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

***Level* : Master**

***Field : Civil Engineering***

***Branch* : *Civil Engineering***

***Speciality* : Structures**

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| **2- Educational Establishment :** |

***Faculty/Institute: Faculty of Tehnology***

***Department : Civil Engineering department***

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| **3- External partners** |

***Algerian Academic partners:***

***Companies and other socio-economic partners*: SEROR, SOGERHWIT, ADA, Groupe HASNAOUI.**

***International partners :***

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

The aim of the Civil Engineering Master's degree, with the "Structures" option, is to train professionals capable of designing, studying and monitoring structures in civil engineering, concrete and steel structures.

To train generalist senior managers capable of participating in the study, management and monitoring of structural projects.

Graduates of the Structures Master's degree have solid scientific and technical knowledge, as well as skills in human management and the organisation of construction projects.

Preparing for a career as a Civil Engineering executive. Teamwork and developing communicative and critical thinking skills.

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

* Material identification and quality control tests (steel, metal, wood, concrete, cement, plaster, etc.)
* Static and dynamic tests on reduced or actual scale on structural systems.
* Testing of innovative materials and products in the field of construction.

Laboratories : EOLE, RISAM.

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

The Master's program provides candidates with the necessary tools for the design and analysis of structures in Civil Engineering, specifically in concrete and steel framing.

It introduces advanced concepts in structural rehabilitation, finite element modeling of structures, seismic engineering, and geotechnical calculations.

It covers the types of materials to be used in structures and their behavior under extreme loads.

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

Career opportunities for professionals in executive positions are significant in all phases of a construction project:

* Work programming: public sector (local authorities, construction companies).
* Structural analysis and design: engineering firms, consulting firms.
* Construction management, supervision, and quality control: general contractors, subcontractors, construction management firms, inspection agencies.
* Maintenance and asset management: technical management, rehabilitation, renovations.
* Site supervision.
* Laboratories.

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

**Semester 1**

Mechanics of structures (3h)

Structural dynamics 1 (3h)

Reinforced concrete structures 1 (3 h)

Metal structures (4h30)

Complementary programming (3 h)

Experimental methods (1h30)

Innovative materials (3 hrs)

Technical English and terminology (1h30)

Housing, safety and public health (1h30)

Risk management (1h30)

Communication (1h30)

**Semester 2**

Elasticity (4h30)

Structural dynamics 2 (3h)

Reinforced concrete structures 2 (3 h)

Foundations and supports (3 h)

Finite element methods (3 h)

Steel construction project (4h30)

Ethics, deontology and intellectual property (1h30)

Building thermics (1h30)

Architectural heritage (1h30)

**Semester 3**

Prestressed concrete (4h30)

Plasticity and damage (3h)

Earthquake engineering (3 h)

Special structures (3 h)

Structural modelling (3 h)

Reinforced concrete structures project (4h30)

Documentary research and dissertation design (1h30)

Pathologies and rehabilitation of structures (1h30)

Project management (1h30)

**Semester 4**

Semester S4 is reserved for an introduction to research, culminating in a dissertation and oral presentation.