ELECTRICAL ENGINEERING DEPARTMENT
FACULTY OF ENGINEERING
ALEXANDRIA UNIVERSITY
EGYPT

EE365: Optical Devices

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I Aim of Course

- The basics of main optical communications devices and their models are presented.
- Power loss due to light launching and coupling are evaluated.
- System performance in terms of both signal-to-noise ratios and bit-error rates are determined.
- The basic optical network devices and their functions are discussed.
- System design for both optical links and networks are discussed.

II Outline

- Introduction.
- Light Emitting Diodes.
- Laser Diodes.
- Intensity Modulation of Light Sources.
- Light Detectors.
- Noise and Detection.
- Introduction to Optical Networks.
- System Design: An Optical Communications Link.

III Text Books and References

[1] R. Hui, *Introduction to Fiber-Optic Communications*, 1st ed. San Diego, CA: Academic Press, 2020.

[2] G. Keiser, *Optical Fiber Communications*, 4th ed. New York: McGraw-Hill, 2011.

[3] J. Senior, *Optical Fiber Communications: Principles and Practice*, 3rd ed. New Jersey: Prentice Hall, 2009.

IV Handouts and Assignments

- Handouts and assignments can be downloaded from
  - ☞ http://www.eng.alexu.edu.eg/∼hshalaby/

V Teaching and Assessments

- Teaching hours per week: Total = 5 hrs.
  1. Lectures: 3 hrs.
     - ☞ Saturday 10:20 AM–12:00 PM, venue K4, every week.
     - ☞ Saturday 12:10–1:50 PM, venue K4, every other week.
  2. Exercises: 1 hr.
  3. Laboratories: 1 hr.
- Exams and their durations:
  1. Midterm exam: 1.5 hrs.
  2. Final exam: 3 hrs.
- Distribution of a total mark of 125:
  1. Midterm exam: 25 marks.
  2. Lab assessments: 15 marks.
  3. Term project: 10 marks
  4. Final exam: 75 marks.