



MASTER'S PROGRAMME IN GEOMATICS (GEOM) 1° LEVEL - A.Y. 2026/2027

Duration	12 months
Teaching period	January 2027 - October 2027
Internship period	October 2027 - January 2028
Total teaching hours (Lectures, Practical Sessions and Laboratories)	488
Total Internship hours	300
Total ECTS	75

Awarding Institution

Siena University - Via Banchi di Sotto 55 - 53100 Siena (Italy)

Type of Academic Programme

I level University Master's Programme

Programme Duration

January 2027 - January 2028

Aims and Objectives

The Master aims to train experts with advanced skills in the latest **geo-informatics technologies**, capable of carrying out activities related to the acquisition, management, analysis, monitoring, updating, and dissemination of **spatial data**. The disciplines covered include geodesy, topographic surveying, cartography, spatial databases, Geographic Information Systems (GIS), spatial analysis and geoprocessing in 2D and 3D georeferenced environments, geostatistics, remote sensing, aerial digital photogrammetry (including terrestrial and drone-based applications), airborne and terrestrial laser scanning, 3D data editing, web cartography, and Building Information Modelling (BIM), for the integrated management of spatial data and building-related information. Starting this year, the programme has been further enhanced with **artificial intelligence** and **machine learning** techniques applied to spatial data, as well as the use of immersive 3D technologies.

The teaching activities, delivered at the Centre for GeoTechnologies since its inauguration in 2004, have attracted the interest of public administration officials and technical staff, as well as professionals from various fields such as geologists, engineers, agronomists, architects, foresters, and archaeologists. During the Master's programme, students will learn processes for extracting topographic and geo-thematic information and developing additional methods for producing spatial data containing numerical and multi-temporal information. The courses include practical examples of image processing with different spatial and spectral resolutions for the creation of digital elevation models, stereoscopic models, and orthorectified data, as well as the acquisition of 3D point clouds for the generation of new vector data.

The Master's programme includes both the theoretical foundations of the disciplines involved and case studies from both national and international contexts. Upon completion of the course, participants will be able to acquire, organize, and manage spatial information, monitor environmental parameters, and disseminate georeferenced thematic data online.



Fees

Master's tuition fee: **€ 3,700**

The amount is payable in two instalments: the first instalment of € 2,000 (+ € 16 for the electronic stamp duty payment) to be paid at the time of enrolment; the second instalment of € 1,800 must be paid no later than February 28th 2027.

Venue of the Master's Programme

Center of GeoTechnologies of University of Siena - Via Vetri Vecchi 34 - 52027 San Giovanni Valdarno (AR - Italy)

Total hours

772 hours (lectures + practical sessions + laboratories + internship)

Recognition of Prior Credits (ECTS/CFU)

Admitted candidates may be granted entry credits by the Board of Lecturers (up to a maximum of 25% of the total ECTS credits) for previously completed educational activities in subject areas relevant to the Master's programme, provided that such activities are properly documented by the students. The Board of Lecturers reserves the right to assess the level of preparation in the relevant subjects also through an oral interview or a written test.

Admission Requirements

To enrol in the I level Master's Programme in Geomatics (GEOM) is required at least a first-cycle degree:

- All Italian degrees awarded under the regulations prior to d.m. 509/99
- All Italian bachelor's degree classes under d.m. 509/99 and d.m. 270/2004
- All Italian master's degrees under d.m. 509/99 and under d.m. 270/2004

Graduates from foreign universities, both EU and non-EU, are also eligible, provided their qualification is deemed equivalent to the required Italian degrees by the Master's Academic Board.

Further Information

TEACHING SECRETARIAT:

Office for the Coordination of Training Activities - e-mail master.cgt@unisi.it - Tel. +39 055.9119449

PROGRAMME COORDINATOR:

Prof. Riccardo Salvini - e-mail riccardo.salvini@unisi.it - Tel. +39 055.9119441

CGT COLLEGE (ACCOMMODATION):

Debora Graziosi e-mail collegiocgt@unisi.it - Tel. +39 055.9119457



Study Programme

Disciplinary Area	Teaching Activities	Hours	ECTS
FUNDAMENTALS OF GEODESY AND DIGITAL CARTOGRAPHY		76	9,5
	Introduction to Geomatics	4	0,5
	Fundamentals of Geoinformatics	12	1,5
	Fundamentals of Geodesy	8	1
	Digital Cartography	8	1
	Applications of Digital Cartography	16	2
	Satellite Positioning Systems (GPS)	8	1
	Topographic Survey	20	2,5
SPATIAL DATABASES, AI PROGRAMMING, AND WEBGIS		96	12
	Fundamentals of Spatial Databases	32	4
	Applications of Spatial Databases	24	3
	AI Programming: Machine Learning models	16	2
	WebGIS	24	3
GIS AND AI APPLICATIONS		100	12,5
	Fundamentals of GIS	20	2,5
	Applications of GIS	16	2
	Geoprocessing and Geospatial AI	20	2,5
	3D GIS	20	2,5
	Geostatistics	24	3
REMOTE SENSING, PHOTOGRAMMETRY AND LiDAR		136	17
	Fundamentals of Remote Sensing	16	2
	Practicals of Remote Sensing	16	2
	AI and Remote Sensing	8	1
	Aerial and Satellite Photogrammetry	40	5
	Drone-Based Photogrammetry	24	3
	Aerial LiDAR	8	1
	Terrestrial LiDAR	24	3
CAD, BIM AND 3D MODELING		80	10
	Fundamentals of Building Information Modeling	8	1
	Applications of Building Information Modeling	16	2
	Fundamentals of 3D Editing	12	1,5
	3D Digital Creation: Editing and Immersive Technologies	20	2,5
	Fundamentals of CAD	24	3
CURRICULAR INTERNSHIP		300	12
	Curricular internship	300	12
FINAL EXAM			2
	Final Dissertation		2