

**SPECIALIZED MASTER's in « PHOTOGRAMMETRY, POSITIONNING and
DEFORMATION MEASUREMENTS (PPMD) » [UPDATE]**

(accredited by the Conférence des Grandes Ecoles)

With the sponsorship of Sintegra, SITES, Geosystems, FIT-Conseil, VINCI, Soldata, Trimble and the SFPT



This specialized master's degree aims at training highly qualified experts in Remote sensing, Photogrammetry, Geodesy and Metrology.

LOCATION

All courses are held at the National School of Geographic Sciences (www.ensg.eu), in Marne la Vallée just east of Paris. These courses include:

- a 2-week internship on data acquisition in October;
- a visit to the OCA observatory in Calern (for the specialization in « Geodesy ») or a 1-week course on "Spatial Imagery" in Toulouse (for the specialization in « 3D and Deformation Measurements » and « Remote Sensing and Photogrammetry »).

TUITION FEES: 5,600 euros (reduced to 5,000 euros for students with an engineering diploma from the ENSG, the ESTP, the ESGT or INSA-Strasbourg, and for students with an M2 in Computer Science applied to GIS from the University of Paris VI).

LENGTH OF STUDY: 12 months

ALL COURSES ARE IN FRENCH.

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+ <http://www.ensg.eu/Masteres-specialises-274#A-MS-PPMD>

Fall semester (October to January):

The **common core** coursework provides students with the opportunity of developing solid skills in Photogrammetry (capture and processing of stereoscopic views), Geodesy (reference systems, GNSS methods), and the tools in mathematics and data processing to understand, maintain and even create code to develop software tools associated with these techniques.

Spring semester (February to mid-April):

- The specialization in « **Geodesy** » highlights the analytical techniques of Topometry and the techniques of Geolocalization. It is meant to train experts in Spatial Geodesy, GNSS methods and Gravimetry, working in the field of permanent networks and GNSS, in metrology as consultants, or in research especially involving precision deformation measurements in geophysical risk prevention (measuring landslides, seismic deformations).
- The specialization in « **3D and Deformation measurements** » emphasizes the methods used to measure and extract 3D information from images or lidar data. It aims at training experts called upon to supervise topometry fieldwork projects and create 3D graphic designs using photogrammetric and lasergrammetric techniques.
- The « **Remote Sensing and Photogrammetry** » specialization places the accent on image processing to extract semantic and geometric information. Its goal is to train experts capable of focusing on specifications in data capture, structure and processing to extract geometric and semantic information, needed for a given project.

Specialization Skills	Geodesy	3D and Deformation Measurement	Remote Sensing and Photogrammetry
Analysis and design of data processing tools associated with Geodesy, Photogrammetry and Remote Sensing	xx	Xx	xx
GNSS, Spatial Geodesy	xxx	X	x
Precision Topometry	xx	X	x
Physical Geodesy	xx	X	x
Image Processing	x	Xx	xxx
Expertise in Sensors (optical, radar, lidar)	x	Xx	xx
Stereo Image Capture Design	xx	xx	xx
3D Image Modelling	x	xxx	xx
Computer-assisted Image Analysis	x	x	xxx
Architectural Image Analysis	xx	xxx	x

Legend:

x: general knowledge of the field

xx: mastery

xxx: expertise

The following chart lists examples of professional openings according to specialization.

Examples of job offers	Specialization	Geodesy	3D and Deformation Measurements	Remote Sensing and Photogrammetry
Design engineer for GNSS permanent network management		x		
Consultant in a Metrology Survey Bureau		x	x	
Design engineer in charge of web developments in the field of Geodesy		x		
Engineer in the field of computer-assisted precision topometric image analysis		x	x	
Engineer in charge of tide-gauge instrument station management		x		
Design and Development engineer at a software provider in one of the PPMD fields		x	x	x
Researcher in one of the PPMD fields		x	x	x
Photogrammetry production assistant (aerial or land survey)			x	x
Design engineer to develop new spatial image capture systems or new cameras			x	x
Researcher working on simulations of sensors to develop applications			x	x
Satellite image programmer			x	x
Project supervisor to organize tenders to procure cameras or lidar			x	x
Engineer in charge of designing light platforms (for drones, for example)			x	x
Design engineer in charge of image/lidar data acquisition, sale and supply			x	x
Design and Development engineer for image/lidar data processing chains				x
Remote Sensing engineer in charge of producing thematic data				x

Table 1: Examples of careers with a Specialized Master's (SM) in PPMD