

UMCS
Electrodynamics in Materials
Winter 2021/2022

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 include:

- Introduction to light's interaction with matter
- Derivation of Wave Equation in matter from Maxwell's equations
- Dielectric properties of insulators, semiconductors and metals
- Waveguides
- Magnetism
- Hall effect
- The electromagnetic field in superconductors - Perfect diamagnetism and the Higgs mechanism

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

Objectives: To have an overview of how the electromagnetic field behaves in a variety of materials and some possible applications.

Prerequisites: Electromagnetism (Maxwell's equations etc.) and calculus.