Goal: This course will provide the student with a fundamental understanding of optical system design and instrumentation. The course builds upon the foundations of geometrical optics that were presented in OPTI-201R to discuss a variety of elementary optical systems. Other topics include chromatic effects, camera systems and illumination optics. A special emphasis is placed on the practical aspects of the design of optical systems.

Required Notes: Available for purchase at the UA bookstore.

Required Text:
Field Guide to Geometrical Optics – John E. Greivenkamp
ISBN# 0-8194-5294-7

Course Outline
Review of Gaussian Optics
Objectives
Zoom Lens
Simple Magnifier
Afocal Systems
Telescopes
Field and Relay Lenses
Eyepieces
Microscopes
Vignetting
Telecentric Systems
Optical Materials and Dispersion
Prism Spectrometer
Abbe Refractometer
Rainbows
Thin Prisms
Achromatic Thin Prism
Achromatic Doublet
Depth of Focus/Field
Hyperfocal Distance
Cameras
Viewfinders
Illumination Optics
Projectors
Aberrations
Reflective Telescopes
Other Systems

Grading:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>20%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Midterm Exam I</td>
<td>20%</td>
</tr>
<tr>
<td>(mid February)</td>
<td></td>
</tr>
<tr>
<td>Midterm Exam II</td>
<td>20%</td>
</tr>
<tr>
<td>(late March)</td>
<td></td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>Wednesday, May 09, 10:30 am-12:30 pm</td>
</tr>
</tbody>
</table>

The midterm dates have not yet been determined, but will be announced well in advance. Quizzes will be given at the beginning of random classes. It is your responsibility to be on time. Please note the final exam date that has been assigned by the University – plan your end-of-the-semester travel accordingly as the final exam will not be available prior to this date.

Homework: There will be approximately one assignment per week, and it will usually be due in one week. The purpose of the homework is for you to practice the techniques discussed in class or to reinforce this material. Completion of the homework is important to fully master this material. Collaboration and discussion of the homework is encouraged.

Homework is due at the start of class. Late homework will be deducted by 20%. No late homework will be accepted after the solution is given out.

Quizzes: There will be 5 D2L quizzes through the semester. The time frame of each quiz will be announced in the class and on D2L. Each quiz will be active
online for a week. No makeup quiz is allowed.

**Absence:** It is expected that students will regularly attend class and be on time for class. Late arrivals to class are distracting to both the instructor and the other students.

In keeping with University policies:
- All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion.
- Absences pre-approved by the UA Dean of Students (or Dean's designee) will be honored.

**Instructor:** Leilei Peng  
College of Optical Sciences, Rm. 614  
University of Arizona  
Tucson, AZ  85721  
(520) 626-3689  
lpeng@optics.arizona.edu

**Teaching Assistants and Graders:** TBD

**Course website:**  
We will use D2L site during the semester.

Homework solutions will be posted as each homework set is returned. In addition, the site is used for distribution of other course materials such as programs, additional course notes and corrections, and exam schedules.

**Sample class notes**  
Course syllabus and class notes of first 2 sections can be downloaded from [http://www.optics.arizona.edu/peng/Teaching/OPTI_202R.html](http://www.optics.arizona.edu/peng/Teaching/OPTI_202R.html)
Academic Integrity

Students will abide by the University’s Student Code of Academic Integrity:

Principle Integrity and ethical behavior are expected of every student in all academic work. This Academic Integrity principle stands for honesty in all class work, and ethical conduct in all labs and clinical assignments. This principle is furthered by the student Code of Conduct and disciplinary procedures established by ABOR Policies 5-308 through 5-404, all provisions of which apply to all University of Arizona students. This Code of Academic Integrity (hereinafter "this Code") is intended to fulfill the requirement imposed by ABOR Policy 5-403.A.4 and otherwise to supplement the Student Code of Conduct as permitted by ABOR Policy 5-308.C.1.

Prohibited Conduct:

Conduct prohibited by this Code consists of all forms of academic dishonesty, including, but not limited to:

1. Cheating, fabrication, facilitating academic dishonesty, and plagiarism as set out and defined in the Student Code of Conduct, ABOR Policy 5-308-E.6, E.10, and F.1
2. Submitting an item of academic work that has previously been submitted without fair citation of the original work or authorization by the faculty member supervising the work.
3. Violating required professional ethics rules contained or referenced in the student handbooks (hardcopy or online) of undergraduate or graduate programs, or professional colleges.
4. Violating health, safety or ethical requirements to gain any unfair advantage in lab(s) or clinical assignments.
5. Failing to observe rules of academic integrity established by a faculty member for a particular course.
6. Attempting to commit an act prohibited by this Code. Any attempt to commit an act prohibited by these rules shall be subject to sanctions to the same extent as completed acts.
7. Assisting or attempting to assist another to violate this Code.

Student Responsibility:
Students engaging in academic dishonesty diminish their education and bring discredit to the academic community. Students shall not violate the Code of Academic Integrity and shall avoid situations likely to compromise academic integrity. Students shall observe the generally applicable provisions of this Code whether or not faculty members establish special rules of academic integrity for particular classes. Students are not excused from complying with this Code because of faculty members’ failure to prevent cheating.

Faculty Responsibility:
Faculty members shall foster an expectation of academic integrity and shall notify students of their policy for the submission of academic work that has previously been submitted for academic advancement, as well as any special rules of academic integrity or ethics established for a particular class or program (e.g., whether a faculty member permits collaboration on coursework; ethical requirements for lab and clinical assignments; etc.), and make every reasonable effort to avoid situations conducive to infractions of this Code.

Student Rights:
Students have the right to a fair consideration of the charges, to see the evidence, and to confidentiality as allowed by law and fairness to other affected persons. Procedures under this Code shall be conducted in a confidential manner, although a student has the right to an advisor in any appeal to a University Hearing Board under this Code.

Further information can be found at  http://dos.web.arizona.edu/uapolicies

It is expected that students observing violations of this code by other students will report these violations to either the Instructor or to the Associate Dean for Academic Programs at the College of Optical Sciences.
Other Policies:

As a courtesy to the instructor and other students in the class, the use of cell phones, pagers, text messaging, personal music devices, etc. is prohibited during class. Computers are to be used only for class-related activities, such as note taking.

Students who are registered with the Disability Resource Center must submit appropriate documentation to the instructor if they are requesting reasonable accommodations: http://drc.arizona.edu/teach/syllabus-statement.html.

Students must abide by all aspects of the University’s Student Policies, Procedures and Codes:  http://dos.web.arizona.edu/uapolicies
Of particular note are the previously mentioned Code of Academic Integrity and the Policy Against Threatening Behavior By Students.

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