**Course title:** Introduction to Astrophysics

**Duration:** 24h

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

**Name and Contact details of unit organizer(s):**

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<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Email</th>
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<tbody>
<tr>
<td>Prof. Massimo Della Valle</td>
<td>National Institute for Astrophysics, Capodimonte Observatory, Naples</td>
<td><a href="mailto:massimo.dellavalle@inaf.it">massimo.dellavalle@inaf.it</a></td>
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**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.