UMCS
Nanophotonics II
Summer 2019/2020

Instructor Information:
Instructor: Dr Nicholas Sedlmayr
Office: 306
Email: sedlmayr@umcs.pl

Course Web Page: See this page.

Course Content: The topics of this course will be:

- Part I:
  - Introduction to light's interaction with matter
  - Derivation of Wave Equation in matter from Maxwell's equations
  - Dielectric properties of insulators, semiconductors and metals (bulk)
  - Light interaction with nanostructures and microstructures (compared with λ)
- Part II:
  - Photonic Crystals
  - Electromagnetic effects in periodic media
  - Light localization, photonic crystal fibers
- Part III:
  - Metal optics (plasmonics) and nanophotonics
  - Light interaction with 0, 1, and 2 dimensional metallic nanostructures
  - Guiding and focusing light to nanoscale
  - Transmission through subwavelength apertures
- Part IV: Metamaterials

Grading: The course grade will be based on participation in the classes, a midterm exam, and a final exam.

Objectives: To have an overview of the different advances in nanophotonics and their applications.

Prerequisites: Basic electromagnetism (Maxwell's equations), calculus.