", Ed. Stephens R.W.B., Chapman and Hall, 1993.