UNIVERSITÀ DEGLI STUDI DI PADOVA

MASTER (LM) DEGREE COURSE IN

ASTROPHYSICS AND COSMOLOGY

Study programme for students enrolled in the academic year 2025-2026 entirely held in English

CURRICULUM THEORY AND MODELLING	
1st YEAR	
MANDATORY UNITS	**CREDITS**
MATHEMATICAL AND NUMERICAL METHODS	**6**
GENERAL RELATIVITY FOR ASTROPHYSICS AND COSMOLOGY	**6**
ADVANCED ASTROPHYSICS	**6**
1 UNIT TO CHOOSE AMONG THE FOLLOWING:	**CREDITS**
ASTROPHYSICS LABORATORY 1: INFRARED AND OPTICAL INSTRUMENTATION	**6**
ASTROPHYSICS LABORATORY 1: HIGH ENERGY INSTRUMENTATION	**6**
1 UNIT TO CHOOSE AMONG THE FOLLOWING:	**CREDITS**
FUNDAMENTALS OF MODERN PHYSICS	**6**
FUNDAMENTALS OF ASTROPHYSICS AND COSMOLOGY	**6**
2 UNITS TO CHOOSE AMONG THE FOLLOWING:	**CREDITS**
THEORETICAL COSMOLOGY	**6**
RADIATIVE PROCESSES IN ASTROPHYSICS	**6**
INTRODUCTION TO FIELD THEORY	**6**
2 UNITS TO CHOOSE AMONG THE FOLLOWING:	**CREDITS**
MULTIMESSENGER ASTROPHYSICS	**6**
OBSERVATIONAL ASTROPARTICLE PHYSICS	**6**
GRAVITATIONAL PHYSICS	**6**
NUCLEAR ASTROPHYSICS	**6**
CELESTIAL MECHANICS	**6**
SUBNUCLEAR PHYSICS	**6**
ASTRONOMICAL SPECTROSCOPY	**6**
PLANETARY ASTROPHYSICS	**6**
GALACTIC DYNAMICS	**6**

ASTRONOMICAL INTERFEROMETRY	**6**
SELECTED TOPICS IN MODERN ASTROPHYSICS	**6**
2nd YEAR	
MANDATORY UNITS	**CREDITS**
COMPACT OBJECT ASTROPHYSICS	**6**
1 UNIT TO CHOOSE AMONG THE FOLLOWING:	**CREDITS**
FLUID AND PLASMA DYNAMICS	**6**
EXOPLANETARY ASTROPHYSICS	**6**
COSMOLOGY OF THE EARLY UNIVERSE	**6**
ASTROPHYSICS OF THE INTERSTELLAR MEDIUM	**6**
HIGH ENERGY ASTROPHYSICS	**6**
ASTRO-STATISTICS AND COSMOLOGY	**6**
COMPUTATIONAL ASTROPHYSICS	**6**
6 ADDITIONAL FREE-CHOICE CREDITS	
FINAL THESIS/DISSERTATION	**42**

ANY FURTHER NOTES

- **Attendance is mandatory according to the didactic regulamentation.**
- **Free-choice credits can be chosen among the university's educational offer as long as they are consistent with the educational path.**

CURRICULUM OBSERVATIONS, EXPERIMENTS, AND INTERPRETATION	
1st YEAR	
MANDATORY UNITS	**CREDITS**
MATHEMATICAL AND NUMERICAL METHODS	**6**
GENERAL RELATIVITY FOR ASTROPHYSICS AND COSMOLOGY	**6**
OBSERVATIONAL ASTROPHYSICS	**6**
1 UNIT TO CHOOSE AMONG THE FOLLOWING:	**CREDITS**
ASTROPHYSICS LABORATORY 1: INFRARED AND OPTICAL INSTRUMENTATION	**6**
ASTROPHYSICS LABORATORY 1: HIGH ENERGY INSTRUMENTATION	**6**
1 UNIT TO CHOOSE AMONG THE FOLLOWING:	**CREDITS**
FUNDAMENTALS OF MODERN PHYSICS	**6**
FUNDAMENTALS OF ASTROPHYSICS AND COSMOLOGY	**6**
2 UNITS TO CHOOSE AMONG THE FOLLOWING:	**CREDITS**
STELLAR ASTROPHYSICS	**6**
ASTROPHYSICS OF GALAXIES	**6**
OBSERVATIONAL COSMOLOGY	**6**
2 UNITS TO CHOOSE AMONG THE FOLLOWING:	**CREDITS**
MULTIMESSENGER ASTROPHYSICS	**6**
OBSERVATIONAL ASTROPARTICLE PHYSICS	**6**
GRAVITATIONAL PHYSICS	**6**
NUCLEAR ASTROPHYSICS	**6**
CELESTIAL MECHANICS	**6**
SUBNUCLEAR PHYSICS	**6**
ASTRONOMICAL SPECTROSCOPY	**6**
PLANETARY ASTROPHYSICS	**6**
GALACTIC DYNAMICS	**6**
ASTRONOMICAL INTERFEROMETRY	**6**
SELECTED TOPICS IN MODERN ASTROPHYSICS	**6**
2nd YEAR	
MANDATORY UNITS	**CREDITS**

ASTROPHYSICS LABORATORY 2	**6**
1 UNIT TO CHOOSE AMONG THE FOLLOWING:	**CREDITS**
FLUID AND PLASMA DYNAMICS	**6**
EXOPLANETARY ASTROPHYSICS	**6**
COSMOLOGY OF THE EARLY UNIVERSE	**6**
ASTROPHYSICS OF THE INTERSTELLAR MEDIUM	**6**
HIGH ENERGY ASTROPHYSICS	**6**
ASTRO-STATISTICS AND COSMOLOGY	**6**
COMPUTATIONAL ASTROPHYSICS	**6**
6 ADDITIONAL FREE-CHOICE CREDITS	
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