

Code: ECO510036

Course: Climatology and climate change

Number of credits: 2 **Total number of hours:** 30 h/a

Lecturer: Marina Hirota (Coordenador)

Semester/Year: 01/2023

Period: May 02, 05, 09, 12, 16 e 19 (3 weeks on Tue and Fri); Jun 06, 13, 20, 23 (Tue and Fri – note that because of holidays on Jun 9, the class will be on Jun 13).

Time: from 9:00 to 12:00

Number of students: 20

Location: CCB

Time and location for student attendance:

- Room 146, Department of Physics

Pre-courses:

- There are no pre-courses to be taken before this course.

Syllabus:

- The climate system;
- Global radiative and energy balances, and the natural greenhouse gas effect;
- General atmospheric and oceanic circulation;
- Climate variability;
- Natural and anthropogenic climate change.

Metodologia de ensino:

- Theoretical classes

Avaliação:

- The evaluation will consist of a project presentation and outreach material. Both will follow the theoretical concepts presented in the classes and scientific papers. Depending on the number of enrolled students, these activities will be developed either individually or in groups.

Content and timeline:

Week	Topic	Lecturer
Week 1 (May 02 & 05) 6 h/a	- Presentations and expectations - The climate system, the radiative and energy balance, and the natural greenhouse gas effect	Marina Hirota
Week 2 (May 09 & 12) 6 h/a	- General atmospheric and oceanic circulations	Marina Hirota
Week 3 (May 16 & 19)	- Climate variability	Marina Hirota



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6 h/a		
Week 4 (Jun 06 & 13) 6 h/a	- Natural and anthropogenic climate change and the IPCC	Marina Hirota
Week 5 (Jun 20 & 23) 6 h/a	- Project presentation - Delivery of the outreach material	Marina Hirota

Syllabus:

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- HARTMANN, D.L. - Global Physical Climatology. Academic Press, 1994, 411p.
 - WALLACE, J.M. e HOBBS, P.V. – Atmospheric science – an introductory survey. Elsevier, 2006, 483p.
 - IPCC AR5 and AR6 reports.
 - IPBES report.
 - Scientific papers selected during the course depending on the study fields of the enrolled students.