The Department of Material Sciences offers training in Master of Chemistry, to be admitted to a Master, a student must justify either a national bachelor's degree in a field compatible with that of the requested master (chemistry and appendices), or validation by equivalence of other diplomas (Engineer, DES, etc.) carried out by the department's training committee. Our training aims to provide graduates with new specific and essential skills in different areas of chemistry, tow specialities are offered:

- **Applied Organic Chemistry**
- **Inorganic Chemistry**

PRESENTATION AND GOALS

The **Applied Organic Chemistry** specialty is aimed more specifically at students who want training in organic synthesis, from its most recent methodological developments to its applications in response to economic challenges. It is a discipline at the heart of recent, current and future innovation in various fields such as health, cosmetics, the environment, agriculture, nanosciences, materials, ...

This specialty allows students, through an internship, to perfect their practical knowledge and become familiar with working in university or industrial laboratories.

To offer students the opportunity to pursue doctoral studies and to train future researchers, teacher-researchers and private executives in the field of organic chemistry.

The **Inorganic Chemistry** specialty is aimed more specifically at students who wish to ***design, synthesize, characterize*** ... molecules or materials derived from elements other than carbon. It can be metals, oxides, carbides ... or even the chemistry of silicon, that of transition metals, rare earths ...

Inorganic chemistry is ***a vast and varied field*** involving many fields of skills and knowledge…

This specialty allows the student to acquire and master knowledge in the fields of molecular chemistry and organometallic chemistry with alternative methods of synthesis of advanced materials. An important aspect also concerns recent developments in specific characterization methods. This set will allow the student to have a solid and complete training aimed at mastering the structure-activity and / or structure-property relationships at the level of the molecule as well as that of the material in the broad sense of the term. It is a training of choice for pursuits in doctoral studies.

After a doctorate very good employability in the private sector (Companies), and in the academic sector.

PROGRAMME MASTER IN CHEMISTRY

- **Specialty: Applied Organic Chemistry**
  Training manager: BENMOULAI-HEBBOUL Zoulikha

Specialty Applied Organic Chemistry M1 S1	
Unit title	**Unit content**
Fundamental	Chemical bonds
	Analysis techniques and structural determination
	Synthesis strategy and tools
Methodology	Practical organic chemistry
	Spectroscopy
	Chemical thermodynamics of solutions
Discovery	Environmental chemistry
Transversal	English I

Specialty Applied Organic Chemistry M1 S2	
Unit title	**Unit content**
Fundamental	Catalysis and green chemistry
	Radiocrystallography
	Electrochemistry
	Functional organic chemistry
Methodology	Crystallographic analysis
	Polymer chemistry
Discovery	Nanoscience
Transversal	Computer tools for use by chemists

Specialty Applied Organic Chemistry M2 S3	
Unit title	**Unit content**
Fundamental	Advanced organic chemistry
	Compounds of the secondary metabolite
	Natural Products Chemistry.
	Bio-inorganic chemistry
Methodology	Thermal analyzes
	Extraction methods and chemical determination of natural products
	Molecular modeling in organic chemistry
	Separation methods
Discovery	Nanotechnologies
Transversal	English II, Management, Communication

- **Specialty: Inorganic Chemistry**
  Training manager: BENMOULAI-HEBBOUL Zoulikha

Specialty Inorganic Chemistry M1 S1	
Unit title	**Unit content**
Fundamental	Chemical bonds
	Inorganic Molecular Chemistry and Solids
	Analysis techniques and structural determination
Methodology	Methodology for the synthesis of materials
	Chemical thermodynamics of solutions
	Molecular modeling in chemistry
Discovery	Environmental chemistry

Transversal	English I

Specialty Inorganic Chemistry M1 S2	
Unit title	**Unit content**
Fundamental	Catalysis and green chemistry
	Radiocristallography
	Electrochemistry and applications
	Coordination and organometallic chemistry
Methodology	Electrochemical analysis techniques
	Polymer chemistry
	Crystallographic analysis
Discovery	Bio-inorganic chemistry
Transversal	Computer tools for use by chemists

Specialty Inorganic Chemistry M2 S3	
Unit title	**Unit content**
Fundamental	Solid state chemistry
	Experimental characterization techniques
	Introduction to electrochemical corrosion and its prevention.
	Thermal analyzes
Methodology	Corrosion and protection
	Spectroscopy
	Fluid dynamics and transfers.

Discovery	Nanotechnologies
Transversal	English II, Management, Communication

Tables summarizing the projects of Master studies and the names of the supervising teachers:

Theme (Specialty: Applied Organic Chemistry)	
Etude comparative sur la rétention d'un colorant cationique par différents adsorbants	**F.Z.Batana**
Détermination quantitatives de principes actifs dans les formulations pharmaceutiques'	**A.Saidat**
Influence de la date de récolte sur la composition chimique et l'activité antioxydants des extraits lipidiques et phénoliques de l'olivier.	**M.Yousfi**
Investigation photochimique aux propriétés antioxydants des extraits de safron locale.	
Effet des extraits de son du blé dur et de l'orge sur L' alpha glucosidase / une etude in vitro	**M.Benalia**
Evaluation in vitro de l'activité antioxydante d'extrait hydroalcoolique de la partie aérienne d'une plante médicinale	**A.Bouziane**
Amylolyse d'extraits d'amidons du blé dur, du Frik, du Mermez et d'orge : une étude in vitro	**A.Djeridane**
Etude de la capacité antioxydante des extraits de la plante Hammada elegans	**R.Mahfoudi (ENS)** **Co-encadrant A.Djeridane**
Contribution à l'optimisation d'extraction assistée aux ultrasons des composés phénoliques et activité antioxydante d'une plante saharienne	**Z.Benahmed**
Modélisation de l'extraction des antioxydants d'une plante locale par le modèle Box-Behnken, et étude des activités antioxydantes	
L'influence de la sonication sur la teneur en phenol et l'activité antioxydante des plantes.	**A.Nourdine**

Optimisation de l'extraction assistée par ultrasons d'une plante saharienne en utilisant la méthode de surface de réponse	**Y.Ami**
Activités antioxydantes des extraits *Ziziphus Spina-Christi*	**Z.Hadbaoui**
Activités antioxydantes des extraits de blé dur, de l'orge de mermez et de frick	**C.Hamia**
Activité antioxydante des extraits des composés phénoliques des plantes médicinales	**B.Keribaa**
Extraction des composé phénoliques des grains de Sorgho locales, et leur quantification par différents méthodes	**B.Belhadi(Département ST) Co-encadrant M.Yousfi**
Les effets inhibiteurs des flavonoïdes sur l'α-amylase **de porcine**	**R.Mahfoudi(ENSL)**

Theme (Specialty: Inorganic Chemistry)	
Effets de certains paramètres physico-chimiques sur la rétention d'un colorant cationique.	**F.Z.Batana**
Comportement électrochimique de quelques électrodes modifiées.	**M.Ferhat**
Effets des paramètres d'électrodéposition sur les dépôts métalliques	**F.Z.K.Hamdi**
Analyse des données des matériaux à base de lanthane.	**Z.Hebboul Co-encadrant I.K.Lefkaier**
Etude expérimentale et théorique de quelques propriétés physiques de matériaux optiquement actifs**.**	**Z.Hebboul Co-encadrant A.Benghia**
Synthèse et caractérisation de quelques oxydes.	**D.Mouattah**
Cinétique de l'électrodéposition de semi-conducteurs à base de soufre	**A.Hamdi**
Etude du comportement électrochimique du titane dans différents milieux corrosifs.	**M.Doulache (Département ST)**
Elaboration de nouveaux matériaux d'électrode pour la détection électrochimique des molécules organiques à intérêt pharmaceutique.	
Détermination des grandeurs d'excès de quelques systèmes binaires.	**F.Allal (Département Biologie)**

Etude des propriétés inhibitrices des colorants azoïques contre la corrosion de l’acier en milieu acide.	**S.Sebiane**