

# **SIMG-303      OPTICS FOR IMAGING      Spring 2004**

MW, 10:00AM - 11:50AM 76-1235

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**Website:** <http://www.cis.rit.edu/class/simg303/>

**Office Hours:** TBD, and by appointment

Course notes will be distributed

E. Hecht, *Optics*, 4<sup>th</sup> Edition, Addison-Wesley, 1996 (*Text*)

OSA Optics Discovery Kits

**Other Suggested Resources:**

WebTop Virtual Optics Lab, available from <http://www.opticsforteens.org/lab/>

K. Iizuka, *Engineering Optics*, Springer-Verlag, 1985.

Craig Scott, *Introduction to Optics and Optical Imaging*, IEEE Press, 1998. (*had been considered as text*)

Raymond Wilson, *Fourier Series and Optical Transform Techniques in Contemporary Optics, An Introduction*, Wiley-Interscience, 1995

Fowles, *Introduction to Modern Optics*, Dover, 1975.

F. Jenkins and H. White, *Fundamentals of Optics*, 4th Edition, McGraw-Hill, 1976.

M.V. Klein and T.E. Furtak, *Optics*, Second Edition, Wiley, 1986

A. Nussbaum and R. Phillips, *Contemporary Optics for Scientists and Engineers*, Prentice-Hall, 1976.

D. Falk, D. Brill, and D. Stork, *Seeing the Light*, Harper and Row, 1986.

F. Crawford, *Waves*, Berkeley Physics Series Vol. III, McGraw-Hill, 1968.

**Details:**

Lectures:

The study of physical optics relates the mathematical wave description of light to observable phenomena and to the fundamental limitations on the performance of imaging systems. Many of the concepts may be demonstrated readily in a laboratory, and so we may move parts of some the lectures to the optics laboratory (76-3125). These will be announced in advance.

Homework: (35%)

Problem sets will be (usually) handed out on Wednesday

Assignments due AS SCHEDULED, typically (but not necessarily) one week later

There may be some computer homework, with two-week deadline.

I encourage you to work together on problems, but you must hand in your own answers.

Exams:

In-class (35%)

2 "real" exams, in class, closed book & closed notes,

NOT in blue books (bring your own paper or use the blank sheets I will supply)

Final Exam (30%), form (in-class or take-home) TBD

The laboratories in optics are presented as part of the Imaging Systems Laboratory (SIMG-231). Some "virtual" (computer) experiments (formerly used as laboratory experiments) will be assigned as homework using software that is installed on the Dell PCs both in the CIS computer complex and in the computers in the undergraduate laboratories. The software may be run on any PC (they are ancient DOS programs, but are still effective) and is available at no charge from the CIS WWW site (<http://www.cis.rit.edu/resources/software>).