Litteraturlista för ÄFYD14, Fysik 4: Modern fysik med fysikdidaktik, 30 högskolepoäng gällande från och med höstterminen 2023

Delkurs 1 Atom- och molekylfysik

These cover most of the course material. We recommend either Foot or Thorne et al.:

Foot, C. J. Atomic Physics. Oxford University Press. Available as an e-book.

Thorne A., Litzén U. & Johansson S. Spectrophysics: Principles and Applications. Springer Verlag.

Haken H. and Wolf H. C. The Physics of Atoms and Quanta. Springer Verlag. Available as an e-book.

These are books on advanced (master's) level but could be used as reference literature:

Demtröder W. Atoms, Molecules and Photons. Springer Verlag. Available as an e-book.

Bransden B.H. & Joachain C.J. Physics of Atoms and Molecules.

Quantum mechanics

Ohlén, G. Phenomena of the Quantum World.

Cohen-Tannoudji C., Diu B. & Laloë F. Quantum Mechanics.

Delkurs 2 Kärnfysik

Lilley, J., Nuclear Physics: Principles and Applications. Wiley. Available as an e-book.*

Lecture notes and slides, laboratory manuals, and problem sheets.

*****or any other book with a similar title, covering the topics of the course. For instance, German-speaking students can consider T. Mayer-Kuckuk, *Kernphysik* (Teubner). The former course book was Kenneth S. Krane. Introductory Nuclear Physics. Wiley.

Further reading (societal aspects):

> Hedqvist, H. Kärlek och Kärnfysik. Albert Bonniers förlag (mainly about Lise Meitner).
>
> Forkman, B. Lise Meitner - en levnadsteckning. Gidlunds förlag.
>
> Chapman K. Superheavy - Making and Breaking the Periodic Table. Bloomsbury.

Delkurs 3 Partikelfysik, kosmologi och acceleratorer

Martin, B.R. & Shaw, G. Particle Physics. Either the 3rd or the 4th edition can be used. Available as an e-book.

Delkurs 4 Fysikdidaktik

Material tillhandahålls av lärare.

Studenterna kan i sina uppgifter behöva referera till den litteratur som de haft under de tidigare didaktikkurserna i ÄFYD11 och ÄFYD12.