ERASMUS+ Project

Ref : 561786-EPP-1-2015-1-SE-EPPKA2-CBHE-JP

“South Mediterranean Welding Centre for Education, Training and Quality Control”

SM-WELD

Presentation

Présentation du Master IngS

USTHB / P11
11 Juillet 2021

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Objectif du Master IngS :

Le Master IngS a pour objectif la mise en place au sein de l'Université des Sciences et de la Technologie Houari Boumediene - USTHB, d'une Offre de Formation Master de Haut Niveau en Technologie de Soudage pouvant répondre au besoin du secteur industriel Algérien et Maghrébin.

Partenaires du Master IngS :

1. **KTH Royal Institute of Technology, Suède (www.kth.se), Porteur du projet** ;
2. **Université des Sciences et de la Technologie Houari Boumediene**, **Algeria (www.usthb.dz) ;**
3. Institute of Entrepreneurship Development, **Grèce** (www.entre.gr) ;
4. University of Coimbra, **Portugal** (www.uc.pt) ;
5. University of LEON, **Espagne** (www.unileon.es) ;
6. University of Galati, **Roumanie** (www.ugal.ro)
7. European Federation for Welding, Joining and Cutting, **Belgique** (www.ewf.be) ;
8. GSI-Gesellschaft für Schweißtechnik International mbH, **Allemagne** (www.gsi-slv.de)
9. R&G Consulting, **Suède** ;
10. Université Frères Mentouri Constantine, **Algérie** (www.umc.edu.dz) ;
11. Entreprise Nationale des véhicules Industriels, **Algérie** (snvigroupe.dz) ;
12. YIT Yamani Institute of Technology, **Algérie** (http://www.yamani-institute.com) ;
13. Société des Materiels de Gerbage et de Manutention, **Algérie** (www.sgpequipag.dz/german.php) ;
14. National Engineering School of Monastir, **Tunisie** (www.enim.rnu.tn) ;
15. University of SFAX, **Tunisie** (www.uss.rnu.tn) ;
16. SOCOMININ, **Tunisie** (www.socomenin.com.tn) ;
17. TECHNOPREST SARL, **Tunisie** (www.technoprest.com.tn) ;
18. SFAX Chamber of Commerce & Industry, **Tunisie** (www.ccis.org.tn) ;

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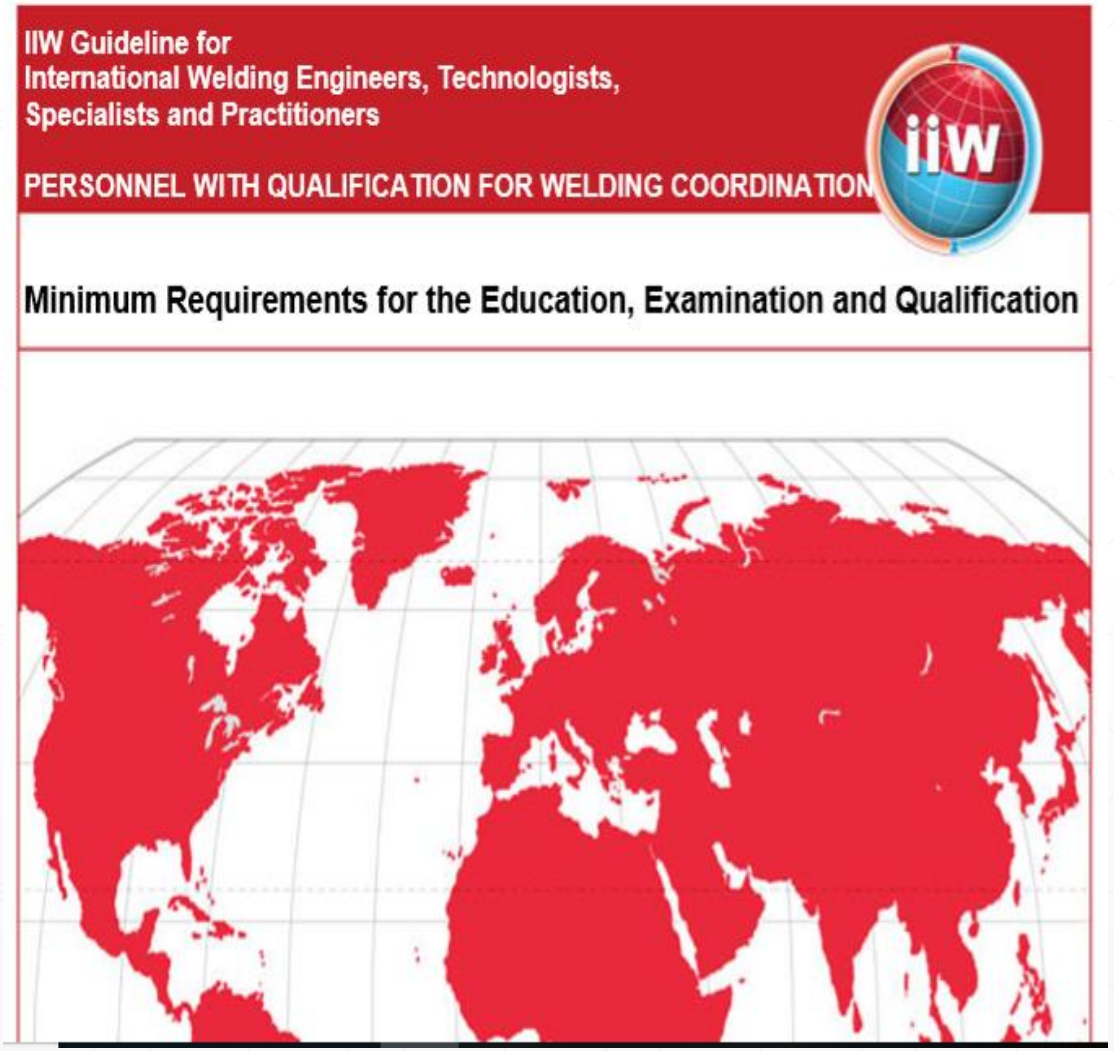
Référentiel de l’International Institute of Welding- IIW



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Referentiel IIW

						Number of subjets											Teaching hours								
			88	293	16	18	13	12	8	17	17	15	17			92	88	64	86	51	88	82	84	87
Mod	S/Mod	Subject Title	Part 1 (Hours)	Part 3 (Hours)	P1 KTH	P2 UC	P3 ULE	P4 UG	P5 EWF	P9 UM	P10 US	P11 USTHB	P12 UFM	Program Countries	Partner Countries	P1 KTH	P2 UC	P3 ULE	P4 UG	P5 EWF	P9 UM	P10 US	P11 UHB	P12 UFM
E M1	1.1	1.1 General introduction to welding technology	3	0					1			1		1	1	0	0	0	0	3	0	0	3	0
E M1	1.2	1.2 Oxy-gas Welding and related processes	2	0			1			1				1	1	0	0	2	0	0	2	0	0	0
E M1	1.3	1.3 Electrotechnics, a review	1	0			1					1		1	1	0	0	1	0	0	0	0	1	0
E M1	1.4	1.4 The arc	3	0			1			1				1	1	0	0	3	0	0	3	0	0	0
E M1	1.5	1.5 Power sources for arc welding	4	0			1			1				1	1	0	0	4	0	0	4	0	0	0
E M1	1.6	1.6 Introduction to gas shielded arc welding	2	0			1			1				1	1	0	0	2	0	0	2	0	0	0
E M1	1.7	1.7 TIG Welding	4	1				1					1	1	1	0	0	0	5	0	0	0	0	5
E M1	1.8.1	1.8.1 MIG/MAG	4	2				1				1		1	1	0	0	0	6	0	0	0	6	0
E M1	1.8.2	1.8.2 Flux Cored Arc Welding	2	0				1			1			1	1	0	0	0	2	0	0	2	0	0
E M1	1.9	1.9 MMA Welding	4	2				1			1			1	1	0	0	0	6	0	0	6	0	0
E M1	1.10	1.10 Submerged-Arc Welding	4	1				1			1			1	1	0	0	0	5	0	0	5	0	0
E M1	1.11	1.11 Resistance Welding	0	6	1								1	1	1	6	0	0	0	0	0	0	0	6
E M1	1.12.1	1.12.1 Other Welding Processes - Laser; Electron Beam; Plasma	0	8					1			1		1	1	0	0	0	0	8	0	0	8	0
E M1	1.12.2	1.12.2 Other Welding Processes, other than 1.12.1	0	6					1	1				1	1	0	0	0	0	6	6	0	0	0
E M1	1.13	1.13 Cutting, Drilling and other edge preparation processes	2	2				1					1	1	1	0	0	0	4	0	0	0	0	4
E M1	1.14	1.14 Surfacing and Spraying	0	2					1			1		1	1	0	0	0	0	2	0	0	2	0
E M1	1.15	1.15 Fully mechanised processes and robotics	0	8					1	1				1	1	0	0	0	0	8	8	0	0	0
E M1	1.16	1.16 Brazing and soldering	0	4		1							1	1	1	0	4	0	0	0	0	0	0	4
E M1	1.17	1.17 Joining processes for plastics	0	2					1			1		1	1	0	0	0	0	2	0	0	2	0
E M1	1.18	1.18 Joining processes for ceramics and composites	0	1		1				1				1	1	0	1	0	0	0	1	0	0	0
E M1	1.19	1.19 Welding laboratory	0	10	1							1		1	1	10	0	0	0	0	0	0	10	0
E M2	2.1	2.1 Structure and properties of metals	4	0		1							1	1	1	0	4	0	0	0	0	0	0	4
E M2	2.2	2.2 Phase Diagrams and Alloys	4	0		1							1	1	1	0	4	0	0	0	0	0	0	4
E M2	2.3	2.3 Iron - carbon alloys	5	0		1							1	1	1	0	5	0	0	0	0	0	0	5
E M2	2.4	2.4 Manufacture and classification of steels	2	2		1							1	1	1	0	4	0	0	0	0	0	0	4
E M2	2.5	2.5 Behaviour of structural steels in fusion welding	4	0		1					1			1	1	0	4	0	0	0	0	4	0	0
E M2	2.6	2.6 Cracking phenomena in welded joints	2	6		1							1	1	1	0	8	0	0	0	0	0	0	8
E M2	2.7	2.7 Fractures and different kinds of fractures	4	0		1							1	1	1	0	4	0	0	0	0	0	0	4
E M2	2.8	2.8 Heat treatment of base materials and welded joints	4	0			1					1		1	1	0	0	4	0	0	0	0	4	0
E M2	2.9	2.9 Structural (unalloyed) steels	2	2			1				1			1	1	0	0	4	0	0	0	4	0	0
E M2	2.10	2.10 High strength steels	4	6			1						1	1	1	0	0	10	0	0	0	0	0	10
E M2	2.11	2.11 Application of structural and high strength steels	0	2			1				1			1	1	0	0	2	0	0	0	2	0	0
E M2	2.12	2.12 Creep and creep resistant steels	0	4		1				1				1	1	0	4	0	0	0	4	0	0	0
E M2	2.13	2.13 Steels for cryogenic applications	0	4	1					1				1	1	4	0	0	0	0	4	0	0	0
E M2	2.14	2.14 Introduction to corrosion	0	4	1								1	1	1	4	0	0	0	0	0	0	0	4
E M2	2.15	2.15 Stainless and heat resistant steels	0	12		1							1	1	1	0	12	0	0	0	0	0	0	12
E M2	2.16	2.16 Introduction to wear and protective layers	0	5	1						1			1	1	5	0	0	0	0	0	5	0	0

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Suite ----------> Referéntiel IIW

M2	2.17	2.17 Cast irons and steels	0	2		1						1		1	1	0	2	0	0	0	0	0	2	0
M2	2.18	2.18 Copper and copper alloys	0	2		1							1	1	1	0	2	0	0	0	0	0	0	2
M2	2.19	2.19 Nickel and nickel alloys	0	2		1							1	1	1	0	2	0	0	0	0	0	0	2
M2	2.20	2.20 Aluminium and aluminium alloys	0	6		1							1	1	1	0	6	0	0	0	0	0	0	6
M2	2.21	2.21 Titanium and other metals and alloys	0	3	1								1	1	1	3	0	0	0	0	0	0	0	3
M2	2.22	2.22 Joining dissimilar materials	0	4				1				1		1	1	0	0	0	4	0	0	0	4	0
M2	2.23	2.23 Destructive testing of materials and welded joints	4	10		1						1		1	1	0	14	0	0	0	0	0	14	0
M3	3.1	3.1 Basic theory of structural systems	4	0			1				1			1	1	0	0	4	0	0	0	4	0	0
M3	3.2	3.2 Fundamentals of the strength of materials	6	0			1				1			1	1	0	0	6	0	0	0	6	0	0
M3	3.3	3.3 Joint design for Welding and Brazing	4	0			1				1			1	1	0	0	4	0	0	0	4	0	0
M3	3.4	3.4 Basics of weld design	0	6	1						1			1	1	6	0	0	0	0	0	6	0	0
M3	3.5	3.5 Behaviour of welded structures under different types of loading	0	4		1						1		1	1	0	4	0	0	0	0	0	4	0
M3	3.6	3.6 Design of welded structures with predominantly static loading	0	8	1						1			1	1	8	0	0	0	0	0	8	0	0
M3	3.7	3.7 Behaviour of welded structures under cyclic loading	0	8	1						1			1	1	8	0	0	0	0	0	8	0	0
M3	3.8	3.8 Design of cyclic loaded welded structures	0	8	1					1				1	1	8	0	0	0	0	8	0	0	0
M3	3.9	3.9 Design of welded pressure equipment	0	6				1		1				1	1	0	0	0	6	0	6	0	0	0
M3	3.10	3.10 Design of aluminium alloys structures	0	4		1					1			1	1	0	4	0	0	0	0	4	0	0
M3	3.11	3.11 Introduction to fracture mechanics	0	4	1						1			1	1	4	0	0	0	0	0	4	0	0
M4	4.1	4.1 Introduction to quality assurance in welded fabrication		6					1		1			1	1	0	0	0	0	6	0	6	0	0
M4	4.2	*4.2 Quality control during manufacture*		16					1	1				1	1	0	0	0	0	16	16	0	0	0
M4	4.3	4.3 Residual Stresses and Distortion		6	1					1				1	1	6	0	0	0	0	6	0	0	0
M4	4.4	4.4 Plant facilities, welding jigs and fixtures		4	1					1				1	1	4	0	0	0	0	4	0	0	0
M4	4.5	4.5 Health and Safety		4	1							1		1	1	4	0	0	0	0	0	0	4	0
M4	4.6	4.6 Measurement, Control and Recording in Welding		4				1		1				1	1	0	0	0	4	0	4	0	0	0
M4	4.7	4.7. Imperfections and Acceptance Criteria		4	1						1			1	1	4	0	0	0	0	0	4	0	0
M4	4.8	4.8 Non Destructive Testing		18			1					1		1	1	0	0	18	0	0	0	0	18	0
M4	4.9	4.9 Economics and Productivity		8	1					1				1	1	8	0	0	0	0	8	0	0	0
M4	4.10	4.10 Repair Welding		2				1				1		1	1	0	0	0	2	0	0	0	2	0
M4	4.11	4.11 Reinforcing-steel welded joints		2				1		1				1	1	0	0	0	2	0	2	0	0	0
M4	4.12	4.12 Case Studies		40				1						1	0	0	0	0	40	0	0	0	0	0

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Cours à Développer par l'USTHB

						Number of subjets	Teaching hours
			16	66		14	82
Mod	**S/Mod**	**Subject Title**	**Part 1 (Hours)**	**Part 3 (Hours)**	European Partner	**P11 USTHB**	P11 USTHB
M1	1.1	General introduction to welding technology	3	0	EWF	1	3
M1	1.3	Electrotechnics, a review	1	0	ULE	1	1
M1	1.8.1	MIG/MAG	4	2	UG	1	6
M1	1.12.1	Other Welding Processes – Laser; Electron Beam; Plasma	0	8	EWF	1	8
M1	1.14	Surfacing and Spraying	0	2	EWF	1	2
M1	1.19	Welding laboratory	0	10	KTH	1	10
M2	2.8	Heat treatment of base materials and welded joints	4	0	ULE	1	4
M2	2.17	Cast irons and steels	0	2	UC	1	2
M2	2.22	Joining dissimilar materials	0	4	UG	1	4
M2	2.23	Destructive testing of materials and welded joints	4	10	UC	1	14
M3	3.5	Behaviour of welded structures under different types of loading	0	4	UC	1	4
M4	4.5	Health and Safety		4	KTH	1	4
M4	4.8	Non Destructive Testing		18	ULE	1	18
M4	4.10	Repair Welding		2	UG	1	2

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Semestre 1 Master Intitulé : INGENIERIE DU SOUDAGE

Unité d'enseignement	Matières	Crédits	Coefficient	Volume horaire hebdomadaire			Volume Horaire Semestriel (15 semaines)	Mode d'Evaluation	
	Intitulé			Cours	TD	TP		Contôle continu	Examen
UE Fondamentale Code : UEF 1.1 Crédits : 12 Coefficients : 10	Materials Engineering and Technology : BM1	6	6	3h00	0,64	0,86	63h00	33%	67%
	Manufacturing Technology : BM2	6	4	2,57	1,28	0,64	63h00	33%	67%
UE Méthodologique Code : UEM 1.1 Crédits : 6 Coefficients : 3	Product and Process Development : BM5	6	3	2,57	1,28	0,64	63h00	33%	67%
UE Découverte Code : UED 1.1 Crédits : 6 Coefficients : 1	Project and Laboratory Works I : PLW1	6	1			4h30	63h00	100%	
UE Transversale Code : UET 1.1 Crédits : 6 Coefficients : 1	Technical English and Communication : BM7	6	1	3h00	1h30		63h00	33%	67%
Total semestre 1		30	15				315		

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Semestre 2 Master Intitulé : INGENIERIE DU SOUDAGE

Unité d'enseignement	Matières	Crédits	Coefficient	Volume horaire hebdomadaire			Volume Horaire Semestriel (15 semaines)	Mode d'Evaluation	
	Intitulé			Cours	TD	TP		Contôle continu	Examen
UE Fondamentale Code : UEF 1.1 Crédits : 18 Coefficients : 13									
	Forming Technology PART I : SM1	6	4	3h00	1h30		63h00	33%	67%
	Machining and Joining Technology-PART I : SM2	6	4	2,57	1,28	0,64	63h00	33%	67%
	Casting and Polymer Processing-PART I : SM31	6	5	3h00	1h30		63h00	33%	67%
UE Méthodologique Code : UEM 1.1 Crédits : 9 Coefficients : 5									
	Production Management and Maintenance : SM4	6	3	2,57	1,93	0,64	63h00	33%	67%
UE Découverte Code : UED 1.1 Crédits : 2 Coefficients : 2	Project and Laboratory Works II : PLW2	6	5			4h30	63h00	100%	
Total semestre 2		30	21				315		

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Semestre 3 Master Intitulé : INGENIERIE DU SOUDAGE

Unité d'enseignement	Matières	Crédits		Coefficient		Volume horaire hebdomadaire			Volume Horaire Semestriel (15 semaines)	Mode d'Evaluation	
	Intitulé					Cours	TD	TP		Contôle continu	Examen
UE Fondamentale 1 Code : SM5 Crédits : 6 Coefficients :3	Welding processes and equipment : SM5					3h00	1h30		67h30	33%	67%
	M1.1 Arc welding	3	6	2	3	1h30	1h30				
	M1.2 Other welding processes Part II	3		1		1h30					
UE Fondamentale 2 Code : SM6 Crédits : 6 Coefficients : 3	Materials and their behaviour during welding : SM6					3h00	1h30		67h30	33%	67%
	M2.1 Weldable metals and their properties	3	6	2	3	1h30	1h30				
	M2.2 Behaviour of welded structures	3		1		1h30					
UE Fondamentale 3 Code : SM7 Crédits : 6 Coefficients : 3	Construction and design of welded structures : SM7					3h00	1h30		67h30	33%	67%
	M3.1 Design of welded structures	3	6	2	3	1h30	1h30				
	M3.2 Calculation of welded structures	3		1		1h30					
UE Méthodologique 1 Code : SM8 Crédits : 6 Coefficients :3	Fabrication, applications engineering : SM8					3h00		1h30	67h30	33%	67%
	M4.1 Production means and quality assurance	3	6	1	3	1h30					
	M4.2 Non Destructive Testing NDT	3		2		1h30		1h30			
UE Méthodologique 2 Code : PLW3 Crédits : 3 Coefficients : 2	Project and Welding Laboratory Works: PLW3							2h30	37h30	100%	
	PLW SM5 / PLW SM6 / PLW SM7		3		2			2h30			
UE Découverte Code : BM6 Crédits :2 Coefficients : 2	Entrepreneurship and Innovation Management : BM6					3h00			45h00	33%	67%
	BM6.1 The enterprise, Environment and Management	1	2	1	2	1h30					
	BM6.2 Methodology of Research &Project Management	1		1		1h30					
UE Transversale Code : UET 1.2 Crédits : 1 Coefficients : 1	Managing innovation and creation innovative enterprise : BM6.3					1h30			22h30	33%	67%
	BM6.3 Managing innovation and creation of a virtual innovative enterprise	1	1	1		1h30					
Total semestre 3			30		17	16h30	4h30	4h00	375h00		

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Semestre 4 Master Intitulé : INGENIERIE DU SOUDAGE

Unité d'enseignement	Matières		Crédits	Coefficient	Volume horaire hebdomadaire				Volume Horaire Semestriel (15 semaines)
	Intitulé							Volume horaire Par UE	
UE Fondamentale **Code : UEF 4.1** **Crédits : 30** **Coefficients : 10**	Projet de Fin d'Etudes	Travail en Laboratoire	10	2					375H
		Travail Personnel	20	3					
Total semestre 4			**30**	**5**				**25h**	**375H**

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Achat des Equipements de Soudage

1. Besoins en Equipements arrêtés
2. Cahier des Charges établi
3. **Fournisseurs potentiels identifiés : 06**

   dont 03 grandes Marques de fabricants

   Miller, Fronius, Castolin

4. Ordre de Service et Bon de Commande au Fournisseur moins disant : **Castolin**

Equipements achetés pour un Budget : 67 300 Euros + 4 000 Euros

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Mobilités

1. SMS- Special Mobility Strands for Students de USTHB à SOCOMENIN

- ✓ Appel à Candidature sur dossier parmi les Master M1-TFM
- ✓ Etude des Candidatures après résultats des délibérations S6
- ✓ **Commission de Sélection : 04 retenus**

Budget : 7 100 Euros

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✓ En Stage à **SOCOMENIN** du 01 juillet 2017 au 31 août 2018

- ✓ Rapport de Stage remis
- ✓ Présentation Orale du déloulement du stage effectuée
- ✓ Notes obtenues et Matière PLW III validée pour les quatre étudiants---------- 06 crédits

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2. SMS- Special Mobility Strands for Students de USTHB à DEMUC

- ✓ Appel à Candidature sur dossier parmi les Licences L3-CM
- ✓ Etude des Candidatures après résultats des délibérations S5
- ✓ **Commission de Sélection : 04 retenus**

- ✓ Période : 16 octobre 2017 - 02 mars 2018

Budget : 17 100 Euros

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3. SMS- Special Mobility Strands for Staff de USTHB à DEMUC

- ✓ Programme
- ✓ **Nombre de Staff : 02**

Budget : 4 918 Euros

- ✓ Période : **20 jours**, en juillet 2018

4. Autres SMS- Special Mobility Strands for Staff

- ✓ de **EWF** à **USTHB : 08 jours**
  - → Enseignements à l'USTHB
  - → Formations aux personnels d'entreprises

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THE END

Thank You For Your Attention

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