Coordinator

Universitat de Girona

Co-funded by the Erasmus+ Programme of the European Union

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PROJECT NUMBER: 598826-EPP-1-2018-1-ES-EPPKA2-CBHE-JP

Partners

WP 2 Deliverable 2.1

MEHMED

Master Curriculum

MEHmed
MEDITERRANEAN ENVIRONMENTAL CHANGE MANAGEMENT
MASTER STUDY & ECOSYSTEM BUILDING

PROPOSED CURRICULUM

MASTER'S IN MEDITERRANEAN ENVIRONMENTAL CHANGE MANAGEMENT

The Master's is intended for university graduates who wish to specialize in the professional analysis and management of environmental problems, in private industry or public institutions and non-governmental organizations

The master's programme will focus on the environmental problems specific to the Mediterranean basin and that are largely common to all the countries and partners participating in the MEHMED project. It is important to note that the Mediterranean region is considered one of the regions that is and will be most affected by the impact of the so-called global environmental change that has especially relevant repercussions in this region due to its socio-environmental characteristics.

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OBJECTIVES

General

✓ To train good professionals to conceive of and enable a more sustainable and especially efficient model to address socio-economic and socio-environmental issues**.**

✓ To provide training in different scientific approaches to the study of environmental change.

✓ To apply them to the management of specific environmental changes at local and regional scales.

✓ To identify adaptation processes and instruments for sustainable management based on the evaluation of adaptive strategies.

Specific

✓ To acquire basic knowledge to analyse, diagnose and manage global environmental change.

✓ To acquire basic knowledge to manage the reduction of impacts on society and the environment and facilitate social and environmental adaptations.

✓ To acquire the expertise, skills and tools needed to solve the previously mentioned problems.

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COMPETENCIES: STRUCTURAL ELEMENTS OF THE MASTER'S

Following the European model of master's programmes established in the Bologna Plan (1999), we intend to design and implement the master's programme based on the achievement of competencies and learning outcomes.

The concept of 'competencies' is defined as 'the sets of knowledge, skills and attitudes that allow the successful execution of tasks with emphasis on solving the problems of the real world, facing challenges and seizing opportunities.

Competencies are combinations of acquired knowledge, skills and attitudes. They are developed from comprehensive learning experiences in which knowledge and skills interact to respond efficiently to the task at hand.

They involve the active and comprehensive use of knowledge, skills and attitudes. By their very nature, they can only be achieved in the final stages of the educational process (practical sessions, internships, master's theses or projects, etc.).

To sum up:

- ✓ ***Competencies are the combination of skills, attitudes and knowledge required to carry out a task effectively.***
- ✓ ***Competencies are demonstrated through action and, therefore, they are only assessable as long as the activities imply their use.***

Note: It is assumed that the definition of competence contained in the original document (WP1) centred on the application of knowledge. On the other hand, when a competence is stated, it is understood that it is about carrying out an activity correctly and at the maximum possible level of efficiency and clarity. For this reason, these extremes are omitted (correctly, effectively,) in the writing of competencies.

Competences

Note: It is assumed that the definition of competence contained in the original document (WP1) centred on the application of knowledge. On the other hand, when a competence is stated, it is understood that it is about carrying out an activity correctly and at the maximum possible level of efficiency and clarity. For this reason these extremes are omitted (correctly, effectively, ...) in the writing of competencies.

Transversal Competences (Ver.1.0: Basic competences)

CT1.-Work in multidisciplinary teams.
CT2.-Obtain and select sources and information using ICT.
CT3.-Communicate information orally and in writing with well thought out arguments to specialized and non-specialized audiences.
CT4.-Analyze new and complex situations and design various possible solutions, from criticism and creativity.
CT5.-Plan your own learning itinerary, oriented to specific objectives.
CT6.-Analyze the activity itself and the proposals themselves, identifying their ethical implications and social responsibility.
CT7.-Plan autonomously the work sequences themselves, carry them out and evaluate them.

Common specific competences (Ver. 1.0: General competences)
CC1.-Analyze and interpret the processes of change and environmental conflicts applying the concept of complexity.
CC2.-Analyze and interpret the mechanisms of response and management of environmental processes and changes in manner with well thought out arguments according to the conceptual frameworks of various disciplines.
CC3.-Build scenarios and plan environmental policies aimed at the recovery and protection of the territory and / or water and / or air.

CC4.-Plan the use of instruments and techniques of green economy, circular and collaborative in the promotion of new strategies.
CC5.-Organize hierarchically, based on the concept of scale, the factors that affect the case studies from local to international level.
CC6.-Use Geographic Information Systems and statistical methods

Local specific competences (Ver. 1.0: Specific competences)

Students will master a set of specific competencies. First, it would be desirable for the universities of the different countries to agree on 2 or 3 specific competencies (SC) linked to the information collected about training needs and career opportunities. To define them, it would be appropriate and advisable to use the report as a point of reference: Summary of responses to questionnaires on relevant topics related to environmental change, ability to generate employment and prioritization of competencies.
CL1 – ¿??????????????

CL2 – ¿??????????????

Second, in addition to SC linked to training needs related to the job market, another 2 or 3 specific competencies are proposed by each university in line with its profile and specialization detailed in the so-called Optional Module. Once again, the reports on the master's programmes offered by the partner universities within the framework of the MEHMED project can serve as an environmentally themed guide.

CL4 – ¿??????????????

Soft skills

Regarding the skills that students must acquire throughout the master's degree, it is considered essential:

* Being able to face reality and problems with critical thinking
* Basic knowledge of research
* Basic knowledge of management,
* Ability to face problem solving by understanding the complexity of the problem and the complexity of the possible solution
* Being able to work with other professionals
* Being able to communicate orally and verbally correctly and fluently

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NUMBER OF STUDENTS REGISTERED IN THE MASTER'S PROGRAMME

The number of students registered each year in the Master's programme should be around 25: between a minimum of 20 and a maximum of 30.

ORIGIN OF THE STUDENTS

In accordance with its specializations, each university must define the possible origins of students always keeping in mind that multidisciplinarity has transcendental value to address the complexity inherent in the processes of environmental change. Therefore, consideration should be given to a broad profile of potential candidates such as environmentalists, geographers, agronomists, biologists, chemists, architects-town planners, physicists, etc.

STRUCTURE OF THE MASTER'S

The design of the Master's programme should be based on a curriculum with a professional profile. That means preparing students to enter the job market and, ultimately, to train a good professionals capable of working in a cross-disciplinary and interdisciplinary way in private enterprise as well as in public administration, non-governmental organizations or in research and/or training centres.

The Master's programme will be designed so that students can complete it, full time, over 12 months (4 semesters). It will consist of 120 ECTS credits. If students are also working, they can complete the master's degree over a longer period in accordance with the regulations of each university.

Value of the credit
120 ECTS credits
Equivalence of ECTS credits in terms of workload: 1 credit = 25 hours of student work of which between 8 and 10 hours are spent in face-to-face classes.

It is important that the subjects be programmed by semesters. If possible, it is recommended that each subject is consolidated not taught in a too long or drawn out way. This facilitates the interaction between theory and practice, group work and the application of new methods. For example, a subject of 3 ECTS credits, which means 30 hours of face-to-face class time, could be taught for 2 hours a day for 3 weeks. In 3 weeks, students would be able to complete 2 subjects of 3 ECTS credits each.

The 120 ECTS credits are organized in modules, which are then divided into subjects.

MODULES	ECTS credits
COMPULSORY MODULE	36
SPECIFIC MODULE	45
FREE ELECTION	9
PRACTICAL MODULE	12
MASTER'S DEGREE FINAL THESIS/PROJECT	18

Compulsory Module: Required at all universities where the master's is taught. It should be approached from different disciplines to holistically treat environmental issues.

Specific module: Designed according to the specialization of each university where the master's is taught as well as to the results of the report on market needs.

Practical module*:* Work in a private company, in public administration, non-governmental organizations or research centres.

Master's degree final thesis/project: Individual work linked to the practical module or developed within the framework and under the supervision of a university research group.

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TEACHING PLAN

COMPULSORY MODULE **(Draft proposal based on the UdG's experience)**	**ECTS CREDITS** **36**	**YEAR**
✓ Scientific foundations for environmental change ✓ Interaction between environmental change and human activity ✓ Interaction between environmental change and the natural environment	6 6 6	1 1 1
✓ 1- Workshop ✓ 2- Workshop	3 3	1 2
✓ Introduction to GIS ✓ GIS and environmental (impact) assessment	3 3	1 1
✓ 1- Introduction to multivariable analysis (I) ✓ 2- Introduction to multivariable analysis (II)	3 3	1 2
SPECIFIC MODULE **Examples of UdG master's** **(to be defined by each partner university)** ✓ Biodiversity management ✓ Pollution and energy management ✓ Land management and planning ✓ Environmental education ✓ Etc.	**ECTS CREDITS** **45** 3 3 3	1 and 2

FREE ELECTION	**CREDITS 9**	
✓ Free election	6	1 and 2
✓ English	3	1 and 2
PRACTICAL MODULE	**CREDITS 12**	2
MASTER'S DEGREE FINAL THESIS/PROJECT	**CREDITS 18**	
✓ Research bases ✓ Project	3 15	2 2

POSSIBLE DESCRIPTORS OF THE COMPULSORY SUBJECTS AND MODULES

As a starting point and practical example for discussion, a first proposal of the possible descriptors and their connection with basic and general competencies from the experience of the University of Girona's Master's in Environmental Change are also provided.

Scientific basis of environmental change – The subject begins with a discussion about planetary limits and growth, which justify the remaining content. Climate change is addressed starting from a description of the climate system that contemplates the elements that constitute it and the factors that make it up, including feedback, the energy balance, the greenhouse effect and ocean currents. Next comes the treatment of spatial and temporal variability, climate scales and extreme episodes, and the causes and evidence of climate change. Attention is also paid to climate modelling, simulation regionalization, and future scenarios and projections. Finally, some effects on the natural environment in the Mediterranean context are dealt with, such as water resources, land degradation and desertification; and other issues related to environmental change, such as the hole in the ozone layer and electromagnetic pollution.

Competencies *CT2, CT4, CC1, CC2, CC3*

Interaction between environmental change and human activity - The subject begins with the foundations of a sustainability strategy and of sustainable development goals (SDG). Next, and as the central axis of the module, we will analyse the current situation, the impacts, the short-term adaptations and the reorientation of strategies and policies by different economic sectors: agriculture, industry and tourism. In a third phase, we will repeat these analyses throughout cities, territories and landscapes.

Competencies *CT1, CT3, CT4, CC1, CC2, CC4, CC5*

Interaction between environmental change and the natural environment - The subject starts from the concept of disturbance and change in the regime of disturbances associated with global environmental change. Next, we analyse biological invasions, forest fires, habitat destruction, the effects of climate change on the distribution of species, changes in the carbon balance of ecosystems, the prevention and management of environmental changes. Finally, restoration of disturbed ecosystems will be discussed.

Competencies *CT1, CT2, CT6, CC1, CC2, CC3, CC5*

Workshop- From the approach to a real environmental problem and to the formulation of a series of issues that interrelate social issues, the natural environment and environmental vectors, the students should delve deeper into the processes and impacts contribute to the complexity of the environmental change studied. It is important that they be carried out far from classrooms.

Competencies *CT1, CT2, CT3, CT4, CBT, CT7, CC3,*

Introduction to GIS - Study of the basic applications of geographic information systems. We will work on the data acquisition processes (sources, standards and interoperability among formats), the techniques to create, manipulate and present geographic information (graphic and alphanumeric) and the main geoprocessing tools of the vector model for the spatial analysis of environmental problems and

territorial planning. (According to the origin of the students, the credits of this subject that may be transferrable.)

Competencies *CT2, CT5, CT7, CC1, CC6*

GIS and environmental (impact) assessment - This subject focuses on spatial analysis techniques of raster and vector models: from the design and creation of databases to the resolution of environmental problems using multicriteria, three-dimensional, geostatistical analyses of networks and models. Scientists and managers of the territory use GIS to study the state of the environment, prepare reports on environmental phenomena, and model how the environment responds to natural factors and to those of human origin.

Competencies *CT1, CT2, CT4, CC3, CC6,*

Introduction to multivariable analysis 1**-** Fundamentals and application of linear models. Non-linear relationships and transformations. Generalized linear models and logistic regression. Sorting and classification methods: principal component analysis and of simple and multiple correspondence analysis. Cluster analysis: hierarchical methods and partitions. Introduction to R software.

Competencies *CT2, CT3, CC1, CC6,*

Introduction to multivariable analysis 2- Fundamentals and application of linear models. Non-linear relationships and transformations. Generalized linear models and logistic regression. Sorting and classification methods: principal component analysis and of simple and multiple correspondence analysis. Cluster analysis: hierarchical methods and partitions. Introduction to R software.

Competencies *CT2, CT3, CT7, CC2, CC5, CC6*

Master's degree final thesis/project –

The master's degree final thesis/project consists of two parts.

In the first part, the students will take a seminar in which they will be given the foundations to carry out good scientific research: determining objectives, formulating hypotheses,

structuring research, quantitative and qualitative methodologies, citations, bibliography, etc.

The second part consists of students individually completing a project, a study or a report that reflects the concepts and skills acquired during the Master's programme. The work will be based on an experimental/empirical analysis and will require building scenarios, designing strategies and applying tools and techniques for a more sustainable management of environmental vectors, of the natural environment and of the territory. Preferably the work should be linked to a line of research (of the research groups related to the master's) or to a public or private administration or company, or a non-governmental organization that investigates or works on planning and management projects related to environmental change. A collaboration agreement will be signed between the university and the company.

***Competencies**,CT3,CE4,CT5,CT6,CT7,CE1,CC2,CC3, CC5,*

POSSIBLE TEACHING METHODOLOGIES

- ✓ Lectures
- ✓ Participatory classes
- ✓ Resolution of exercises and problems
- ✓ Problem-based learning
- ✓ Project-based learning
- ✓ Cooperative learning

Based on:

* The skills that have been assigned to each subject,
* The knowledge to be acquired in each subject,
* The soft skills to be acquired throughout the master's (defined in previous paragraphs)

the teaching methodologies to be applied in each subject have to be specified.

Specifically in each subject, there should be applied master classes, participatory classes and resolution of exercises and problems. In addition, in

some part of the subject, when dealing with some issues, one of the following methodologies should be applied: Problem-based learning, project learning or cooperative learning.

NOTE: When analysing and designing the subjects, it is important to keep in mind that this is an interdisciplinary master's programme in which students with different levels of knowledge will enrol.

SUBJECTS	CT 1	CT 2	CT 3	CT 4	CT 5	CT 6	CT 7	CC 1	CC 2	CC 3	CC 4	CC 5	CC 6
Scientific foundations for environmental change		X		X				X	X	X			
Interaction between environmental change and human activity	X		X	X				X	X		X	X	X
Interaction between environmental change and the natural environment	X	X				X		X	X	X		X	
1- Workshop	X	X	X	X		X	X			X			
2- Workshop	X	X	X	X		X	X			X			
Introduction to GIS		X			X		X	X					X
GIS and environmental (impact) assessment	X	X		X						X			X
Introduction to multivariable analysis (I)		X	X					X					X
Introduction to multivariable analysis (II)		X	X				X		X			X	X
PRACTICAL MODULE													
MASTER'S DEGREE FINAL THESIS/PROJECT			X	X	X	X		X	X	X		X	

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Partners

WP 2

MEHMED – Deliverable 2.2

Develop learning content and educational material

MEHMED E-learning Training Platform

(Renseignements à utiliser, si nécessaire, pour l'élaboration de la réglementation pour l'externalisation)

À prendre en considération:

- **Plateforme conçue avec un accès facile et sûr pour chacun des partenaires du projet.**
- **Un système de mise à jour doit être développé assurant aussi la mise en disposition de nouveaux matériels.**
- **Garantir le paiement du domaine pendant une période suffisant pour la rentabilité du projet à moyen terme (minimum 5 années).**

Cette initiative s'inspire du PROJET MEDIS (développé par Wusmed) qui est devenu le modèle de référence.

http://wusmed.org/porfolio/medis.project/
http://medisinclusiveschools.eu/

OBJECTIF MINIMUM: Développer de 6 à 8 paquets graphiques (vidéo + matériel de soutien) par la UdG. Au moins un pour chaque matière commune (5) + projet de recherche (1). Ces six paquets seraient le point de départ. Si davantage de fonds sont mis à disposition, d'autres paquets complémentaires pourrait être développés. Les paquets complémentaires devraient être de nature plus transversale et de synthèse, moins sectoriels et plus holistiques dans leur approche, impliquant plus d'un sujet et autour d'une étude de cas.

OBJECTIF OPTIMAL: Paquets UdG (6 - 8 unités) + Paquets des partenaires universitaires du Maghreb (8). Les paquets (vidéos et matériels) à développer par les partenaires maghrébins pourraient être axés sur une présentation générale en fonction de l'orientation de leur master + analyse d'un cas ou d'un exemple. Ils devraient intéresser tous les étudiants des universités partenaires, et pas seulement ceux des universités du Maghreb.

FORMAT DU MATÉRIEL

Toutes les vidéos et le matériel pédagogique et bibliographique complémentaires feront partie d'une série qui pourrait être intitulée (titre provisoire à discuter) : ***Le future de la Méditerranée : impact, adaptation et aménagement du***

changement environnemental. (Étant donnée que **le français** est la langue véhiculaire dans l'enseignement des masters, on propose que le titre commun soit en cette langue et que son usage soit **privilégié** dans l'élaboration du matériel, quoique pas exclusivement. L'objectif est de faciliter au maximum son utilisation parmi les étudiants).

PLAN POUR L'ÉLABORATION DU MATÉRIEL

Accès depuis l'onglet formation en ligne du site web du projet. Plus précisément, sur le **MEHMED TRAINING PLATFORM:**

https://mastermehmed.com/mehmed-training/#

TRÈS IMPORTANT. À prendre en considération il s'organisé :

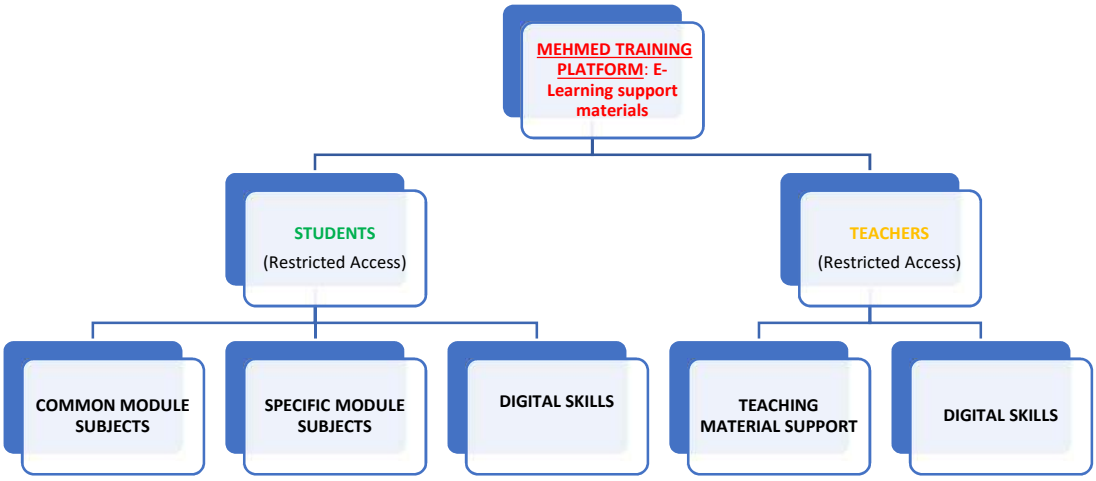
- ÉTUDIANTS
- PROFESSEURS

MEHMED TRAINING PLATFORM: **E-Learning support materials.**

PREMIER NIVEAU (Première page): Brève ***explication du projet*** pour le contextualiser correctement dans la page d'accueil du site web (Il faut inclure aussi les questions clés du changement environnemental en Méditerranée et son lien avec la documentation disponible dans la Mehmed Training Platform ainsi que les **compétences liées au projet**). Il serait très utile d'avoir une vidéo et/ou un court texte au début pour présenter et mettre en contexte la série de vidéos et de documents sous le titre qui sera finalement retenu.
Il faut inclure également une ***vidéo et/ou un court texte*** facile à comprendre sur **le fonctionnement de la plateforme**.

Brève explication de la structure générale du module E-Learning au **DEUXIÈME NIVEAU (Deuxième page)**: ***MEHMED TRAINING PLATFORM: E-Learning support materials***. Souligner la différenciation entre les deux blocs principaux qui la composent: ***Students (Open Access) et Teachers (Restricted Access)***. De même, il faut y souligner les compétences liées à chaque module.

Fig. 1: Structure général de la MEHMED TRAINING PLATFORM (MTP):

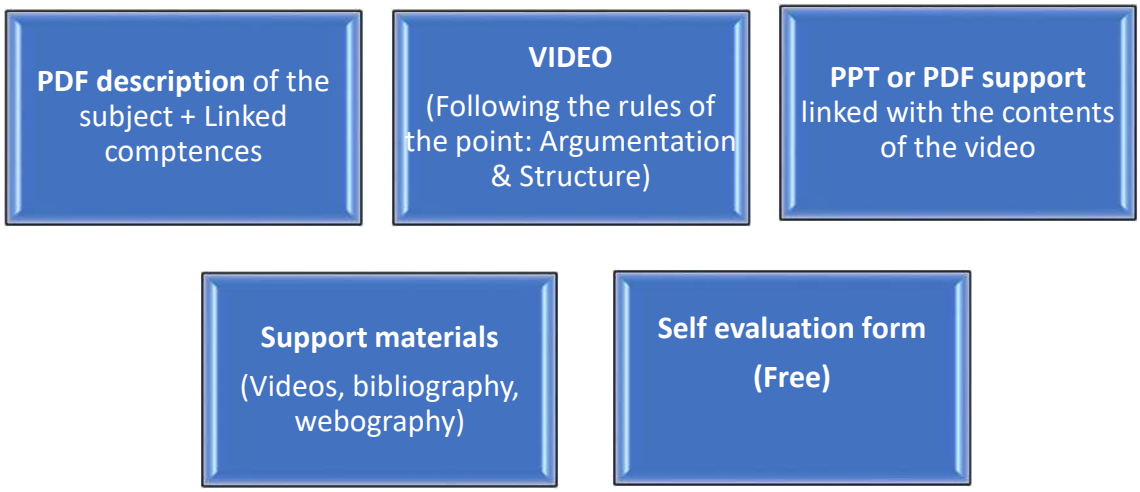


LE TROISIÈME NIVEAU EST CONSTITUÉ PAR LES 5 BLOCS inférieurs de l'image précédente (Troisième page) :

- COMMON MODULE SUBJECTS
- SPECIFIC MODULE SUBJECTS
- STUDENTS-DIGITAL SKILLS
- TEACHING MATERIAL SUPPORT
- TEACHER-DIGITAL SKILLS

Dans ce **TROISIÈME NIVEAU (Troisième page)**, il y aura une présentation pour chaque bloc précédent et, ensuite, chacun d'eux sera affiché suivant une même structure en cinq sections selon les types de matériaux. Il faudra indiquer les **compétences associées à chaque matière**.

Veuillez trouver ci-dessous, les cinq sections avec leur contenu respectif :



QUATRIÈME NIVEAU (Quatrième page): affichage des informations relatives à chacune des sections telles que détaillées dans leurs descriptions individuelles.

VIDÉOS

DURÉE DES VIDÉOS

Maximum : 15 à 20 minutes. Cette durée correspond à la version qui sera téléchargeable sur la plateforme d'apprentissage en ligne. En outre, il es envisagé de développer une **version réduite (maximum 5 minutes)** afin d'encourager et faciliter sa consultation en ligne.

L'ARGUMENTATION ET LA STRUCTURE :

Brève présentation ou cadre théorique qui introduit le thème principal de la vidéo toujours axée sur l'analyse d'un cas réel. C'est-à-dire, en suivant le modèle d'**apprentissage par problèmes** (APP). Bien que le contenu soit conçu pour un sujet particulier, il faut veiller à ce que les informations et l'approche soient intéressantes pour d'autres sujets. Les études de cas présentées, sur lesquelles on travaillera, doivent se référer à des problèmes spécifiques à la Méditerranée occidentale et, par conséquent, il doit être possible de les interpréter et de les répliquer dans tout cet espace territorial.

Plan pour l'élaboration des vidéos:

- Enregistrement à cet effet: Introduction au cas concret.
- Utilisation d'images d'archives et d'autres documents : développement de l'étude de cas.

- Enregistrement sur le terrain : Présentation pratique du cas.

Évidemment, ces trois étapes qui structurent le document graphique doivent suivre une séquence similaire dans toutes les vidéos. Cependant, ils peuvent être intercalés entre eux en fonction des besoins de chaque thème et de chaque cas.

Veuillez trouver ci-dessous un exemple de la matière « Les impacts sur l'environnement ».

Cas: *La tempête Gloria: impacts et mesures d'adaptation et d'atténuation*.

- Tout d'abord, le professeur présente le cas et le problème.
- Ensuite, on y montre des images réelles de la tempête.
- Troisièmement, on se rend sur un ou plusieurs lieux touchés par la tempête afin d'analyser sur place les impacts causés.
- Quatrièmement, présentation des mesures d'adaptation et/ou d'atténuation.
- Conclusions et remarques finales.

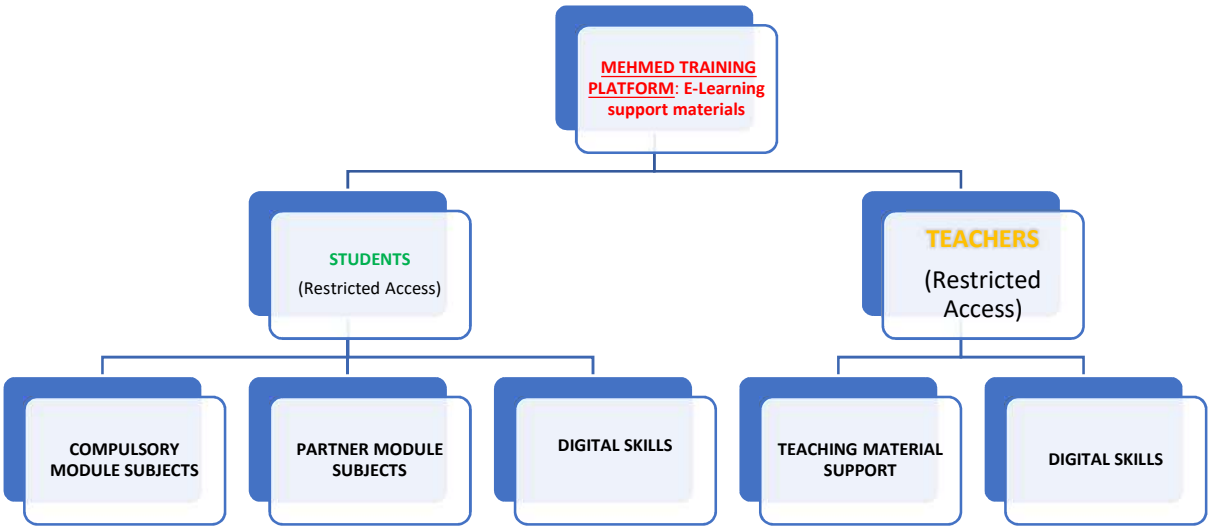
Toutes les vidéos doivent commencer avec la même couverture, les mêmes images et la même musique. Et ils doivent se terminer par les crédits correspondants et les logos du projet, de l'Union européenne et de toutes les partenaires. Pour maintenir l'image de cohérence de la série, il est très important de préserver l'homogénéité du matériel produit.

Un plan parfaitement défini doit être établi (une sorte de guide bien structuré qui facilite l'interprétation univoque par tous les partenaires) afin que chaque université puisse créer les vidéos et le matériel jugé approprié, en maintenant toujours, de la première à la dernière production, la même structure et els mêmes éléments formels qui garantissent l'uniformité de l'ensemble.

Structure et organisation du matériel pour développer le bloc TEACHERS (Restricted Acces) au sein de la MEHMED TRAINING PLATFORM: E-Learning support materials.

<u>OBJECTIF :</u> Référentiel de connaissances de soutien pour les professeurs avec la structure, les caractéristiques, et le matériel de base et complémentaire afin qu'ils puissent exercer convenablement l'enseignement des matières.

Fig. 1: Structure général de la MEHMED TRAINING PLATFORM (MTP):



Le référentiel doit être conçu de manière à être facile à **entretenir** et à permettre sa **mise à jour** et, éventuellement, son **élargissement** avec de nouveaux matériaux.

Il doit évidemment **faire partie de la MEHMED TRAINING PLATFORM (MTP) (Bloc des TEACHERS (Restricted Acces))** dont l'**accès sera restreint au coordinateur du Master et aux enseignants et responsables, accédant à chacune de leurs matières respectives**. Néanmoins, il serait souhaitable de considérer si seul le coordinateur du master dans chaque université devrait avoir accès au référentiel afin d'éviter des problèmes de manque de coordination ou de chevauchement en ce qui concerne son maintien.

Comme sera le cas du reste de matériel de la MTP, il y a la intention de **maintenir le référentiel actif et mis à jour au-delà de la durée du projet** afin de contribuer à sa durabilité future.

Chaque université doit s'engager à mettre de nouveau matériel et à réviser la documentation existante puisque ce site web est conçu pour être à la base des matières des masters et, donc, un ferme soutien pour les enseignants. Et pas seulement pour les premiers professeurs, mais aussi pour faciliter leur remplacement et l'intégration de nouveaux enseignants dans les cours universitaires à venir.

Il est important de souligner que ce matériel, qui sera mis à la disposition dans la MTP, doit être perçu comme un **complément aux dossiers de chaque matière**. Les dossiers des matières suivent le modèle de ceux utilisés par l'Université de

Girona (UdG). WUSMED offre la plateforme. L'UdG mettra dans le site web les renseignements correspondant aux matières communes. En ce qui concerne la partie propre, il faudra que chaque université complète les dossiers des matières respectives lors de la première promotion des masters. Le plus important, pour l'instant, est de définir la structure initiale de chacune des matières afin qu'elles puissent être complétés progressivement.

Ce bloc est également inspiré du PROJET MEDIS (développé par Wusmed) et reste, donc, le modèle de référence.

http://wusmed.org/porfolio/medis.project/

http://medisinclusiveschools.eu/

Il devrait être possible, pour chaque matière de chaque master, de visualiser le programme ainsi que le reste de matériels de soutien : bibliographie de base, webographie, matériel audiovisuel et exemples de bonnes pratiques (tant en ce qui concerne les contenus que par rapport à des exemples à appliquer dans leur apprentissage).

PLAN POUR L'ÉLABORATION DU MATÉRIEL DU BLOC TEACHERS (Restricted Acces)

Accès depuis l'onglet spécifique **MEHMED TRAINING PLATFORM (MTP)**. Plus précisément, TEACHERS **(Restricted Acces)**

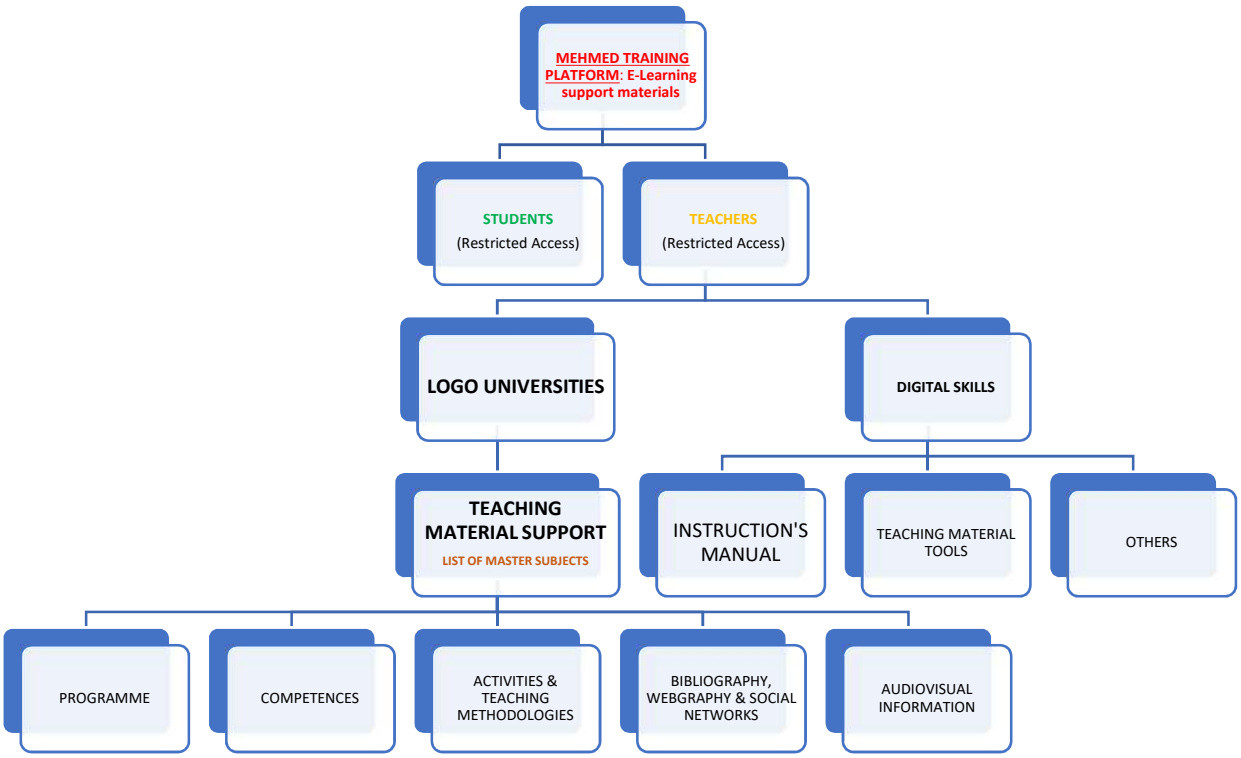
PREMIER NIVEAU (Première page): Brève explication du contenu pour le mettre en contexte correctement dans le cadre de la MTP (à noter qu'il est d'usage exclusif des enseignants et des coordinateurs des masters).

DEUXIÈME NIVEAU (Deuxième page): LOGO DE CHAQUE UNIVERSITÉ - MASTER. En cliquant sur le LOGO, la liste de matières s'affiche avec un accès pour chacune d'entre elles.

Pour chaque matière il y aura plusieurs sections (une liste qui devraient être facile à élargir) :

- ✓ Programme
- ✓ Compétences
- ✓ Activités et méthodes d'enseignement
- ✓ Bibliographie, webographie et réseaux sociaux
- ✓ Documentaires et autre information graphique

Fig. 2: Structure général de la MEHMED TRAINING PLATFORM (MTP) - TEACHERS:


MEHMED TRAINING PLATFORM: E-Learning support materials
STUDENTS
(Restricted Access)
TEACHERS
(Restricted Access)
LOGO UNIVERSITIES
DIGITAL SKILLS
TEACHING MATERIAL SUPPORT
LIST OF MASTER SUBJECTS
INSTRUCTION'S MANUAL
TEACHING MATERIAL TOOLS
OTHERS
PROGRAMME
COMPETENCES
ACTIVITIES & TEACHING METHODOLOGIES
BIBLIOGRAPHY, WEBGRAPHY & SOCIAL NETWORKS
AUDIOVISUAL INFORMATION

MEHmed

MEDITERRANEAN ENVIRONMENTAL CHANGE MANAGEMENT

MASTER STUDY & ECOSYSTEM BUILDING

WP 2

MEHMED – Deliverable 2.3

Teaching Methodologies

Coordinator

Universitat de Girona

Co-funded by the Erasmus+ Programme of the European Union

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PROJECT NUMBER: 598826-EPP-1-2018-1-ES-EPPKA2-CBHE-JP

Partners

Index of contents

1 Introduction

Like it was commented in Deliverable "Proposal of New ***Master***" the general Teaching Methodologies proposed to the different HEI's are:

- ✓ Lectures
- ✓ Participatory classes
- ✓ Resolution of exercises and problems
- ✓ Problem-based learning
- ✓ Project-based learning
- ✓ Cooperative learning

Based on:

* The skills that have been assigned to each subject,
* The knowledge to be acquired in each subject,
* The soft skills to be acquired throughout the master's (defined in previous paragraphs).

In each subject there should be applied master classes, participatory classes and resolution of exercises and problems. In addition, in some part of the subject, when dealing with some issues, one of the following methodologies should be applied: Problem-based learning, project learning or cooperative learning.

On the other hand, of course, it was needed to include the ordinary methodologies and experience of each partner. All this information was share by the different partners to improve the common knowledge and practices of the full consortium Mehmed. In practice it was done using a specific questionnaire to collect all the information from each of the HEI institutions.

The different teaching methodologies link to each subject have to be specified. This information is included in the application of Master was developed for all the academics partner under guidelines of the consortium and it was evaluated for the specific institutions responsible in each country

2 Teachers profile (MEHmed common part)

In relation the profile of the teachers involved in the Master's was established some general recommendations for all the consortium. Specially these proposals are focus in the subjects included in the common part of the Master for all the consortium. La siguiente table resume Below a description of these suggestions:

Tabla 1: General recommendations for the common part of the Master

Subject	*Credits*	*Profile*	*Specialists*
Interaction between environmental change and human activity	6 ECTS	Geographer, Environmentalist, Sociologist.	Skills
Scientific foundations for environmental change	6 ECTS	Physicist, Biologist, Environmentalist	Skills
Interaction between environmental change and the natural environment	6 ECTS	Biologist, Environmentalist	Skills
Introduction to Multivariable Analysis I, II	3 ECTS	Statistician, Mathematician, Physicist, Biologist, Engineering	Skills
GIS & Environmental assessment		Geographer, Environmentalist, Biologist, Engineering	Skills
Workshop I – II (3 ECTS)	3 ECTS	Biologist, Engineering, Environmentalist, Geographer, Physicist; Sociologist.	Skills


MEHmed

Interaction between environmental change and human activity

Specialists on:

- Anthropic Impact (or human activity) on the territory and the environment.
- Human activity and environmental change.
- Foundations of sociability and sustainable development.
- Human activity and the adaptation and mitigation of environmental change
- Ability to implement innovative teaching methodologies and apply different work systems and assessment skills.

Scientific foundations for environmental change

Specialists on:

- Climate Change: Climate system, the greenhouse effect, ocean circulation.
- Climate modeling, simulations and future scenarios
- Climate change in the Mediterranean.
- Other topics related to environmental change such as: ozone hole, electromagnetic pollution ...
- Ability to implement innovative teaching methodologies and apply different work systems and assessment skills.

Interaction between environmental change and the natural environment

Specialists on:

- Environmental change, invasive species in terrestrial and marine ecosystems.
- Changes in species distribution.
- The balance of carbon in ecosystems.
- Fire as a characteristic of the Mediterranean climate.
- Fire and the relationship with fauna and vegetation in the Mediterranean area.
- Ability to implement innovative teaching methodologies and apply different work systems and assessment skills.

Introduction to Multivariable Analysis I, II

Specialists on:

- Multivariate analysis
- Linear and no-linear models.
- Cluster Analysis.
- Sorting and sorting methods.
- Ability to implement innovative teaching methodologies and apply different work systems and assessment skills.

GIS & Environmental assessment

Specialist on:

- Spatial analysis techniques of raster and vector models; multicriteria analysis; modeling networks.
- Remote Sensing.
- Aerial Photography with drones.
- Ability to implement innovative teaching methodologies and apply different work systems and assessment skills.

Workshop I – II

Specialist on:

- Teachers involved in others subjects of the master's degree with a multifactorial vision of the complexity related to the environmental changes.
- Knowledgeable about environmental changes in the Mediterranean area
- Knowledgeable about adaptation and mitigation policies and projects.

- Ability to implement innovative teaching methodologies and apply different work systems and assessment skills.

3 Questionnaire: Teaching methodologies

After the incorporation of the general recommendations based on the experience of the *Master in Environmental Change: Analysis and Management* from the University of Girona was collected the information from the partners in relation with the final proposal of Master developed and applied for accreditation in each university. It was done by a specific questionnaire.

Here the structure and content of the questionnaire of teaching methodologies answered by the different HEI in MENA countries:

Questionnaire Teaching Methodologies Establishment

In this brief questionnaire, we want to gather the **basic information about teaching methodology establishment** in the proposal of master's sent for accreditation. This information is required for the preparation of deliverable 2.3 "Teacher training methodology") related to different activities included in our application. In fact:

Activity 2.2. Teaching methodology establishment

Activity 2.2.1. Define lecturers' profiles

The required profile, knowledge and skills for academic teachers for the MEHMED Master's will be identified based on the experience analyses and local emphases.

Activity 2.2.2. Lecturer manual

The manual for the master lecturers will be developed to support them in the programme implementation. It will include all relevant information to hold on quality courses within the master programme such as:

- Organizational structure of the master
- Personnel involved in the master supervision
- Teaching methodology: conventional lecturers, interactive methods, practical case studies, online classes
- IT supporting tools
- How to plan course

- How to support course
- Assessment procedures

IMPORTANT: The answers need to be related to your Master's proposal. If it is not possible to answer some questions, please indicate: not applicable.

1. Which is the required profile, knowledge and skills for academic teachers for the MEHMED master's? (The profile of the teachers that will be involved in the teaching of the Master's)

2. Which personnel is involved in the master's supervision?

3. Which teaching methodology (e.g. conventional lecturers, interactive methods, practical case studies, online classes, etc.) will be used? Please try to explain in detail

4. Which IT supporting tools are available or are you planning in relation the new Master's?

5. How will the courses be planned? Will there be any support?

6. Are there any assessment procedures included in the Master's proposal?

7. Others important concerns to consider.

Below we present the main results and contributions of the different academic partners of the project and their answers to the questions included in the questionnaire. An information that allows us to have a general overview of the approach incorporated in the various Masters linked to the project.

In practice, the considerations in the different Masters applications from the partners are strongly connected with the recommendation and the profiles of teachers suggested after the analysis of the requirements based on the interdisciplinary and multidisciplinary perspectives of the Master. And also

in relation the previous experience of the UE universities on the field of environmental change. it is presented by country following the number of each university in the Mehmed project application

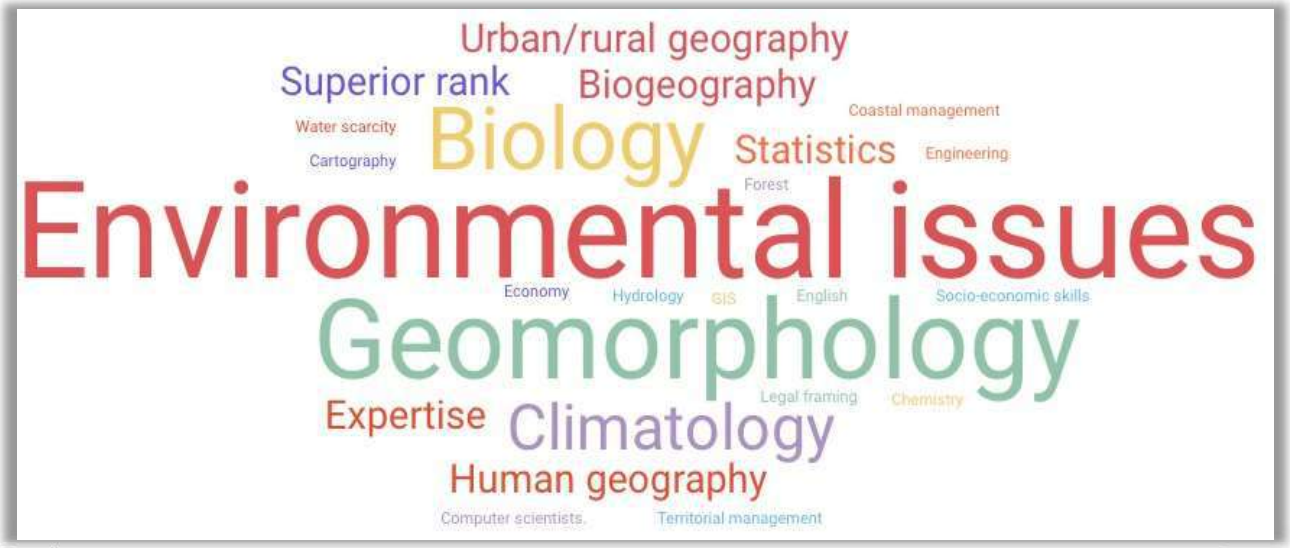
1. Which is the required profile, knowledge and skills for academic teachers for the MEHMED master's? (The profile of the teachers that will be involved in the teaching of the Master's)(Link to answers)

This next section presents some of the results obtained from the analysis of the responses obtained in question 1. The complete responses provided by each partner are in ANNEX: tables of results. In summary, although the universities each present their contributions, a large part of the contributions coincides to a great extent, especially with regard to thematic areas and level of teacher training.

On one hand, graph 1 shows which are the requirements that predominate in the academics profiles, depending on the response of each partner. The size of each term represents a proportion of the frequency with which these requirements were requested. Skills such as languages, soft skills, socio-cultural perspectives and disciplines related to new technology applications, in general has less representation on the profiles requirements. On the other hand, the graph confirms a predominant interdisciplinarity of the teaching profiles from a more general approach, in accordance with the subjects included in the common part of the Master. Those profiles and disciplines related to more local aspects and specific to each partner are less represented.

Three of the universities emphasize, firstly, that it is necessary for teachers to have a higher rank in their disciplines (doctorate), and at the same time a consolidated trajectory in their subject areas. This should make it possible to obtain highly qualified teachers in their discipline. The relationship of each teacher with the discipline will be required and must be demonstrated.

Secondly, when analysing the exposed disciplines, the physical and natural sciences stand out, on the one hand, such as geomorphology, biogeography or climatology, especially linked to the environmental impacts of climate change. On the other hand, social sciences that can be linked to these environmental changes, such as geography or land use planning. In a transversal way, other more technical disciplines also appear, such as cartography or computer science.



Graphic 1: Represent the descriptors of the most frequently cited profiles. Words of greater size mean high frequency and those of lesser, little repetition in the responses of the partners.

2. Which personnel is involved in the master's supervision? (Link to answers)

The supervision of the Master plays an important role in the final definition of the profile of the teacher and the teaching methodologies adopt by the project. It depends of the rules of each MENA HEI institution and often the legal framework established in each country. But anyway, the internal organization of the Mehmed project played an important responsibility in these supervisions looking for insure the quality of the different proposals. All the proposal was presented beforehand into the face to face SC meeting developed in the University of Sousse (October 2019) and the University of Sorbonne (February 2020).

As mentioned above, each university is subject to the legal framework of each state in relation to the evaluation and supervision of the master. Even so, multidisciplinary teams stand out in most of the participating universities, at the disciplinary level, but also in pedagogical and internal aspects of each faculty. The different fundamental aspects of teaching at the master's level are thus treated, such as research, training and occupation or other structures related with supervision and quality of each university.

In general terms, most of the partners have differential committees that are in charge of supervision (see diagram). Some of the distinctive criteria that are mentioned in response to this question are:

- Differential supervision according to local (faculty) or national scale (National Agency for the Evaluation and Quality Assurance of Higher Education and Scientific Research)
- Specific regulatory texts
- Student representatives
- Different supervisors for pedagogical contents, managing and scheduling lectures
- Coordinator of the MEH Med Master program

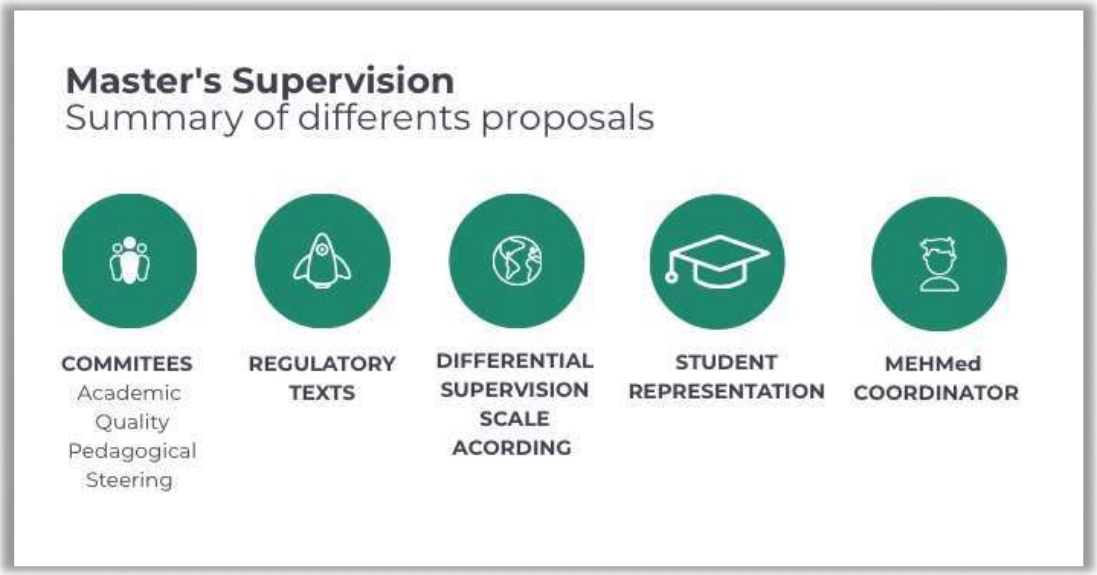


DIAGRAM summarizes in general terms, the different proposals of supervision from the partners

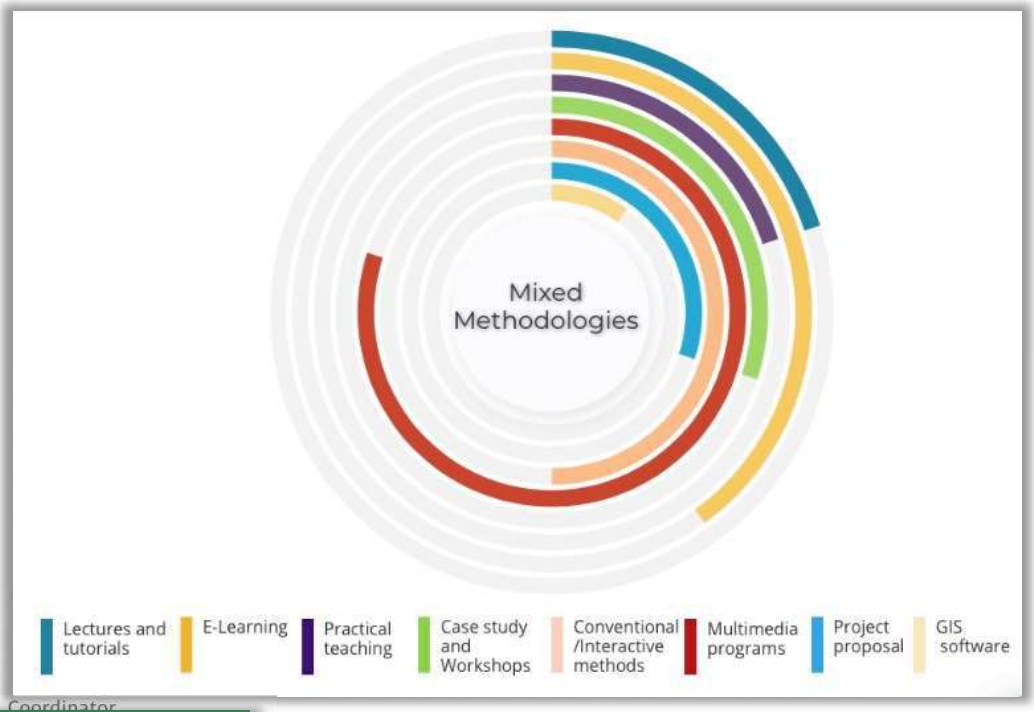
3. Which teaching methodology (e.g. conventional lecturers, interactive methods, practical case studies, online classes, etc.) will be used? Please try to explain in detail. *(Link to answers)*

This is focus a central question of the questionnaire, so it is the general presentation of the methodologies included in the application of the Master in each academic institution. Like usual it is presented by country following the number of each university in the Mehmed project application. In this case it is clear also the differences between universities following the experiences and the tradition of each academic partner, anyway de main common suggestions from the project are mainly included in the proposals of master's.

In the first place, although the majority of partners recognize the freedom of each teacher to better choose their teaching methodologies based on their discipline, they are generally committed to diversifying the methodology. Master classes continue to be the preferred ones, although examples of new methodologies that are consolidated are collected, especially linked to new technologies and those that allow a collaborative teaching, which tries to deepen in group activities for example to strengthen the multidisciplinary. Promotion the work of each student in flipped classes, or by organizing seminars and workshops that allow teaching less based on lectures and more practical.

Thirdly, it is worth highlighting the increasing ease of access to materials through the internet, as well as teaching platforms that facilitate a new teaching dimension. In the current post-pandemic context, distance education (e-learning) is an opportunity to deepen in this regard.

The following graphic summarizes the new teaching and learning methodologies proposed by the partners. It is interesting to highlight those which take into account the current context (global pandemic) responding to the general and particular objectives of the master from an innovative perspective.



The selected methodologies serve as inputs that will allow configuring the proposed "Teaching training plan", and the acquisition of the necessary skills to acquire for its implementation in the classroom.

es proposed by the partners
m an innovative perspective.

4. Which IT supporting tools are available or are you planning in relation the new Master's?
(Link to answers)

Another characteristic of the Master's Mehmed id the important role-played by IT supporting tools. In this sense is important to know their availability and planning of use in the different MENA HEI to detected needs but at the same time opportunities of cooperation between the partners. The answers received give us a general overview and the different options and focus using IT supporting tools in the different universities, also connected with their specific profile and academic and research tradition. All the partners considered acceptable the facilities, tools, and they planning to cover some gaps with the acquisition of material and equipment included in the budget of the project.

Most universities have their own online platforms, based on applications such as Moodle, which is very common in many educational institutions internationally. But also, other systems offered by global companies such as Microsoft or Google. In addition, they want to advance, linked to the previous question, in teaching based on new technologies. Not only because it is a complementary channel for teaching, with videoconferences or e-labs, but also technology will be a key aspect in the teaching content itself, with aspects such as GIS or other technologies available for each discipline.

With all this, therefore, technology is a transversal aspect in the teaching of the master. As has already been mentioned, the different possibilities it offers are multiple, and help to propose new teaching methodologies and relationships between teachers and students.

5. How will the courses be planned? Will there be any support? (Link to answers)

In relation, the planification of the course and their connection with the teaching methodologies the position of the partners is based on the recommendations and rules establish for the entire Consortium, especially in the common part of the Master.

The planning of each course is determined as stated in the overall proposal of the master, following what is established in reference to the duration of each course, as well as the different hours of dedication.

In addition, the universities highlight all the material and learning derived from the current master's degree, as well as the content and pedagogical support derived from the different teams of the MEHMED Consortium set made up of the different universities.

Also included is the capacity of each teacher, recognized in their subject, to develop the materials for each course and subject, following the common established recommendations. These materials are dynamic and evaluable at the end of each course, to be adapted and improved to be more useful in its objective.

6. Are there any assessment procedures included in the Master's proposal? (Link to answers)

Another question fundamental aspect is the assessment procedures included in the different master proposals to evaluate the success of the Master and also to design and implement an internal evaluation system with the objective to establish measures of correction to improve permanently the Master. This is the general perspectives of the different partners.

The evaluation system can be carried out from different points of view, with the general objective of improving the quality of teaching year after year. Each legal framework established by each country or center is decisive, although most of the universities surveyed propose quantitative and qualitative methods to determine the reality of each university.

Based on the contributions made, a double reading emerges, on the one hand, the master's degree as a whole in each university, and on the other, the evaluation of the students as a reference to understand the implementation and evolution of the study.

In relation to the students, the diversity of procedures applied by each partner encompasses different dimensions at a cognitive and academic level (continuous assessment, quantitative indicators, etc.). Evaluation proposals mostly implement traditional methods (Oral and written assessment, presentations, exercises and reports, etc.), an aspect to take into account when making these procedures compatible in a virtual context that the current global situation demands.

Finally, a qualitative evaluation is also proposed, through different techniques to evaluate the master at different scales, and with all the groups involved, such as students, teachers or external personnel.

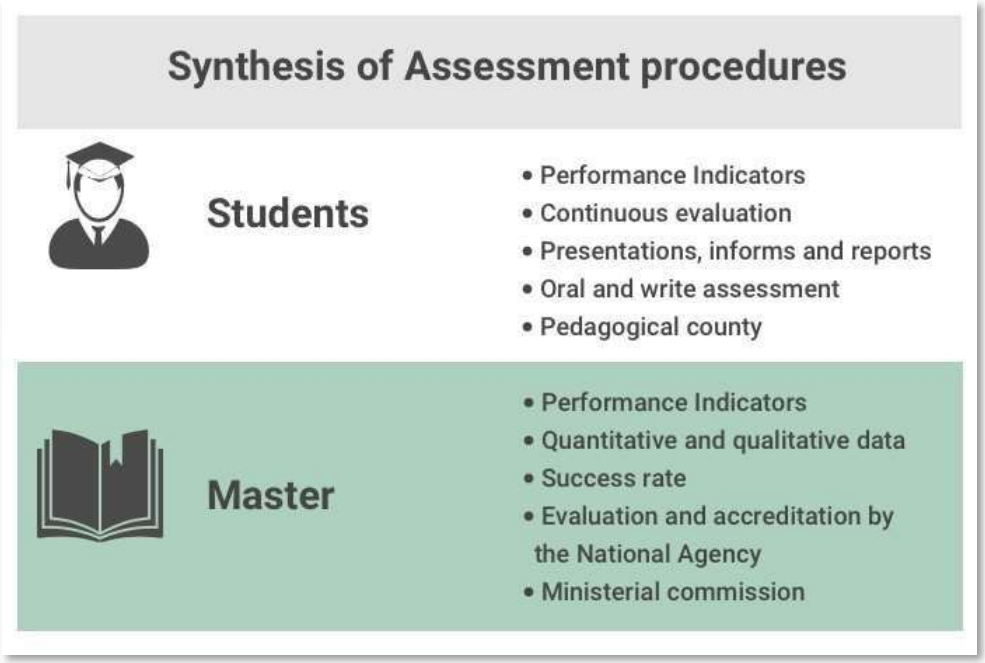


DIAGRAM synthesis of the different Assessment procedures for Students and Master


MEHmed

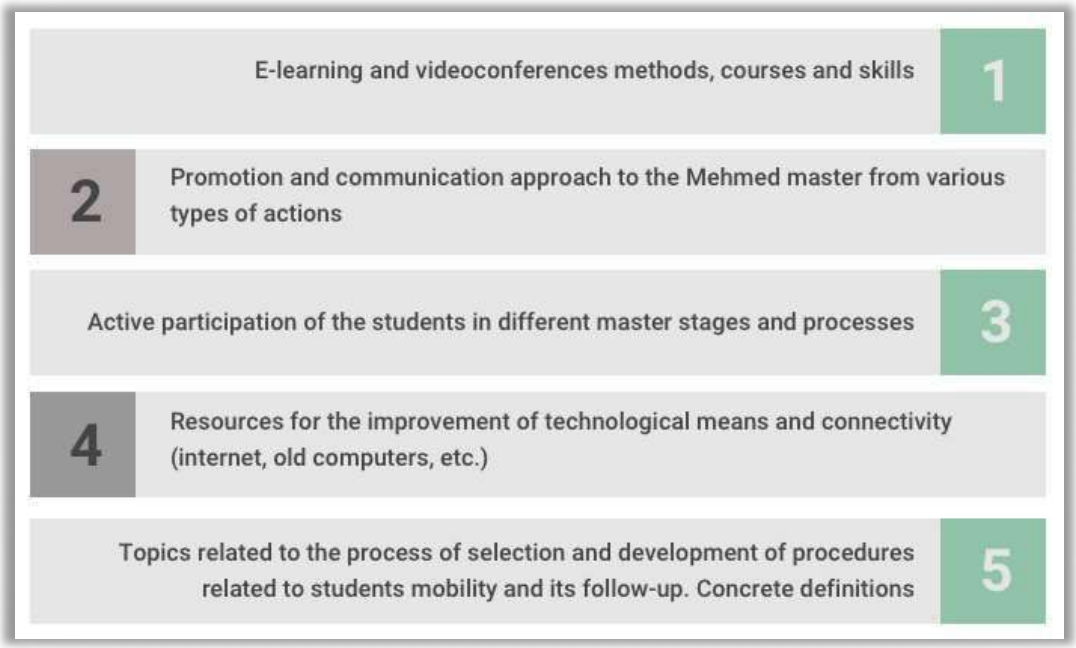
7. Others important concerns to consider. (Link to answers)

Finally, the open question about important questions to emphasize appears the need to reinforce all the strategy e-learning in the new international context after Covid-19 pandemic. In fact, from the coordination of the project was asked the officer to mobilizing some economic resources from travelling to developing and reinforce the e-learning platform.

Other aspects discussed refer to, for example, the technical possibilities of the students, since it can be a limitation when choosing it in a reality with a large offer of postgraduate courses. Linked to this, one of the universities highlights the need to establish a strong strategy to attract students, and therefore, a powerful communication campaign is necessary.

Lastly, some contributions want to reflect on questions derived from student mobility, as well as aspects derived from it, such as limitations derived from the language or the topics discussed.

Summary of topics to consider:



4 Teaching training plan

First of all taking in account the information provided by the different MENA HEI partners of the project MEHMED in the questionnaire and the agreements of the different meeting (On-line Steering Committee monthly Skype / Google Meet meeting & Face to face Steering Committee Meeting (Sousse oct 2019 & Paris February 2020) was design a teacher training from University of Girona (UdG) and with active participation of the rest of HEI from UE: University of Sassari (Italy) and Sorbonne University (France).

The teaching training was based in three main lines core ideas:

1) Innovative teaching methodologies.
2) Teaching methodologies in the Environmental Master UdG.
3) Teaching methodologies experience in the University of Sassari and Sorbonne University.

The teacher training was planned initially to be developed face to face in middle April 2020 in the University of Girona with two members of each university partners of the consortium. Unfortunately, under the Covid-10 pandemic situation and the enclosure of all the university and borders for a long time was not possible to do it like it was planned at the beginning. After it was planned to postponed until beginning July but the situation isn't still good enough to developed it. Finally, all the partners were agreed to reschedule it to Autumn 2020 in one-line version. The proposal of Autumn was decided to avoid the problems related to lock-down of the universities and avoid the summer period and the beginning of the new academic year 2020-21 in a very complex situation under the new Covid-19 measures.

Of course, this situation was a clear inconvenient for the normal development of the project but on the other hand it offers also some opportunities. The advantages of this new scenario are associated to:

- Resolution of the accreditation of the different Masters.
- Definition of the full academic staff responsible of the different subjects.
- Extension of the participation to all the staff of the project.
- Extension of the number of days of training from 3 to 4 days.
- Use of the contents of the teaching training methodologies for the e-learning platform for the permanent training of staff of the Master. It is planned to recorded all the sessions and upload it in the Mehmed learning platform: https://mastermehmed.com/mehmed-training/#

In the next page we present a general plan draft of the program sessions teaching training in Girona next autumn. Agenda Teacher Training ERASMUS+ MEHMED, Girona 2020 (DRAFT)

Agenda Teacher Training ERASMUS+ MEHMED, Girona 2020 (DRAFT)

	DAY 1	DAY 2		DAY 3		DAY 4
9:00 - 10:30h	**Competence-based working at the university** (Josep Juandó, WUSMED) *Venue: Faculty of Arts*	**Workshop Problem-based learning** (Teaching Innovation Network, Faculty of Nursing, Faculty of Medicine, UdG) *Venue: ICE*	**Use of *ICT* in class** (JA Donaire, Department of Geography, UdG) *Venue:* Institute of Education Sciences (*ICE)*	**How to structure and work Compulsory module: Interaction between environmental change and the natural environment** Teachers of UdG master's	**How to structure and work Compulsory module: Interaction between environmental change and human activity** Teachers of UdG master's	**Teaching methodologies experience in the University of Sassari** Alessandra Casu
11:00 - 12:00	**Evaluation of the quality of the master's** (Cabinet of Planning of the Quality, GPA-UdG) *Venue: Faculty of Arts*					**Teaching methodologies experience in the Sorbonne University** Marianne Cohen
12:00 - 13:00	**Action Plans Tutorial** (Mònica Iglesias, Vice dean of the Faculty of Sciences, UdG) *Venue: Faculty of Arts*		Sustainable Development Goals (SDG) in teaching (Leslie Collazo, Faculty of Education, UdG) *Venue: ICE*	**How to structure and work Compulsory module: Scientific foundations for environmental change** Teachers of UdG master's	**How to structure and work Compulsory module: Introduction multivariable analyse ii multivariate analysis of environmental data** Teachers of UdG master's	**Conclusions & final remarks** Alessandra Casu & Marianne Cohen

				Venue: Faculty of Arts	*Venue: Faculty of Arts*	

5 Annex: tables of results

Question 1. Which is the required profile, knowledge and skills for academic teachers for the MEHMED master's? (The profile of the teachers that will be involved in the teaching of the Master's)

Tunisia	*P4: University of Sousse*	Should be PhD holder for Lecturers / Researchers or an Engineer or MSc holder for professionals (working in public or private institutions) with a strong experience in the field he will teach. - Teachers' understanding of the nature and purpose of the discipline strongly influences their personal pedagogical content knowledge, i.e. what they highlight as important. This means that teachers need to have a sense of what the nature of the discipline is, understanding its organizing concepts as well as its tools. - we can summarize the required competencies in four aspects: Instructional delivery; Classroom management; Formative assessment ; Personal competencies (soft skills)
	P5: University of Monastir	Chemistry; Biology; Chemical; Engineering; Mathematics; Legal Science (have a look at the completed list attached)
Morocco	*P8: Sidi Mohamed Ben Abdellah University*	The team of teachers involved in the Master includes geomorphologists, a biogeographer, biologists, a hydrologist, climatologists, an economist, a statistician
	P9: UAEssaadi	Geomorphology, Human geography, English, Applied geomatics (GIS and remote sensing), Rural geography, Urban geography, Territorial management, Forest dynamics, Cartography, Statistics, Methodologies, Climate change and productive sectors, Coastal management, Water scarcity control, Legal framing of environmental issues, Environmental risk management, Environmental constraints in transition areas.
	P10: UMP	The teachers of the MEHMED Master are professors of the Mohammed Premier University specialists in Chemistry, in biology; or in Geosciences relating to Environmental Sciences. In addition, skills from the socio-economic environment working in the field of the Environment are also involved in the supervision of the MEHMED Master
Algeria	*P11: U Constantine 3*	MEHMED's group of teachers will be multidisciplinary: Geographers, urban planners, geologists, biologists, environmentalists and computer scientists.

	P12: UBBA	The teachers must be of superior rank and in the specialty. The teachers in our department are all academics in the field of environment and process engineering .
	P13: University Mostaganem	Lecturers involved in the MEHMED Master have a large number of years of experience and know-how each in his field. They come from different faculties, according to their skills and their areas of research:• Faculty of Nature and Life Sciences;• Faculty of Exact Sciences and Computer Science;• Faculty of Sciences and Technology.For courses with different theoretical concepts in various fields, as is the case for the course "Biodiversity management", several teachers may be involved. Each one will have the opportunity to ensure a part of the curriculum having a relationship with his area of interest and his skills.

Question 2. Which personnel is involved in the master's supervision?

Tunisia	*P4: University of Sousse*	The educational manager of the master (pedagogical contents, managing and scheduling lectures) - The head of the doctoral school (for administrative aspects) - The master's commission (composed by the lecturers of the master) - the director of studies of the institute (for scheduling the courses) - the director of traineeship (for trainings managing) - The director of the Institute and coordinator of the Mehmed project
	P5: University of Monastir	All the steering committee members, quality committee members and the academic council
Morocco	*P8: Sidi Mohamed Ben Abdellah University*	The faculty supervises the conduct of the courses at the local level. The National Agency for the Evaluation and Quality Assurance of Higher Education and Scientific Research is responsible at the national level
	P9: UAEssaadi	Adil SALHI; Noureddine CHIKHI; El Houssaine AFKIR; Abdelaziz BOULIFA; Mohammed EL ABDELLAOUI; Mustapha EL HARRAR IMRANI; Karim BEJJIT.
	P10: UMP	The supervision of the Master is ensured by the coordinator of the MEH Med Master program, who chairs a multidisciplinary educational commission made up of a chemist, a biologist, a geologist and one in environmental sciences.
Algeria	*P11: U Constantine 3*	Someone's yes and other's no.
	P12: UBBA	Pedagogy tea - CRUEst (Regional Conference of Eastern Universities) - Quality Committee
	P13: University Mostaganem	This Master's degree, like all other training offers, is governed by well-defined regulatory provisions common to Bachelor's and Master's degrees (Ministerial Orders 711, 712, 713, 714 and 715) and other regulatory texts specific to Master's degrees (Ministerial Orders 362 and 363). These regulatory texts define the prerogatives and responsibilities of the different parties

		involved in the administrative and pedagogical management of higher education training. A pedagogical coordination committee is set up for each level of the Master training (Master 1 and Master 2). This committee is composed of all the teachers involved in the training and whose main mission is the continuous pedagogical follow-up of the training. This committee, in the presence of student representatives, meets frequently and according to a schedule set at the beginning of each semester. These pedagogical committees are chaired by a teacher elected by his peers.

Question 3. Which teaching methodology (e.g. conventional lecturers, interactive methods, practical case studies, online classes, etc.) will be used? Please try to explain in detail

Tunisia	*P4: University of Sousse*	Due to the fact that most of teachers are conventional lecturers, most of lectures will probably be realized conventionally. But lately, due to the pandemic situation more and more teachers are learning how to make distance teaching (videoconferences, platforms, etc). As a consequence, the teaching methodologies that will probably be used are: 1. Instructor-led classroom training Classroom-style training is the most traditional and widely used training method. A subject matter expert or training manager prepares a classroom experience– usually a lecture-style presentation with a PowerPoint as a visual accompaniment – and presents in front of a group of trainees. 2. Interactive methods This training method takes classroom-style lectures to a new level by adding interactive and group activities to the training experience. Popular interactive methods include small group discussions, case study reviews, role playing, quizzes and demonstrations. Since students say training is often uninspiring and prohibits learning, this approach is a great way to add fun, engaging experiences to the training process. 3. Computer-Based Training Computer-based training is becoming increasingly prevalent as technology becomes more widespread and easy to use. Though traditional forms of training are not likely to be replaced completely by technological solutions, they will most likely be enhanced by them. Human interaction will always remain a key component of workplace training. Computer-based training formats vary from the simplest text-only programs to highly sophisticated multimedia programs to virtual reality. 4. Online or E-Learning In addition to computer-based training, many companies with employees in a variety of locations across the country are relying on other technologies to deliver training. According to the ASTD "State of the Industry" report, companies are using a record level of e-learning, and ASTD predicts that number will continue to rise. This method is becoming more and more popular as access to the Web becomes more widely available. Some examples include Web-based training; Tele- or videoconferencing; Audioconferencing, Web meetings, or webinars; Online colleges and universities; Collaborative document preparation.

		Of courses practical classes and works, visits to outdoor sites and institutions are mandatory for a professional master education.
	P5: University of Monastir	The teaching methodology is left to the own choice of the teachers. We cannot impose any teaching method. However, it is strongly recommended to use new teaching methods based on ICT. We insisted on the case studies especially in the workshops and practical modules. We have also planned one or two modules to be done remotely. Finally, the inverted classes will be used in some case studies.
Morocco	*P8: Sidi Mohamed Ben Abdellah University*	Modules will be taught using a variety of teaching methods including: Face-to-face teaching, Interactive teaching, Practical activities-based teaching, Problem resolving based teaching, Project based teaching, Case study, Field investigation and observation.
	P9: UAEssaadi	Conventional lecturers, interactive methods and practical case studies. Also, it will be adopted the "flipped classroom" method, which is a mixed learning where students are introduced to the fundamentals of the following class content and are asked to undertake preparatory activities. Later, the knowledge and acquisitions are enhanced in the class and they are empowered with documents and tools to assist them understand and master the learnings. The Google Classroom app and platform will be used as a free and easy to use tool. - Students will be directed to online related bibliography (the access to paid repositories is institutionally available: ScienceDirect, Springer, Cairn, Web of Science, JSTOR, Scopus, MathSciNet, Aluka). - The following Open Acceess databases will be used: • To download satellite images and data https://eos.com/landviewer and https://landsatlook.usgs.gov/ • To download soil quality data and characteristics http://www.fertimap.ma/ and in https://esdac.jrc.ec.europa.eu/resource-type/national-soil-maps-eudasm • To download geomorphological data: https://asterweb.jpl.nasa.gov/ • For advanced processing of digital satellite data https://earthengine.google.com/ - Study trips, inspections and field research to teach the student some research methods..
	P10: UMP	Lectures – Tutorials - Practical work - An onsite training Face-to-face and or remote workshop Presentations by students
Algeria	*P11: U Constantine 3*	There will be teaching methods in the classroom, other field trips, educational seminars will be scheduled and internship blocked for at least one week for a case study.
	P12: UBBA	Mix of the different techniques (Classical conferences, lectures, presentations, etc.)

P13: University Mostaganem	The choice of the teaching method as welle as the educational tools used in the Master's programme are left to the discretion of the training team. For this Master's degree, all teachings are face to face training. They are given in the form of lectures followed, in most cases, by tutorials or practical work. Personal work (individual contribution of the students) is another learning method used in this Master's programme. This method consists in asking the student to carry out certain research activities in the form of mini-projects or problems to be solved either individually or in a group.

Question 4. Which IT supporting tools are available or are you planning in relation the new Master's?

Tunisia	*P4: University of Sousse*	practical work labs - e-lab - visioconference / webinar equipments
	P5: University of Monastir	Video-projection and smart board will be used for teachers who wish to use them
Morocco	*P8: Sidi Mohamed Ben Abdellah University*	GIS software GPS Moodle
	P9: UAEssaadi	Google classroom, Microsoft Teams for education
	P10: UMP	Moodle platform, Mohammed First University platform, Google classroom platform
Algeria	*P11: U Constantine 3*	Using Computers, software, videoconferencing room, video projectors
	P12: UBBA	Moodle platform, google class room, google drive
	P13: University Mostaganem	In this new Master, each student will have the right to a laptop during the entire training period. Students will also have access to a broadband connection available at the educational premises. The Faculty also has an e-learning platform allowing students to exchange with their teachers the various teaching materials.

Question 5. How will the courses be planned? Will there be any support?

Tunisia	*P4: University of Sousse*	- videoprojectors - whiteboards - internet connection - laptops
	P5: University of Monastir	According to the established list, as soon as we get the accreditation, the academic staff, who already knows about the Mehmed master, will prepare the courses according to the study plan. Most of the courses are, at 80% level, already used for ongoing environmental master. For the mandatory specific modules, and in accordance with Girona Training, specific instructions will be given for the corresponding responsible to be in complete accordance with our general and specific goal
Morocco	*P8: Sidi Mohamed Ben Abdellah University*	
	P9: UAEssaadi	There is a detailed plan of studies for each module which include the detailed description, objectives and contents, the knowledge to be acquired in advance, The duration of the module with detailed information about all programmed activities (classes, practical classes, personal work, assessment, …), the procedures for organizing the applied activities, the description of the student's personal work (in some modules), the procedures for the assessment, the teaching staff of the module and any other useful information.
	P10: UMP	The modules are organized in semesters (6 modules per semester for the first 3 semesters, the 4th is devoted to PFE) Each semester has 14 weeks Each module will have 1h30 of lecture per week, and 3h for TP and / or TD
Algeria	*P11: U Constantine 3*	The courses will be planned according to a weekly hourly volume of 25 hours 30 per week
	P12: UBBA	The teachers have already been chosen and are each specialist in their own field. The pedagogical support is the framework where the program is already detailed.
	P13: University Mostaganem	As already mentioned above (question 3), all teachings are face-to-face training. Courses materials will be developed for each subject and for each teacher. At the end of each semester, these materials are updated according to the experience lived by each teacher. At the end of the training, a global document can be edited to serve as support for future students.

Question 6: Are there any assessment procedures included in the Master's proposal?

	P4: University of Sousse	The quality analysis (WP4)
Tunisia	*P5: University of Monastir*	As all academic offer can be improved over time, it is important for us to design and implement an internal evaluation system. Various assessment systems can be envisaged. For us, it is possible to consider developing a dashboard with a set of performance indicators such as: - success rate - abandonment rate - integration rate - coaching rate It is also possible to deepen the evaluation by collecting quantitative or qualitative information to analyze elements relating to the training process itself or its output (result). This evaluation can be carried out: - by students - by professionals - by peers (colleagues) A set of unified indicators will be gradually implemented to be able to establish national benchmarks. - Attractiveness rate: (nb of registrants / nb of requests) - Supervision rate: (nb of registrants / nb of permanent staff) - by specialty of permanent staff in the best of cases - Nb of students having benefited from grants (mobility, work-study program, exchange, etc.) - Number of foreign students - Number of partners (subsidy, co-construction, work-study program, internships, event sponsorship, job interviews, etc.) Success rate 1st year, 2nd year

Morocco	*P8: Sidi Mohamed Ben Abdellah University*	Evaluation and accreditation by the National Agency for Evaluation and Quality Assurance of Higher Education and Scientific Research
	P9: UAEssaadi	Each module is evaluated by: a) Continuous evaluation: presentations, exercises and reports; b) - End of term exam. For each module, there is an adapted equilibrium (between the continuous evaluation and the end of term exam) according to the hourly volume of activities. Students may be absent from a maximum of two sessions (with a legal excuse). Later, the module is approved by obtaining a score equal to or greater than 10 by 20, while the end of term exam must be passed). For the maser thesis, the student presents the thesis in 4 copies for the coordinator in the first half of June and is subject to a preliminary examination by a committee consisting of at least 3 professors, including the supervisor, and a member from outside the university institution may participate in addition to them. The committee is appointed by the coordinator. After the written approval of the thesis, it is submitted for its public defense, where the student makes a presentation before the committee evaluates the work, then deliberate to decide the result. The final result is based on the average score submitted by each member of the committee, in addition to the training evaluation point awarded by the professional supervisor of the training institution. If the thesis is approved by the committee, the student must provide the coordinator with three corrected copies of his thesis in addition to an electronic version in CD.
	P10: UMP	For each module: Continuous assessment in mid-semester and an exam at the end of the semester and a remedial session for those who have not validated the module
Algeria	*P11: U Constantine 3*	Oral and written assessment.
	P12: UBBA	The caneva does not provide for evaluation procedures but there is a ministerial commission that judges the content of the Master's degree. But for the internal evaluation it is the pedagogical county, composed of all the teachers of the department that judges the content of the modules and the programme.
	P13: University Mostaganem	The evaluation methods are defined by the applicale regulations (regulatory texts already mentionned). The pedagogical evaluation of the knowledge acquired is done by means of continuous assessment and a final exam. Continuous monitoring can take different forms of evaluation distributed regularly throughout the semester. The final exam is a written test scheduled at the end of each semester and covering the entire teaching program. The average grade for each course is obtained by a weighting between continuous assessment and the final exam. Students who have obtained average grades less than 10 will have a right to a re-take exam.

Question 7: Others important concerns to consider.

Tunisia	*P4: University of Sousse*	I think a very big efforts should be done by all partners (and particularly the coordinator) of the MEHMED project to prepare and establish e-learning and videoconferences methods in order to guarantee a maximum of common lectures between universities, especially that we will encounter big difficulties to find the right teacher for many lectures (for the compulsory module, but also for some others...). Even if not initially mentioned during the accreditation, offering e-learning courses will be highly welcomed by institutional supervisors, particularly in this new world situation.
	P5: University of Monastir	To attract graduates to choose our master offer, it is necessary to stimulate this demand by adopting a communication and promotion approach to the Mehmed master. t is possible to envisage various types of actions such as for example: Visits of establishments - Participation in trade fairs - Open day - Social networks - Radio, TV, Newspapers - Flyers
Morocco	*P8: Sidi Mohamed Ben Abdellah University*	
	P9: UAEssaadi	
	P10: UMP	30% of the grade for the modules is reserved for the work carried out by the students (Presentation, report on field trips, workshop facilitation, etc.)
Algeria	*P11: U Constantine 3*	
	P12: UBBA	The problem we encounter is that our students lack the means (Internet, old computer, etc.) to be up to date for study
	P13: University Mostaganem	We would like to draw your attention to the Master2 student mobility programme. We must start thinking about the selection procedures and the way in which this mobility will take place as soon as the Master's programme is launched next September or October. Our concerns are related to the attribution of the topics to be treated and the follow-up of these students. Many questions remain to be answered: • In which laboratories will the students be oriented? • How will the topics be defined?

	• Will the language be a problem for some students? • Will the mobility period be sufficient

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Partners

WP 2

MEHMED – Deliverable 2.7

Accreditation roadmap

MEHmed
MEDITERRANEAN ENVIRONMENTAL CHANGE MANAGEMENT
MASTER STUDY & ECOSYSTEM BUILDING

REPORT ON ACCREDITATION ROADMAP

The accreditation of degree programs – in this case a master's program - is a mark of assurance that particular standards are met. The accreditation is provided by professional and statutory bodies. Accredited programmes address the needs of employers and students, and usually undergo a peer review process founded on the judgement of experts. This finally provides a credible and confirmable method for employers and students so they can trust in the career programs. The accreditation undergoes an assessment process for all degree programs based on the different disciplines. It is a review process at different levels - involving university faculties, universities, regional and national authorities. Accreditation preparation takes a lot of time since it has to be ensured that all the data is collected and presented in a way that reaches the standards of the accreditors. To gain accreditation, applicants must demonstrate that they provide with all the relevant key requirements for the program. All this ensures the high quality of our master's after obtaining accreditation.

Different steps have to be taken in order to achieve the final accreditation of the master's program.

This report is focused on the procedures and deadlines for the accreditation of the Master's in the different PC HEIs in Algeria, Morocco and Tunisia, in particular, on the different steps to follow in each PC HEI to be undertaken to obtain the official accreditation at national level.

The information presented was collected from each university and country through email correspondence and during the different Steering Committee meetings. In the monthly virtual SC meetings as well as in the face-to-face SC meetings in Girona (February 2019), Sousse (October 2012) & Paris (February 2020), the accreditation road map was an important issue for discussions.

In order to achieve the program accreditation, several steps had to be taken. In a first phase, planning and discussions on the degree programs with colleagues of the Mehmed project during the kick-off meeting was very helpful to agree on a common strategy as well as on structure and content issues. Exchange with other professionally qualified staff – university professors, professionals, etc. - provided advice on the program's potential for accreditation and helped to identify and collate information for the accreditation submission. Actively contacting experts and involving the Academic Council from the Mehmed project was essential to accomplish with all demands of the accreditation process. In a further step, self-assessment and further discussion with the Mehmed partners was helpful to prepare for the submission at the different authority levels.

We present in the next tables the principal information and steps to be implemented in order to achieve the accreditation of the Master's from each country and PC University. All information was collected before the Covid-19 crisis. The pandemic situation has increased the uncertainty and at the same time affected directly the final schedule of the accreditation and the implementation of the Master's.

A short summary of the present situation is shown below. It is a summary of the original accreditation roadmap tables in each PC, respectively Algeria (Tab. 1), Morocco (Tab. 2) and Tunisia (Tab. 3).

Table 4 provides an up-dated version (July) of the time planning for the accreditation process in the three Mediterranean countries.

Table 1: Accreditation roadmap Algeria

Country		Algeria	
Partner	P11	P12	P13
University	University of Constantine 3	UBBA	University Mostaganem
Date of submission to intra-university organs	Local Authorities Dec 19 - Mars 20 Ø Scientific Committee of the Department: December 2019 Ø Scientific Committee of the Faculty: January 2020 Ø Scientific Committee of the University : February 2020 Regional Authorities Regional Conference of the Eastern Universities (CRUEst): March 2020 National Authorities national teaching committee of the domain (CPND): July 2020 (National accreditation Council (CNH) of the Ministry of Higher Education): Jul 2020	Local Authorities Dec 19 - Mars 20 Ø Scientific Committee of the Department: December 2019 Ø Scientific Committee of the Faculty: January 2020 Ø Scientific Committee of the University : February 2020 Regional Authorities Regional Conference of the Eastern Universities (CRUEst): March 2020 National Authorities national teaching committee of the domain (CPND): July 2020 (National accreditation Council (CNH) of the Ministry of Higher Education): Jul 2020	Local Authorities: From December 2019 to February 2020 Ø Scientific Committee of the Department: December 2019 Ø Scientific Committee of the Faculty: January 2020 Ø Scientific Committee of the University: February 2020 Regional Authorities (Regional Conference of the Western Universities): From March to May 2020 National Authorities (National Committee of the Ministry of Higher Education): June 2020 Announcement of the decision of the Regional Conference of the Western Universities: May 2020 Announcement of the decision of the National Committee of the Ministry of Higher Education: June 2020

Estimated date of accreditation and accreditation body	July 2020	06/2020 by the Ministry of Higher Education and Scientific Research	Estimated date of accreditation: June 2020 Accreditation bodies: • Local Authorities (Scientific Committees: Department/Faculty/University) • Regional Authorities (Regional Conference of the Western Universities) • National Authorities (National Committee of the Ministry of Higher Education)
Date of implementation (up and running)	September 2020	October 2020	September 2020

Table 2: Accreditation roadmap Morocco.

Country	Morocco		
Partner	P8	P9	P10
University	Sidi Mohamed Ben Abdellah University	University of Abdelmalek Essaadi	Université Mohammed Premier
Date of submission to intra-university organs	December 2019 Department End December 2019 Faculty January 2020 University	December 2019 Department End December 2019 Faculty January 2020 University	October-December, 2019
Estimated date of accreditation and accreditation body	June 2020. Accreditation body: Agence Nationale d'Evaluation et d'assurance Qualité pour l'Enseignement Supérieur.	September 2020 The Ministry of National Education, Vocational Training, Higher Education and Scientific	June-July, 2020 Agence Nationale d'Evaluation et d'assurance Qualité pour l'Enseignement Supérieur
Date of implementation (up and running)	September 2020	Expected to be implemented by September 2020	October, 2020

Table 3: Accreditation roadmap in Tunisia.

Country	Tunisia	
Partner	P4	P5
University	University of Sousse	University of Monastir
Date of submission to intra-university organs	January 2020 Scientific council of the Faculty, March 2020 at the University of Sousse	December 2019 at the chemistry Department council, January 2020 Scientific council of the Faculty of Sciences, February 2020 at the University of Monastir Council
Estimated date of accreditation and accreditation body	July 2020/ IEAQA	July 2020, Chemistry Sectorial Committee, General Direction of Academic Renovation, Ministry of Higher Education and Scientific Research
Date of implementation (up and running)	October 2020	September 2020

The initial procedure and deadlines fixed for the accreditation of the Master's was done on time for all the academic partners of the project. Therefore, it was completed as it was planned in the roadmap in all the HEI's from each country. Consequently, all the documentation required for the accreditation of the 8 master's was presented on time:

- December 2019 in Morocco.
- February – March 2020 in Algeria & Tunisia

After the start of the pandemic (March 2020) and the lockdown in the different countries of the consortium, some important changes arose compared to the initial Roadmap. Here is a short summary of the actual situation in each country and HEI.

Table 4: Up-dated roadmap for accreditation in the participating countries

- ALGERIA:
○ 3 master's submitted, March 2020 (UC3, UMAB, UBBA).
○ Expected award of accreditation: August – September 2020.
○ Planned start of the Master's: Autumn 2020.
○ The consortium has asked the NEO Algeria for intervention and support for the accreditation process.
- MOROCCO:
○ 3 master's submitted, December 2019 (UMP, UAE, USMBA).
○ **3 master's accredited, June – July 2020**
○ Planned start of the Master's: Autumn 2020.
○ The positive role of the NEO Morocco to facilitate the process of accreditation with a very active support of mediation with the Ministry of National Education has to be underlined.
- TUNISIA:
○ 2 master's submitted, March 2020 (UoS, UM).
○ Expected award of accreditation: July – August 2020
○ Planned start of the Master's: Autumn 2020 – January 2021

The evolution of the pandemic situation and the lockdown in these countries is expected to have a direct impact on the accomplishment of implementation of the master's courses due to a possible delaying of the start caused by a potential second wave of the Covid-19. Nevertheless, in our opinion the dates included in the report are quite realistic despite the present uncertain context (July 2020).