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| **1- Identification of the Education Offer** |

***Level:* Master Degree (Graduate level)**

***Field :* Architecture, Urban Planning and City Professions**

***Branch* : City professions**

***Speciality* : Geomatics and Land Management**

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| **2- Educational Establishment :** |

***Faculty/Institute: Faculty of Technology***

***Department: Department of Architecture***

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| **3- External partners** |

***Algerian Academic partners:***

- Ecole nationale supérieure des sciences géodésiques (ENSGTS)

- Ecole Nationale des Ingénieurs de la Ville (ENIV)

***Companies and other socio-economic partners*:**

- Agence nationale du Cadastre

- Centre des Techniques Spatiales (CTS)

- Centre d'Etude et de Réalisation en Urbanisme, Tlemcen (URBAT)

***International partners :***

- Projet ERODITE : EaRth Observation Tools for the promotion of DigITal Economy

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| **4- Context and objectives of the training:** |

The Geomatics and Land Management (GGF) specialization is designed to train professionals who can work in the fields of geographic information, land management and urban planning. This specialization therefore focuses on the operational application of Geographic Information Systems (GIS) in urban, rural and forestry land management.

Geomatics, as the science of acquiring and analyzing geographic information (geography + computer science), will enable the identification (surveying) and management of land on a geographic scale (rural environment) and on a city scale (urban environment). Algerian towns and villages in particular are subject to rapid, accelerated and sometimes even anarchic development. It is therefore imperative to monitor and regulate this development from the point of view of the land base. This can only be achieved through digitized management capable of processing a large mass of data. Moreover, securing rural land tenure is one of the priorities of any rural development policy, through the conservation of land-related information.

Moreover, geomatics, as a discipline that enables spatial data to be produced, processed and visualized digitally, is becoming an essential part of land administration and management. Indeed, the originality of this course is to combine geomatic techniques such as GIS, remote sensing, digital cartography, photogrammetry and satellite positioning, with the needs of land identification and planning through land management, cadastre, demarcation, land law, subdivision and development. In this respect, the Geomatics and Land Management Laboratory (GeF) at the École Supérieure des Géomètres et Topographes (ESGT) Le Mans (France) is a potential partner for the proposed training program.

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| **5- Facilities, Equipment and Laboratoires** |

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| **Title of the laboratory:** | | **TOPOGRAPHY** | | |
| **No.** | **Equipment title** | | **Number** | **Observations** |
| 1 | Theodolite DT 200 digital | | 1 | The material listed allows the  realization of various works  surveying practices  as :  • the statement,  • the layout,  • determination of surfaces,  • plotting the curves of  levels, etc. |
| 2 | Theodolite Tt400 (T12) with tripod | | 1 |
| 3 | Tachymeter device 5 | | 5 |
| 4 | 4 Niveaux NK01 8 | | 8 |
| 5 | KERM level with tripod | | 1 |
| 6 | Level N 20 with tripod | | 1 |
| 7 | Leica NA730 level | | 1 |
| 8 | Gray T12 staff | | 1 |
| 9 | White target | | 7 |
| 10 | LNG red sight | | 2 |
| 11 | Staff with case | | 1 |
| 12 | Mire L.A.T | | 1 |
| 13 | Mire type B.T.L 4D.01 | | 1 |
| 14 | Mire B.T.L 4D | | 1 |
| 15 | Optical brackets | | 6 |
| 16 | GST 20 Tripods | | 5 |
| 17 | Tripods GST 70 | | 1 |
| 18 | Trépied type B.S.T | | 1 |
| 19 | Centering device with two pivoting feet 1 | | 1 |
| 20 | Centering rod | | 2 |
| 21 | Milestones | | 67 |

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| **Title of the laboratory:** | | **Building materials technology** | | |
| **No.** | **Equipment title** | | **Number** | **Observations** |
| 1 | Complete apparatus for equivalent test of  sand according to NF P 18 598 | | 2 | Equivalent test of  Sand |
| 2 | Complete apparatus for Vicat test | | 2 | Vicat test |
| 3 | Complete apparatus for the " Permeameter of  BLAINE » | | 3 | Permeability test |
| 4 | Flow cone according to NF P 10-358 with  10 mm fixed nozzle L0060.4 | | 2 | TP Flow cone |
| 5 | 1l PVC measuring container | | 2 |
| 6 | Stainless steel sieve diameter 150 open 3.15 mm | | 2 |
| 7 | MARCH cone nozzle diam 4.76 mm for  grout viscosity with graduated plastic bowl  1 liter | | 2 | TP Cone of March |
| 8 | 1 liter graduated bowl | | 2 |
| 9 | SPEDY device | | 3 | TP |
| 10 | Measuring plot for shrinkage mold 4x4x16 cm (10 pieces) | | 1 |
| PT of  Deformometry or  refractometry |
| 11 | INVAR calibration rod length 160mm  for test on specimen 4x4x16mm | | 1 |
| 12 | Stainless steel ball dia 6mm for refractometer | | 5 |
| 13 | 5mm comparator | | 1 |
| 14 | Pull-Out test device according to ASTM C900 | | 1 | Pull-out test TP |
| 15 | Hydraulic cylinder | | 1 |
| 16 | Pump with 60kn pressure gauge | | 1 |
| 17 | Set of inserts to put in place when casting the  concrete with support ring | | 1 |
| 18 | Complete apparatus for analysis  particle size of aggregates | | 5 | Analysis lab  Granulometric |

12 drawing rooms with a capacity of 25 drawing tables

09 classrooms with more than 25 seats

01 Amphitheater (classrooms) with 150 seats

02 computer rooms with a capacity of 20 workstations (for CAD work)

01 drawing room

01 computer center

01 remote teaching center

01 examination room

Library of over 6,000 books from the Faculty of Technology.

In addition to the titles available in architecture, the library covers all disciplines related to architecture:

- Civil Engineering

- Books in Computer Science

- Hydraulics

- Books on environment and ecology.

- Books on urban planning

The Faculty of Technology is equipped to provide

Students to benefit from Internet services.

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| **6- Profiles and Competencies Targeted** |

This course is designed to enable students to enter the land surveying and land development professions, in order to implement more effective and sustainable territorial and urban policies. On completion of the course, graduates will be able to carry out all kinds of land surveying projects, from topographic surveys to cadastral plans and interactive maps, with an emphasis on the use of geographic information systems (GIS). Graduates will also be able to draw up land development plans (subdivisions, parcelling out, etc.) in accordance with current Algerian legislation.

With regard to the targeted profiles, the graduate will become a specialist in geomatics and land ownership, able to integrate into both the public and private sectors, as an active player in the professional sectors of land, environment, development and urban planning. The targeted profiles are as follows

- GIS specialist

- Geomaticians specializing in land management

- Geomaticians specializing in geospatial studies

- Land use planning consultant

- Geo-spatial analysis officer

- Land management planner

- Engineer attached to cadastral departments.

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| **7- Development Prospects and Employability** |

This professional Master's degree is designed to train specialists in land management (urban, rural and forestry), and thus meet the requirements of land registry management. The course prepares our graduates to produce, process and digitally visualize spatial/territorial data. In this respect, the potential for employment is both regional (in the west of the country) and national, given that the digitization of land and land registries is lagging behind throughout the country. In fact, this sector is characterized by major technological changes, and is obliged to adopt professional specifications based on geographic information systems (GIS), more suited to the identification (surveying) and management of land on a geographical scale (rural/forestry) and on a city scale (urban). Indeed, tools such as remote sensing, digital mapping and geographic information systems (GIS) are becoming indispensable in land administration and management. The aim is therefore to improve :

- Computerization of the land registry ;

- Digital mastery of cartographic requirements;

- Promoting entrepreneurship in rural land development, given that rural land management is essential to improving farming conditions;

- Controlling the evolution of rural and urban land use;

In this respect, the potential for regional and national employability specific to this Master's program has been considerable in recent years, given the rapid growth of urban and rural environments. In the public sector, graduates will be able to work for administrations and departments (local authorities, land registries, land inspectorates, DUAC, etc.) that are particularly looking for specialists in rural and urban land management and geographic information systems (GIS). Graduates will also be able to work for private firms and establishments (Géomètre Expert Foncier, technical design offices, urban planning study centers, etc.).

This training also enables greater immersion in the world of entrepreneurship related to land surveying and planning, through consulting firms (expert missions), or startups specializing in high-tech terrestrial reconnaissance (drones, Alsat-1, Alsat-1B satellite data, etc.).

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| **8- Organisation of the Semesters Teaching** |







