



## METADATA

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### Abstract

The book focuses on the presentation of Laser Physics, i.e. the physics that describes and explains the principles of laser operation, within the framework of a semester-long course lasting thirteen weeks, with three hours of teaching per week, in a Physics Department, and/or an Electrical Engineering Department, and/or a Materials Science Department. The level of the textbook assumes that the reader has already been exposed to and is familiar with and understands the following courses: Wave Physics, Optics, Electromagnetism, Elements (at least) of Quantum Mechanics, and an introductory course in Atomic/Molecular Physics. In any case, particular emphasis is placed on highlighting the physics of the various

properties of laser radiation and the operating parameters of various laser devices. A relatively extensive chapter is devoted to the physics of the production, amplification and measurement of short laser pulses (femtosecond lasers), due to the enormous interest they have attracted in recent years in many areas of modern technology and basic research. The last chapter provides a brief introduction to the most important nonlinear optical phenomena and the generation of harmonic frequencies as a result of nonlinear interactions between light and matter. We note that, to the best of our knowledge, the Greek-language literature on these last two chapters is extremely limited, if not non-existent.

