

## **PHO 242 Introduction to Lasers Lab**

This companion course to PHO 241 Introduction to Lasers gives you practice in laser beam alignment techniques and the measurement of laser output parameters.

Corequisite: PHO 241 Introduction to Lasers

### **Laboratory Notebook and Reports**

You will be required to keep a separate laboratory notebook for recording your data and observations. This notebook may be checked occasionally. Industry considers the maintenance of neat, complete records an essential skill.

ALL collected lab reports are expected to be neat and complete, following the format presented in lab. Labs which are not complete will not be graded.

**No lab reports will be accepted more than 2 weeks after the experiment is completed, or after graded labs have been returned.**

### **Draft list of laboratory experiments**

1. Determining absorption coefficient
2. Alignment of a HeNe tube ("Zygo lab")
3. Laser Beam Collimation & Spatial Filtering
4. Polarization of Light - Fresnel Curves
5. Laser Beam Profile Measurement- Spiricon LBA
6. Mach Zehnder interferometer
7. Tyman Green interferometer
8. Measurement of temporal coherence
9. Characterization of a HeNe Laser
10. Laser Coherence Measurements
11. Laser divergence
12. Optical Spectrum Analyzer -FP laser modes
13. Laser Engraver basics
14. Laser Bar Code Scanner

### **Course Outcomes**

After successfully completing this course you will be able to

- Use mirrors, beamsplitters, translation stages and other optical and mechanical devices to perform laser beam alignment
- Measure laser beam output characteristics including spatial (beam quality and divergence), temporal (spectral width, mode spacing, temporal coherence, pulse characteristics) and polarization