

Designing a history of physics course at the University of Copenhagen

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Dilemmas

- Internalist vs. Externalist
- Depth vs. Extension
- Which cases to choose?
“Highlights”, Relevant at BSc, First times
- Audience: Scientists, Teachers, Historians

Intended Learning Outcomes

After having completed the course the student will be able to:

- Identify essential features of the original formulations of core theories/concepts studied in the BSc
- Apply the original reasoning to solve problems and prove theorems
- Compare original formulations with modern ways of teaching physics topics and reflect about pros and cons of the “didactic transformation”
- Use the history of physics as a background for reflections about the philosophical and social status of this science

Program

Week	
6 6-8/2	Introduction and Module 1: Newton's mathematical force (RK)
	Module 2: Mechanics in the XVIII century (RK)
7 13-15/2	Module 3: Fluid dynamics (RK)
	Module 4: Wave theory of light (RK)
8 20-22/2	Module 5: Thermal physics and thermodynamics (RK)
	Module 6: Kinetic gas theory and statistical mechanics (RK)
9 27/2-1/3	Module 7: Shaping electromagnetism (RK)
	Module 8: Maxwell's analogies (RK)
10 6/3-8/3	Module 9: Path to relativity (HK)
	Module 10: Original formulations of quantum mechanics (HK)
11 13/3-15/3	Module 11: Discovery of antimatter (HK)
	Module 12: Modern cosmology (HK)
12 20/3-22/3	Seminars 1 and 2
	Seminar 3 and external guest (André Koch Assis)
13 27/3-29/3	Seminar 4 and external guest (Eugenio Bertozzi)
	Seminar 5 and NBI historic tour
14 3-7/4	Exams

HK = Helge Kragh

Reading material

- *Expected reading*
Excerpts of originals (5 pages max)
- *Recommended reading*
2nd sources explaining the originals in modern terms
- *Complementary reading*
Overview of the topic/period/context

Innovative (?) and Effective (?) Teaching

- Students are asked to submit questions prior to the lessons, which guide the preparation and discussions.
- Students write weekly reflection essays summarizing what they have learned and reflecting about differences between originals and modern textbooks
- Feedback (end of each module) to monitor the process
- Lessons are videotaped and available in the website
- Seminars given by the students on a chosen topic
- Final grade: seminars + essays + oral exam

Students' end of course feedback

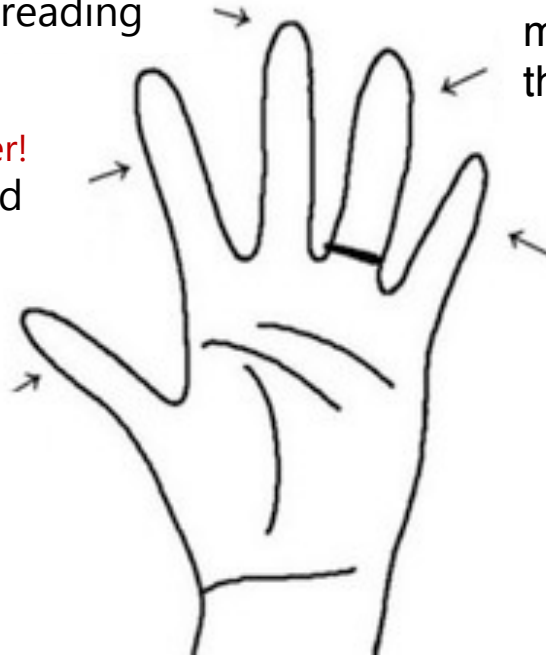
I did not like that!
Too much
content/reading

I will take that with me!
Knowledge/appreciation of how
much work went into developing
the theories we use today

That could have been better!
Student involvement and
activation

That came too short!
Broad overview, context,
society, etc.

That was great!
Looking at original
formulations and
derivations



More information?

Course website

<https://absalon.ku.dk/courses/16976>

Email

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