

# Preface

This book is an outgrowth of lecture notes of a graduate course on mechanics of soft materials that I have been teaching since 2009. The interest in the mechanics of soft materials is triggered by the development of new engineering and biomedical technologies. Mechanical behavior of soft materials is strongly nonlinear from both physical (constitutive equations) and geometrical (large deformations) standpoints and the standard texts on mechanics of materials are not enough in this case. The nonlinearities make the subject challenging, yet rich and exciting.

In writing this book I tried to help the reader in starting her own research journey as quickly and painlessly as possible. For this purpose, I elaborated excessively on some formulas and included practically important numerical examples. Isotropic and anisotropic hyperelasticity is the core of the mathematical modeling in mechanics of soft materials. However, thermo-, chemo-, electro-, and viscoelastic couplings are also often required and they are introduced in the book. Though this book is mostly about soft solids, the last chapter introduces a general Eulerian elasticity-fluidity framework, which is applicable to non-Newtonian fluids as well.

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