Instructor: Mani Hossein-Zadeh
Office hour: Wednesday 10-12 or by appointment
Office: CHTM 116A
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Phone: 505-272-7845
Teaching Assistant: Fenfei Liu (fliu@unm.edu)
    F.L. Pedrotti, L.S. Pedrotti, L.M. Pedrotti
    “Introduction to Fourier Optics”
Other references:
2-“Optics”, Eugene Hecht, 3rd edition
3-“Principles of Optics”, Max Born and Emil Wolf, 6th edition

Topics:
1-Introduction to nonlinear optics and optical modulation
2-Diffraction: Fraunhofer and Fresnel diffraction, diffraction gratings
3-Fourier Optics and its applications
4-Introduction to coherence theory

Homework
There will be one assignment per week (13 homework sets). At the end the homework with lowest grade will be dropped. Each assignment consists of 4-6 problems/questions and has 40 points. So homework assignments will have 480 points total (12×40)

Grade
24 % Home work (480/20)
34 % Midterm exam
42 % Final exam
Tentative schedule

Tu-Jan-19 → Introduction and review(L-1)
Th-Jan 21 → Nonlinear Optics and the Modulation of Light(L-2)

Tu-Jan 26 → Nonlinear Optics and the Modulation of Light(L-3)
Th-Jan 28 → Nonlinear Optics and the Modulation of Light(L-4)

Tu-Feb 2 → Fraunhofer Diffraction(L-5)
Th-Feb 4 → Fraunhofer Diffraction(L-6)

Tu-Feb 9 → Fraunhofer Diffraction(L-7)
Th-Feb 11 → Diffraction grating(L-8)

Tu-Feb 16 → Diffraction grating(L-9)
Th-Feb 18 → Fresnel diffraction(L-10)

Tu-Feb 23 → Fresnel diffraction(L-11)
Th-Feb 25 → Fresnel diffraction(L-12)

Tu-March 2 → Analysis of two-dimensional signals and systems(L-13)
Th-March 4 → Foundation of scalar diffraction theory(L-14)

Tu-March 9 → MIDTERM EXAM (Tuesday March 9th, 2-4 pm)

Tu-March 11 → No class
Spring break

Tu-March 23 → Exam problems(L-15)
Th-March 25 → Foundation of scalar diffraction theory (Fresnel/Fraunhofer diffraction revisited) (L-16)

Tu-March 30 → Wave Optics analysis of coherent optical systems(L-17)
Th-April 1 → Wave Optics analysis of coherent optical systems(L-18)

Tu-April 6 → Wave Optics analysis of coherent optical systems(L-19)
Th-April 8 → Frequency analysis of optical imaging systems(L-20)

Tu-April 13 → Frequency analysis of optical imaging systems(L-21)
Th-April 15 → Analog optical information processing(L-22)

Tu-April 20 → Analog optical information processing(L-23)
Th-April 22 → Analog optical information processing/Holography (L-24)

Tu-April 27 → Holography/Coherence(L-25)
Th-April 29 → Coherence(L-26)

Tu-May 4 → Coherence(L-27)
Th-May 6 → Review(L-28)
*EXTRA* Fr-May 7: 1-3 → Review(L-29)

Tu-May 11 → FINAL EXAM (Thursday May 11th, 10 – 12 pm)