Course policy: Office hour and grading method
OSE 5115: Interference, Diffraction and Coherence
Fall 2017

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Academic calendar:
Semester duration: Monday, August 21 – Saturday, December 2
Academic activity verification: Monday, August 21 - Friday, August 25
Final Examination Period: Monday, December 4 - Saturday, December 9

Schedule for OSE 5115:
Lecture hours: 4:30 – 5:45 PM, Mondays and Wednesdays
Classroom: CREOL A214
Office hours: 3:00 – 4:15 PM, Mondays and Wednesdays in CREOL 284
Last lecture: Wednesday, November 29
Final exam: 4:00 PM – 6:50 PM, Monday, December 4

Grading policy:
Homework: 10%
Exam 1: 20% (September 20, Wednesday)
Exam 2: 20% (November 1, Wednesday)
Final exam (Comprehensive): 50% (4:00 PM – 6:50 PM, Monday, December 4)

- All home works will be due by the end of the lecture hour on the due date.
- All FEEDS (online) students need to appear for the Exams (Exam 1, Exam 2 and Final exam) in the **classroom (CREOL A214)**.
- Each lecture will be available on FEEDS (online) for two weeks after the lecture.

A: > 85 – 100 **(A)**, > 80 – 85 **(A-)**
B: > 75 – 80 **(B+)**, > 70 – 75 **(B)**, > 65 – 70 **(B-)**
C: > 60 – 65 **(C+)**, > 55 – 60 **(C)**, > 50 – 55 **(C-)**
D: > 45 – 50 **(D+)**, > 40 – 45 **(D)**, > 35 – 40 **(D-)**
F: ≤ 35

Syllabus
OSE 5115: Interference, Diffraction and Coherence
Fall 2017

Catalog description: Interference of light, optical interferometry, Fraunhofer and Fresnel scalar diffraction, diffraction gratings, temporal coherence, spatial coherence, and partial coherence.

Recommended reading:

1. B. E. A. Saleh and M. C. Teich, *Fundamentals of Photonics*
2. J. W. Goodman, *Introduction to Fourier Optics*
3. M. Born and E. Wolf, *Principles of Optics*
4. A. Papoulis, *Systems and Transforms with Applications in Optics*
5. G. O. Reynolds, J. B. Develis, G. B. Parrent, B. Thompson, *The New Physical Optics Notebook: Tutorials in Fourier Optics*
6. J. W. Goodman, *Statistical Optics*
7. J. D. Gaskill, Linear *Systems, Fourier Transforms, and Optics*
8. E. Hecht, *Optics*
9. F. L. Pedrotti, S. J.; L. S. Pedrotti, and L. M. Pedrotti, *Introduction to Optics*
10. A. N. Matveev, *Optics*
11. M.V. Klein and T. E. Furtak, *Optics*

Syllabus:

1a. Review of the Fourier transform
1b. Review of electromagnetic, wave propagation, and the plane-wave angular spectrum
2a. Scalar diffraction theory
2b. Rayleigh-Sommerfeld diffraction
2c. Fresnel and Fraunhofer diffraction
2d. Diffraction limited optical imaging
2e. Diffraction gratings
3a. Interference and optical path difference (Double slit interference)
3b. Two-Beam Interference (Mach-Zehnder interferometer, Michelson interferometer, Sagnac interferometer)
3c. Multiple-beam interference
4a. Introduction to coherence theory
4b. Spatial and temporal coherence
4c. Effect of coherence on optical imaging