



HISTORY OF SCIENCES	
Enrollment year	2020/2021
Academic year	2020/2021
Regulations	DM270
Academic discipline	M-STO/05 (HISTORY OF SCIENCE AND TECHNIQUES)
Department	DEPARTMENT OF BRAIN AND BEHAVIORAL SCIENCES
Course	PSYCHOLOGICAL SCIENCES
Curriculum	PERCORSO COMUNE
Year of study	1°
Period	1st semester (21/09/2020 - 15/01/2021)
ECTS	6
Lesson hours	48 lesson hours
Language	Italian
Activity type	ORAL TEST
Teacher	FREGONESE LUCIO (titolare) - 6 ECTS
Prerequisites	The course contextually presents the prerequisite notions necessary to understand the proposed contents.
Learning outcomes	Central episodes in the historical evolution of scientific knowledge. Better understanding of scientific concepts through a critical analysis of their historical development. Strategies for a more effective didactic transmission of the history of sciences. The course strives to provide a high quality instruction also to the benefit of students and teachers and complies therefore with the goals of the ONU 2030 agenda.
Course contents	In the current academic year the course consists of two monographic parts, focusing respectively on ancient atomism and on the principal theories developed in the 18th century to explain the nervous and muscular functions and their relationships with electricity. The part dealing with ancient atomism starts considering the methodological problems of the sources and of the historiographical

approaches to the subject. Analysis of Lucretius's "De rerum natura" provides the basis to highlight the principal contents of ancient atomism in the specific form elaborated by Epicurus and expounded in poetical form by Lucretius. The analysis concentrates on six different themes: 1) the theoretical principles at the basis of Epicurean atomism, 2) the various conceptions of weight that can be identified in "De rerum natura", 3) the Kinetic character of Epicurean atomism, different orders of particles and movements through which macroscopic phenomena «emerge» from the fundamental microscopic level, 4) the indeterministic "clinamen" of Epicurean atomism, 5) psychology, soul and perception in Lucretius, 6) elements of Epicurean cosmology in Lucretius.

The second part starts considering Newton's attempts to interpret the faculties of perception, volition and muscular contraction. The study proceeds sketching a picture of the principal paradigms of 18th-century physiology (iatromechanism, micromechanism, animism, vitalism) and focusing especially in the influential physiological theory which Albrecht von Haller based on the distinction between "sensibility" and "irritability" of the various parts of organic bodies. The course examines then the fundamental investigations of Galvani and Volta on "animal electricity" in the framework of Hallerian sensibility and irritability. Volta's invention of the battery is discussed in connection with the debates on animal electricity. A MOOC course (Massive Open Online Course) specifically produced on the contents of this second part of the course is presented as a specific case of recent modes for a more effective communication and teaching of the history of sciences.

Teaching methods

Lectures with incentive to participate during the exposition and critical discussion at the beginning of the following lecture before addressing new subjects.

Reccomended or required readings

Bio-bibliographical introduction to Lucretius, from: Tito Lucrezio Caro, "De rerum natura", Armando Fellin (ed.), Torino, UTET, 2013.

Digital slides "Il De rerum natura di Lucrezio: sei percorsi di lettura". Geoffrey E.R. Lloyd e John Vallance, "La scienza nell'antichità greco-romana", in La scienza antica (2001) [vol. 1 di Storia della scienza, Roma: Istituto della Enciclopedia italiana, 2001-2004, 10 voll.], sez. IV, cap. I, di, pp. 539-554.

David Sedley, "Epistemologia e teorie della natura nell'età ellenistica", in La scienza antica (2001) [vol. 1 di Storia della scienza, Roma: Istituto della Enciclopedia italiana, 2001-2004, 10 voll.], sez. IV, cap. XI, pp. 678-690.

Walter Bernardi, "I fluidi della vita: alle origini della controversia sull'elettricità animale", Firenze: Olschki, 1992, selected parts.

Lucio Fregonese, Volta: teorie ed esperimenti di un filosofo naturale, in "I grandi della scienza", Milano: Le scienze, n° 11, 1999, selected parts.

Giuliano Pancaldi, Volta: science and culture in the age of Enlightenment, Princeton; Oxford: Princeton University Press, 2003, selected parts.

Marco Piccolino e Marco Bresadola, "Rane, torpedini e scintille: Galvani, Volta e l'elettricità animale", Torino: Bollati Boringhieri, 2003, selected parts.

Lucio Fregonese: MOOC online course "L'eredità di Volta: dalla pila al fotovoltaico" (2016):

	<p>https://iversity.org/en/courses/l-eredita-di-volta-dalla-pila-al-fotovoltaico. Students who cannot attend lectures are kindly requested to get in touch via email with the teacher before the course starts to get the study materials and suggestions about how to use them best.</p>
Assessment methods	<p>Oral examination verifying the assimilation of the specific course contents in the wider perspective of an historical epistemology which strives to reconstruct the original conceptual and scientific contexts.</p>
Further information	
Sustainable development goals - Agenda 2030	<p>\$lbl legenda sviluppo sostenibile</p>