The Physics of Living Systems (Undergraduate Lecture Notes in Physics)

Fabrizio Cleri
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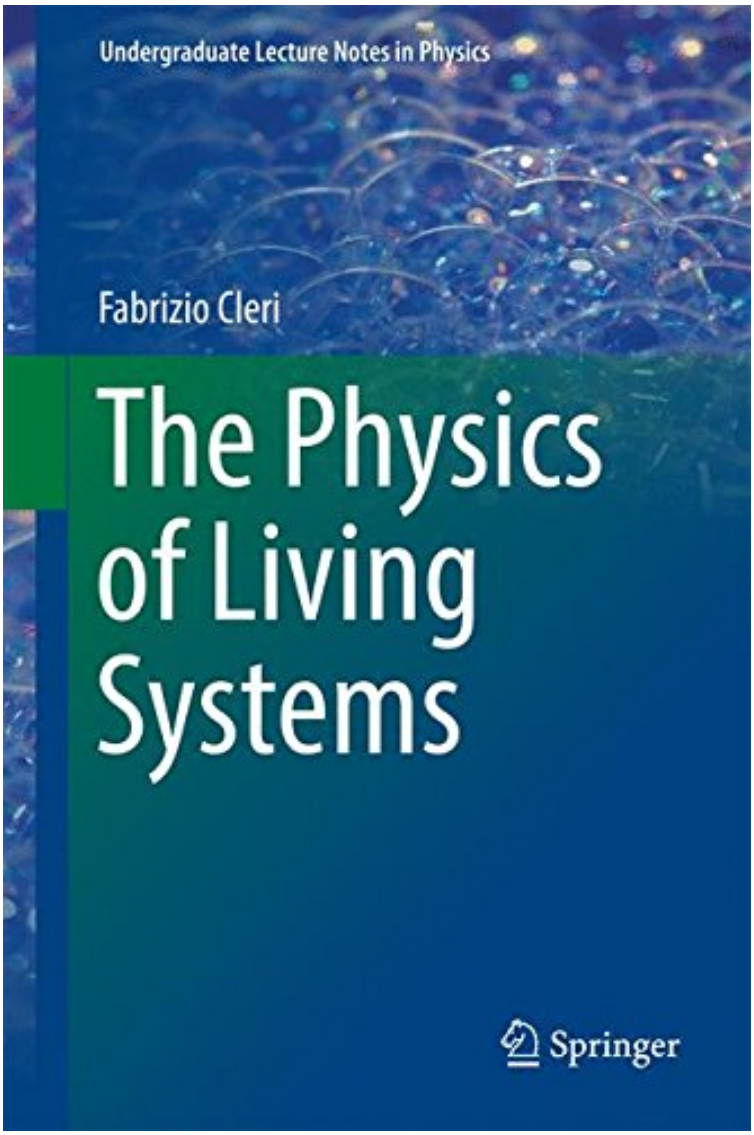

#1241944 in Books Fabrizio Cleri 2016-10-08Original language:EnglishPDF # 1 9.21 x 1.38 x 6.14l, .0 #File Name: 3319306456620 pagesThe Physics of Living Systems Undergraduate Lecture Notes in Physics | File size: 72.Mb

Fabrizio Cleri : The Physics of Living Systems (Undergraduate Lecture Notes in Physics) before purchasing it in order to gage whether or not it would be worth my time, and all praised The Physics of Living Systems (Undergraduate Lecture Notes in Physics):

0 of 0 people found the following review helpful. A little gem of introductory biophysics for the youngerBy XXXIt is

a beautifully written book. Knowing well older works by Schmidt Nielsen, Steven Vogel, Pennicuick (all cited by the author) I hardly hoped this book would add something to the masterpieces of these authors. I read this work by F Cleri with growing interest, and was fascinated by the way he treated such disparate subjects, ranging from greenhouse effect, to water-walkers, to whales' bones, to Turing reaction-diffusion models. The subject matter, namely the paramount role of physics in shaping the living beings and their existence via their environment, is described in a clear and pedagogically effective way. Several end-of-chapter problems help in grasping non obvious sides of the themes discussed in each chapter, and some of them are definitely hilarious. Certainly, many subjects are missing, for example the physics of vision and auditory system. However, Cleri's effort is highly commendable, and the book should be a treat for both young students, and more experienced health-science professionals who forgot about how important physics is indeed for any living plant or animal.

In this book, physics in its many aspects (thermodynamics, mechanics, electricity, fluid dynamics) is the guiding light on a fascinating journey through biological systems, providing ideas, examples and stimulating reflections for undergraduate physics, chemistry and life-science students, as well as for anyone interested in the frontiers between physics and biology.Rather than introducing a lot of new information, it encourages young students to use their recently acquired knowledge to start seeing the physics behind the biology. As an undergraduate textbook in introductory biophysics, it includes the necessary background and tools, including exercises and appendices, to form a progressive course. In this case, the chapters can be used in the order proposed, possibly split between two semesters. The book is also an absorbing read for researchers in the life sciences who wish to refresh or go deeper into the physics concepts gleaned in their early years of scientific training. Less physics-oriented readers might want to skip the first chapter, as well as all the "gray boxes" containing the more formal developments, and create their own -la-carte menu of chapters.

Cleri does a masterful job of integrating the history of science with some of the most recent results, in order to give the reader a comprehensive view of where our field has been, and where it now stands. figures help to bring the material alive, and the detailed grey boxes provide important context. includes a number of challenging and subtle questions at the end of each chapter, guaranteed to make the student (and instructor) think deeply. (Sonya Bahar, Journal of Biological Physics, 2016)From the Back CoverIn this book, physics in its many aspects (thermodynamics, mechanics, electricity, fluid dynamics) is the guiding light on a fascinating journey through biological systems, providing ideas, examples and stimulating reflections for undergraduate physics, chemistry and life-science students, as well as for anyone interested in the frontiers between physics and biology.Rather than introducing a lot of new information, it encourages young students to use their recently acquired knowledge to start seeing the physics behind the biology. As an undergraduate textbook in introductory biophysics, it includes the necessary background and tools, including exercises and appendices, to form a progressive course. In this case, the chapters can be used in the order proposed, possibly split between two semesters. The book is also an absorbing read for researchers in the life sciences who wish to refresh or go deeper into the physics concepts gleaned in their early years of scientific training. Less physics-oriented readers might want to skip the first chapter, as well as all the "gray boxes" containing the more formal developments, and create their own -la-carte menu of chapters.About the AuthorFabrizio Cleri received his doctor's degree in Physics from the University of Perugia, Italy in 1984 and his Habilitation in Physics (HDR) from the University Louis Pasteur in Strasbourg in 2004. After 20 years spent at ENEA in Rome, he became full professor at the University of Lille I and Director of Research at IEMN-Cnrs in Lille in 2006. Fabrizio Cleri is the founder and director of biennial Master studies in Biological and Medical Physics in the Department of Physics in Lille. His teaching covers both introductory-level and advanced courses in Condensed Matter Physics and Biophysics, as well as Applied Nuclear Physics for medical physicists. Author of more than 120 scientific papers and more than 50 invited talks, with over 3000 citations, his skills as a theoretical physicist range from nuclear and radiation physics, to condensed-matter physics and materials mechanics, to molecular physics, biophysics and bio-nanotechnology. He gave major contributions to the understanding of micromechanical phenomena and charge/heat transport processes in nanomaterials and biological molecules. Since 1986, he has been an invited professor at the CEA of Cadarache, at MIT in Boston, at the KITP of UC Santa Barbara, California, at Rensselaer Polytechnic Institute, Troy, New York, at the Institute of Industrial Sciences at the University of Tokyo, as well as permanent researcher at Argonne National Laboratory in Chicago between 1995 and 1998. He was an Associate Editor of Applied Physics Letters until 2016 and of the European Physical Journal B until 2014, and since 2014 serves as AE of the European Physical Journal E.