



UNIVERSITÀ DI PISA

STORIA CONCETTUALE DELLA FISICA

STEVEN NEIL SHORE

Anno accademico 2023/24
CdS FISICA
Codice 342BB
CFU 6

Moduli	Settore/i	Tipo	Ore	Docente/i
STORIA CONCETTUALE DELLA FISICA	FIS/08	LEZIONI	48	STEVEN NEIL SHORE

Obiettivi di apprendimento

Conoscenze

Examination of the development of physical theories and methods from classical and mediaeval times through mid-20th century. The details will change each year based on the students' interests and experience. The parallel developments in Western (i.e., greco-latin) and non-Western cultures (e.g., China, India, Islam) will also enter. Topics include:
elementary principles of realism, space, time, displacement and change
development of kinematic and dynamical methods and the early use of geometrical and algebraic mathematical methods
concept of natural laws and regularities
use of symmetries and conservation principles from Aristotle through contemporary physics
the concept of field and active space
the role of the "paranormal" (i.e. magical thinking and methods) in the early modern period

Modalità di verifica delle conoscenze

a paper based on original sources (not merely a summary ala Wikipedia), selected on consultation, examining the development of some physical concept or examining a historical development or period.

Prerequisiti (conoscenze iniziali)

lingua inglese, fisica 1,2, matematica (analisi)
geometria sarebbe utile

Indicazioni metodologiche

Lectures in English with bilingual discussions

Programma (contenuti dell'insegnamento)

Basic concepts of space, time, dynamics, force (from classical to 17th century)
Introduction of empirical methods to study natural phenomena
Application of mathematical reasoning to physical problems (14-19 century)
Extension to action-at-a-distance, fields (17 - 20 century)

Modalità d'esame

A review, written essay based on original literature, following a physical concept and its development.

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