

## DELIVERABLE 4.3

### The third annual quality-assurance report

Written by	Responsibility
Felipe Gil Castiñeira (UVIGO)	WP4 Leader
<b>Edited by</b>	
Marios Raspopoulos (UCLan)	WP2 Leader
Nearchos Paspallis (UCLan)	Member of the Quality Monitoring Committee
Omar Daoud (PU)	PU representative
Jonathan Rodriguez (IT)	WP5 Leader
Fabrizio Granelli (UNIT)	Member of the Quality Monitoring Committee
Cristina López Bravo (UVIGO)	Member of the Quality Monitoring Committee
Ziyad Al tarawneh (MU)	WP6 Leader
Andreas Kazantzidis (UPAT)	WP3 Leader
Athanassios Argyriou (UPAT)	Member
Moath Alsafasfeh (AHU)	Member
Bassam Abu Karaki (AHU)	Member
Sultan Altarwneh (MU)	Member
<b>Approved by</b>	
Saud Althunibat (AHU)	Project Coordinator

This publication was produced with the financial support of the European Union. Its contents are the sole responsibility of the partners of the IREEDER project and do not necessarily reflect the views of the European Union.



## LIST OF CHANGES

Version	Date	Change Records	Partner responsible
1.0	October 15 <sup>th</sup> , 2022	Original Version	(UVigo)
1.5	Ocotber 23 <sup>rd</sup> , 2022	Editing	AHU
2.0	November 14 <sup>th</sup> , 2022	Final Version	Quality Monitoring Committee



## TABLE OF CONTENTS

1. Introduction	4
1.1. Scope and Objectives	4
2. Monitoring and quality assessment activities	5
3. Revision of the work plan	7
3.1. Work Plan for project year 1	7
3.2. Work Plan for project year 2	8
3.3. Work Plan for project year 3	9
4. Development of work packages	11
4.1. General overview of WP1	11
4.2. General overview of WP2	15
4.3. General overview of WP3	19
4.4. General overview of WP4	33
4.5. General overview of WP5	41
4.6. General overview of WP6	49
4.7. General overview of WP7	55
5. Review of progression indicators (QAP)	61
6. Observations and Recommendations	82

## 1. Introduction

### 1.1. Scope and Objectives

The third annual quality assurance report assesses the progress of the IREEDER project, in particular the activities to achieve the project objectives implemented in the last year from November 2021 to November 2022. The report was prepared by the Quality Monitoring Committee (QMC) and delivered on the 14th of November 2022. This report provides information on the overall implementation of the project activities, focusing on the training and dissemination workshops conducted in Jordan in the last year of the project. The QMC is composed of the following members:

Quality Monitoring Committee (QMC)	
Felipe Gil Castiñeira	(UVigo) – leader of WP4
Andreas Kazantzidis (UPAT)	Leader of WP3
Saud Althunibat (AHU)	Leader of WP7/Project coordinator
Ziyad Altarawneh (MU)	Leader of WP6
Ahmed Aljaafreh (TTU)	Member
Omar Daoud (PU)	Member
Mohammad Siam (IU)	Member
Fabrizio Granelli (UNITN)	Leader of WP1
Jonathan Rodrigues (IT)	Leader of WP5
Marios Raspopoulos (UCLAN)	Leader of WP2
Nearchos Paspallis (UCLAN)	Member

A specific quality monitoring and evaluation system was established to provide management with constant and clear information on the effective implementation of the actions, allowing for optimisation of resources and reorientation of activities that may be affected by problems. A set of qualitative and quantitative indicators was applied through monitoring instruments such as questionnaires, interview grids and checklists. Great attention was paid to the participation of all actors involved, underlining the importance of the contribution of each partner.

The WP4 leader formed a QMC composed of a representative of all partners. This QMC assisted in all deliverables and reports of the other WPs. It also monitored the role of each partner to ensure their commitment to the project activities.

The QMC delivered three annual monitoring reports. In addition, an external evaluator was contracted to assess the progress of the project. The following requirements were considered for the selection of the external evaluator:

- Sufficient experience in teaching and research on IREEDER topics.
- Sufficient experience in the management of EU projects.
- Ability to supervise all IREEDER project activities, including training workshops in Europe and Jordan and dissemination workshops in Jordan, in addition to evaluating the training materials developed and the laboratories set up in Jordan.

The external evaluator provided quality monitoring reports to contribute to the quality management of the project.

## 2. Monitoring and quality assessment activities

This third quality monitoring report is produced at the end of the third year of the project (November 2021 - November 2022) with the aim of assessing the quality of the IREEDER project following the instructions included in the Quality Monitoring Plan. The aim of this assessment is to ensure that the implementation of the IREEDER project is carried out according to the agreed schedule and following the European standards governing the project.

The QMC monitors and assesses the quality of the expected results of the project against the established qualitative and quantitative progress indicators. Its main objective is to carry out an evaluation of the analytical materials produced by the project consortium in the framework of the work packages. The following products have been reviewed and approved during this last period:

- D3.3 Holding training workshops in EU; (Achieved)
- D3.4 Holding training workshops in Jordan; (Achieved)
- D4.3 Third annual quality assurance report; (Achieved, 14/11/2022)
- D4.5. Final evaluation report; (Achieved, 14/11/2022)
- D5.1 Elaboration of the Sustainability Plan; (Achieved, 11/01/2022)
- D5.2 Students Training; (Achieved, 14/11/2022)
- D5.3 Setup of the E-Learning Modules; (Achieved, 14/11/2022)
- D5.4 Final Year Graduation Projects; (Achieved, 14/11/2022)
- D6.3. First dissemination workshop; (Achieved, 1/06/2022)
- D6.4. Second dissemination workshop; (Achieved, 5/10/2022)
- D7.1.5 Fifth IREEDER plenary meeting; (Achieved, 29-30/03/2022)
- D7.1.6 Sixth IREEDER plenary meeting; (Achieved, 3-4/10/2022)

In addition, the Quality Management Committee verified that all deliverables have been completed in accordance with the approved proposal.

*WP1. Project Initialization and Work Preparation*

- D1.1 Kick-off meeting; (Achieved, 3-4/02/2020)
- D1.2 Identifying training and teaching needs; (Achieved, 15/02/2020)
- D1.3 Verifying Partner's Facilities; (Achieved, 15/2/2020)

*WP2. Development of the teaching materials*

- D2.1 Report on teaching objectives and materials' outline; (Achieved, 14/06/2020)
- D2.2 Preparing the teaching materials; (Achieved, 15/06/2021)

*WP3. Capacity building and training of trainers*

- D3.1 Development of a capacity building plan; (Achieved, 15/11/2020)
- D3.2 Identification of general equipment of laboratories; (Achieved, 15/06/2020)
- D3.3 Holding training workshops in EU; (Achieved)
- D3.4 Holding training workshops in Jordan; (Achieved)

*WP4: Quality Assurance*

- D4.1 The first annual quality assurance report; (Achieved, 15/11/2020)
- D4.2 The second annual quality assurance report; (Achieved, 20/11/2021)
- D4.3 The third annual quality assurance report; (Achieved, 14/11/2022)
- D4.4 The mid-term evaluation report (External evaluator); (Achieved, 15/04/2021)
- D4.5 The final evaluation report; (Achieved, 14/11/2022)

*WP5. Dissemination & Exploitation*

- D5.1 Elaboration of the sustainability Plan; (Achieved, 11/01/2022)
- D5.2 Students Training; (Achieved, 14/11/2022)
- D5.3 Setup E-Learning Module; (Achieved, 14/11/2022)
- D5.4 Final Year Graduation Projects; (Achieved, 14/11/2022)

*WP6. Dissemination*

- D6.1 Development of the dissemination plan; (Achieved, 15/01/2021)
- D6.2 Communication plan and promotion materials; (Achieved)
- D6.3 The first dissemination workshop; (Achieved, 1/06/2022)
- D6.4 The second dissemination workshop; (Achieved, 5/10/2022)

*WP7: Management*

- D7.1.2 Second IREEDER plenary meeting; (Achieved, 09/09/2020)
- D7.1.3 Third IREEDER plenary meeting; (Achieved, 25/02/2021)
- D7.1.4 Fourth IREEDER plenary meeting; (Achieved, 29/07/2021)
- D7.1.5 Fifth IREEDER plenary meeting; (Achieved, 29-30/03/2022)
- D7.1.6 Sixth IREEDER plenary meeting; (Achieved, 3-4/10/2022)
- D7.2 IREEDER website and communication platform; (Achieved)
- D7.3 Financial auditing report; (Ongoing)

### 3. Revision of the work plan

#### 3.1. Work Plan for project year 1

Activities	Total duration (number of weeks)	Total duration (number of weeks)	M1 Dec. 19	M2 Jan. 20	M3 Feb. 20	M4 Mar. 20	M5 Ap. 20	M6 May 20	M7 Jun. 20	M8 Jul. 20	M9 Aug. 20	M10 Sep. 20	M11 Oct. 20	M12 Nov. 20
Ref.	Title													
1.1	Holding kick-off meeting	1	1X											
1.2	Preparing the questionnaire and analysing the results	12	4X	4X	4X									
1.3	Preparing the survey and analysing the results	12	4X=	4X=	4X=									
2.1	Identification of teaching objectives and materials outlines	16				4=	4=	4=	4=					
2.2	Preparing the teaching materials	20								4=	4=	4=	4=	4=
3.1	Preparing the capacity building plan	12									4X=	4X=	4X=	4X=
3.2	Identification of laboratories equipment	12									4X=	4X=	4X=	4X=
4.1	Preparing the first quality assurance report	6							1=	1=				4=
4.4/4.5	Activities related to external evaluator	6							1X	1X	1X	1X	1X	1X
6.2	Preparing promotion materials													
7.1	Coordinating plenary meeting	4	2X						2X					

7.2	Setting up the project website	5	1X	1X	1X	1X	1X								
-----	--------------------------------	---	----	----	----	----	----	--	--	--	--	--	--	--	--

### 3.2. Work Plan for project year 2

Activities	Total duration (number of weeks)	Total duration (number of weeks)	M1 Dec. 20	M2 Jan. 21	M3 Feb. 21	M4 Mar. 21	M5 Ap. 21	M6 May 21	M7 Jun. 21	M8 Jul. 21	M9 Aug. 21	M10 Sep. 21	M11 Oct. 21	M12 Nov. 21
Ref.	Title													
2.2	Preparing the teaching materials	28	4=	4=	4=	4=	4=	4=						
3.2	Identification of laboratories equipment	16	[14/6/2020 (anticipated as suggested by the National Officer)]											
WP3	Establishment of IoT, CS, RE laboratories in Jordan	32					4X	4X	4X	4X	4X	4X	4X	4X
3.3	IoT Training workshops in UCLAN	3												
	CS Training workshops in UVIGO	3												
	RE Training workshops in UPAT	3												
4.2	Preparing the second quality assurance report	6						1=	1=					4=
4.4/4.5	Activities related to an external evaluator	6						1X	1X	1X	1X	1X	1X	1X





6.1	Preparing dissemination plan	12						4X	4X	4X				
6.2	Preparing promotion materials	10									2X	2X	2X	2X
7.1	Coordinating plenary meeting	4	2X						2X					

### 3.3. Work Plan for project year 3

Activities	Total duration (number of weeks)	Total duration (number of weeks)	M1 Dec. 21	M2 Jan. 22	M3 Feb. 22	M4 Mar. 22	M5 Ap. 22	M6 May 22	M7 Jun. 22	M8 Jul. 22	M9 Aug. 22	M10 Sep. 22	M11 Oct. 22	M12 Nov. 22
Ref.	Title													
WP3	Establishment of IoT, CS, RE laboratories in Jordan	32												
3.3	IoT Training workshops in UCLAN	3	3=	IoT Training workshop was held in year 2 (June 21)										
	CS Training workshops in UVIGO	3			3=	CS Training workshop was held in year 2 (Sept. 21)								
	RE Training workshops in UPAT	3					3=	RE Training workshop was held in year 2 (Nov. 21)						
3.4	Holding training workshops in Jordan	6						2X		2X		2X		
4.3	Preparing the third quality assurance report	6						1=	1=					4=



4.4/4.5	Activities related to external evaluator	6							1X	1X	1X	1X	1X	1X
5.1	Preparing sustainability plan	4	2X	2X										
5.2	Students training	10			1X	1X	1X	1X	1X	1X	1X	1X	1X	1X
5.3	Setting up E-learning modules	12	1X	1X	1X	1X	1X	1X	1X	1X	1X	1X	1X	1X
5.4	Commencing final year graduation projects	24	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X
6.3	Holding the first dissemination workshop	3							3X					
6.4	Holding the second dissemination workshop	3												3X
7.1	Coordinating plenary meetings	6	2X						2X					2X

Activity completed

Activity carried out in the Programme Country: = (E.g., activity in Spain for two weeks in the first month of the project 2= under M1).

Activity carried out in the Partner Country (ies): X (E.g., activity in Jordanian for three weeks in the second month of the project: 3X under M2).

## 4. Development of work packages

### 4.1. General overview of WP1

WP1 aims to initiate the project by forming the different committees (StC and SSC), assigning tasks and elaborating agreements during the kick-off meeting. It also includes the preparation of the activities of the following work packages. WP1 also aims to define the current knowledge and future needs of engineering students in the skills of the fields (IoT, CS, RE) with emphasis on the use of these technologies in Jordan. The purpose is to find out the level of technical knowledge of engineering students and map possible competence gaps and determine their interest and needs. This will help to determine the potential and profile of the students for the IREEDER project, as well as to highlight important topics to be included in the training and the best training methods.

Work package 1 was completed according to the work programme during the first year of the IREEDER project, and produced the following results:

**D1.1 IREEDER kick-off meeting:** The Kick-off meeting was held at AHU on Feb. 3-4, 2020. The StC (Steering Committee) and SSC (Scientific and Supervising Committee) were formed by selecting three representatives from each partner (1 StC and 2 SSC). All managing structures and technical activities were discussed in the meeting. A specific session was devoted to administrative staff for a clear sharing of the rules for expenditures. The memorandum of understanding (MOU) between all partners was also discussed and signed.

**D1.2 Identifying training and teaching needs:** A report (Deliverable D1.2) on teaching and training needs for IoT, CS and RE was prepared based on a questionnaire distributed among all partners, other stakeholders such as universities, students, trainees, private companies, and public administrations. More attention was paid to the Jordanian stakeholders.

**D1.3 Verifying Partners' Facilities:** A report (Deliverable D1.3) provides a survey of the facilities of all partners to ensure continuity to the IREEDER project. The survey reports the number of departments and students, laboratories, library, existing subjects for the project topics and their contents, number of academic staff and their previous experiences, international relations, and many other facilities like the video conference instruments and rooms.

WP1	PROJECT INITIALIZATION AND WORK PREPARATION				
WP1 Leader	Fabrizio Granelli (UNITN)				
REPORTING PERIOD	16/11/2021 - 14/11/2022				
<b>WP 1 Overall Progress</b>	WP 1 aims to create the framework for the development of project activities. Within this work package, the official members of the Scientific and Steering Committees were appointed and specific tasks and responsibilities were assigned following the signing of the partnership agreement. This WP1 also identified the state of the current supply at the academic level in IoT, RE and CS, identifying the specific needs in terms of knowledge and practical skills to respond to the requests of the Jordanian labour market.				
<b>1. Tasks</b>					
Activity #	Brief description of activity delivered	Comments	Status	End of task	Anticipated Risks
<b>Task 1.1_ To hold the kick-off meeting at AHU</b>	The kick-off meeting was held at AHU (Ma'an-Jordan) on February 3-4, 2020, where representatives from all partners participated.	Delayed based on National Erasmus Office recommendation.	<b>Achieved</b>	03-04/02/2020	<i>R1.1: inactivity of a partner or more.</i> The active involvement of the partners in the project activities from the beginning is demonstrated by the high number of participants in the Kick-Off meeting. Moreover, partners have contributed to the sharing of online surveys among local stakeholders fostering high participation with more than 300 responses for each questionnaire.
<b>Task 1.2_ To form the StC and SSC</b>	During the kick-off meeting, the StC and SSC have been formed with representatives from all partners.	During the Kick-Off meeting, the participants agreed on the names of the members of the Steering and Scientific Committees of the IREEDER project.	<b>Achieved</b>	15/2/2020	
<b>Task 1.3_ To distribute tasks within each partner</b>	The task allocation has been discussed for all partners from the beginning of the project. Also, in the kick-off meeting, the framework for each WP has been discussed and agreed on.	During the second day of the Kick-Off meeting, it was asked to each WP leader to provide a short presentation of the main tasks and deliverables. The main goal of this approach was to improve the awareness of the leaders in their roles in the project and clarify their responsibilities in guaranteeing the achievement of the foreseen results.	<b>Achieved</b>	15/2/2020	

<p><b>Task 1.4_To define a general cooperation methodology</b></p>	<p>A general cooperation and communication approach has been discussed and agreed on to achieve each task of each WP.</p>	<p>A common approach for the collaboration and the communication in the project was discussed during the Kick-Off meeting and the decisions taken were reported in the Minutes. Partners agreed on the methodology for the investigation of needs in terms of competencies at the university level and in the labour market. The three questionnaires were designed and shared in the three sectors of IoT, CS and RE, seeing the participation of more than 300 people each. The results, in terms of participation in each survey, is higher than the quantitative indicators included in the proposal in the Logical Framework (at least 100 filled surveys per topic).</p>	<p><b>Achieved</b></p>	<p>15/2/2020</p>	<p><i>R1.2: low interest of local authorities and companies in the IoT, CS and RE issues.</i> The high participation of local stakeholders in the surveys proves the interest of Higher Education institutions and companies in the topics. This interest should be preserved, designing an appropriate strategy for the medium and long-time involvement of the stakeholders in the project activities, increasing the final impacts at the National and Regional levels.</p>
--	---	--	------------------------	------------------	--

2. Deliverables					
Deliverable #	Specific and measurable indicators	Comments	Current Status	Deadline for Submission (according to contract)	Deviation of working or time schedule and technical corrective action
<p><b>DEV 1.1 IREEDER Kick-off meeting</b></p>	<p>Kick-Off meeting organised at AHU; StC members nominated; SSC members nominated; Partnership agreements between</p>	<p>Delayed based on National Erasmus</p>	<p><b>Delivered</b></p>	<p>15/12/2019</p>	<p><i>Task 1.1:</i> The Kick-Off meeting was planned to be in the first month of</p>



	the coordinator and all partners signed; n.1 Kick-off meeting quality report.	Office recommendation 03-04/02/2020			the project. However, due to the national Erasmus office recommendation, it has been shifted to the beginning of Feb 2020 (after the grant-holder meeting held in Brussels 27-28 Jan 2020).
<b>DEV 1.2 Identifying training and teaching needs</b>	n.3 questionnaires were elaborated, distributed, and filled in; n.371 participants in the IoT questionnaire; n. 333 participants in the CS questionnaire; n.334 participants in the RE questionnaire; n.1 final report elaborated (D1.2).	N/A	<b>Delivered</b>	15/2/2020	
<b>DEV 1.3 Verifying Partners' Facilities</b>	n.1 questionnaire (survey) was elaborated, distributed, and filled in; n.10 responses (one from each partner) were received; n.1 final report elaborated (D1.3).	N/A	<b>Delivered</b>	15/2/2020	

#### 4.2. General overview of WP2

The WP2 aims at the elaboration and integration of the training and teaching contents by analysing the information and documents resulting from the previous activity and to plan strategic lines for organisational structures and didactics. WP2 is structured as follows:

- Definition of training objectives and teaching material general contents.
- Analysis of existing teaching materials.
- Update of existing teaching materials.

Teaching material includes slides and/or multimedia content when applicable, including practical worksheets based on the developed laboratories. Each topic (RE, IoT and CS) will have a separate teaching material.

The main aim of WP2 is to develop the teaching material for three courses on key topics on Electrical and Electronic Engineering:

- Internet of Things (IoT)
- Cybersecurity (CS)
- Renewable Energy (RE)

During the first year of the project, the outline (course descriptors) of the 3 courses were defined and reported in Deliverable D2.1, which also included the teaching development responsibilities of each partner in the consortium. D2.1 was submitted on time on the 15th of June 2020. The teaching material descriptors define the following for each course: the course aims; the learning outcomes; the teaching methodology; the weekly teaching materials schedule; the assessment methods; the bibliography.

Once the outline was defined, partners started preparing their teaching material (slides and lecture notes) based on the workload distribution reported in D2.1. The teaching material has been delivered according to the estimated date of completion (15th June 2021) as part of D2.2. To ensure the quality of the teaching materials, experts in the three fields (IoT, RE and CS) from outside the IREEDER partner institutions were selected to review and evaluate the contents. Based on their responses, three quality reports of the learning content were produced, one for each course. D2.2 included the PowerPoint presentation for all the teaching material (13 teaching weeks) as well as a consolidated document in Microsoft Word format that includes 13 chapters; each chapter containing extensive lecture notes for each teaching week. Separate documents have been prepared for each topic (RE, CS and IoT). In addition to the lecture slides and notes, each course included 10 laboratory worksheets chosen in such a way according to the purchased equipment. Additionally, all the teaching material was uploaded to an online platform together with a set of quiz questions for each teaching week for each course (this was done under the scope of WP5). There were no deviations from the original plan.

WP2	DEVELOPMENT OF TEACHING MATERIALS				
WP2 Leader	Marios Raspopoulos (UCLAN)				
REPORTING PERIOD	16/11/2021 - 14/11/2022				
<b>WP 2 Overall Progress</b>	The main objective of WP2 is the development of integration materials for training and teaching activities. The new materials were developed on the basis of the results of the surveys conducted in WP1. Within WP2, the training objectives and the general contents of the teaching materials were defined.				
<b>1. Tasks</b>					
Activity #	Brief description of activity delivered	Comments	Status	End of task	Anticipated Risks
<b>Task 2.1 Collecting and updating of existing material</b>	The input received from WP1 questionnaires was discussed between the members of WP2 and the descriptors of the 3 courses (IoT, RE, CS) were prepared. These descriptors include detailed information about each course, aims and learning outcomes, information about the content distributed in 13 teaching weeks, the assessment methods, the scheduled teaching plan, the teaching methodology and the bibliography. These course descriptors together with the teaching material workload distribution were included in Deliverable D2.1 which was submitted on time on the 14th of June 2020.	Responsibilities for the development of the new courses were clearly divided among the partners by appointing three working groups, one for each topic (IoT, CS and RE). The partners also agreed on the final structure and contents of the descriptor for each course, based on Jordanian and European standards and aimed at demonstrating the skills acquired by the students at the end of the courses.	<b>Achieved</b>	14/6/2020	<i>R2.1: expectations concerning teaching objectives may strongly differ from partner to partner.</i> The consortium found a common solution based on the analysis of local needs and the results of the surveys presented during WP1. This risk did not affect the project.
<b>Task 2.2 Support WP leader in analysing needs for updating teaching material</b>	Based on the course descriptors developed in task 2.1, all partners contributed to the development of the course material for the 3 courses. The course material includes 13 sets of slides for each course and a course manual containing 13 chapters.	Based on the course descriptors developed in Task 2.1, all partners contributed to the development of the course material for the 3 courses. For each course, the training material includes 13 sets of slides and a notebook consisting of 13 chapters. The training material was subjected to two	<b>Achieved</b>	15/6/2021	<i>R2.2: a synthesis will have to be found.</i> This risk did not affect the project, as online meetings were held to agree on the structure and contents of the three courses.



	<p>Preliminary revisions and plagiarism tests were carried out, and the final version of the training material was delivered in June 2021.</p> <p>The final version of the three curricula was evaluated by expert evaluators in each of the topics. These expert evaluators do not belong to any of the project's partner institutions.</p> <p>After receiving the evaluators' responses, three reports on the quality of the courses were produced</p>	<p>levels of evaluation: plagiarism detection and quality assessment.</p> <p>The course material was also reviewed by expert evaluators in each of the topics that were selected from outside the consortium institutions.</p> <p>With the evaluation responses of the experts, a quality report was produced for each of the courses.</p>			
--	--	--	--	--	--

## 2. Deliverables

Deliverable #	Specific and measurable indicators	Comments	Current Status	Deadline for Submission (according to contract)	Deviation of working or time schedule and technical corrective action
<b>DEV 2.1. Report on teaching objectives and materials' outline</b>	Report on the course descriptors of the three courses elaborated (including teaching objectives, course outline and workload distribution for the development of the teaching material).	A report on teaching objectives and materials' outlines is available in IREEDER repository. The document, written by the WP2 leader, provides for each course the following contents: aims and objectives, learning outcomes, the course's contents scheduled per week (for a total of 13), teaching, learning and assessment strategy, bibliography. The results of the surveys carried out during the WP1 have been taken into consideration and included in the report as suggestions for the elaboration of the new courses.	<b>Delivered</b>	14/6/2020	No deviation

<b>DEV 2.2. Teaching materials</b>	n. 13 sets of lecture slides and lecture notes for the IoT course; n. 13 sets of lecture slides and lecture notes for the RE course; n. 13 sets of lecture slides and lecture notes for the CS course.	The teaching material is divided into 13 PowerPoint presentations and one lecture note for each course. The teaching materials for the three courses developed have been reviewed by expert evaluators from outside the project partner institutions. A report on the evaluation of the expert evaluators have been produced for each of the courses. n.1 CS evaluation teaching materials; n.1 IoT evaluation teaching materials; n.1 RE evaluation teaching materials	<b>Delivered</b>	15/6/2021	No deviation
------------------------------------	--	--	------------------	-----------	--------------

#### 4.3. General overview of WP3

The objective of WP3 is to develop a capacity building and staff development programme in the fields of IoT, CS and RE. The main focus of the activities is the development of human resources and the enhancement of skills and capabilities through exposure to hands-on training, experiments and equipment. In this WP, three laboratories were established in three Jordanian universities:

- IoT laboratory established at AHU.
- CS laboratory established at TTU.
- RE laboratory established at MU.

In addition, a server for a remote laboratory with virtual laboratory software was installed at each Jordanian partner university. Each Jordanian partner issued a tender (with the help of all partners and under the supervision of the coordinator) to announce the need to build the necessary equipment to purchase and deliver the components of the laboratories. Once the laboratories were purchased, the equipment was installed and tested.

Three different training workshops were held in the EU partners for selected staff of the Jordanian partners, as follows:

- IoT training workshop held at UCLAN.
- CS training workshop held in UVIGO.
- RE training workshop held in UPAT.

For each training workshop, 15 trainees were selected from Jordanian partners (three from each Jordanian partner), according to predefined criteria. Each training course lasted five days. The training workshops started from the general programme and methodology to concrete examples of organised and proven successful training initiatives. An important component of the training was related to the technical aspects of scientific measurement and characterisation of the IoT, CS and RE fields. WP3 included actual training on the operation of experiments and laboratories, technical assistance and advisory services for academic staff, researchers, students, engineers, and technicians.

Targeted training was implemented by UPAT, which is leading WP3, together with other EU partners. In addition, access to information, skills, and training from Jordanian universities enabled their professors and researchers to evaluate existing curricula and effectively redesign courses to include state-of-the-art technologies. This also greatly helped to establish training laboratories as local resources and training points in Jordan.

Training courses were delivered in a traditional classroom format in Jordan. Jordanian staff trained in Europe organised three training workshops, as follows

- IoT training workshop at the TTU
- CS training workshop at TTU
- ER training workshop at MU

Staff from all Jordanian universities, students, engineers from the Jordanian labour market and all other interested parties were invited.

**Deliverable 3.1.** The IREEDER Capacity Development Plan includes the project capacity development concept, the implementation structure, the monitoring and evaluation framework and the implementation process. The main conditions for the successful implementation of the project activities and the achievement of the results are the development of new and updated teaching material, the installation of new laboratories and the training of trainers and students.

**Deliverable 3.2** (Identification of the general equipment of the laboratories) was delivered on 15th June 2020. In general, Deliverable 3.2 follows the objectives and didactic materials (determined in WP2), identifies the practical training needs, and defines the laboratory equipment to be designed by the Jordanian partners. This report includes all information concerning the three laboratories and a detailed description of the devices.

**Deliverable 3.3** (Training Workshops in EU and Training Reports). Three training workshops were held in the EU on the topics of Internet of Things (IoT), Cybersecurity (CS) and Renewable Energy (RE). The training workshops were led by partners from UCLAN, UVigo and UPAT. The IoT training workshop took place on 17-28 June 2021 (online participation) and it was coordinated by Dr. Marios Raspopoulos, University of Central Lancashire, Cyprus. The CS training workshop took place on 20-30 September 2021 (online participation) and it was coordinated by Dr. Felipe Gil Castiñeira, University of Vigo, Spain. The RE training workshop took place on 22-26 November 2021 (physical participation) and it was coordinated by Prof. Andreas Kazantzidis, University of Patras, Greece. Staff from Jordanian universities attended these training workshops. The aim of the training workshops was to present the basic principles on the topics of IoT, CS and RE. The relevant report (Deliverable 3.3) delivered on December 15th, 2021. The basics of each course were first presented in this report, followed by a description of the contents of each training workshop. The participants of the workshops were asked to complete a survey in order to provide feedback and comments on the training workshops. The full content of the survey was also presented in this report, along with analysis of the results. Overall, the training workshops on the subjects of IoT, CS and RE managed to provide the participants with more knowledge on each topic and raised their interest on these subjects.

**Deliverable 3.4** (Training Workshops in Jordan and Training Reports). Three training workshops were held in Jordan on the topics of Internet of Things (IoT), Cybersecurity (CS) and Renewable Energy (RE). Staff from Jordanian Universities that had trained in EU partners held effective workshops at their own institutions. The aim of the training workshops is to present the basic principles on the topics of IoT, CS and RE. In addition, the courses aim to train lab tutors and provide them with the necessary knowledge to teach the practical parts of the IREEDER labs. The IoT training workshop took place on 14-15 Feb 2022 and it was coordinated by Dr. Saud Althunibat and Dr. Moath Alsafasfeh, Al-Hussein Bin Talal University, Ma'an, Jordan. The CS training workshop took place on 02-03 March 2022, and it was coordinated by Prof. Ahmad Al-Jaafreh, Tafila Technical University, Jordan and Dr. Moath Alsafasfeh, Al-Hussein Bin Talal University, Jordan. The RE training workshop took place on 22-23 February 2022, and it was coordinated by Dr. Ziyad Altarawneh and Dr. Ziyad Almajali, Mutah University, Karak, Jordan. The relevant report (Deliverable 3.4) delivered on April 15th, 2022.



The basics of each course were presented, followed by a description of the contents of each training workshop. The participants of the workshops were asked to complete a survey in order to provide feedback and comments on the training workshops. The full content of the survey was presented in this report, along with analysis of the results. Overall, the participants found the training workshops useful, as they gained knowledge and skills, and appreciated the structure of each workshop.

WP3	CAPACITY BUILDING AND TRAINING OF TRAINERS				
WP3 Leader	Andreas Kazantzidis (UPAT)				
REPORTING PERIOD	16/11/2021 - 14/11/2022				
<b>WP3 Overall Progress</b>	The main objective of WP3 is to develop local competences of trainers and students in IoT, CS and RE. To this end, three different training workshops were organised in European universities, three new laboratories were installed to integrate the theoretical approach with practical experiences and three other training workshops were held in Jordan for local stakeholders and final beneficiaries (students and teaching staff)				
<b>1. Tasks</b>					
<b>Activity #</b>	<b>Brief description of activity delivered</b>	<b>Comments</b>	<b>Status</b>	<b>End of task</b>	<b>Anticipated Risks</b>
<b>Task 3.1 Take part in developing the long-term capacity building plan</b>	The capacity building plan of IREEDER (D3.1) was elaborated. The document considers the 3 main goals of the project: teaching materials preparation, labs installation and staff training, all of them in the areas of IoT, CS and RE. The long-term aspect was considered, and it is expected the plan will be used also after the end of the project.	Consortium worked in the elaboration and approval of a Capacity Building Plan. The main goal is to assure the achievement of the main three goals of the project: teaching materials elaboration, labs installation and staff training, all of them in the 3 areas of IoT, CS and RE. Partners have considered the impact of the project results in short/medium and long term, identifying the conditions for assuring the future sustainability of the actions. Task has been concluded on time.	<b>Achieved</b>	15/11/2020	<i>R3.1: Staff may be prevented from leaving the region at the planned time due to difficulties in obtaining visas and permits from their universities.</i>  The pandemic has stopped any type of mobility, for students and staff. Online meetings have been organised to ensure the development of the project activities.
<b>Task 3.2 Set up the IREEDER laboratories in Jordan</b>	The list of the laboratories' equipment (D3.2) was finalised by all partners. The equipment for the IoT lab, CS lab and RE labs were selected based on the real needs, expected cost and availability in the Jordanian market. Another set of equipment has been also prepared for equipment to	The first stage of Task 3.2 consists of the analysis of the Jordanian partners' laboratories, the identification of needs in terms of devices and infrastructure, and the elaboration of a detailed list of equipment to be procured. The final list of equipment was finalised in June 2020.  The list also includes devices to facilitate remote access between all partners. The list was approved by the ERASMUS+ officer on 22nd July 2020.	<b>Achieved</b>	14/3/2021	<i>R3.2: Laboratory equipment costs more than the allocated budget, making it</i>

	facilitate remote access among all JO partners.				<i>necessary to seek alternative funding.</i>
	Installation of IREEDER laboratories	The second task consists of the purchase of the equipment and its installation. The latter activity was greatly affected by the pandemic. As a result, the documents for the public announcements were prepared late.	<b>Achieved</b>	14/11/2021	There is no evidence of this type of problem in the purchase of equipment.
<b>Task 3.3 Help Jordanian universities set the criteria of selection of staff</b>	Trainees from Jordanian partners were selected (three from each Jordanian partner), according to predefined criteria.	The selection of the trainees was mainly based on the relation between the education field of the staff to the training field, the ability and commitment to teach/train IREEDER courses later, and the gender balance.	<b>Achieved</b>	15/11/2021	
<b>Task 3.4 Host three trainees from each Jordanian university for a period of five days</b>	Three training workshops were successfully held in the EU on the topics of IoT, CS and RE.	The three training workshops were planned and held according to plan and by the adequate number of Jordanian partners. For the course of IoT, the main technological components of IoT were presented, examined, and evaluated, as well as the most important technological applications. The course of CS aimed at presenting the fundamental concepts of CS and use of tools, architectures, and security design principles. The RE course aimed at presenting the main principles, architectures and emerging technologies of RE systems.	<b>Achieved</b>	15/12/2021	
<b>Task 3.5 Work on the establishment of the laboratories and organise a national workshop about IoT, CS and RE</b>	The tendering process has been finalised for the laboratories. There has been a delay caused by COVID circumstances. Upon purchasing the laboratories, equipment was installed and tested successfully.	The participants were extensively trained in the lecture content as well as the use of the lab equipment. The training workshops were found to be useful, as the participants gained knowledge and skills and appreciated their structure. Most importantly, the majority of the participants found	<b>Achieved</b>	15/4/2022	

		the training appropriate for their own level of experience and met their expectations.			
--	--	--	--	--	--

2. Deliverables					
Deliverable #	Specific and measurable indicators	Comments	Current Status	Deadline for Submission (according to contract)	Deviation of working or time schedule and technical corrective action
<b>DEV 3.1. Development of a capacity building plan</b>	Capacity Building plan of IREEDER was finalised (D3.1)	The IREEDER capacity development plan includes the project capacity development concept, the implementation structure, the monitoring and evaluation framework and the implementation process. The main conditions for the successful implementation of the project activities and the achievement of the results are the development of new and updated teaching material, the installation of new laboratories and the training of trainers and students.	<b>Delivered</b>	15/11/2020	No deviation
<b>DEV 3.2. Identification of general equipment of laboratories</b>	List of equipment for the IoT lab; List of equipment for the RE lab; List of equipment for the CS lab; List of equipment for Remote Access; Equipment approved by EACEA;	This report includes all information concerning the three laboratories and a detailed description of the devices. Real Delivery Date: 15-06-2020 (anticipated as suggested by the National Officer).	<b>Delivered</b>	15/3/2021	15-06-2020 (anticipated as suggested by the National Officer)





	Official communication for the approval of the equipment.				
<b>DEV 3.3. Training workshops in EU and training reports</b>	<b>IoT Training Workshop</b> <i>17-28 June 2021</i>	The sessions were organised with the participation of 7 IoT experts from the European partner universities of the project. All sessions were attended by 15-20 participants.	<b>Delivered</b>	15/12/2021	The IoT training workshop was organised by the UCLAN and took place between 17-28 June 2021 virtually (Microsoft equipment) due to travel restrictions caused by COVID 19.
	<b>CS Training Workshop</b> <i>20-30 September 2021</i>	Fifteen two-hour sessions were organised with the participation of 7 cybersecurity experts from the European partner universities of the project. All sessions were attended by between 15 and 20 participants.	<b>Delivered</b>	15/12/2021	The CS training workshop was organised by UVigo and took place between 20-30 September 2021 in a virtual way (Microsoft Teams) due to travel restrictions caused by COVID 19.
	<b>RE Training Workshop</b> <i>22-26 November 2021</i>	The RE training workshop took place on 22-26 November 2021 and it was coordinated by Prof. Andreas Kazantzidis, University of Patras, Greece. The agenda of the workshop included 5 days of training, during which the fundamentals on the subject of RE were presented.	<b>Delivered</b>	15/12/2021	No deviation
<b>DEV 3.4. Training Workshops in Jordan and training reports</b>	In the context of the IREEDER project, three training workshops were held in Jordan on the topics of Internet of Things (IoT),	For the <b>IoT course</b> , the main technological components of IoT as well as the most important technological applications were presented, discussed and evaluated. The course aims to teach how to design, code and build	<b>Delivered</b>	15/04/2022	No deviation

<p>Cybersecurity (CS) and Renewable Energy (RE). Staff from Jordanian Universities that had trained in EU partners held effective workshops at their own institutions as follows: <b>IoT training workshop at AHU</b> <i>14-15 February 2022</i> <b>CS training workshop at TTU</b> <i>02-03 March 2022</i> <b>RE training workshop at MU</b> <i>22-23 February 2022</i> The aim of the three courses is to present the basic principles on the topics of IoT, CS and RE, respectively. In addition, the courses aim to train lab tutors and provide them with the necessary knowledge to teach the practical parts of the IREEDER labs.</p>	<p>IoT solutions. Students will understand the main operating principles and components of IoT systems, as well as knowledge of their architecture and basic technologies and standards. They will be able to use existing platforms to design and implement IoT systems. They will be able to identify the necessary security measures and participate in the discussion on future IoT challenges.</p>			
	<p>The <b>CS course</b> aimed to introduce the fundamental concepts of CS. The course aimed to teach the most important techniques to maximise the security of computers and networks and to teach the design of secure applications. Students will be able to apply basic CS concepts and use security design tools, architectures, and principles. They were able to identify and use the main security operations and assess the impact of new technologies on cybersecurity.</p>	<b>Delivered</b>	15/04/2022	No deviation
	<p>The <b>RE course</b> aimed to present the main principles and architectures of RE systems. The most important technological components of RE systems were presented and technological applications were reviewed. Students were able to address the main issues related to renewable energy sources and understand the technologies of RE components and different systems. They learned about the different applications used in energy production, gained knowledge on different</p>	<b>Delivered</b>	15/04/2022	No deviation



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

Ref. No.: IREEDER-D4.3  
Date: November 14th, 2022  
Final version

		topics, such as renewable energy sources, renewable energy systems and renewable energy technologies.			
--	--	---	--	--	--

### Tendering Process

	IoT Tender AHU	CS Tender TTU	RE Tender MU	PCs, Data Servers Tender for all partners (fourth Tender)
Tendering document prepared	ACHIEVED	ACHIEVED	ACHIEVED	ACHIEVED
Public advertisement published	ACHIEVED	ACHIEVED	ACHIEVED	ACHIEVED
Offers received	Three offers	Only two offers (After two calls)	Five offers	Three offers (after 3 calls)
Supplier(s) selected	ACHIEVED	ACHIEVED	ACHIEVED	ACHIEVED
Contract signed	ACHIEVED	ACHIEVED	ACHIEVED	ACHIEVED

	AHU IoT lab, 17 PCs, 1 Server, Data show	TTU CS lab, 1 PCs, Data show	MU RE lab, 16 PCs, 1 Server, Data show	PU 16 PCs, Data show	IU 16 PCs, Data show
Equipment delivered	Only IoT lab	Only CS lab	Only RE lab	ACHIEVED	ACHIEVED
Laboratory installed	Only IoT lab	Only CS lab	Only RE lab	ACHIEVED	ACHIEVED
Devices tested	Only IoT lab	Only CS lab	Only RE lab	ACHIEVED	ACHIEVED

IoT Tendering		Internet of Things Laboratory at AHU		
Responsible of task		Moath Alsafasfeh		
Summary of Tendering Process				
Action	Date	Supporting documents	Comments	
The equipment list of IoT lab has been identified by the project consortium in D3.2	15/6/2020	The identified equipment list of the IoT lab	N/A	
The equipment list of the IoT lab has been approved by the Project Officer EACEA	22/7/2020	Approved list from EACEA	N/A	

The tendering process has been initialised at AHU	11/8/2020	IREEDER representative request to start tendering process	N/A
The decision of publishing the tender on AHU website and local newsletters	8/11/2020	The decision of publishing the tender	N/A
The technical committee has selected one offer	2/3/2021	Technical committee recommendations	Three offers have been received
The final IoT equipment list sent to the selected supplier	20/4/2021	The final decision of the tendering committee	The total cost is 27.885,5€ and the installation period is set to 90 days
The supplier could deliver the equipment based within the supply period	26/7/2021	Supplier delivery receipt	N/A
The total tender cost (27.885,5€) euro has been paid in a check to the supplier	23/9/2021	N/A	N/A

<a href="#">RE Tendering</a>		<a href="#">Renewable Energy Laboratory at MU</a>	
<a href="#">Responsible of task</a>		<a href="#">Ziyad Altarawneh</a>	
<a href="#">Summary of Tendering Process</a>			
Action	Date	Supporting documents	Comments
The equipment list of RE lab has been identified by the project consortium in D3.2	15 June 2020	The equipment list of RE lab	N/A
The equipment list of the RE lab has been approved by the Project Officer EACEA	22 July 2020	Equipment lists approved list from EACEA	N/A
The tendering process has been initialised at MU	9 August 2020	A request forms the contact person to start the tendering process	N/A
	16 September 2020	The tender as formulated by the tendering department	The Tender technical specifications have been sent to Tendering department at MU

<p>The first RE public tender has been announced</p>	<p>06 October 2020</p>	<p>The RE tender as appeared in one of the Jordanian Newspapers</p>	<p>The tender document has five items: - Items (1 to 4) are related to lab hardware equipment/devices and remote lab software - Item no.5 in Educational Software - For Hardware lab equipment (Items (1 to 4) five offers have been received. - For Educational Software (PSIM software) three offers have been received.</p>
<p>The technical committee has evaluated the offers and finalised their recommendation report</p>	<p>3 Dec 2020</p>	<p>Technical committee recommendations</p>	<p>For Items (1-4): among the five companies only two companies their offer met the tender specifications namely: Technology Integration Company, and Spectrum Scientific Company For Item no.5: only two companies submitted for this item: namely: Syts for Technology &amp; Advanced Systems Company and Spectrum Scientific Company. Five companies have submitted for this bid: - Syts for Technology &amp; Advanced Systems Company - International Engineers for Trading Company - Spectrum Scientific Company - Technology Integration Company - Isfahan International Trade Company Among the received offers (five offers), three offers have met the required specifications as follows: - Technology Integration Company/offer 1 (total cost: 45.000€, all items included) - Technology Integration Company/offer 2 (total cost: 43.000€, all items included) - Spectrum Scientific Company (total cost: 128.600€, all items included) The technical committee has recommended selecting:</p>

			<ul style="list-style-type: none"> <li>- The Technology Integration Company/offer 2 for the item (1-4) with a cost equal to 45.000€ because it has more features compared to offer 1 from Technology Integration Company.</li> <li>- Syts for Technology &amp; Advanced Systems Company offer Educational Software (PSIM software) at a cost of 4.530€. Because it meets the requirement and has the lowest price.</li> </ul>
The final resolution sent to the selected supplier	03 January 2021	The final decision of the tendering committee	The total cost is 49.530€ and the installation period is set to 12 weeks
The RE lab's equipment has been received	08 April 2021	Photos	All items have been received
The lab installation has been finalised	17 June 2021	Photos	All items have been handed over, tested, and operated
The supplier has been paid	5 July 2021	Invoices	Technology Integration Company has received 45.000€. Syts for Technology & Advanced Systems Company has received 4.530€

CS Tendering	Cyber security Laboratory at TTU		
Responsible of task	Ahmad Aljaafreh		
Summary of Tendering Process			
Action	Date	Supporting documents	Comments
The equipment list of CS lab has been identified by the project consortium in D3.2	15/6/2020	The identified equipment of CS lab	N/A
The equipment list of the CS lab has been approved by the Project Officer EACEA	22/7/2020	Approved list from EACEA	N/A
The tendering process has been initialised at TTU	6/9/2020	IREEDER representative request to start tendering process	N/A

The first CS public tender has been announced	13/9/2020	The first CS tender	Only two offers have been received and hence it has been repeated
The second CS public tender has been announced	5/10/2020	The second CS tender	
The technical committee has selected one offer	29/11/2020	Technical committee recommendations	Two offers have been received as follows: - Al-Fayhaa Scientific and Laboratory Equipment company (total cost: 51.959€, all items included) - Matrix business technology company (total cost: 66.785€, all items included) The technical committee has recommended selecting the Al-Fayhaa Scientific and Laboratory Equipment company because its offer is the lowest price with highest quality. Notes: 1. The number of PCs has been reduced to 15 (total cost is 7.500€) 2. The number of management switches has been reduced to 2 (total cost is 6.556€) 3. 2.700€ discount on the total
The final CS equipment list sent to the selected supplier	15/12/2020	The final decision of the tendering committee	The total cost is 51.959€ and the installation period is set to 90 days
The CS lab's equipment due time	8/3/2021	N/A	N/A
The supplier could not deliver the equipment based within the supply period	7/4/2021	The company supplying the equipment sent a document justifying the delay in the delivery and installation of the equipment. This document is written in Arabic.	N/A
The supplier has delivered the equipment	25/10/2021	N/A	N/A



#### 4.4. General overview of WP4

For this third quality report, the QMC monitored and assessed the quality of the project's expected results against the established qualitative and quantitative progress indicators. Each QMC contact person was also in charge of disseminating the QAP in their institutions, following the daily activities using the work plan and the logical framework matrix as reference documents. The project results monitored and evaluated by the QMC in this period (November 2021 - November 2022) were:

- D3.3 Holding training workshops in EU; (Achieved)
- D3.3 Holding training workshops in EU; (Achieved)
- D4.3 Third annual quality assurance report; (Achieved, 14/11/2022)
- D4.5 Final evaluation report; (Achieved, 14/11/2022)
- D5.1 Elaboration of the sustainability Plan; (Achieved, 11/01/2022)
- D5.2 Students Training; (Achieved, 14/11/2022)
- D5.3 Setup of the E-Learning Modules; (Achieved, 14/11/2022)
- D5.4 Final Year Graduation Projects (Achieved, 14/11/2022)
- D6.2 Communication plan and promotion materials; (Partially Achieved)
- D6.3 First dissemination workshop; (Achieved, 01/06/2022)
- D6.4 Second dissemination workshop; (Achieved, 05/10/2022)
- D7.1.5 Fifth IREEDER plenary meeting; (Achieved, 29-30/03/2022)
- D7.1.6 Fourth IREEDER plenary meeting; (Achieved, 3-4/10/2022)



WP4 Overall Progress	QUALITY ASSURANCE				
WP4 Leader	Felipe Gil Castiñeira (UVigo)				
REPORTING PERIOD	16/11/2021 - 14/11/2022				
<b>WP 4 Overall Progress</b>	Work Package 4 aims to establish a specific monitoring and evaluation system to provide regular and clear information on the development of the project activities and the results achieved. A Quality Monitoring Committee was appointed with the participation of all partners and an external evaluator was selected.				
<b>1. Tasks</b>					
Activity #	Brief description of activity delivered	Comments	Status	End of task	Anticipated Risks
<b>Task 4.1 Forming the quality monitoring committee</b>	The QMC was established at the kick-off meeting held at the AHU on 3-4 February 2020. The QMC is composed of a senior representative of all partners (from Jordanian and European institutions). The QMC worked on the elaboration of the IREEDER Quality Plan which includes the QMC members, the description of the internal monitoring and quality activities (qualitative and quantitative indicators), the Quality Assurance Tools and the Risk Management Plan.	This task was completed according to schedule during the kick-off meeting (February 2020).	<b>Achieved</b>	14/6/2020	<i>R4.1: weak participation from partners and the state of carrying out the project itself.</i>

<b>Task 4.2 Preparing the annual quality assurance reports</b>	The annual quality assurance reports assessed the progress of the IREEDER project, in particular the activities to achieve the project objectives. All reports were prepared by the QMC.	The first report was delivered on the 15th of November 2020, the second report was delivered on the 15th of November 2021, and the third and last report was delivered on the 14th of November 2022. These reports tackle the overall implementation of the project activities, as well as the development and implementation of the curricula.	<b>Achieved</b>	14/11/2022	The partners have demonstrated active participation in the monitoring activities by providing the requested contribution on time. The work package managers filled in the information in the monitoring tables and delivered the documents on time.
<b>Task 4.3 Recruiting the external evaluator</b>	The hiring of an external evaluator following an open call and a selection process. The selected external evaluator is responsible for the external evaluation of the project and for the elaboration of the external evaluation reports at mid-term and in the final phase of the project.	The public announcement for the selection of the External Evaluator was published in November 2020. The delay is justified by the necessity to find a person with proven experience in the management and evaluation of European projects and competences in the three topics of IREEDER (IoT, CS and RE). The contract was signed in March 2021. For this reason, the Task was affected by a delay of 8 months.	<b>Achieved</b>	14/11/2022	
<b>Task 4.4 Facilitating the tasks of the external evaluator</b>	The QMC has provided the external evaluator with all partner contacts and all documents developed to facilitate the evaluation process. The project coordinator has supported the External Evaluator by providing a PowerPoint presentation on the status of the project, informing the StC and SSC members about the new engagement, and sharing the contacts of the Quality Monitoring Committee members.	The implementation of this task has been delayed due to the delay in the recruitment process of the external evaluator. This has resulted in a delay of two months in the production and delivery of the external evaluator's report.	<b>Achieved</b>	14/11/2022	



2. Deliverables					
Deliverable #	Specific and measurable indicators	Comments	Current Status	Deadline for Submission (according to contract)	Deviation of working or time schedule and technical corrective action
<b>DEV 4.1. The first annual quality-assurance report</b>	<p>The purpose of the annual quality-assurance reports was to ensure that the implementation of the IREEDER project was carried out according to the agreed schedule and following the European standards that govern the project. In November 2020, the QMC verified that the tasks already completed were:</p> <p><i>WP1: Project Initialization and Work Preparation</i></p> <ul style="list-style-type: none"> <li>-D1.1 Kick off meeting</li> <li>-D1.2 Identifying training and teaching needs</li> <li>-D1.3 Verifying Partner's Facilities</li> </ul> <p><i>WP2: Development of the teaching materials</i></p> <ul style="list-style-type: none"> <li>-D2.1 Report on teaching objectives and materials' outline</li> </ul> <p><i>WP3: Capacity building and training of trainers</i></p> <ul style="list-style-type: none"> <li>-D3.1 Development of a capacity building plan</li> <li>-D3.2 Identification of general equipment of laboratories</li> </ul> <p><i>WP4: Quality Assurance</i></p> <ul style="list-style-type: none"> <li>-D4.1 The first annual quality assurance report</li> </ul>	<p>The first annual quality assurance report provides specific information on the results of each work package and task, during the implementation of the project, taking into account qualitative and quantitative indicators to assess the level of success. The first report was prepared by the QMC and delivered according to schedule on the 15th of November 2020.</p>	<b>Delivered</b>	15/11/2020	No deviation

	<ul style="list-style-type: none"> <li>-D4.4 /4.5 Beginning of the process for the selection and hiring of the external evaluator</li> </ul> <p><i>WP7: Management</i></p> <ul style="list-style-type: none"> <li>-D7.1 Second IREEDER plenary meeting</li> </ul>				
<b>DEV 4.2. The second annual quality-assurance report</b>	<p>In November 2021, the QMC verified that the tasks already completed were:</p> <p><i>WP2: Development of the teaching materials</i></p> <ul style="list-style-type: none"> <li>-D2.2 Preparing the teaching materials</li> </ul> <p><i>WP3: Capacity building and training of trainers</i></p> <ul style="list-style-type: none"> <li>-D3.2 Identification of general equipment of laboratories</li> <li>-D3.3 Holding training workshops in EU</li> </ul> <p><i>WP4: Quality Assurance</i></p> <ul style="list-style-type: none"> <li>-D4.2 The second annual quality assurance report</li> <li>-D4.4 The mid-term evaluation report (External evaluator)</li> </ul> <p><i>WP6: Dissemination</i></p> <ul style="list-style-type: none"> <li>-D6.1 Development of the dissemination plan</li> <li>-D6.2 Communication plan and promotion materials</li> </ul> <p><i>WP7: Management</i></p> <ul style="list-style-type: none"> <li>-D7.1.3 Third IREEDER plenary meeting</li> <li>-D7.1.4 Fourth IREEDER plenary meeting</li> <li>-D7.2 IREEDER website and communication platform</li> </ul>	The second annual quality assurance report assessed the progress of the IREEDER project, in particular the activities done to achieve the project objectives. This second report was prepared by the QMC and delivered according to schedule on the 15th of November 2021. This report provides information on the overall implementation of the project activities, as well as on the development and implementation of the curricula.	<b>Delivered</b>	15/11/2021	No deviation
<b>DEV 4.3. The third annual quality-assurance report</b>	<p>In November 2022, the QMC verified that the tasks already completed were:</p> <p><i>WP3: Capacity building and training of trainers</i></p> <ul style="list-style-type: none"> <li>-D3.3 Holding training workshops in EU</li> </ul>	The third annual quality assurance report assessed the progress of the IREEDER project, in particular the activities done to	<b>Delivered</b>	14/11/2022	No deviation



	<ul style="list-style-type: none"> <li>-D3.4 Holding training workshops in Jordan</li> <li><i>WP4: Quality Assurance</i></li> <li>-D4.3 The third annual quality assurance report</li> <li>-D4.5. The final evaluation report</li> <li><i>WP5: Dissemination &amp; Exploitation</i></li> <li>-D5.1 Elaboration of the sustainability Plan</li> <li>-D5.2. Students Training</li> <li>-D5.3 Setup E-Learning Module</li> <li>-D5.4 Final Year Graduation Projects</li> <li><i>WP6: Dissemination</i></li> <li>-D6.2 Communication plan and promotion materials</li> <li>-D6.3. The first dissemination workshop</li> <li>-D6.4. The second dissemination workshop</li> <li><i>WP7: Management</i></li> <li>-D7.1.5 Fifth IREEDER plenary meeting</li> <li>-D7.1.6 Fourth IREEDER plenary meeting</li> <li>-D7.2 IREEDER website and communication platform</li> </ul>	<p>achieve the project objectives and implemented in the last year. The report was prepared by the QMC and delivered according to schedule on the 14th of November 2022. This report provides information on the overall implementation of the project activities with a focus on the training and dissemination workshops carried out in Jordan in the last year of the project.</p>			
--	--	---	--	--	--

<p><b>DEV 4.4. The mid-term evaluation report</b></p>	<p>This mid-term evaluation report is the result of the monitoring activity conducted in the framework of the IREEDER Project during the period November 15th, 2019 - November 14th, 2021. The results of this evaluation were the submission of four quality reports, including an assessment of the partnership's performance, project progress, effectiveness, and impact of dissemination activities.</p>	<p>First Monitoring Report Reporting Period: 15/11/2019–14/05/2021 Second Monitoring Report Reporting Period: 15/05/2021–14/11/2021 First External Quality Report Reporting Period: 15/11/2019–14/05/2021 Second External Quality Report Reporting Period: 15/11/2019–14/11/2021</p>	<p><b>Delivered</b></p>	<p>14/04/2021</p>	<p>In November 2020, a public announcement was made for the selection of the External Evaluator. The delay is explained by the need to identify someone with proven experience in the management and evaluation of European projects, as well as experience in the three IREEDER topics (IoT, CS and RE). A contract was signed in March 2021. As a result, the task was delayed by eight months. The implementation of task 4.3 has been delayed due to the delay in the</p>
<p><b>DEV 4.5. The final evaluation report</b></p>	<p>Final evaluation Report by the External Evaluation Expert</p>	<p>Delivered according to schedule (14th November 2022)</p>	<p><b>Delivered</b></p>	<p>14/11/2022</p>	<p></p>



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

Ref. No.: IREEDER-D4.3  
Date: November 14th, 2022  
Final version

					recruitment process of the external evaluator. This has resulted in a delay of two months in the production and delivery of the external evaluator's report (DEV 4.4).
--	--	--	--	--	--



	 <p>Co-funded by the Erasmus+ Programme of the European Union</p>	<p>Ref. No.: IREEDER-D4.3 Date: November 14th, 2022 Final version</p>
---	--	---

#### 4.5. General overview of WP5

Subjects are expected to be autonomous after the EU funding phase and to produce multiplier effects in the educational, economic, and social development environment. The sustainability of the programme can be calculated at different levels:

- The preliminary needs analysis.
- The structure of the subjects.
- Training activities.
- Access to the labour market.

In addition, sustainability is strictly linked to financial, institutional, social, and environmental issues. The IT developed a sustainability plan, under the supervision of the SSC. The plan sets out guidelines to guide the implementation of all activities in a sustainability perspective.

This work package includes the establishment of an e-learning module to provide electronic access to all project outputs in order to broaden the impact on the beneficiaries of the project. The graduation project for final year students is being supervised by the involved staff of the Jordanian partners.

WP5	EXPLOITATION OF RESULTS AND SUSTAINABILITY PLAN				
WP5 Leader	Jonathan Rodriguez (IT)				
REPORTING PERIOD	16/11/2021 - 14/11/2022				
<b>WP5 Overall Progress</b>	The WP5 includes the establishment of an e-learning module providing electronic access to all project outputs in order to extend the beneficiary of the project. The graduation project for final year students, which is supervised by the involved staff of the Jordanian partners. The tasks developed were the elaboration of a sustainability plan, the adoption of the teaching materials in the Jordanian partners.				
<b>1. Tasks</b>					
<b>Activity #</b>	<b>Brief description of activity delivered</b>	<b>Comments</b>	<b>Status</b>	<b>End of task</b>	<b>Anticipated Risks</b>
<b>Task 5.1 Elaborate a sustainability plan</b>	The purpose of the Sustainability Plan is to describe the strategy that will support the sustainability of the outcomes of the IREEDER project after its lifetime. It includes information on the project outcomes and conditions, recommendations and guidelines for using the developed project products, thus providing all interested individuals and institutions (including further actors not directly involved in the project) with a solid overview on the products available for them for further usage and the ways they could be used. Therefore, a description of the IREEDER outcomes and possible modes of their application and detailed information on the sustainability of the project results are included in this document.	In terms of the potential ways of exploitation, the context of each partner and partner country was taken into consideration and the guidelines of reaching target groups and ideas of usage were prepared accordingly. This document is developed in the scope of the WP5 - Exploitation of results and sustainability plan (Dissemination & Exploitation) of the Project in compliance with the Project description and all applicable rules & guidelines.	<b>Achieved</b>	14/1/2022	<i>R5.1: Assumptions are the crediting of the subjects; real participation of partners, effective networking of authorities and companies involved; interest of students. Risks are related to the subjects not credited and high costs for maintaining the program itself.</i>
<b>Task 5.2 Adopting the teaching materials at Jordanian partners</b>	The developed materials were delivered to Jordanian universities. All Jordanian partners have concluded the accreditation stage of a set of courses in the three core areas of IREEDER: Renewable Energy, Cybersecurity and Internet of Things.	In addition, students carried out experimental activities with the help of laboratories at three Jordanian universities, as well as virtual laboratories.	<b>Achieved</b>	14/11/2022	This risk did not affect the project.

<p><b>Task 5.3 Regularly updated following the project implementation depending on the institutional, social, economic, and technological viabilities</b></p>	<p>The local cooperation between Jordanian partners will be continued through the IREEDER platform, by sharing the virtual laboratories, teaching materials, e-learning courses and other training events.</p>	<p>Given the cooperation links with local Jordanian industrial stakeholders established at the beginning of the IREEDER project, efforts will be made to maintain the academia-industry cooperation network after the project ending with several aspects related to the project sustainability at the local level being ensured through the network, guaranteeing that industry representatives will be involved in the course creation and delivering after the project ending.</p>	<p><b>Achieved</b></p>	<p>14/11/2022</p>	
<p><b>Task 5.4 Setting up the e-learning module</b></p>	<p>The IREEDER project has developed three e-learning modules for the developed teaching materials within the framework of the project. The modules have been built based on Google Classroom platform. The courses developed are available through an e-learning platform initiated by the project, which can be accessed through both the project website and the Jordanian partners' websites. For the e-learning modules, three classes have been created in Google Classroom. Each course has been divided into 13 topics, one for each chapter. Within each topic, there are the corresponding presentation slides and lecture notes as separate materials. Then, for each chapter, there is a quiz. The preparation and introduction of the quiz was the responsibility of the contributors of the corresponding chapter.</p>	<p>The e-learning platform serves as the basis for the online training courses, which can be relevant not only for current and future students at each of the institutions, but also for other international students currently enrolled in related subjects, as well as for researchers and industrial actors with a keen interest in the topics.</p>	<p><b>Achieved</b></p>	<p>14/11/2022</p>	

<p><b>Task 5.5 Supervising final-year graduation projects in IREEDER topics</b></p>	<p>The different final year graduation projects were completed in different departments at the participating Jordanian institutions, covering a big range of Engineering areas, from Electrical Engineering to Cyber Security, Mechatronics, Data Science and Artificial Intelligence and Computer Science and Software Engineering, among others. The projects were carried out in the Electrical Engineering departments, Renewable Energy Engineering departments, and the Electrical Engineering and Communications and Electronics departments.</p>	<p>Several items of equipment were purchased in the scope of the IREEDER project, to facilitate the establishment of the three laboratories on Cybersecurity, Internet of Things and Renewable Energy. For several of the final year graduation projects, IREEDER equipment was used to support the research activities.</p>	<p><b>Achieved</b></p>	<p>14/11/2022</p>	
---	--	--	------------------------	-------------------	--

## 2. Deliverables

Deliverable #	Specific and measurable indicators	Comments	Current Status	Deadline for Submission (according to contract)	Deviation of working or time schedule and technical corrective action
<p><b>DEV 5.1. Elaboration of the sustainability Plan</b></p>	<p>n. 1 Sustainable Plan elaborated and approved</p>	<p>N/A</p>	<p><b>Delivered</b></p>	<p>15/1/2022</p>	<p>Real Delivery Date: 11/01/2022</p>
<p><b>DEV 5.2. Students Training</b></p>	<p>A total of <b>13 student training workshops</b> have been conducted in the Jordanian universities: five on Renewable Energy (at TTU, AHU, MU, and PU); four on Internet of Things (at AHU, MU, PU, and IU); four on Cyber Security (at TTU, MY, PU, and IU).</p>	<p>The <b>student training workshops</b> took place between May and September 2022 and were attended by 250 student trainees, 50 of which were female.</p>	<p><b>Delivered</b></p>	<p>14/11/2022</p>	<p>No deviation</p>

	A total of <b>10 training workshops outside the partner institutions</b> have been conducted in Jordan: Six on Renewable Energy (MVC-Maan, JEA-Tafila, JEA-MAAN, JEA- Karak, JEA-Amman and JEA-Aqaba); Two on Internet of Things (JEA-Aqaba and JEA-Maan); Two on Cyber Security (JEA-Maan and JEA-Aqaba).	The <b>training workshops outside partners</b> took place between December 2021 and October 2022 and were attended by 448 student trainees, 168 of which were female.			
<b>DEV 5.3. Setup E-Learning Module</b>	The e-learning platform serves as the basis for online training courses, which may be relevant not only to current and prospective students at each of the institutions, but also to other international students currently enrolled in related subjects, as well as researchers and industry players with a keen interest in the topics.	The e-learning modules are hosted on the official project website.	<b>Delivered</b>	15/7/2022	No deviation
<b>DEV 5.4. Final Year Graduation Projects</b>	A total of 62 final year graduation projects conducted in the scope of the IREEDER project have been reported by Jordanian partners. From the 62 reported projects 28 were conducted in the topic of Renewable Energy (RE), 26 were related to the topic of Internet of Things (IoT), while the remaining 8 were in the field of Cybersecurity.	Given the number of final year graduation projects achieved, the diversity of relevant topics and the quality of the work conducted, it appears safe to say that IREEDER not only achieved the goal it set itself , but that it surpassed the expectations.	Not yet achieved	15/11/2022	No deviation

### Accreditation Process

Jordanian Universities	Main steps for the accreditation/approval of the new courses	IoT course	CS course	RE course
AHU	Request of accreditation/approval submitted	<b>Achieved</b>	<b>Achieved</b>	<b>Achieved</b>
	Request of review of the submitted syllabus received	<b>Achieved</b>	<b>Achieved</b>	<b>Achieved</b>

	Review submitted	Achieved	Achieved	Achieved
	Official communication of approval received	Achieved	Achieved	Achieved
MU	Request of accreditation/approval submitted	Achieved	Achieved	Achieved
	Request of review of the submitted syllabus received	Achieved	Achieved	Achieved
	Review submitted	Achieved	Achieved	Achieved
	Official communication of approval received	Achieved	Achieved	Achieved
TTU	Request of accreditation/approval submitted	Achieved	Achieved	Achieved
	Request of review of the submitted syllabus received	Achieved	Achieved	Achieved
	Review submitted	Achieved	Achieved	Achieved
	Official communication of approval received	Achieved	Achieved	Achieved
PU	Request of accreditation/approval submitted	Achieved	Achieved	Achieved
	Request of review of the submitted syllabus received	Achieved	Achieved	Achieved
	Review submitted	Achieved	Achieved	Achieved
	Official communication of approval received	Achieved	Achieved	Achieved
ISRA	Request of accreditation/approval submitted	Achieved	Achieved	Achieved
	Request of review of the submitted syllabus received	Achieved	Achieved	Achieved
	Review submitted	Achieved	Achieved	Achieved
	Official communication of approval received	Achieved	Achieved	Achieved

Accreditation Final Updates			
Mutah University			
Course	Department	Program	Action taken
Renewable Energy systems	Electrical Engineering	Power and Control Engineering	Updating existing course

Introduction to Internet of Things	Electrical Engineering	Power and Control Engineering	Added as a new course in the study plan
Introduction to Internet of Things	Electrical Engineering	Communications Engineering	Added as a new course in the study plan
Introduction to Internet of Things	Computer Engineering	Computer Engineering	Added as a new course in the study plan
Introduction to Cyber Security	Computer Engineering	Computer Engineering	Added as a new course in the study plan
<b>Philadelphia University</b>			
<b>Course</b>	<b>Department</b>	<b>Program</b>	<b>Action taken</b>
Introduction to Renewable Energy	Electrical Engineering	Electrical Engineering	Updating existing course
Internet of Things	Electrical Engineering	Communications and Electronic Engineering	Added as a new course in the study plan
Cyber Security	Electrical Engineering	Communications and Electronic Engineering	Added as a new course in the study plan
Internet of Things	Mechatronics Engineering	Mechatronics Engineering	Added as a new course in the study plan
<b>Al-Hussein Bin Talal University</b>			
<b>Course</b>	<b>Department</b>	<b>Program</b>	<b>Action taken</b>
Renewable energy	Electrical Engineering	Electrical Engineering	Updating existing course
Renewable energy	Mechanical Engineering	Mechanical Engineering	Updating existing course
Introduction to Internet of Things	Computer Engineering	Computer Engineering	Added as a new course in the study plan
Introduction to Internet of Things	Communications Engineering	Communications Engineering	Added as a new course in the study plan
Introduction to Internet of Things	Computer Engineering	Network Security Engineering	Added as a new course in the study plan
Introduction to Internet of Things	Electrical Engineering	Electrical Engineering	Added as a new course in the study plan
Introduction to Cyber Security	Communications Engineering	Communications Engineering	Added as a new course in the study plan
Introduction to Cyber Security	Computer Engineering	Computer Engineering	Added as a new course in the study plan
<b>Isra University</b>			
<b>Course</b>	<b>Department</b>	<b>Program</b>	<b>Action taken</b>

Introduction to Renewable Energy	Department of Communications and Electronics Engineering	Communications and Electronics Engineering	Added as elective specialisation course
Introduction to Internet of Things	Department of Communications and Electronics Engineering	Communications and Electronics Engineering	Added as elective specialisation course
Introduction to Cyber Security	Department of Communications and Electronics Engineering	Communications and Electronics Engineering	Added as elective specialisation course
<b>Tafila Technical University</b>			
<b>Course</b>	<b>Department</b>	<b>Program</b>	<b>Action taken</b>
Introduction to Internet of Things	Department of Communications and Electronics and Computer Engineering	Computer Engineering	Added as elective specialisation course
Introduction to Internet of Things	Department of Communications and Electronics and Computer Engineering	Smart Systems Engineering	Added as elective specialisation course
Introduction to Cyber Security	Department of Communications and Electronics and Computer Engineering	Computer Engineering	Added as elective specialisation course
Computer and Network Security	Department of Communications and Electronics and Computer Engineering	Computer Engineering	Course updated based on project outcomes
Renewable Energy and Energy storage	Department of Electrical Engineering	Integrated Renewable Energy Engineering	Added as compulsory specialisation course
Photovoltaic Energy Systems	Department of Electrical Engineering	Mechatronics Engineering	Added as elective specialisation course
Renewable Energy and Energy storage	Department of Electrical Engineering	Electrical Power Engineering	Added as compulsory specialisation course
Introduction to Renewable Energy	Department of Mechanical Engineering	Mechanical Engineering	Added as compulsory specialisation course



	 <p>Co-funded by the Erasmus+ Programme of the European Union</p>	<p>Ref. No.: IREEDER-D4.3 Date: November 14th, 2022 Final version</p>
---	--	---

#### 4.6. General overview of WP6

The needs of the Jordanian market for qualified electrical engineers with a deep understanding of new technologies is increasing dramatically, especially due to the global trends in IoT, CS and RE. To complete this WP6, many activities were organised, and stakeholders were invited along with companies, ministries, and media. These activities, which are the tools to spread the idea of this project, consisted of seminars, reports for distribution, a website to disseminate the results of IREEDER, newsletters, brochures, and posters to be distributed to all stakeholders. In addition, publicity leaflets were printed and distributed to partner universities to attract students to the new subjects.

The IREEDER project was also disseminated through workshops. In particular, two main dissemination workshops were held at PU (coinciding with the fourth IREEDER plenary meeting) and at MU (coinciding with the last IREEDER plenary meeting). In addition to project partners and associates, all Jordanian universities and interested companies were invited to the workshops and are expected to adopt the project results. After the end of the IREEDER project, annual local dissemination workshops will be held in each Jordanian partner to raise progress awareness and encourage student participation in the training activities that will take place in the established laboratories. EU partners will also disseminate the IREEDER results at local dissemination events in their countries.

WP6	DISSEMINATION				
WP6 Leader	Ziyad Al Tarawneh (MU)				
REPORTING PERIOD	16/11/2021 - 14/11/2022				
<b>WP6 Overall Progress</b>	WP6 aims at disseminating the activities and results of the IREEDER project. For this purpose, a dissemination plan was elaborated in which the main internal and external communication strategies were reported. Promotional material was also designed and produced. Two main dissemination workshops were held in MU and PU, and local dissemination events were also organised.				
<b>1. Tasks</b>					
<b>Activity #</b>	<b>Brief description of activity delivered</b>	<b>Comments</b>	<b>Status</b>	<b>End of task</b>	<b>Anticipated Risks</b>
<b>Task 6.1 Prepare the dissemination plan</b>	The IREEDER Dissemination Plan (D6.1) has been finalised by MU with the help and contributions from all partners. It includes the dissemination activities which will be carried out by the project partners to ensure the effective promotion and exploitation of the project results. The approved final version is uploaded on the project website.	As reported in the Dissemination Plan, the document was elaborated by the SSC and outlines the activities which will be carried out to assure the promotion and exploitation of project results. Following the recommendation of the National Erasmus Officer, the elaboration of the Dissemination Plan was shifted earlier. The document was finalised on January 15th, 2021, instead of June 15th, 2021 (five months before the planned deadline). This decision has allowed the implementation of a communication strategy and the elaboration of communication tools from the beginning of the project, supporting its local impact.	<b>Achieved</b>	15/01/2021	<i>R6.1: Lack of interest in the target group.</i> There is no evidence of the weak interest of the local stakeholders in the project.
<b>Task 6.2 Produce and distribute the promotion materials</b>	In order to increase public awareness and use of IREEDER outcomes, as well as to ensure high visibility of project outcomes among target groups and stakeholders, the IREEDER teams completed a variety of activities, including a live radio interview	Once approved the dissemination plan, the consortium has worked in the elaboration of the promotional materials. The official website of the IREEDER project is online at the following link: <a href="http://ireeder.ahu.edu.jo/">http://ireeder.ahu.edu.jo/</a> . During the life of the project, the Consortium has carried out the following promotional activities: live radio interviews; production of	<b>Achieved</b>	14/11/2021	

	about IREEDER, the development of multilingual promotional videos and online introductory lectures held at various Jordanian universities, along with the development and distribution of several newsletters, which are made available on the official project website and circulated via Facebook and LinkedIn to make promotional materials accessible to a broader and diverse audience.	multilingual promotional videos; online introductory lectures in Jordanian universities. Specific pages on two social media platforms, Facebook and LinkedIn, have been opened. The official logo was designed from the beginning of the project and has been used in all official and public communication. A live radio interview was held at Saout aljanoub radio station. Six multilingual newsletters have been elaborated. A YouTube channel has been created and is continuously updated with videos relevant to the IREEDER project.			
<b>Task 6.3 Update the website contents</b>	The website of the project represents one of the key platforms and resources for disseminating and promoting the IREEDER project to a larger and diverse audience. The official website of the IREEDER project is available on the Internet and can be accessed at <a href="http://ireeder.ahu.edu.jo/">http://ireeder.ahu.edu.jo/</a> . The website is used to proactively disseminate the overall aim, specific targets, objectives, and outcomes of the IREEDER project. In addition to project-related content, it includes content on upcoming activities, relevant news, and downloadable material (including meeting presentations, training materials, newsletters, etc.). During the lifespan of the project, the IREEDER website is updated on a regular basis and updated for at least one year after the project is completed.	The IREEDER website has been designed and opened on time (within the first 2 months of the project).	<b>Achieved</b>	14/11/2022	

<p><b>Task 6.4 Organise institutional events and two dissemination workshops</b></p>	<p>The <b>dissemination day</b> of the IREEDER project has been held at Isra University (IU) on January 13, 2022. The day has four sections: The opening session, the Internet of Things (IoT) session, the Renewable Energy (RE) session, and the Cyber Security (CS) session. After that the opening of the IREEDER laboratory and a discussion.</p> <p>The <b>first dissemination workshop</b> of the IREEDER project was held at Philadelphia University (PU) on June 1, 2022. The schedule of this workshop has been divided into four main parts; the opening ceremony, the Renewable energy session, the Internet of Things session and the Cyber security session. After that the Graduation Projects Expo and the closing session.</p> <p>The <b>second IREEDER dissemination workshop</b> was conducted on October 5, 2022, at Mutah University (MU). This workshop's agenda was organised into four major sections: the opening ceremony, the Renewable energy session, the Internet of Things session, and the Cyber security session. Following that was the closing session.</p>	<p>Online IREEDER Introductory Lectures were held at different Jordanian partners:</p> <ul style="list-style-type: none"> <li>- IREEDER Introductory Lecture -IU 15 March 2021</li> <li>- IREEDER Introductory Lecture -TTU on 17 March 2021</li> <li>- IREEDER Introductory Lecture -MU on 25 March 2021</li> <li>- IREEDER Introductory Lecture -PU on 8 April 2021</li> <li>- IREEDER RE lab opening ceremony 6 July 2021 at MU</li> <li>- IREEDER IoT lab opening Ceremony 3 January 2022 at AHU</li> <li>- Remote Access lab opening ceremony on 24 March 2022</li> <li>- Dissemination workshop at IU on 13 January 2022</li> <li>- Dissemination workshop at PU on 1 July 2022</li> </ul>	<p><b>Achieved</b></p>	<p>15/6/2022</p>	
--	--	--	------------------------	------------------	--

<b>Task 6.5 Participate in other local dissemination events at the EU partners</b>	N/A	It was planned during the IoT and CS training workshops and the plenary meetings that were to be held in EU. However, because of the COVID 19 pandemic there was limited participation in local events in EU partner institutions.		15/11/2022	
--	-----	--	--	------------	--

<b>2. Deliverables</b>					
<b>Deliverable #</b>	<b>Specific and measurable indicators</b>	<b>Comments</b>	<b>Current Status</b>	<b>Deadline for Submission (according to contract)</b>	<b>Deviation of working or time schedule and technical corrective action</b>
<b>DEV 6.1. Development of dissemination plan</b>	The dissemination plan (D6.1) has been finalised	The Dissemination Plan is focused on the strategies and tools for external communication, towards stakeholders and final beneficiaries. The document includes the dissemination goals and objectives, the roles of the partners, target groups and stakeholders, a list of the dissemination tools (website, social network, newsletter, events, etc.). IREEDER stakeholders have been identified in n. 6 categories: 1) Students of electrical engineering and related programmes, 2) Academic staff, 3) Industrial partners and companies working in the field of RE, CS and Io, 4) Industries and companies working in other fields, 5) Agricultural Institutions and 6) society in general. For this purpose, a stakeholders Contact list has been elaborated. The Mailing list saved in the repository counts n. 90 contacts.	<b>Delivered</b>	15/6/2021	As a result of a recommendation from the National Erasmus Office during a monitoring visit in September 2020, the dissemination plan has been shifted earlier. The dissemination plan was supposed to be delivered on June 15, 2021; however, it was provided on January 15, 2021.

<b>DEV 6.2. Communication plan and promotion materials</b>	n.1 logo 30-11-2019; n.1 brochure of IREEDER project (English and Arabic) 15-1-2020; n.1 IREEDER promotional video (English and Arabic) 15-12-2020; First IREEDER Newsletter 01/07/2020; Second IREEDER Newsletter 02/10/2020; Third IREEDER Newsletter 01/06/2021; Fourth IREEDER Newsletter 15/12/2021; Fifth IREEDER Newsletter 05/06/2022; Sixth IREEDER Newsletter 01/11/2022.	All these materials are available on the project website.	<b>Delivered</b>	15/11/2021	Due to the current COVID 19 pandemic situation, all project brochures, newsletters are issued in digital versions (in a PDF file format) and available on the official project website. A portion of this task has been already achieved while others are still in progress.
<b>DEV 6.3. The first dissemination workshop</b>	n. 1 dissemination Workshop held at MU; n. 1 agenda; n. 1 list of invited stakeholders; n. 1 list of registered attendees; n. 5 PowerPoint presentations; n. 1 IREEDER network; n.1 Dissemination workshop minutes.	The WP6 leader has prepared the minutes of the first dissemination workshop of the IREEDER project held at Philadelphia University (PU) in June, 1 2022. The report provides a description of the proceedings of the opening ceremony, a description of the session on renewable energy, Internet of Things and cybersecurity.	<b>Delivered</b>	15/06/2022	Real Delivery Date: 01/10/2022
<b>DEV 6.4. The second dissemination workshop</b>	n. 1 dissemination Workshop held at PU; n. 1 agenda n. 1 list of invited stakeholders; n. 1 list of registered attendees; n. 5 PowerPoint presentations; n. 1 IREEDER network updated; n.1 Dissemination workshop minutes.	The WP6 leader has also prepared the minutes of the second IREEDER project dissemination workshop held at Mutah University (MU) on October 5, 2022. The workshop had a total number of attendees that exceeded 90 participants.	<b>Delivered</b>	15/11/2022	Real Delivery Date: 05/10/2022

#### 4.7. General overview of WP7

After the Project approval, all management and operational structures were established and followed during the project's life. The project has been managed in such a way that promotes a sense of ownership and motivation for each of the partners. AHU is the project coordinator and responsible for the overall operation of the project and its smooth running, financial and administrative management including the preparation of budget and reports, timeliness and accomplishment.

To facilitate the work in the project, the following committees were established: IREEDER Steering Committee (StC); IREEDER scientific and supervising committee (SSC) and IREEDER operational staff. The IREEDER StC is composed by the project coordinator and focal point from each partner. It deals with the overall management and decision-making process. The IREEDER SSC is composed by two representatives from each partner. The IREEDER SSC is responsible for overseeing all scientific and technical activities, ensuring the quality and sustainability of the project. All reports and deliverables were discussed by IREEDER SCC and StC. The StC and SSC meetings were held in the same location to reduce the overhead costs of the meetings. The project meetings were scheduled as follows:

**IREEDER Plenary meeting.** The first meeting was the **kick-off meeting** which was held at AHU (Jordan) on 3rd-4th of February 2020. In this kick-off meeting, activities related to project initializations (WP1) have been finalised such as partnership agreements, committees forming, building operational staff, and discussing the initial results of WP1.

The **second plenary meeting** was supposed to be held in June 2020 however, it has been moved to 9th September 2020 and has become a virtual meeting due to the travel restriction caused by the COVID-19 pandemic. The WP leaders presented the progress of the work of the functioning WPs, especially WP2, WP3, WP4, WP6 and WP7. They also discussed measures to be taken to overcome the travel restriction in upcoming activities, including training and meetings.

The **third plenary meeting** held on 25th of February 2021 was a virtual meeting due to the travel restriction situation caused by Covid 19. The WPs leaders presented the progress of the work of the WPs in progress, especially in WP2 and WP3. This meeting also gave a summary of the progress of the work of the WP4, WP6 and WP7 work packages.

The **fourth plenary meeting** held on 29th of July 2021 was a virtual meeting due to the travel restriction situation caused by the COVID-19. The meeting included a summary of the interim technical and financial reports and comments received from the external evaluation of the project. The progress of WP3, especially the training workshops and tendering processes, was also summarised. The work plan for WP5 was also reviewed and discussed at the meeting.

The **fifth plenary meeting** was held on 29-30 March 2022 at the University of Trento, Italy. The meeting was started by a welcome message from the local organiser, Prof. Fabrizio Granelli. The project coordinator, Prof. Saud Althunibat, presented a summary of the current technical and financial status, analysis of the comments received from the external evaluator of the project, and the plan and actions for the following period. The meeting also included a session to discuss future collaboration among Jordanian partners, the University of Trento and other IREEDER consortium members.

The **sixth plenary meeting** was held on 3rd-4th of October 2022 at Mutah University, Karak, Jordan. The meeting was started by a welcome message from the local organiser, Dr. Ziyad Altarawneh. The project coordinator, Prof. Saud Althunibat, presented a summary of the current technical and financial status, analysis of the comments received from the external evaluator of the project, and the plan and actions for the following period. Also, WP leaders of ongoing WPs have presented their progress.

- D7.2 IREEDER Website

The official project website (<http://ireeder.ahu.edu.jo/>) was launched in December 2019. It includes most of the public details about the project, the deliverables, news, activities, and results. Also, a reciprocity file folder has been set up with the help of the IT partner to share the project documents among the partners, where each partner can exchange files through it.

- D7.3 Financial Auditing Report

The financial auditing report will be elaborated by an external auditor with the help of the project coordinator by the end of the project.

Apart from WP7's deliverables, AHU is managing the whole project budget to ensure the right expenses aspect as planned in the proposed budget.

The midterm technical and financial reports were delivered to EACEA on 1st July 2021. Overall evaluation of "Good" has been made by EACEA. The request for the second payment from EACEA is being prepared.





WP7 Overall Progress	MANAGEMENT				
WP7 Leader	Saud Althunibat (AHU). Project Coordinator and WP7 Leader				
REPORTING PERIOD	16/11/2021 - 14/11/2022				
<b>WP7 Overall Progress</b>	The WP7 aims at setting the framework for the efficient management of the IREEDER project.				
<b>1. Tasks</b>					
Activity #	Brief description of activity delivered	Comments	Status	End of task	Anticipated Risks
<b>Task 7.1 Act as a contact point between EACEA and all partners involved in the project</b>	AHU as a coordinating institution of the IREEDER project has been in contact with the project partner and the project officer (EACEA) to update both sides about necessary actions, comments, and milestones. AHU has signed the project agreement and transferred all the programme regulations and rules that must be followed in managing the grant.	N/A	<b>Achieved</b>	14/11/2022	<i>R7.1: Project schedules are not respected.</i> To date, the project activities have been completed on time, respecting the planned schedule of activities.
<b>Task 7.2 Manage the implementation of the project</b>	AHU has managed all project activities since the beginning of the project. AHU has organised six plenary meetings to discuss project activities, future work plans and ensure the delivery of project outputs on time and to an acceptable quality.	N/A	<b>Achieved</b>	14/11/2022	
<b>Task 7.3 Supervise the design and management of the website</b>	The project website was created in the first month of the project and it is periodically updated to announce project results, activities, and events.	N/A	<b>Ongoing</b>	14/11/2022	

<b>Task 7.4 Organise the kick-off meeting</b>	The Kick-Off meeting was held in AHU (Ma'an-Jordan) on February 3-4, 2020. All the representatives from all partners participated. AHU coordinated the meeting and discussed the project progress and the future work plans.	N/A	<b>Achieved</b>	14/12/2019 Real Delivery Date: 3- 4/02/2020	
<b>Task 7.5 Organise and manage all meetings with the hosting partners</b>	AHU managed 6 plenary meetings to discuss the progress of the project: - Kick-off meeting at AHU in February 2020. - Second virtual meeting in September 2020. - Third virtual meeting in February 2021, - Fourth virtual meeting in July 2021. - Fifth meeting in March 2021 at University of Trento, Italy. - Sixth meeting in October 2022, at Mutah University, Karak, Jordan.	N/A	<b>Achieved</b>	14/11/2022	
<b>Task 7.6 Assure the external audit</b>	AHU as the coordinating institution recruited an external auditor office that is in charge of delivering the required auditing report for the whole project expenses during the project lifetime.	The external auditor hiring process has been started by announcing a call for offers in June 2022. The external auditor has been selected and started its work in Oct 2022. It is expected to finalise the report by Dec2022/Jan 2023.	<b>Ongoing</b>	14/1/2023	
<b>Task 7.7 Participate in drafting the required reports</b>	AHU has reviewed and contributed to the elaboration of all project deliverables.	The midterm technical and financial reports were delivered to EACEA on 1st July 2021. Overall evaluation of "Good" has been made by EACEA. The request for the second payment from EACEA is being prepared.	<b>Achieved</b>	14/11/2022	
<b>Task 7.8 Participate in meetings</b>	All partners have participated in all plenary meetings held up to now.	Sixth plenary meetings have been organised.	<b>Achieved</b>	14/11/2022	

<b>Task 7.9 Participate in organising SSC and StC meetings</b>	StC and SSC meetings were held with the plenary meetings.	Committee meetings have been co-located with project plenary meetings.	<b>Achieved</b>	14/11/2022	
--	---	--	-----------------	------------	--

2. Deliverables					
Deliverable #	Specific and measurable indicators	Comments	Current Status	Deadline for Submission (according to contract)	Deviation of working or time schedule and technical corrective action
<b>DEV 7.1. IREEDER plenary meetings</b>	Kick-off meeting at AHU: Agenda; List of Participants; Minutes; PowerPoint presentations; Photos; n.1 Kick-off Quality report.	03/02/2020: 29 Participants 04/02/2020: 23 Participants	<b>Delivered</b>	15/12/2019 Real Delivery Date 03-04/02/2020	The kick-off meeting was delayed to early February 2020 due to the recommendation of the national Erasmus office.
	Second Plenary Virtual Meeting: Agenda; List of Participants; Minutes; PowerPoint presentations; Photos; n.1 Second Plenary meeting- Survey Quality report.	23 Participants	<b>Delivered</b>	15/05/2020 Real Delivery Date 09/09/2020	The second plenary session was held virtually due to travel restrictions caused by the COVID-19 pandemic.



	Third Plenary Virtual Meeting: Agenda; List of Participants; Minutes; PowerPoint presentations; Photos; n.1 Second Plenary meeting- Survey Quality report.	27 Participants	<b>Delivered</b>	15/12/2020 Real Delivery Date 25/02/2021	The third plenary session was held virtually due to travel restrictions caused by the COVID-19 pandemic.
	Fourth Plenary Virtual Meeting: Agenda; List of Participants; Minutes; PowerPoint presentations; Photos; n.1 Second Plenary meeting- Survey Quality report.	29 Participants	<b>Delivered</b>	15/05/2021 Real Delivery Date 29/07/2021	The fourth plenary session was held virtually due to travel restrictions caused by the COVID-19 pandemic.
	Fifth plenary meeting: Agenda; List of Participants; Minutes; PowerPoint presentations; Photos; n.1 Second Plenary meeting- Survey Quality report.	27 Participants	<b>Delivered</b>	15/12/2021 Real Delivery Date 29-30/03/2022	N/A
	<b>Sixth plenary meeting:</b> Agenda; List of Participants; Minutes; PowerPoint presentations; Photos; n.1 Second Plenary meeting- Survey Quality report.	26 Participants	<b>Delivered</b>	15/05/2022 Real Delivery Date 03-04/10/2022	N/A
<b>DEV 7.2. IREEDER website and communication platform</b>	The IREEDER official website is periodically updated. Communication platform for IREEDER partners. Final report on the monitoring of accesses and registered users, and their feedback and opinions.	Project website <a href="http://ireeder.ahu.edu.io">http://ireeder.ahu.edu.io</a> Communication platform <a href="https://4tellstore.av.it.pt/cgi-bin/">https://4tellstore.av.it.pt/cgi-bin/</a> A YouTube channel has been created and continuously updated with	<b>Delivered</b>	15/03/2020 Real Delivered Date: 15/12/2019	N/A

		videos relevant to the IREEDER project.			
<b>DEV 7.3. Financial auditing report</b>	The external auditor has been selected and started its work in Oct 2022. It is expected finalise the report by Dec2022/Jan 2023	This activity is planned at the end of the project	<b>Ongoing</b>	14/11/2022	N/A

## 5. Review of progression indicators (QAP)

Activities WP1	Target groups / potential beneficiaries	Deliverable/ Results / Outcomes	Real delivery	Info	Level of satisfaction	Corrective Actions (if needed)	Quantitative indicators	Qualitative indicators	Status
WP1/1.1 IREEDER Kick-off meeting	Stakeholders in academic institutions (students, professors, researchers...) and industrial sector (engineers, technical staff, employers)	-Meeting agenda -D1.1 Kick-off -Meeting Minutes -List of StC members -List of SCC members -List of QMC members	3-4/02/2020	<a href="#">D1.1 Kick off meetin g minutes .pdf</a>	Very satisfactory	The Kick-off meeting was delayed due to (04-02- 2020) based on National Erasmus Office recommendation.	3/2/2020: 29 participants 4/2/2020: 23 participants  StC: 11 members SCC: 20 members QMC: 11 members	The kickoff meeting was held at AHU (Ma'an-Jordan) on February 3-4, 2020 where representatives from all partners participated. During the Kick-Off meeting, the participants agreed on the names of the members of the Steering and Scientific committees of the IREEDER project. The task allocation has been discussed for all partners from the beginning of the project. Also, in the kickoff meeting, the framework for each WP has been discussed and agreed on. A general cooperation and communication approach has been discussed and agreed on to achieve each task of each WP. To define QAP methodology.	Achieved



WP1/1.2 Identifying training and teaching needs	Teaching staff, students, trainees	-D1.2 Identifying Training and Teaching Needs report	14/02/2020	<a href="#">D1.2 Identifying training and teaching needs.pdf</a>	Very satisfactory	N/A	-n.3 questionnaires were elaborated, distributed and filled in. -n.371 participants in the IoT questionnaire. -n. 333 participants in the CS questionnaire. -n.334 participants in the RE questionnaire. -n.1 final report elaborated (D1.2).	Three different questionnaires were designed to investigate the needs in the three fields of interest of the IREEDER project (IoT, CS and RE) for three identified final users/sectors, university (students and staff), and industry. The online questionnaire (Google Form) on Renewable Energy was filled up by 334 participants, 96,7% of them from Jordan. The one on Cyber Security was filled up by 333 participants, 93,4% of them from Jordan. The third survey on Internet of Things saw the participation of 371 people, 94,1% from Jordan. Graphs, results and conclusion are included in a final Report and shared with the partners. For completing the deliverable, the excel files automatically downloadable from Google Form and including all the responses, could be saved in the repository.	Achieved
WP1/1.3 Verifying partners facilities	Teaching staff, students, trainees, administrative staff, technical staff, librarians	-D1.3 Verifying Partners Facilities report	14/02/2020	<a href="#">D1.3 Verifying Partners Facilities.pdf</a>	Very satisfactory	N/A	-n.1 questionnaire (survey) was elaborated, distributed and filled in. -n.10 responses (one from each partner) were received. -n.1 final report elaborated (D1.3).	To investigate the different facilities offered by the Jordanian universities participating in the iREEDER project, a questionnaire was developed. The final report includes the questionnaire template, the link to Google Form and the analysis of the results. The surveys completed by each of the 10 participants are also included.	Achieved



Activities WP2	Target groups / potential beneficiaries	Deliverable/ Results / Outcomes	Real delivery	Info	Level of satisfaction	Corrective Actions (if needed)	Quantitative indicators	Qualitative indicators	Status
WP2/2.1 Identification of teaching objectives and materials outlines	Teaching staff, students, trainees	-D2.1 Report on Teaching Objectives and Materials' Outline	15/06/2020	<a href="#">D2.1 Report on teaching objectives and materials' outline.pdf</a>	Very satisfactory	N/A	-n.1 Report on the course descriptors of the three courses elaborated (including teaching objectives, course outline and workload distribution for the development of the teaching material)	A report on teaching objectives and materials' outlines is available in IREEDER repository. The document, written by the WP2 leader, provides for each course the following contents: aims and objectives, learning outcomes, the course's contents scheduled per week (for a total of 13), teaching, learning and assessment strategy, bibliography. The results of the surveys carried out during the WP1 have been taken into consideration and included in the report as suggestions for the elaboration of the new courses.	Achieved
WP2/2.2 Preparing the teaching materials	Teaching staff, students, trainees	-D2.2 Teaching materials -n.1 IoT Lecture Notes -n.13 IoT Presentation Slides -n.1 CS Lecture Notes -n.13 CS Presentation Slides -n.1 RE Lecture Notes -n.13 RE Presentation Slides -n.1 CS teaching materials evaluation report	-15/06/2021 -16/04/2021 -16/04/2021 -27/05/2021 -27/05/2021 -07/05/2021 -07/05/2021 -01/09/2021	<a href="#">IoT course</a> <a href="#">CS course</a> <a href="#">RE course</a>	Very satisfactory	N/A	-IoT course: 13 chapters and 1 lecture note. -ER course: 13 chapters and 1 lecture note. -CS course: 13 chapters and 1 lecture note. -n.21 experts participated in the development of the IoT course content. -n.13 experts participated in the development of the CS course content. -n.10 experts participated in the development of the RE course	The teaching material is divided into 13 PowerPoint presentations and one lecture note for each course. The teaching materials for the three courses developed have been reviewed by expert evaluators from outside the project partner institutions. A report on the evaluation of the expert evaluators has been produced for each of the courses.	Achieved



		-n.1 RE teaching materials evaluation report -n.1 IoT teaching materials evaluation report	-01/07/2021 -01/09/2021				content. -n.5 expert evaluators for the CS course. -n.9 expert evaluators for the RE course. -n.5 expert evaluators for the IoT course.		
--	--	---	----------------------------	--	--	--	--	--	--

Activities WP3	Target groups / potential beneficiaries	Deliverable/ Results / Outcomes	Real delivery	Info	Level of satisfaction	Corrective Actions (if needed)	Quantitative indicators	Qualitative indicators	Status
WP3/3.1 Development of capacity building plan	Teaching staff, students, trainees	-D3.1 Development of a Capacity Building Plan	06/11/2020	<a href="#">IREEDER D3.1 Development of a Capacity Building Plan (Final).pdf</a>	Very satisfactory	N/A	-n.1 Development of a Capacity Building Plan	The IREEDER capacity development plan includes the project capacity development concept, the implementation structure, the monitoring and evaluation framework and the implementation process.	Achieved
WP3/3.2 Identification of laboratories equipment	Teaching staff, students, trainees	-D3.2 Identification of General Equipment of Laboratories report	14/6/2020	<a href="#">IREEDER D3.2</a>	Very satisfactory	Anticipated as suggested by the National Officer. The second task in	-n.1 List of equipment for the IoT lab. -n.1 List of equipment for the CS lab	This report includes all information concerning the three laboratories and a detailed description of the devices.	Achieved





				<a href="#">Identification of general equipment of laboratories.pdf</a>		this work package consists in the purchase of the equipment and its installation. The latter activity was greatly affected by the pandemic. As a result, the documents for the public announcements were prepared late.	-n.1 List of equipment for the RE lab. -n.1 List of equipment for Remote Access. -n.1 Equipment approved by EACEA. -n.1 Official communication for the approval of the equipment.		
WP3/3.3 Holding training workshops in EU	Stakeholders in academic institutions (students, professors, researchers...)	-D3.3 Training workshops in EU and training reports	IoT training workshop at UCLAN: 17-28/6/2021  CS training workshop at UVigo: 20-30/9/2021  RE training workshop at Patras: 22-26/11/2021	<a href="#">IREEDER D3.3 Training workshops in EU and training reports.pdf</a>	Very satisfactory	-The IoT workshop training was organised virtually due to the restrictions caused by Covid 19. -The CS workshop training was organised virtually due to the restrictions caused by Covid 19.	-IoT training: Trainees: 17; Instructors: 7 -CS training: Trainees: 20; Instructors: 8 -RE training: Trainees: 19; Instructors: 8 - Recorded videos of all training sessions for IoT training and CS training	-The IoT training presented, discussed and evaluated the main technological components of IoT, as well as the most important technological applications. The training aimed to teach how to design, code and build IoT solutions. -The CS training aimed to introduce the fundamental concepts of CS. The training aims to teach the most important techniques for maximising computer and network security and to teach the design of secure applications. -The aim of the ER training was to present the main principles and architectures of ER systems. The most important technological components of ER systems were presented and technological applications were reviewed.	Achieved
WP3/3.4 Holding	Jordanian faculty members, students,	D3.4. Training workshops in Jordan	- IoT training workshop at	<a href="#">IREEDER</a>	Very satisfactory	N/A	IoT training workshop: -Total Trainees: 13	-During the IoT training workshop, the main technological components of IoT as well as	Achieved



training workshops in Jordan.	trainees, technical staff	and training report	AHU: 14-15/2/2022 - CS training workshop at TTU: 2-3/3/2022 - RE training workshop at MU: 22-23/2/2022	<a href="#">R_D3.4 Training Workshops in Jordan.pdf</a>			-Female trainees: 3 CS training workshop: -Total Trainees: 14 -Female trainees: 8 -RE training: Trainees: 13 -Female trainees: 3	the most important technological applications were presented, discussed and evaluated. This training workshop aimed to teach how to design, code and build IoT solutions. -During the CS training workshop, the fundamental concepts of CS were presented. The course aimed to teach the most important techniques to maximise the security of computers and networks and to teach the design of secure applications. -The RE training workshop aimed to present the main principles and architectures of RE systems. The most important technological components of RE systems were presented and technological applications were reviewed.	
-------------------------------	---------------------------	---------------------	---	---	--	--	---	--	--

Activities WP4	Target groups / potential beneficiaries	Deliverable/ Results / Outcomes	Real delivery	Info	Level of satisfaction	Corrective Actions (if needed)	Quantitative indicators	Qualitative indicators	Status
WP4 Quality Assurance	Teaching staff, students, trainees	-Quality Assurance Plan	16/06/2020	<a href="#">WP4 IREEDER Quality Assurance Plan.pdf</a>	Very satisfactory	The QMC decided to include a risk management plan	-n.1 Quality Assurance Plan	This document provides the Quality Assurance Plan (QAP) for the IREEDER project. In order to ensure the success of this QAP, all project partners perform their tasks effectively to achieve the intended results and create an impact in Jordan. In this sense, this document reflects the commitment of the partners of the IREEDER project with the quality of all the results.	Achieved



WP4/4.1 The first annual quality-assurance report	Teaching staff, students, trainees	-D4.1 The first annual quality report assurance	15/11/2020	<a href="#">D4.1 The first annual quality assurance report final version.pdf</a>	Very satisfactory	N/A	-n.1 The first annual quality report assurance	The report provides specific information on the results of each work package and task, during the implementation of the project, taking into account qualitative and quantitative indicators to assess the level of success. The first report was prepared by the QMC and delivered on 15 November 2020.	Achieved
WP4/4.2 The second annual quality-assurance report	Teaching staff, students, trainees	-D4.2 The second annual quality assurance report	15/11/2021	<a href="#">IREEDER D4.2 The second annual quality</a>	Very satisfactory	N/A	-n.1 The second annual quality report assurance	The second annual quality assurance report assessed the progress of the IREEDER project, in particular the activities to achieve the project objectives. The second report was prepared by the QMC and delivered on 15 November 2021. This report provides information on the overall implementation of the project activities, as well as on the development and implementation of the curricula.	Achieved

				<a href="#">y- assur ance report _Ann exes.p df</a>					
WP4/4.3 The third annual quality- assurance report	Teaching staff, students, trainees	-D4.3 The third annual quality assurance report	14/11/2022			N/A	-n.1 The third annual quality report assurance	The third annual quality assurance report assessed the progress of the IREEDER project, in particular the activities done to achieve the project objectives and implemented in the last year. The report was prepared by the QMC and delivered according to schedule on the 14th of November 2022. This report provides information on the overall implementation of the project activities with a focus on the training and dissemination workshops carried out in Jordan in the last year of the project.	Achieved
WP4/4.4 The mid-term evaluation report (External evaluator)	Teaching staff, students, trainees	-D4.4 The mid term evaluation report (External evaluator)	17/05/2021	<a href="#">IREEDER - Second External Quality Report</a>	Very satisfactory	The public announcement for the selection of the External Evaluator was published in November 2020. The delay is justified by the necessity to find a person with proven experience in the management and evaluation of European projects and also competences in the three topics of IREEDER (IoT, CS and RE). Contract was signed in March 2021. For this reason the Task is affected by a delay of 8 months. The implementation of this task has	-FIRST MONITORING REPORT Reporting Period: 15/11/2019 – 14/05/2021 -SECOND MONITORING REPORT Reporting Period: 15/05/2021 – 14/11/2021 -FIRST EXTERNAL QUALITY REPORT Reporting Period: 15/11/2019 – 14/05/2021 -SECOND EXTERNAL QUALITY REPORT Reporting Period: 15/11/2019 – 14/11/2021	The <i>FIRST MONITORING REPORT</i> is the result of the monitoring activity conducted in the framework of IREEDER Project during the period from November 15th, 2019, to May 14th, 2021. It was elaborated following the objectives and the tools as stated in the External Evaluation Plan. The <i>SECOND MONITORING REPORT</i> refers to the period from May 15th, 2021, to November 14th, 2021. It was drawn up following the methodology reported in the External Evaluation Plan and asking the support of the WPs leaders. The main goal of the document is to provide an updating about the activities delivered during the mentioned period. The aim of the <i>FIRST EXTERNAL QUALITY REPORT</i> was to	Achieved



				<a href="#">Final REEDER - First External Quality Report.docx</a>	<p>been delayed due to the delay in the recruitment process of the external evaluator. This has resulted in a delay of two months in the production and delivery of the external evaluator's report (DEV 4.4). The mid-term assurance report prepared by the external evaluator was planned for 15-4-2021, but due to the delay in the hiring process of the external evaluator, the delivery of the report has been delayed to 30-5-2021.</p>		<p>develop a questionnaire whose main objective was to investigate the quality of the implementation of the IREEDER project with reference to the EACEA evaluation criteria and the capacity building action. The period analysed was from 15 November 2019 to 14 May 2021. The questions refer to project relevance, project implementation, management, impacts, internal communication and dissemination of project activities and results. IREEDER members were invited to respond carefully and to provide specific comments in the open areas in order to improve the quality of the project and to put the Steering Committee and the Scientific Supervising Committee in a position to act on all appropriate strategies and re-channels to close the project in a positive and successful way.</p> <p>The <i>SECOND EXTERNAL QUALITY REPORT</i> aims at investigating the quality of the project implementation. Face to face bilateral interviews were carried out during the training session at the University of Patras, organised from 22nd to 26th of November 2021. The WP leaders and the contact persons participating in the training session constituted the target groups. In addition, questions on the attention of the consortium to transversal issues like gender balance, sustainable development, unemployment, social cohesion and on the involvement of people with fewer opportunities have also been submitted to the interviewees. The report includes a summary of the answers, the problems that come to light and some possible suggestions to improve the quality of the actions.</p>	
WP4/4.5 The final evaluation report (External)	Teaching staff, students, trainees	-D4.5 The final evaluation report (External)	14/11/2022					

evaluator)		evaluator)							
------------	--	------------	--	--	--	--	--	--	--

Activities WP5	Target groups / potential beneficiaries	Deliverable/ Results / Outcomes	Real delivery	Info	Level of satisfaction	Corrective Actions (if needed)	Quantitative indicators	Qualitative indicators	Status
WP5/5.1 Elaboration of the sustainability plan	Teaching staff, trainees	-Sustainability Plan	11/01/2022	<a href="#">IREEDER D5.1 Sustainability Plan.pdf</a>	Very satisfactory	N/A	-n.1 The Sustainability Plan	This document describes the strategy that will support the sustainability of the outcomes of the IREEDER project after its lifetime. It includes information on the project outcomes and conditions, recommendations and guidelines for using the developed project products, thus providing all interested individuals and institutions (including further actors not directly involved in the project) with a solid overview on the products available for them for further usage and the ways they could be used.	Achieved
WP5/5.2 Students training	Training Workshops at Partners (students). Teaching staff, students, trainees	-RE Training Workshop at TTU - RE Training Workshop at AHU - RE Training Workshop at PU - RE Training Workshop at MU - RE Training Workshop at IU - IoT Training Workshop at PU - IoT Training Workshop at MU - IoT Training Workshop at AHU - IoT Training Workshop at IU - CStraining Workshop at TTU - CStraining Workshop at PU	23/05/2022 20/07/2022 02/08/2022 17/08/2022 18/09/2022 01/08/2022 16/08/2022 05/09/2022 19/09/2022 06/06/2022 03/08/2022	<a href="#">IREEDER D5.2 STUDENTS TRAINING v3.0.docx</a>	Very satisfactory	N/A	-RE Training Workshop at TTU: Total trainees= 32; Female trainees=6; Trainers= 2; Organizers=1 -RE Training Workshop at AHU: Total trainees= 34; Trainers= 2; Organizers=1 -RE Training Workshop at PU: Total trainees= 15; Trainers= 3; Organizers=2 -RE Training Workshop at MU: Total trainees= 12; Female trainees=4;	The developed materials were delivered to Jordanian universities. All Jordanian partners have concluded the accreditation stage of a set of courses in the three core areas of IREEDER: Renewable Energy, Cybersecurity and Internet of Things. In addition, students carried out experimental activities with the help of laboratories at three Jordanian universities, as well as virtual	Achieved

		- CStraining Workshop at MU - CStraining Workshop at IU	15/08/2022 20/09/2022				Trainers= 2; Organizers=1 -RE Training Workshop at IU: Total trainees= 9; Female trainees=3; Trainers= 2; Organizers=1 -IoT Training Workshop at PU: Total trainees= 32; Trainers= 2; Organizers=2 -IoT Training Workshop at MU: Total trainees= 29; Female trainees=3; Trainers= 2; Organizers=1 -IoT Training Workshop at AHU: Total trainees= 21; Female trainees=8; Trainers= 2; Organizers=1 -IoT Training Workshop at IU: Total trainees= 9; Female trainees=3; Trainers= 2; Organizers=1 -CStraining Workshop at TTU: Total trainees= 21; Female trainees=12; Trainers= 1; Organizers=1 -CStraining Workshop at PU: Total trainees= 12; Trainers= 3; Organizers=2 -CStraining Workshop at MU: Total trainees= 15; Female trainees=8; Trainers= 2; Organizers=1 -CStraining Workshop at IU: Total trainees= 9; Female trainees=3; Trainers= 1; Organizers=1	laboratories. A total of 13 student training workshops have been conducted in the Jordanian universities: -five on Renewable Energy (at TTU, AHU, MU and PU); -four on Internet of Things (at AHU, MU, PU and IU); -four on Cyber Security (at TTU, MY, PU and IU). The courses took place between May and September 2022 and were attended by 250 student trainees, 50 of which were female.	
Training workshops Outside Partners. Teaching staff, students, trainees	-RE Training Workshop (MVC-Maan) -RE Training Workshop (JEA-Tafila) -RE Training Workshop (JEA-Maan) -RE Training Workshop	07/12/2021 04/09/2022 05/09/2022 17/09/2022		Very satisfactory	N/A	-RE Training Workshop MVC-Maan: Total trainees= 12; Female trainees=1 -RE Training Workshop JEA-Tafila: Total trainees= 17; Female trainees=3; Trainers= 3; Organizers=2; -RE Training Workshop JEA-Maan: Total trainees= 58; Female trainees=22;	A total of 10 training workshops outside partners have been conducted in Jordan: -Six on Renewable Energy (MVC-Maan, JEA-Tafila, JEA-MAAN, JEA- Karak, JEA-Amman and JEA-Aqaba); -Two on Internet of Things (JEA-Aqaba	Achieved	

		(JEA-Karak) -RE Training Workshop (JEA-Amman) -RE Training Workshop (JEA-Aqaba) -IoT Training Workshop (JEA-Aqaba) -IoT Training Workshop (JEA Maan) -CS Training Workshop (JEA Maan) -CS Training Workshop (JEA-Aqaba)	15/10/2022 29/09/2022 28/09/2022 08/09/2022 15/09/2022 27/09/2022				Trainers= 3; Organizers=1; -RE Training Workshop JEA-Karak: Total trainees= 81; Female trainees=18; Trainers= 3; Organizers=2; -RE Training Workshop JEA-Amman: Total trainees= 71; Female trainees=23; Trainers= 3; Organizers=1; -RE Training Workshop JEA-Aqaba: Total trainees= 43; Female trainees=28; Trainers= 3; Organizers=2; -IoT Training Workshop - JEA-Aqaba: Total trainees= 38; Female trainees=21; Trainers= 4; Organizers=2; -IoT Training Workshop JEA -Maan: Total trainees= 41; Female trainees=21; Trainers= 4; Organizers=1; -CS Training Workshop JEA -Maan: Total trainees= 45; Female trainees=8; Trainers= 3; Organizers=1; -CS Training Workshop JEA-Aqaba: Total trainees= 42; Female trainees=23; Trainers= 3; Organizers=2;	and JEA-Maan) -Two on Cyber Security (JEA-Maan and JEA-Aqaba). The courses took place between December 2021 and October 2022 and were attended by 448 student trainees, 168 of which were female.	
		-D5.2 Students Training Report	14/11/2022		Very satisfactory	N/A	-n.1 The students training report	This report details the training activities carried out under the IREEDER project. In addition, it provides information on the accreditation of the courses developed in Jordanian universities and the implementation of these courses. It also focuses on the laboratories established in Jordanian universities that support the establishment of the courses and other training activities carried out by the Jordanian IREEDER partners, including workshops organised with the Jordanian Engineers	





								Association. This document also includes future plans, including Memoranda of Understanding established between Jordanian and European partners.
WP5/5.3 Setting up E-learning modules	Teaching staff, students, trainees	The IREEDER project has developed three e-learning modules for the developed teaching materials within the framework of the project. The modules have been built based on Google Classroom platform.	15/07/2022	<a href="#">IREEDER D5.3 E-Learning Modules.pdf</a>	Very satisfactory	N/A		
WP5/5.4 Commencing final year graduation projects	Teaching staff, students, trainees	A total of 62 final year graduation projects conducted in the scope of the IREEDER project have been reported by Jordanian partners. 21 projects at Philadelphia University 15 projects at Isra University 11 projects at Mutah University 10 projects at Al-Hussein Bin Talal University 5 projects at Tafila Technical University	14/11/2022	<a href="#">IREEDER D5.4 FINALY EARGR ADUATION PROJECTS V01.docx</a>	Very satisfactory	N/A		

Activities WP6	Target groups / potential beneficiaries	Deliverable/ Results / Outcomes	Real delivery	Info	Level of satisfaction	Corrective Actions (if needed)	Quantitative indicators	Qualitative indicators	Status
WP6/6.1 Development of dissemination plan	Students of electrical engineering and related programme, Academic staff, Industrial partners and companies working the field of RE, CS and IoT, Industries and companies working in other fields, Agricultural Institutions and Society in general.	-D6.1 Dissemination Plan	15/01/2021	<a href="#">D6.1. Dissemination Plan.pdf</a>	Very satisfactory	As a result of a recommendation from the National Erasmus Office during a monitoring visit in September 2020, the Dissemination plan has been shifted earlier. The dissemination plan was supposed to be given on June 15, 2021, however it was actually provided on January 15, 2021.	IREEDER Dissemination Plan (D6.1) has been finalised by MU with the help and contributions from all partners. It includes the dissemination activities which will be carried out by the project partners in order to ensure the effective promotion and exploitation of the project results. The approved final version is uploaded on the project website. The Dissemination Plan is focused on the strategies and tools for the external communication, towards stakeholders and final beneficiaries. The document includes the dissemination goals and objectives, the roles of the partners, target groups and stakeholders, a list of the dissemination tools (website, social network, newsletter, events, etc.). IREEDER stakeholders have been identified in n. 6 categories: 1) Students of electrical engineering and related programmes, 2) Academic staff, 3) Industrial partners and companies working in the field of RE, CS and Io, 4) Industries and companies working in other fields, 5) Agricultural Institutions and 6) society in general. For this purpose a stakeholders Contact list has been elaborated. The Mailing list saved in the repository counts n. 90 contacts.	The Dissemination Plan outlines the activities which will be carried out in order to assure the promotion and exploitation of project results. Following the recommendation of the National Erasmus Officer, the elaboration of the Dissemination Plan was shifted earlier. The document was finalised on January 15th, 2021, instead of June 15th, 2021 (five months before the planned deadline). This decision has allowed us to implement a communication strategy and to elaborate the communication tools from the beginning of the project, supporting its local impact.	Achieved
WP6/6.2 Communication plan and promotion materials	Students of electrical engineering and related programme,	-n.1 logo -n.1 brochure of IREEDER project (English and Arabic)	30-11-2019 15-1-2020 15-12-2020	<a href="#">IREEDER Newsletter</a>	Very satisfactory	Due to the current COVID19 pandemic situation, all project brochures, newsletter are issued in digital versions (in	-Online IREEDER Introductory Lectures were held at different Jordanian partners: n.1-IREEDER Introductory Lecture -IU 15 March 2021 n.1-IREEDER Introductory Lecture -TTU on 17	Once approved the dissemination plan, the consortium has worked in the elaboration of the promotional materials. The	Achieved



	<p>Academic staff, Industrial partners and companies working the field of RE, CS and IoT, Industries and companies working in other fields, Agricultural Institutions and Society in general.</p>	<p>-n.1 IREEDER promotional video (English and Arabic) -First IREEDER Newsletter -Second IREEDER Newsletter -Third IREEDER Newsletter -Fourth IREEDER Newsletter -Fifth IREEDER Newsletter -Sixth IREEDER Newsletter -n.4 IREEDER Introductory Lectures -n.1 IREEDER official website - n-1 IREEDER facebook - n-1 IREEDER LinkedIn -n.1 IREEDER YouTube channel</p>	<p>01/07/2020 02/10/2020 01/06/2021 15/12/2021 05/06/2022 01/11/2022</p>	<p><a href="#">er Iss ue 1(ENGLIS H).pdf IREEDER Ne wslett er Iss ue 2(ENGLIS H).pdf IREEDER Ne wslett er Iss ue 3(ENGLIS H).pdf IREEDER Ne wslett er Iss ue 4 (ENGLI</a></p>		<p>a PDF file format) and available on the official project website.</p>	<p>March 2021 n.1 IREEDER Introductory Lecture -MU on 25 March 2021 n.1-IREEDER Introductory Lecture -PU on 8 April 2021 -IREEDER RE lab opening ceremony 6 July 2021 at MU -IREEDER IoT lab opening Ceremony 3 January 2022 at AHU -Remote Access lab opening ceremony on 24 March 2022 -Dissemination workshop at IU on 13 January 2022 -Dissemination workshop at PU on 1 July 2022 -n.6-bi-annual newsletters were developed and distributed among partners, social media.</p>	<p>official website of the IREEDER project is online. During the life of the project, the Consortium has carried out the following promotional activities: live radio interviews, production of a promotional video, online introductory lectures in Jordanian universities. Specific pages on two social media sites, Facebook and LinkedIn, have been opened. The official logo was designed from the beginning of the project and has been used in all official and public communication. A live radio interview was held at Saout aljanoub radio station. Six newsletters have been elaborated. A YouTube channel has been created and continuously updated with videos relevant to the IREEDER project.</p>	
--	---	--	--	---	--	--	--	--	--



				<a href="#">SH).pdf</a> <a href="#">f</a> <a href="#">IREEDE</a> <a href="#">R Ne</a> <a href="#">wslett</a> <a href="#">er Iss</a> <a href="#">ue 5(E</a> <a href="#">nglish)</a> <a href="#">.pdf</a> <a href="#">IREEDE</a> <a href="#">R Ne</a> <a href="#">wslett</a> <a href="#">er Iss</a> <a href="#">ue 6(E</a> <a href="#">nglish)</a> <a href="#">.pdf</a>					
WP6/6.3 Holding the first dissemination workshop	Students of electrical engineering and related programme, Academic staff, Industrial partners and companies working the field of RE, CS and IoT,	-n. 1 dissemination Workshop held at PU -n. 1 agenda -n. 1 list of registered attendees	1 01/06/2022	<a href="#">IREEDE</a> <a href="#">R</a> <a href="#">Disse</a> <a href="#">minati</a> <a href="#">on</a> <a href="#">Works</a> <a href="#">hop at</a>	Very satisfactory	N/A	126 participants		Achieved



	<p>Industries and companies working in other fields, Agricultural Institutions and Society in general.</p>			<p><a href="#">PU_1 June 2022 1...v2.pdf Attendance sheet Dissemination PU_1 June 2022 2.pdf</a></p>					
--	--	--	--	--	--	--	--	--	--



WP6/6.4 Holding the second dissemination workshop	Students of electrical engineering and related programme, Academic staff, Industrial partners and companies working the field of RE, CS and IoT, Industries and companies working in other fields, Agricultural Institutions and Society in general.	n. 1 dissemination Workshop held at MU n. 1 agenda n. 1 list of registered attendees	05/10/2022	<a href="#">IREEDER Dissemination Workshop at MU 5 Oct 2022.pdf</a>	Very satisfactory	N/A			Achieved
--	--	--	------------	---	-------------------	-----	--	--	----------

Activities WP7	Target groups / potential beneficiaries	Deliverable/ Results / Outcomes	Real delivery	Info	Level of satisfaction	Corrective Actions (if needed)	Quantitative indicators	Qualitative indicators	Status
WP7/7.1 IREEDER plenary meetings	All the project partners	kick-off meeting -Meeting agenda -Plenary meeting minutes	03-04/02/2020	<a href="#">Kickoff Meeting Agenda .pdf D1.1 Kickoff</a>	Very satisfactory	The kick-off meeting was delayed to early February 2020 due to the recommendation of the national Erasmus office.	3/2/2020: 29 participants 4/2/2020: 23 participants	AHU has managed all project activities since the beginning of the project. To date, the coordinator has organised 6 plenary meetings to discuss project activities, future work plans and ensure the delivery of project outputs on time and to an acceptable quality. AHU as a coordinating institution of the IREEDER project has been in contact with	Achieved



				<a href="#">Meeting Minutes.pdf</a>					the project partner and the project officer (EACEA) to update both sides about necessary actions, comments and milestones. AHU has signed the project agreement and transferred all the programme regulations and rules that must be followed in managing the grant.	
		Second IREEDER Plenary Meeting -Meeting agenda -Plenary meeting minutes	09/09/2020	<a href="#">2nd MEETING AGENDA.pdf</a> <a href="#">iREEDER 2nd Plenary Meeting Minutes Final Version.pdf</a>	Very satisfactory	The second, third and fourth plenary meetings have been held virtually due to travel restrictions caused by the COVID-19 pandemic.	23 participants			Achieved
		Third IREEDER Plenary Meeting -Meeting agenda -Plenary meeting minutes	25/02/2021	<a href="#">3rd MEETING AGENDA.pdf</a> <a href="#">The Third</a>	Very satisfactory		27 participants			Achieved



				<a href="#">IREEDER Plenary Meeting Minutes.pdf</a>					
		Fourth IREEDER Plenary Meeting -Meeting agenda -Plenary meeting minutes	29/7/2021	<a href="#">IREEDER Fourth Plenary Meeting Agenda.pdf</a> <a href="#">IREEDER 4th Meeting Minutes Final.pdf</a>	Very satisfactory		29 participants		Achieved
		Fifth IREEDER Plenary Meeting -Meeting agenda -Plenary meeting minutes	29-30/03/2022	<a href="#">IREEDER 5th Meeting Agenda.pdf</a> <a href="#">IREEDER</a>	Very satisfactory	N/A	27 participants		Achieved





				<a href="#">5th Meeting Minutes final.pdf</a>					
		Sixth IREEDER Plenary Meeting -Meeting agenda -Plenary meeting minutes	3-4/10/2022	<a href="#">6th MEETING AGENDA .pdf</a>	Very satisfactory	N/A			Achieved
WP7/7.2 IREEDER website and communication platform	Teaching staff, students, trainees, technical staff	-IREEDER website - Communication platform	15/12/2019	<a href="#">IREEDER Website Communication platform</a>	Very satisfactory	N/A		The project website was created in the first month of the project and is regularly updated to announce project results, activities and events. All deliverables and achievements of the project are stored in the Communication Platform created for IREEDER partners.	Achieved
WP7/7.3 Financial auditing	Administrative staff	Financial auditing report	14/11/2022						

## 6. Observations and Recommendations

The partnership has successfully implemented the activities of the planned work packages with a high degree of accuracy and quality in the results produced. All the WPs reached the intended objectives, and their quality was verified through different methods.

Under WP1, the partnership has identified the training and teaching needs of the Jordanian Partners by the means of 3 different surveys collecting information about the 3 topics chosen by the project (Internet of Things, Cyber Security and Renewable Energy) and by addressing students, academic staff and industry.

WP2 was finalised with success by producing the teaching materials, from the description of the courses to the lecture notes and the teaching slides for the three courses on Renewable Energy, Internet of Things and Cyber Security. The teaching material was subjected to a final revision by peers, and handed over to the partner institutions.

WP3 was totally implemented. The Capacity Building plan offers a clear structure and guidelines on how to attain the transfer and reinforcement of capacities in the framework of the project and beyond. The main objective of WP3 was to develop local competences of trainers and students in IoT, CS and RE. To this end, three different training workshops were organised in European universities, three new laboratories were installed to integrate the theoretical approach with practical experiences and three other training workshops were held in Jordan for local stakeholders and final beneficiaries (students and teaching staff).

Regarding the WP4, the partnership has established important Quality Assurance measures described in an exhaustive plan. The activities carried out provide a significant guarantee of monitoring and control of the different phases of implementation.

WP5 includes the creation of an e-learning module to provide electronic access to all learning materials. A long-term objective foresees that the developed subjects will become self-sustaining after the EU funding phase and trigger further multiplier effects in the educational, economic and social development environment. A concrete step towards achieving this objective was the accreditation of the courses developed in each of the Jordanian academic partners. The different final projects were carried out in different departments of the participating Jordanian institutions, covering a wide range of engineering areas, from Electrical Engineering to Cybersecurity, Mechatronics, Data Science and Artificial Intelligence and Computer Science and Software Engineering, among others. The projects were carried out in the departments of Electrical Engineering, Renewable Energy Engineering and Electrical Engineering and Communications and Electronics. A total of 62 final year graduation projects conducted in the scope of the IREEDER project have been reported by Jordanian partners. From the 62 reported projects, 28 were conducted in the topic of Renewable Energy (RE), 26 were related to the topic of Internet of Things (IoT), while the remaining 8 were in the field of Cybersecurity.

The Dissemination plan contains relevant information related to the dissemination strategy, the tools that were deployed and the targeted groups and stakeholders that should be reached out to. To complete this WP6, many activities were organised, and stakeholders were invited along with companies, ministries, and media. These activities consisted of seminars, reports for distribution, a website to disseminate the results

	 <p>Co-funded by the Erasmus+ Programme of the European Union</p>	<p>Ref. No.: IREEDER-D4.3 Date: November 14th, 2022 Final version</p>
---	--	---

of IREEDER, newsletters, brochures, and posters to be distributed to all stakeholders. In addition, publicity brochures were printed and distributed to partner universities to attract students to the new subjects. Two main dissemination workshops were held at PU and at MU. In addition to project partners and associates, all Jordanian universities and interested companies were invited to the workshops and are expected to adopt the project results. After the end of the IREEDER project, annual local dissemination workshops will be held in each Jordanian partner to raise progress awareness and encourage student participation in the training activities that will take place in the established laboratories. EU partners will also disseminate the IREEDER results at local dissemination events in their countries.

Regarding WP7, AHU has managed all project activities since the beginning of the project. AHU has organised six plenary meetings to discuss project activities, work plans and ensure the delivery of project outputs on time and to an acceptable quality. AHU as a coordinating institution of the IREEDER project has been in contact with the project partner and the project officer (EACEA) to update both sides about necessary actions, comments and milestones. AHU has signed the project agreement and transferred all the programme regulations and rules that must be followed in managing the grant. In addition, the project website was created in the first month of the project and is regularly updated to announce project results, activities and events. All deliverables and achievements of the project are stored in the Communication Platform created for IREEDER partners.

There have been some small deviations, mainly due to the consequences of COVID 19, but in general all deliverables have been delivered on time as proposed and to a high quality.