

# OPTICAL SHOP PRACTICES

*'A hands-on course'*

This is a *'hands-on'* course to learn the basics of optical fabrication. Students fabricate and test one or two mirrors that can be used to make a telescope. There is some lens design work and drawing preparation. Curve generation, fine grinding, polishing, figuring, and testing are some of the tasks to be done. Some theoretical aspects are discussed like theories of grinding and polishing, subsurface damage, surface roughness, and testing. The emphasis of the course is to produce actual optical elements by applying abstract optical concepts.

**Instructor:**

Jose M. Sasian

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**Office hours:**

By email appointment

**Schedule:**

Tuesday and Thursdays 2:00 PM to 4:30 PM

**Exams:**

There will be no exams.

**Homework:**

Some article reading will be assigned.

**Topics:**

- Lens design and drawings
- Glass selection
- Beveling
- Abrasives
- Generating
- Grinding
- Polishing

- Testing: Spherometer, profilometer, Ronchi, and interferometer tests.  
Null testing.
- Theoretical aspects

**Grade:**

Based on the completion of the mirrors and on class attendance.

**References:**

Jean Texereau, “How to make a telescope,” Willman-Bell  
 Hank Karov, “Fabrication Methods for Precision Optics,” Wiley  
 Daniel Malacara, “Optical shop testing,” Wiley  
 Horne, “Optical Production Technology” Adam Hilger  
 Twyman, “Prism and Lens Making,” Adam Hilger

**Shop guidelines:**

Safety is first  
 Have a PDF notebook  
 Maintain the classroom clean and anything you use

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**Academic Integrity**

According to the Arizona Code of Academic Integrity (<http://web.arizona.edu/~studpubs/policies/cacaint.htm>), “Integrity is expected of every student in all academic work. The guiding principle of academic integrity is that a student’s submitted work must be the student’s own.” Unless otherwise noted by the instructor, work for all assignments in this course must be conducted independently by each student. CO-AUTHORED WORK OF ANY KIND IS UNACCEPTABLE. Misappropriation of exams before or after they are given will be considered academics misconduct.

Misconduct of any kind will be prosecuted and may result in any or all of the following:

- \* Reduction of grade
- \* Failing grade
- \* Referral to the Dean of Students for consideration of additional penalty, i.e. notation on a student’s transcript re. academic integrity violation, etc.

**Students with a Learning Disability**

If a student is registered with the Disability Resource Center, he/she must submit appropriate documentation to the instructor if he/she is requesting reasonable accommodations. (<http://drc.arizona.edu/instructor/syllabus-statement.shtml>).

The information contained in this syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.