

ECE436: Optical Communications Devices

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Outline

- 1 Aim of Course
- 2 Course Outline
- 3 Text Books and References
- 4 Handouts and Assignments
- 5 Teaching and Assessments



1 Aim of Course

- The basics of main optical communications devices and their models are presented, including:
 - 1 Light sources.
 - 2 Light detectors.
 - 3 Optical fibers.
- System performance in terms of both signal-to-noise ratios and bit-error rates are determined.
- Power loss due to light launching and coupling are evaluated.






2 Course Outline

- Introduction.
- Light Emitting Diodes.
- Laser Diodes.
- Light Detectors.
- Intensity Modulation of Light Sources.
- Noise and Detection.
- Multimode Optical Fibers
- Modal Distortion in Optical Fibers
- Dispersion in Optical Fibers
- Single-Mode Fibers
- Power Launching and Coupling.



3 Text Books and References

-  R. Hui, *Introduction to Fiber-Optic Communications*, 1st ed. San Diego, CA: Academic Press, 2020.
-  G. Keiser, *Optical Fiber Communications*, 4th ed. New York: McGraw-Hill, 2011.
-  J. Senior, *Optical Fiber Communications: Principles and Practice*, 3rd ed. New Jersey: Prentice Hall, 2009.



4 Handouts and Assignments

- Handouts and assignments can be downloaded from
👉 <http://www.eng.alexu.edu.eg/~hshalaby/>



5 Teaching and Assessments

- Credit hours = 3 hr.
- Teaching hours per week: Total = 5 hr.
 - 1 Lectures: 2 hr.
 - 2 Tutorials: 1 hr.
 - 3 Laboratories: 2 hr.
- Exams and their durations:
 - 1 Midterm exam: 1.5 hr.
 - 2 Final exam: 3 hr.



5 Teaching and Assessments

- Distribution of a total mark of 300:
 - 1 Class work (assignments and quizzes): 15%.
 - 2 Midterm exam: 15%.
 - 3 Lab assessment and term project: 30%.
 - 4 Final exam: 40%.