

Federal University of ABC, Brazil

EVOLUTION OF PHYSICS - SYLLABUS

2nd term – June to August, 2016

Professor: Breno Arsioli Moura – Center of Natural Sciences and Humanities

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<http://www.brenoam.com>

Tower 3, Bloc A, Office 640

Office hours: Tuesdays, from 10 to noon.

This course consists of lectures that will discuss the historical backgrounds of Physics. It will be divided into 6 units, each discussing a specific area. The main purpose is to present an adequate History of Physics, based on current standards of Historiography of Science, which means that the ideas of “scientific genius”, “insights”, “neutral science”, “the most beautiful experiments of Physics” and so on, will NOT be part of it. If you are expecting something like this, read “Superinteressante” and other journals and books like it.

For each unit, it will be available a list of readings. It is mandatory that you read the texts BEFORE you go to class. All reading materials will be provided in PDF files that can be downloaded from the web site: <http://www.brenoam.com>. Click on “Disciplinas” and then on “Evolution of Physics”.

In addition, in almost every class, the students will receive a short extract of an original source to be read there. The students will have approximately 30 minutes to read.

You are each expected to participate actively in discussion each week. Class attendance is mandatory.

One last thought: Please, if you think that because this course is about “humanities” and “history”, and therefore it is “easy”, do not go further. It is essential that you leave some time to study and read. Surely, it is not expected that you become a historian of Physics (it would be great, though), but you should face the course with equal importance that you face other courses on “exact” sciences.

Grading policies

Grades will be determined from your performance in a set of writing assignments and two exams. All of them will be done individually.

The *writing assignments* must be done in class, after the reading of original sources. There will be 13 writing assignments throughout the course. For each one, it will be given a grade, from F to A. Later, the grades will be analyzed and become a single one. There will be no substitutive *writing assignments*, since they are supposed to be done in class.

There will be 2 *exams*, in July 12 and August 16. For each one, it will be given a grade, from F to A.

If you are unable to take any of these *exams*, please inform the professor IMMEDIATELY. A substitutive *exam* may be available in such cases.

Recovery exams will be applied at the beginning of the next term.

Final grades will be determined from the combination of the three grades (writing assignments and exams).

EVOLUTION OF PHYSICS - PLAN			
UNIT	CLAS S	DATE	CONTENT/ACTIVITY
X	01	06/07	Presentation of the course
1 Astronomy	02	06/10	<i>Aristotle and Ptolemy – analysis of their system of the world</i>
	03	06/14	<i>Copernicus and the “revolution” in physics</i>
	04	06/17	<i>The ideas of Descartes and Newton</i>
2 Classical Mechanics	05	06/21	<i>Aristotle’s and Galileo’s mechanics</i>
	06	06/24	<i>Newton’s mechanics</i>
3 Optics	07	06/28	<i>Early ideas on light and colors; Hooke and Huygens</i>
	08	07/01	<i>Newton’s optics</i>
	09	07/05	<i>The wave theory of light</i>
X	10	07/08	Review
	11	07/12	1st evaluation
4 Electromagnetism	12	07/15	<i>The development of electricity and magnetism</i>
	13	07/19	<i>Franklin’s ideas on electricity</i>
	14	07/22	<i>Orsted and the development of electromagnetism</i>
5 Thermodynamics	15	07/26	<i>A general introduction to the history of thermodynamics</i>
	16	07/29	<i>The contributions of Sadi Carnot</i>
6 Modern physics	17	08/02	<i>The discovery of the X-Rays and radioactivity</i>
	18	08/05	<i>The theory of relativity</i>
	19	08/09	<i>Introduction to quantum physics</i>
X	20	08/12	Review
	21	08/16	2nd evaluation
			Closure
	22	08/19	Impressions from the students about the course. What could be changed?
	23	08/23	Review – Marks
	24	08/26	Review - Marks