SSM
Scuola Superiore Meridionale

Course title:

Introduction to Astrophysics

Duration : 24h

PhD Program [MERC/MPS/SPACE]**: SPACE**

Name and Contact details of unit organizer(s):

Prof: Massimo Della Valle
Affiliation(s): National Institute for Astrophysics, Capodimonte Observatory, Naples
Email: massimo.dellavalle@inaf.it

Course Description [max 150 words]**:**

The course is divided into two sections: 1. Basics of stellar evolution, from star formation to Supernova and Gamma-ray bursts explosions and formation of chemical elements; 2. we will describe the most common techniques for measuring cosmic distances. We will discuss recent measurements of the expansion rate of the universe, i.e. Hubble constant and Ωm.

Syllabus [itemized list of course topics]**:**

1) Stellar evolution
2) Formation of elements
3) Geometrical Indicators: Parallaxes
4) Primary Indicators: Cepheids, Novae
5) Secondary Indicators: Globular Clusters luminosity Function, Surface Brightness, Tully-Fisher
6) Supernovae, long duration GRBs, Gravitational Sirenes
7) Hubble constant and Ωm measurements

Assessment [form of assessment, e.g., final written/oral exam, solutions of problems during the course, final project to be handed-in, etc.]**:**

Discussion of selected topics

Suggested reading and online resources:

1. Astrophysics in a Nutshell, Dan Maoz, Princeton University Press
2. Stellar Candles for Extragalactic Distance Scale, D. Alloin & W. Gieren (Eds.) Springer
3. Notes provided by the Teacher.