MASS (Master in Astrophysics and Space Science) Courses and Paths
### Courses Scheme

#### S1: Uni. Tor Vergata (30 ECTS)

**Compulsory Courses (30)**
1. Mathematical Methods (8)
2. Modern Astrophysics (6)
3. Radiative Processes (6)
4. Quantum Mechanics (8)
5. Language (2)

#### Winter Training School

#### S2: Uni. Bremen (30 ECTS)

**Compulsory Courses (24)**
1. Intro GR (9)
2. Introduction to Cosmology (6)
3. Exp. Gravitation (6)
4. Science, astronomy & exploratory missions (3)

**Elective Course(s) (6)**
- Celestial Mechanics (6)
- Stellar Astrophysics (6)

#### S2: Uni. Belgrade (30 ECTS)

**Compulsory Courses (24)**
1. Spectroscopy of astrophysical Plasmas (6)
2. Active Galactic Nuclei (6)
3. Physics of interstellar matter (6)
4. Computational Astrobiology (6)

**Elective Course(s) (6)**
- Gravitation and Cosmology (6)
- Supernovae and Their Remnants (6)
- Introduction to Nucleosynthesis and Particle Astrophysics (6)
- Small Solar System objects (6)

#### S2: Uni. Nice (30 ECTS)

**Compulsory Courses (24)**
- Astronomical Optics (6)
- Astronomical Technique (6)
- Helio & Asteroseismology (6)
- Stellar atmospheres for helio & asteroseismology (6)

**Elective Course(s) (6)**
- Fluid Mechanics (3)
- Math/Stat (3)
- Modelling in Asteroseismology (3)
- Cophasing Optics (2)
- Optical long baseline interferometry (2)
- Gravitational wave detection by laser interferometry: VIRGO&LISA (2)

#### Summer Training School

#### S3: Uni. Tor Vergata (30 ECTS)

**Compulsory Course**
- Internship (6)

**Elective Courses (24)**
- Stellar Structure and Evolution (6)
- Advanced Cosmology (6)

#### S3: Uni. Bremen (30 ECTS)

**Compulsory Course**
- Internship (6)

**Elective Courses (24)**
- Advanced GR (6)
- Hydrodynamics and Accr. Disks (6)
- Black Holes (6)

#### S3: Uni. Belgrade (30 ECTS)

**Compulsory Course**
- Internship (6)

**Elective Courses (24)**
- Astroinformatics - Astrostatistics and Machine Learning in Astronomy (6)
- Astrodynamics and Space Missions (6)

#### S3: Uni. Nice (30 ECTS)

**Compulsory Course**
- Internship (6)

**Elective Courses (24)**
- Small satellite (6)
- Convex optimisation applied to statistical signal processing (3)
- Statistical physics (3)
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**Winter Training School**

**Master Thesis**

*(30 ECTS)*