

# Astrophysics and Molecular Physics

Module No.: MN-P-SP-Astro, MN-P-SP-Mol, MN-P-PN-Astro, MN-P-PN-Mol, MN-P-WaMa

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## Course: The Physics of the Interstellar Medium

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Category	Type	Language	Teaching Hours	CP	Semester
Specialized Course	Lecture	English	2	3	SuSe
Specialized Course	Lecture	English	2+1	4.5	SuSe

### Requirements for participation:

Astrophysics I (Advanced Astrophysics recommended)

### Type of module examinations:

One oral examination at the end of the module

### Duration of the course:

1 semester

### Aims of the course:

Understanding the fundamental processes structuring the interstellar medium (ISM) and ways to observe them

### Contents of the course:

The dynamics of the interstellar gas, hydrodynamic instabilities, turbulence. Formation of and radiation from interstellar gas, dust and polycyclic aromatic hydrocarbons. The energy balance of the ISM, phases of the ISM and chemical phase transitions, Special interstellar regions: HII regions, diffuse Galactic clouds, molecular clouds, photon-dominated regions and X-ray dominated regions, interstellar shocks and supernova remnants, planetary nebulae

### Recommended literature:

B.T. Draine: Physics of the Interstellar and Intergalactic Medium (Princeton Series in Astrophysics)  
A.G.G.M. Tielens: The Physics and Chemistry of the Interstellar Medium (Cambridge University Press)  
K.R. Lang: Astrophysical Formulae (Springer Study Edition)