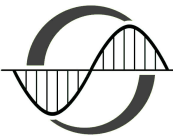




UNIVERSITÀ  
degli STUDI  
di CATANIA



DIPARTIMENTO DI FISICA E ASTRONOMIA  
“ETTORE MAJORANA”

DOTTORATO DI RICERCA IN FISICA

ANNO ACCADEMICO 2019/2020

---

## Sun-Earth connection and Space Weather

2 CFU

**Teaching staff:** FRANCESCA ZUCCARELLO

**Email:** [Francesca.zuccarello@inaf.it](mailto:Francesca.zuccarello@inaf.it)

**Office:** INAF – Catania Astrophysical Observatory

**Telephone:** +39 095 7332237

**Reception hours:** Friday 10:30 - 12:30 (send an e-mail to:  
[Francesca.zuccarello@inaf.it](mailto:Francesca.zuccarello@inaf.it))

---

### Program of the course:

The Sun: a general overview – Solar interior – Solar atmosphere - Solar magnetism and the 11-year cycle - Dynamo mechanism – Activity phenomena – Flares : observations and models - Coronal Mass Ejections: observations and models – Solar Wind.

The Interplanetary Magnetic Field – The Earth’s Magnetosphere – Impact of solar phenomena on the magnetosphere of the Earth – Space Weather effects: magnetic storms, aurorae, ionospheric perturbations – Impact of Space Weather on technological systems.

---

### Bibliography:

- C. Chiuderi & M. Velli: Fisica del Plasma: Fondamenti e applicazioni astrofisiche, Springer - Verlag, 2012
- K. R. Lang : The Sun from Space, Springer, 2000
- E. Landi Degl'Innocenti : Fisica Solare, Springer Verlag, 2008
- E. R. Priest : Solar magnetohydrodynamics, Reidel Publ. Co., Dordrecht, 1984.