

ERASMUS + KA2 – Cooperation for innovation and the exchange of good practices – Strategic Partnerships



**INTELLECTUAL OUTPUT 3:
LEARNING PLATFORM
IO3/A1- Functional and non-functional specifications**

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1. INTRODUCTION

1.1. *THE PROJECT*

ENSEC arises from a Strategic Partnership composed by higher education and business institutions that will actively cooperate among them and key stakeholders (enterprises, regional bodies and other HE/VET institutions) for the development of an International Master Degree for the Environmental Security Sector, which will offer an adapted curriculum to equip the young generation with the specific, basic and transversal competences currently required in the planning, climate change mitigation and vested industries. This international Master Degree Modules Programme is in line with the targets identified at the 2011 EU modernisation agenda. The developed curriculum attuned to current labour market needs to the modern society will provide opportunities for students to gain additional skills through study and training abroad and this will attract people into Higher Education. This Strategic Partnership has previous experience of collaborating together. It is formed of eight entities; four universities, three SMEs and one social partner-Chamber of Commerce. All partners in the consortium are located in regions which are highly influenced by the climate change and are actively involved in research and innovation initiatives, which will strengthen the links between education, research and business to promote excellence and regional development.

This initiative complies with one of the principal aims in the Erasmus+ program: Promoting synergies and cross fertilization throughout the different fields of education, training and youth, removing artificial boundaries between the various actions and projects formats, fostering new ideas, such as a sectoral multi campus, promoting cross border cooperation by attracting new actors from the world of work to collaborate with universities and VET, but above all, with the target of stimulating new forms of cooperation.

As a first approach, this Strategic Partnership has focused the Masters modules content in those relevant and high-level basic and transversal competences required in the sectors that environmental changes have a major impact. This includes planning (having strong emphasis on ecodesign), resources management and green materials as well as processes and technologies in the tourism and banking sector. The second approach to this Masters Degree will also address those basic and transversal competences needed in these sectors: Ecoinnovation, innovation, business continuity, technical surveillance, industrial property, competences in foreign languages and Information and Communication Technology (ICT) tools.

ENSEC's approach aims to recognise and validate the competences and skills acquired by making use of the ECTS instrument and National Qualification Frameworks of the participant countries. These will equip future and current youth workers from these traditional sectors with all skills and competences currently needed to deliver high quality products and services to boost competitiveness of the EU security sector with main emphasis on environment.

The duration of the project is 30 months (November, 2017 – May, 2020) and is comprised of:



- Project Management and Implementation
- Transnational Project Meetings
- Multiplier Events
- Activities for the development of the defined “Intellectual Outputs”

The Quality Assurance and Risk Management - Activity 3 - develops a quality plan aiming at providing a common quality baseline for every activity for every partner in the consortium, involving a close monitoring of each activity, book recording and registration of ENSEC’s activities and responsibilities.

This Quality Plan is to be signed and adopted by each partner at the beginning of the project and starts with the adoption of the quality assurance mechanisms in line with both good EU practices and procedures. It will design the common criteria for educational contents between all consortium partners.

The activity objectives are:

- To monitor and evaluate the quality of project’s activities and results.
- To handle project risks and appropriate mitigation/contingency.

1.2. AIM OF THE INTELLECTUAL OUTPUT

The Intellectual Output 3 consisted in the creation of a learning Platform (Activity Type: Learning, teaching, training, youth work materials and methods, pedagogical approaches and tools). The prototype of the e-learning platform was already developed by EVM, it comes from a free online training platform based on a free software tool called CHAMILO. This is an open-source (under GNU/GPL licensing) e-learning and content management system, aimed at improving access to education and knowledge globally. It is backed up by the Chamilo Association, which has goals including the promotion of the software, the maintenance of a clear communication channel and the building of a network of service providers and software contributors.

The Chamilo project aims to improve the availability and quality of education at a reduced cost, through the distribution of its software free of charge, the improvement of its interface for 3rd world countries devices portability [*] and the provision of a free access public elearning campus. EVM has been working with Chamilo for two years and the platform functions effectively, although EVM uses the on-line platform for small training provision (EVM normally uses the platform for trainings activities of between 15 to 45 hours). Due to other initiatives such as the teaching master degree adequate for the online campus of the proposed international master degree. The platform fits the requirements and it will only be necessary to make minor changes. These have been identified in the contingency plan in case we do not consider this platform suitable for certain circumstances (See section above). If this case arises, other platforms such as Moodle, Dokeos, Claroline, Sakai, etc. will be considered as a mitigation plan.



After the adaptation process, the e-learning platform shall be able to integrate the findings and outcomes from OI4, namely, the developed learning modules. The platform information will be available in all partners' languages in which the master degree will be implemented.

The objectives that will be accomplished with the IO3 are:

- To obtain an e-learning platform
- To define platform specifications.
- Architectural adjustment of the platform.
- Customisation of the contents.
- Testing and improving the platform.
- To release the pilot platform.

The most important work will be executed while preparing functional and non-functional specifications (O3-A1). EVM will start preparing the guidelines (O3-A4) once specifications are elaborated and they will be completed at the early stages of the content integration (O3- A2) and the test release and training improvement. If needed, O3-A4 will be extended. O3-A1 Elaboration of functional and non-functional specifications. Leader: EVM, 8 Months. Based on the design and development of the training path and learning contents, O2, EVM with BNU help, will start with the adaptation of the identified needs to its platform.

This task will comprise the architectural adaptation for the customisation of the OSS platform of choice (Chamilo). Any identified third party components (connectors, services, interfaces to social media, etc.) that will be plugged into Chamilo to facilitate the final requirements will be given back to the community under a Creative Commons licence, so that others can use and extend freely, contributing thus also to the sustainability of the tools.

A testing release will be available for the partners in order to perform the internal testing. Then, following a testing cycle, improvements and corrections will be initiated for the preparation and delivery of the modules online by each partner responsible. This release will comprise all of the content, in all of the project languages.

1.3. AIM OF THE ANALYSIS

EVM, as leader of IO3, made an exhaustive analysis of several platforms during the proposal preparation and chose Chamilo platform, an open-source (under GNU/GPL licensing) e-learning and content management system, aimed at improving access to education and knowledge globally.

Once the project started, EVM decided to do a consultation among the partners in order to decide which platform will fit better the project: Moodle, Chamilo, Totara learn, Canvas or Open EdX. This analysis is a part of the IO3- A1: preparing functional and non-functional specifications.

After the analysis the partners decide that Moodle will fit better the needs of the platform.



The process of the analysis was:

- 1) Identify the objectives of the platform: integrate the results and findings from the modules
- 2) Identify several platforms
- 3) Identify the characteristics of each platform
- 4) Do the preliminary questions
- 5) Answer the questions
- 6) Final decision

2. ACTIVITIES DESCRIPTION

The main activities that were foreseen for this specific output are:

O3-A1 Elaboration of functional and non-functional specifications. Leader: EVM, 8 Months.

Based on the design and development of the training path and learning contents, O2, EVM with BNU help, will start with the adaptation of the identified needs to its platform. This task will comprise the architectural adaptation for the customisation of the OSS platform of choice (Chamilo). Any identified third party components (connectors, services, interfaces to social media, etc.) that will be plugged into Chamilo to facilitate the final requirements will be given back to the community under a Creative Commons licence, so that others can use and extend freely, contributing thus also to the sustainability of the tools.

A testing release will be available for the partners in order to perform the internal testing. Then, following a testing cycle, improvements and corrections will be initiated for the preparation and delivery of the modules online by each partner responsible. This release will comprise all of the content, in all of the project languages. EVM will be responsible for the proper execution of this activity. Although the more technical weight of this activity lies with EVM, BNU and the other partners will help EVM re-design the conceptual architecture and the functionalism for the online training platform. Later, when the platform has been tested, each partner, will translate the informative part of the on-line platform, which previously has been designed in English, into all consortium languages. BNU will review the English version.

O3-A2 Training Content Integration. Leader: UPM, 7 Months.

The final content objects will be uploaded to the platform and integrated into learning paths that will facilitate the training workflow by grouping the learning units comprising each module under a learning path. Each learning path will provide functionality for keeping scores and tracking progress and it will be possible for course administrators to define pass/ fail conditions depending on the overall score achieved per assessment or otherwise. The platform will also be compatible and fully



working on Smartphones and tablet systems. This step will comprise the necessary changes for the customisation of the e-learning platform. This task will be led by UPM with the help of EVM and UMA.

O3-A3 Test release and platform improvement Leader: UMA, 7 Months.

A testing release will be available for the partners in order to perform the internal testing. Then, following a testing cycle, improvements and corrections will be initiated for the preparation and delivery of the modules online by each partner responsible. This release will comprise all of the content in all of the project languages. Later, when the platform has been tested, each partner, will translate the on-line informative part of the platform, which have previously been designed in English, into all consortium languages. UMA will be responsible for the proper execution of this activity. Although the more technical weight of this activity lies with EVM, BNU will help re-design the conceptual architecture and the functionalism for the online training platform.

O3-A4 Guidelines on how to use e-Learning Platform. Leader: TUB, 5 Months..

The offline and online multilingual guidelines will be developed with methodology on how to use the e-Learning platform, as not all trainees will have the required knowledge of ICT skills. The offline guidelines will be developed by EVM in English although, every partner, will translate the guidelines into all of the consortium languages. BNU will review the English version.

3. SELECTING A PLATFORM

3.1. INITIAL REQUIREMENTS

The main requirement for the platform:

- Content integration
- Training sessions
- Intuitive platform
- Open source
- Accessible to European business and HE stakeholder

Partners decide to analyse several platform apart from CHAMILO in order to have a clear idea of what they wanted to accomplish.

That is the reason why EVM prepared a serie of questions in order to make sure all interested parties have thought about

- Size of the platform and the materials to upload



- Scope of the platform
- Purpose
- Ambition
- Budget

3.2 PRELIMINAR QUESTIONS

As a starting point, the partners had to think about the following questions:

What do we want to accomplish with our Learning Platform?

- Just hold Courses / Modules / MOOCs?
- Disseminate? Exploitation?
- Teach to small groups?
- Teach to large groups?
- Hold events for your staff or consortial members?
- Hold community-wide events?
- Start small with plans to expand into something bigger?
- We cannot choose a platform before having a clear idea of what we want to accomplish.
- Hold courses, meetings, have focus groups, talk to everyone you can talk to...

4. PLATFORM ANALYSIS

The main objective of this process is to analyse the characteristics of each of the pre-selected platforms in order to understand which one fits best the project aims.

Details of each platform and a comparative chart of other platforms can be found below:

Top Open-Source Learning Management Systems

Moodle: Moodle is widely known among open-source LMS solutions. It features detailed guides on how to set up your own Learning Management System, tips on how to create online training courses and teach with Moodle, as well as a large community of Moodle users who interact on various topics. Most importantly, it's entirely free of any charge and comes with a mobile application as well.



Chamilo: An open-source LMS, that is here to improve access to online training. Backed up by the Chamilo Association, aiming to promote the software, maintain a clear communication channel, and build a network of service providers and software contributors. Chamilo offers easy-to-use authoring tools for creating online training that meets all learning preferences.

Totara Learn: Totara Learn meets all the requirements related to your employees' roles, training needs and objectives through effective delivery of individual learning plans. It provides for rich functionality, which can be implemented quickly and with a significant cost reduction, comparing to proprietary solutions. This award-winning open-source learning platform is designed for helping you to develop, train, manage and engage your staff.

Canvas: An open-source LMS that is free for instructors. It makes teaching and learning easier in terms of implementation, adoption, customer support, and success. It is adaptable, reliable, and customizable. Designed to get out of your way, and let you do your thing. Its interface and features are crafted to save you time and effort, resulting in getting adopted faster and deeper than many other Learning Management Systems.

Open edX: The Open edX is a tool empowering learners to access online course content, including videos and textbooks, plus checking their progress in the online training course. The Open edX LMS also has a discussion forum and a wiki at your disposal, that both learners and course team members can contribute to. There is also a dashboard through which the online instructor can enroll online learners, produce reports, and administer an online training course as it runs.

	Free/Open Source	Free Users	eLearning Mgmt	Course Tracking	Certification & Compliance Mgmt	Course Catalog (aka Course Library)	Proficiency testing / reporting	Course Authoring (aka Content authoring)	Mobile Learning	Gamification	Extended Enterprise	Mobile Apps
ATUTOR	Open source	Free	Free	Open source	Open source	Open source	Free	Free	Open source	Free	Open source	Free
Coggnio Training. Simplified	Unlimited	Unlimited	Unlimited	Unlimited	Limited	Unlimited	Unlimited	100	50	100	Unlimited	N/A
COURSEsites	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓
forma.lms	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
LATITUDE LEARNING	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
mycourse	✓	✓	✓	✓	✓		✓		✓			✓
Sakai		✓		✓	✓	✓		✓	✓	✓	✓	
			✓		✓		✓		✓			✓



5. FINAL DECISION AND CONCLUSIONS

After a joint analysis of the project requirements and the available platforms, the consortium decided to use **MOODLE** for the completion of the project.

The specifications of the platform matched all of the project needs and has other interesting features that facilitated the work of partners and students:

- Open Educational Resource
- Modern interface
- Intuitive
- Known by the partners and future users
- Personalised dashboard, feature to track the progress
- Collaborative platform
- Multilingual capability
- Manage user roles and permissions
- Create learning paths
- Group management
- Peer and self assessment

O3-A2 TRAINING CONTENT INTEGRATION.

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1 Introduction

ENSEC project provides training for MSc and PhD students interested to improve their knowledge in the field of environmental security. The overall objective of the training course is to give students a broad presentation and, in some aspects, detailed knowledge of Environment Security topics, nowadays challenges and particular subjects related to the management of a rising threat to our planet.

The object of this document is to address O3-A2 TRAINING CONTENT INTEGRATION of ENSEC project.

The course title is: “**Environmental Security - ENSEC**”.

Total European Credit Transfer System credits awarded for Course: 90

Table 1 – ENSEC training course structure

Title	Method	Learning hours	Where
Environmental Security - ENSEC	e-learning	Private study: 120 hours, including up to 40 hours in completing e-modules.	https://ensec.web.uma.pt/

1.1 E-learning course

Course objectives: The major challenge concerns the global environmental change, focusing on the interactions between ecosystems and mankind, the effects of global environmental change on environmental degradation, the effects of increasing social request for resources, ecosystem services, and environmental goods. The relevant objects of environmental security are complex, adaptive systems with two main components – the social, characterized by human intent, and the ecological, rising without intent; these have interacted historically, and society strongly determines the landscape ecological components of such systems (Zurlini, Müller, 2008).

In the 10 presented Modules, we intend to give you a broad presentation and, in some aspects, detailed knowledge of Environment Security topics, nowadays challenges and particular subjects related to the management of a rising threat to our planet. Any person can register in ENSEC platform and attend any or all the Modules.

The objective for the e-learning module is to give students the basic concepts and skills in the field of environmental security.

Course content:

- (i) Introduction to Environmental Security
- (ii) Forest Fire Land Restoration
- (iii) Polluted Soil Restoration
- (iv) GIS and Environmental Management/Security
- (v) Climate Change and Waste Land Restoration
- (vi) Climate Change Mitigation and Adaptation Systems
- (vii) International Climate Change Governance
- (viii) Forests, Poverty and Environmental Security
- (ix) Research Methods
- (x) Introduction to Soft Skills

Table 2 provides an overview of the e-learning training in ENSEC.

Table 2 – Program and timetable 2017-2018 of “Ecosystem services innovation and entrepreneurship” (5 ECTS)

Course Title:	ENSEC				
Mode:					
Course Code:					
Total Credits available: 180	Total European Credit Transfer System credits awarded for Course: 90				
Module Title	Assessment Regime (%)				
	ETCS	Test Grid	Assignments	Case Studies	Examinatio
Introduction to Environmental Security	6	25	25	25	25
Forest Fire Land Restoration	6	25	25	25	25
Polluted Soil Restoration	6	25	25	25	25
GIS and Environmental Management/Security	6	25	25	25	25
Climate Change and Waste Land Restoration	6	25	25	25	25

Climate Change Mitigation and Adaptation Systems	6	25	25	25	25
International Climate Change Governance	6	25	25	25	25
Forests, Poverty and Environmental Security	6	25	25	25	25
Research Methods	6	25	25	25	25
Introduction to Soft Skills	6	-	50	25	25
Training	30	-	-	-	100
Thesis Dissertation	30	-	-	-	100

Module title	Learning outcomes: specific competences	Mode of delivery	E-lessons	Timetable	Developer
Introduction to Environmental Security	<p>Understanding of main environmental security issues;</p> <p>Ability to identify an environmental security hazards and conflicts;</p> <p>Understanding of history of Environmental Security;</p> <p>Capacity to conduct a resource efficiency assessment;</p> <p>Ability to understand the importance of Human Security and Gender security;</p> <p>Ability to understand the Policies in terms of Environmental Security</p>	Web-based training	<p>Unit 1: Environmental Security: Definition and importance</p> <p>Unit 2: Human Security, Environmental Security and Gender Security</p> <p>Unit 3: Environmental stress as a source of conflict</p> <p>Unit 4: Human dimension of Environmental Security (institutions, defence)</p>	1 week Monday 16/10 Friday 20/10	UPM-Spain
Forest Fire Land Restoration	<p>Understanding of forest fires;</p> <p>Understanding of land restoration after forest fires</p> <p>Ability to identify forest fire hazards and conflicts;</p> <p>Capacity to conduct a resource efficiency assessment;</p> <p>Ability to understand the importance of forest fire land restoration.</p>	Web-based training	<p>Unit 1. Postfire effects on ecosystems</p> <p>Unit 2. Postfire assessment. Fire effects information system</p> <p>Unit 3. Erosion control. Postfire restoration treatments</p>	1 week Monday 23/10 Friday 27/10	UPM - Spain

			Unit 4. Study cases. Postfire treatments effectiveness		
Polluted Soil Restoration	<p>Student has an overview about soil degradation and pollution in the world;</p> <p>Student is able to use different methods of polluted soils restoration;</p> <p>Student has a capacity to plan and conduct polluted soil restoration projects;</p> <p>Student has an ability to understand and use the concept of bioremediation in the context of environmental security.</p>	Web-based training	<p>Unit 1. Degradation and pollution of soils</p> <p>Unit 2. Remediation technologies for soils and groundwater</p> <p>Unit 3. Biological degradation</p> <p>Unit 4. Bioremediation</p> <p>Unit 5. Phytoremediation</p> <p>Unit 6. Metal removal</p>	1 week Monday 30/10 Friday 3/11	OÜ Eesti Metsakeskused – Estonia
GIS and Environmental Management/Security	<p>To apply basic principles of Geographic Information Systems in problems that arise in environmental management and security</p> <p>To be able to use Geographic Information Systems procedures and modules in dealing with maps</p> <p>To understand basic principles of cartography, to be able to combine science, aesthetics, and GIS</p>	Web-based training	<p>Unit 1. GEOGRAPHIC INFORMATION SYSTEMS (GIS)</p> <p>Unit 2. QGIS – one of the most powerful open-source GIS</p> <p>Unit 3. Using Remote Sensing GIS in environmental management/security</p>	1 week Monday 6/11 Friday 17/11	UTB - Romania

	<p>technique to build maps on the premise that reality can be modeled in ways that communicate spatial information effectively.</p> <p>To be able to handle GIS design programs in environmental management and security</p> <p>To be able to apply GIS procedures and cartographic principles and Remote Sensing in developing mapping products</p>				
Climate Change and Waste Land Restoration	<p>Understanding of environmental management systems;</p> <p>Understanding of waste land restoration and climate change</p> <p>Ability to identify waste land hazards and conflicts;</p> <p>Capacity to conduct a resource efficiency assessment;</p> <p>Ability to understand the importance of waste land restoration.</p>	Web-based training	<p>Unit 1. Introduction to climate change and waste land restoration</p> <p>Unit 2. Waste management and greenhouse gases (GHG)</p> <p>Unit 3. Climate impact of waste</p> <p>Unit 4. Management and minimizing of landfill gas emissions</p>	<p>1 week</p> <p>Monday 20/11</p> <p>Friday 1/12</p>	UPM-Spain
Climate Change Mitigation and Adaptation Systems	<p>E.g. Understanding of environmental management systems;</p> <p>Ability to design and plan a resource efficiency management system;</p>	Web-based training	<p>Unit 1. Science and Impacts</p> <p>Unit 2. Adaptation and Economics</p> <p>Unit 3. Solutions – Policy and Economics</p>	<p>1 week</p> <p>Monday 20/11</p> <p>Friday 1/12</p>	BUCKS-UK

	<p>Capacity to conduct a resource efficiency assessment;</p> <p>Ability to understand and use the concept of ecological footprint.</p>				
International Climate Change Governance	<p>Understanding climate change international governance;</p> <p>Understanding climate change effects;</p> <p>Ability to understand the importance of international climate change governance;</p> <p>Learning the importance, provisions and mechanism of the Kyoto protocol.</p>	Web-based training	<p>Unit 1 Scientific Basis of Climate Change</p> <p>Unit 2 The international response to climate change</p>	<p>1 week</p> <p>Monday 20/11</p> <p>Friday 1/12</p>	UTB - Romania
Forests, Poverty and Environmental Security	<p>Student has an overview about poverty and forest problems in the world;</p> <p>Student is able to use different methods of social studies in environmental security;</p> <p>Student has a capacity to plan and conduct forests and poverty research projects;</p>	Web-based training	<p>Unit 1. Poverty as a global issue</p> <p>Unit 2. Forest-poverty relationship</p> <p>Unit 3. Globalization and poverty</p> <p>Unit 4. Illegal forestry and environmental security</p> <p>Unit 5. Poverty allevation and sustainable forestry</p> <p>Unit 6. Forest certification</p> <p>Unit 7. Forest fires</p>	<p>1 week</p> <p>Monday 20/11</p> <p>Friday 1/12</p>	OÜ Eesti Metsakeskused – Estonia

	Student has an ability to understand and use forest policy tools in the context of environmental security.				
Research Methods	<p>Student is able to identify and apply different methods of scientific research.</p> <p>Student has knowledge of the research process from its beginning until the publication.</p> <p>Student has the ability to elaborate a research in any field.</p> <p>Student knows how to write a scientific publication.</p> <p>Student understand and respect the ethics of research.</p> <p>Student is aware of the importance of the normalization procedures.</p> <p>Student understand and can use impact indexes.</p>	Web-based training	<p>Unit 1. Introduction</p> <p>Unit 2. Methodology</p> <p>Unit 3. Ethics of Research</p> <p>Unit 4. Scientific Publications</p> <p>Unit 5. Internet for updating knowledge</p> <p>Unit 6. Final Test</p>	<p>1 week</p> <p>Monday 20/11</p> <p>Friday 1/12</p>	BUCKS-UK
Introduction to Soft Skills	Enhance and tailor written, verbal, and non-verbal communication skills to various workplace audiences, including managers, teammates and clients	Web-based training	<p>Unit 1: Communication</p> <p>Unit 2: Leadership</p> <p>Unit 3: Problem solving and teamwork</p>	<p>1 week</p> <p>Monday 20/11</p> <p>Friday 1/12</p>	EVM - Portugal

	<p>Develop leadership skills and demonstrate working well with team members and peers</p> <p>Recognize and develop idea of self in the workplace including emotional intelligence and intercultural awareness</p> <p>Demonstrate practical and efficient uses of brainstorming and playing in the workplace</p> <p>Engage in successful business interactions, including how to work efficiently and interact as a part of a team and individually</p> <p>Improve critical thinking, problem solving and active listening skills in response to the needs of various constituents in workplace settings</p>		<p>Unit 4: Time/resource management and creativity</p>		
<p>RESULTS OF FINAL EXAMINATION</p>		<p>Evaluated by BUCKS. Grades by 31/01/2018</p>			
<p>COURSE EVALUATION BY STUDENTS</p>		<p>By 16/12</p>			

Teaching and learning methods: the course is completely run through the e-learning platform Moodle and is organized in 10 E-modules and a final assignment. The teaching method is detailed in Annex 1.

The common structure of an E-module is:

- Introduction (provides information of the E-module contents)
- Study guide (detailed the learning process in the E-module, e.g. individual or group work, exercises, deadlines)
- E-lessons (from 2 to 4 depending on the E-module)

Each E-lesson is structured as follow:

- Introduction: to introduce the learning topic
- Spark: to start the learning process (image, video, etc.)
- Objective: to clarify the learning objective of the e-lesson
- Task: to specify what the student has to do in order to pass the E-lesson. The fulfilment of the task is objective and verifiable. To complete a task the student has to:
 - posts at least one message addressing the task within the defined deadlines;
 - posts at least one comment to address contributions of fellows;
- Suggested resources: to provide student with learning sources (web sites, articles, databases, etc.)
- Start and deadline: to fix the start and end time of the E-lesson

The platform Moodle allows and high interactivity level through the use of discussion forum, media sharing, article analysis, critical reflection and web interaction with the tutor, the invited technical experts and the participants.

Course completion requirements: the examination is based on two components:

- completion of e-modules (it accounts for 25% of the final score): to pass the course you must complete at least 80% of the e-modules (4 out of 5 E-modules). An e-module is completed when at least 80% of the e-lessons are completed (at least 2 out of 3 e-lessons completed; for those e-modules where there are only 2 e-lessons, they must both be completed - i.e. 100% have to be completed). Each e-lesson has a specific task to be fulfilled that allows the proper evaluation by e-lecturers (see Annex 2 for an example).

- Midterm assignment (it accounts for 25% of the final score);
- Final assignment (it accounts for 50% of the final score): it consists on a written assignment (max 1,000 words - tables, figures, appendixes and references excluded). Each student on a individual base will develop an assignment that consists in a first business plan idea. The business plan idea will summarize the knowledge acquired from e-module 1 to 5.

A final score is assigned merging both the final examination score and the completion of e-modules score. Scores are ranging from A to F (where A: excellent; B: very good; C: good; D: satisfactory; E: pass; and F: fail). E-learning scores will be merged with the scores of the thematic spring school. Final scores will be transmitted to the University, converted into the local grading system (if needed) and registered directly into the career of the student (see Annex 7 for the latest grade conversion table). The participant will be informed by email about his/her results after the completion of final examination.

Quality evaluation

Students must fulfil ex-ante and ex-post course quality evaluation form. The satisfaction forms are mandatory. Forms are completely anonymous.

Course homepage: <https://ensec.web.uma.pt/>

Annex 1 provides a guideline for e-lecturers to engagement e-students in e-learning activities.

Recognition process in each University.

2 DISSEMINATION

The course is introduced into the curricula of the four Universities as a new non-compulsory course, hence it should be appealing to students. The dissemination plays a relevant role and should be carried on through:

- Promotion by MSc and PhD staff at the Universities with the support of brochure;
- Dissemination through students' social networks (IFSA, local student associations, etc.);
- Fledge Network.

3 TRAINING AFTER ENSEC

Giving the need to have a more integrated teaching approach among ENSEC partners (e.g., insurances for students undertaking mobility, quick recognition of ECTS credits and grades, etc.), after the completion of the ENSEC project a second edition of the training course will be based on an Erasmus+ Agreement between the Universities involved in ENSEC.

4 ANNEXES

ANNEX 1: Guideline for e-lecturers to engage e-students in e-learning activities

Introduction

Dear e-lecturers, three quick tips to get you started to e-learning teaching:

- Be on time: make sure that all students manage to log on to Moodle in beginning of course. Otherwise send them personally a friendly e-mail and ask if there's anything you can help with;
- Be present: is important to be online at the course minimum a couple of times each day and contribute to the discussions;
- Good environment: create a good atmosphere, students need to feel comfortable online;

Competencies and Skills for e-lecturers

- Process facilitator – facilitating the range of online activities that are supportive of student learning;
- Adviser/counsellor – working on an individual/private basis, offering advice or counselling learners to help them get the most out of their engagement in a course;
- Assessor – concerned with providing grades, feedback, validation of learners' work, etc.;
- Researcher – concerned with engagement in production of new knowledge of relevance to the content areas being taught;
- Content facilitator – concerned directly with facilitating the learners' growing

understanding of course content;

- Technologist – concerned with making or helping make technological choices that improve the environment available to learners;
- Designer – concerned with designing worthwhile on-line learning tasks;
- Manager/administrator – concerned with issues of learner registration, security, record keeping, etc.

The five stages in Gilly Salmons model:

In a e-learning course there are at least five stages (Figure 1).

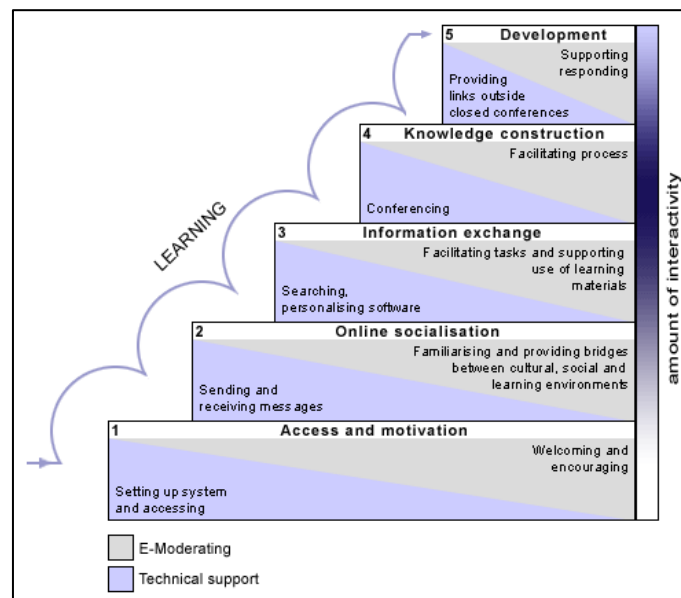


Figure 4.1 – Interactivity over an e-learning course

- *Stage 1: access and motivation:* The purpose at this stage is to expose participants to the platform (Moodle) and to enable them to become successful in using technology and see the benefits. Problems are often specific to a particular configuration of hardware, software and network access, or else related to loss of a password. In the beginning the most important thing is to ensure that everybody was able to log on and that they could answer the welcome letter from the teacher.
- *Stage 2: Online socialization:* you will face many students with different nationalities. You should as an e-lecturer contribute to the process of establishment of personal online

identity and group dynamic. It is essential to create an atmosphere where the participants feel respected and are able to gain respect for their views. So the e-activities should stimulate students to tell about themselves and show who they are. This process should be closely related with the main issue of the course.

- *Stage 3: information exchange:* At stage three e-students start to appreciate the broad range of information available online. At this stage, e-lecturers should ensure that conferencing concentrates on discovering or exploring answers, problems or issues. Presenting and linking data, analysis and ideas in interesting ways will stimulate productive and constructive information sharing.
- *Stage 4: knowledge construction:* You may feel tempted to skip to stage four. However, the previous stages provide an important scaffold for success. At this stage, participants begin to interact with each other in more exposed and participative ways. They formulate and write down their ideas or understanding a topic. Your task and role here is to stimulate interaction between students so they discuss the questions in the e-lessons.
- *Stage 5: development:* at stage 5 participants become responsible for their own learning through computer-mediated opportunities and need little support beyond that already available. E-lecturers should set up exercises and online events that promote critical thinking in conference participants, such as commenting on each other's writing.

Reference: Salmon, Gilly (2004): "E-moderating: the key to teaching and learning online", Routledge Falmer.

Managing conflicts

Case 1: inactive students online. Students can be inactive for many reasons. It is fundamental to identify the reason why the students are not participating. This is critical especially at the beginning of the course, when high participation will produce high motivation! Besides if a student is lagging behind at the start of the course, it is probable that he/she leaves the course.

When a student is not active, the e-lecturer should as soon as possible contact directly and privately the student asking why he/she is not participating.

This is an example of an email sent to an inactive student by the e-assistant:

Hi xxxx,

I hope that you are doing fine. We are very glad to have you in the course and your participation is very important for the whole group. But we are missing you in the e-module 3? Do you have problems to access XXXX? I hope that you are feeling comfortable with the teaching methods in the course. Please do not hesitate to contact me if you have any problems.

I look forward to seeing you online soon, sharing your experiences and contributing to the discussions with your group. The deadline for this e-module is Friday at 17:00 CET!

Please confirm that you have received this email as soon as possible.

Cheers,

Florin :-)

Case 2: Case: students with restricted time. This is a case of students with restricted time for the course. In an online course the diversity of students is very high. This is an example of answer from a student with restricted time for the course, this is a reply to the e-lecturer's emails:

Hi Florin

Things looked bright for a moment, and then a new larger assignment landed on my desk. I estimate that it will take all my time for the next few weeks. I think, that I'm so far behind already, that it will be difficult for me to catch up at this point in time I'm not at a point in my work-life, where I can book time during the workday to follow this course, so it has to be in my spare time. And I've realised, that I don't have that much spare time available right now - maybe when the kids are older? It really bugs me, because I think the course is very interesting and the e-learning is a good concept. But I can't invest the needed amount of time to it right now - unfortunately! I would like to continue to have access to the course-material, if that is possible.

Best wishes,

Carmela

Answer from the e-coordinator:

Hi xxxx,

I can understand that it is very difficult to integrate family, work and studies. We fully understand that you are busy and we are very glad that you have tried the course and that you demonstrated a good engagement in the e-lessons. So far you have passed already 12 e-lessons, that is good! I think that if you continue passing 3 e-lessons for each e-module you will have a good chance to pass the course. Also you can focus in the e-modules that you consider the most important for your interests.

You are of course welcome to continue reading in the discussions, and if you have something to add to the discussions you are also very welcome. In this way you can also prepare for the final exam, if you want to try it.

It would be great if you continue with the course.

Best regards – Florin

ANNEX 3: Grade conversion table (to be updated every year)

The performance of the student is documented by a national grade. The grades are related to the ECTS grading scale in the table below. Please note that no official conversion table exists. The table is constructed based on the practices of the involved institutions.

	BUCKS	MADEIRA	BRASOV	MADRID	ECTS
Excellent	?	30 e lode	?	9-10	A
Very good	?	30	?	8	B
Good	?	28-29	?	7	C
Satisfactory	?	25-27	?	6	D
Pass	50%	18-24	?	5	E
Fail	?	<18	?	0-4	F/FX

TEST RELEASE AND PLATFORM IMPROVEMENT

Intellectual Output 3 – Activity 3



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Project Partners Universities:



Project Partners Companies:



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Introduction

The ENSEC project's main purpose is to build a catalogue of courses on environmental security topics, supported by a rich e-Learning platform. After the definition of the plan, programmes, objectives and all the aspects of each of course, the next phase was to adapt and build a strategy to offer this knowledge to students interested in these topics.

This report presents a brief insight to the contents of the Master's in Environmental Security Sector. An overall appreciation to the use of the Moodle platform, as the e-learning platform of choice, shall be given and an analysis of the data from questionnaires that were applied to the users will also be discussed. The alterations made to the platform due to the feedback obtained from the questionnaires are later explained in this report.

The contents defined and developed in this project were organized into 10 Modules, being the first 8 modules related to the environmental security domain and the last 2 modules are foundation courses to new skills and to initiate and advance in the research area our students, both individually and/or in teams. Next, we present each of the modules and their goals.

- **Module 1 - Introduction to Environmental Security:** the goal of the module is to acquire a general view of environmental security and the evolution of the concept, in terms of environment, gender, human and political security.
- **Module 2 - Forest Fire Land Restoration:** the goal of the module is to acquire a general view of forest fire land restoration, focusing on the postfire treatments effectiveness.
- **Module 3 - Remediation of Polluted Soils:** the goal is to understand the concepts and methods, and to plan soil restoration on polluted sites.
- **Module 4 - GIS and Environmental Management/Security:** the goal of the module is to give the opportunity of understanding cartography tools and using them in different scenarios which can appear in the management Units.
- **Module 5 - Climate Change and Waste Land Restoration:** the goal of the module is to acquire a general view of the management of wastes, the wasteland restoration related to climate changes.

- **Module 6 - Climate Change Mitigation and Adaptation Systems:** the goal of this module is to support an effective solution to the challenges presented by climate change.
- **Module 7 - International Climate Change Governance:** the goal of the module is to understand the importance of climate change governance, focusing especially on the mechanism and role of national governments in formulating strategies and policies for mitigation and adaptation to climate change.
- **Module 8 - Forests, Poverty and Environmental Security:** the goal of the module is to understand the concepts, methods and problems linking forests, poverty and environmental security and to develop research skills for further studies.
- **Module 9 - Research Methods:** the goal of the module is to familiarize the student with different methods of scientific research, so they can then elaborate a research in any field and write specific scientific publications.
- **Module 10 - Introduction to Soft Skills:** the goal of the module is to acquire a general view of soft skills and the importance of the practical use and understanding of these skills in order to properly behave in differing environments and situations.

The platform selected to support these contents is Moodle¹, a well-known platform for e-Learning as a means for the delivery of educational content on many educational levels, including higher education. This platform is used by many universities around the world. Information relating to the platform is presented in the section E-Learning Platform.

The evaluation of the platform, with the intent to improve it, occurred during the whole cycle of the content development and a more complete testing phase after the content was developed. In the section Platform Improvement, we detail the whole process put in place to guarantee the quality of the learning content to students.

The Annexes, in the last section of the report, contain the complete list of questions used in the two test and improvement surveys, one about the platform and the other about the contents of the modules. Besides the questionnaires, the graphs relating to the data obtained from each of the questionnaires are also shared as an annex.

¹ <https://moodle.org>

E-learning Platform

As already referred, the selected platform was Moodle. It offers a web interface to students, teachers and schools and a mobile application, allowing everyone to access the contents in different places and at diverse moments of the day, according to each students' own needs and commodity. As presented by (Kraleva et al., 2019), the Moodle platform, is, very likely, the one with most users in the world and supports all groups of functionalities and almost all functionalities in each group. Only Gamification is not included, but there are add-ons that can add different activities like those expected in gamification in the Moodle developers' web site. Also, it's one of the e-learning platforms with more implementations and scientific studies about its use and adoption by a large set of schools and universities.

It is a very flexible platform and is well known by many teachers and students as it's open source and does not have a licensing cost. The platform was chosen based on the offering of functionalities in 3 main areas, following the approach of (Buendia & Hervás, 2006) and adapted to the objectives of the ENSEC program:

- The Content area refers to the resources and activities available to teachers to deliver their selected learning content. This content can be constructed in the platform or linked or imported from other sources of information. Examples of contents are pages with text, images and other multimedia items, such as videos or interactive content.
- The Communications area includes those tools that support communication and other types of interaction. Examples of communication tools are the messaging systems, synchronous or asynchronous, forums, posts, blog posts, other messaging applications and comments to promote group work.
- The Management area is the set of functionalities that supports the organization and management of the learning process. Examples of important functionalities for a flexible management are the creating of groups, execution of assessments and grading, and the tracking of the students' learning advancements.

Some other aspects were also considered, such as:

- **Cost:** Licensing cost and other associated elements that are also relevant for a choice, such as, hosting, installation and configuration, maintenance, backup and, if needed, recovery. Some of the LMS have a licensing cost, but many are free. Also, a cost is having the technical personnel to do all the tasks needed to keep the platform operating normally. Almost everything can be installed in-house and/or in the cloud or the supplier infrastructure.
- **Control:** This is an important factor and is related to keeping complete responsibility of the data, from students, teachers and all the content. This is also essential to certify the application of the General Protection Data Regulation (GPDR)².

For each one of the areas, a list of functionalities defined as core characteristics to support the modules learning objectives are provided. In Table 1 the complete list of functionalities is presented.

Table 1: Areas and functionalities intended for the e-Learning Platform

Area	Functionality
Content	Lectures as web pages, documents in different formats, presentations, audio and video. Examples and tasks completed in different media. Uploading/downloading various documents types.
Communications	Real-time Chat/Ideas exchange Forums Messages Email messages Blogs posts to disseminate ideas
Management	Assignments and exercises as web pages and/or documents Assessment and Evaluation with quizzes Add, edit, delete data for students Analysis of students' achievements and outcomes Security and protection of users' data Manage all the user roles in the LMS Users Self-Registration Multi-language support

Besides Moodle, several other e-Learning Management Systems (LMS) were considered, such as Chamilo³ and Open EdX⁴. These are newer LMS than Moodle and have been attracting many

² <https://gdpr.eu>

³ <https://chamilo.org>

⁴ <https://open.edx.org>

users and are being adopted by many schools and Universities. All supported the needed functionalities and the new LMS are being used because they are considered as simpler and more user friendly than Moodle (Marchenko, 2015), but, in terms of flexibility and present knowledge by the users, be they moderators/ teachers or learners/ students, Moodle is, by far an approved platform by many entities. Also, and a very important factor, is the cost of learning a new platform by the partners, who are already experienced in Moodle, ended as a factor weighing into the option to develop the course modules on Moodle⁵. In Figure 1 is an example of a Moodle course with several diversified activities and resources, ranging from e-Books, videos as resources and a quiz which is used for assessment purpose.

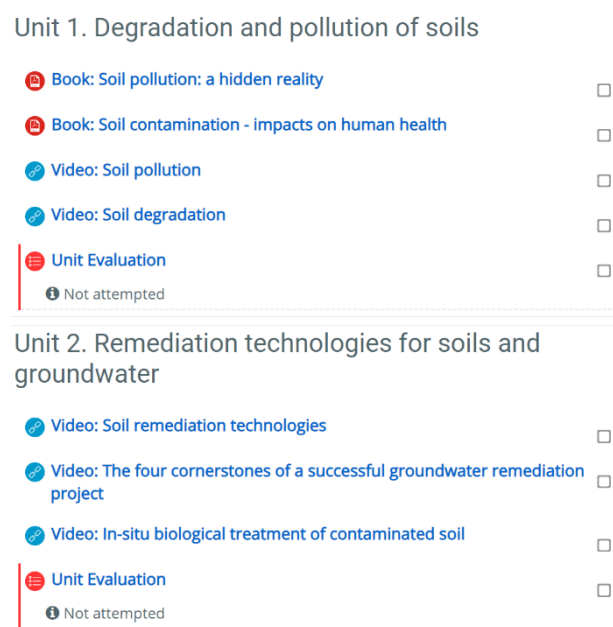


Figure 1: Example of a course content in Moodle Platform

The study conducted by (Pecheanu et al., 2011), analyzed 15 LMS, including Moodle, and already in 2011, described Moodle as containing most of the required functionalities needed for our project. Most of the limitations pointed-out in the study are already solved, confirming Moodle as a strong platform to support the project. Another aspect in Moodle is the General Protection Data Regulation compliance. As presented in (Almo et al., 2019), Moodle already supports many of the directives of GPDR and it is possible to improve it to give more guarantees concerning the GPDR compliance.

⁵ Address of the ENSEC project platform: <https://ensec.web.uma.pt>

Platform Improvement

Initial Testing and Improvement

The development of the contents and the buildup of the platform were parallel tasks done by the project partners, specifically teachers and technicians. It was possible, early on, to start uploading the contents to the platform and get experience of how the content and learning process could be organized on the platform.

The Teachers Guidelines document (Intellectual Output 2: Activity 4) was a first product to guide the development of the content for the e-learning environment. The final resulting document defined the global aims for the courses, detailed the 9-teaching skills required for teachers, and the commitments that each teacher is expected to fulfil in the development and execution of the courses. The document also gives teachers and content developers a set of guidelines to construct each module, in the form of a template with resources and activities as an example.

This task involved all the partners, being each one registered on the platform to start using it to quickly start giving some feedback on the characteristics of the platform. This phase was, mostly, based on e-mail exchange between partners and with the presentation and discussion following the partners' meetings. The Teachers Guidelines had several versions and reflected diverse suggestions made until the definitions were reached and presented in the last version. In this phase, some more technical testing was performed, assuring an efficient installation and configuration of the platform. The operations under detailed testing included registering users, uploading content through diverse sources and the activation of the communication tools.

User testing and Improvement

After the first interactions to help the teachers and technicians develop all the e-learning content and to test the first version of the platform, we opened the platform to other users, with the purpose of, from a perspective, continue the tuning and correction of eventual mistakes, and, more importantly, to start receiving feedback on the platform and, more specifically, on the module contents.

The procedures put in place to achieve some results were to disseminate the platform to possible interested groups of users in the partners' regions and to propose the filling in of two surveys. A controlled environment pilot with students was considered, in order to present the platform and test some aspects of the user interface, performance and organization of content, but, due to the Covid19 restrictions, this approach was not completed.

The following two sections describe each one of the developed surveys, their objectives, and main results. We also include some of the follow up actions to improve the platform.

Questionnaire on the Virtual Learning Platform (VLP)

These questionnaires were developed with the intent of having access to the perceptions of the students of their learning experience whilst using the platform. Their critical perspectives enabled optimization of the design of the courses, clearer layout of the course content and more efficient platform usability. The design of these questionnaires included short and long open answers, statements for the users to rate using the Likert scale, multiple choice answers, many being simple yes and no answers.

In order to get to know our target audience, the initial part of the questionnaire enquired about personal information. Out of the 39 responses we acquired, 28,2% were female and 71,8% were male. These respondents came from different origins, mainly from Portugal (30,8%), from the University of Madeira; Spain (20,5%), from the Polytechnic University of Marid and from Estonia (17,9%), from the University of Estonia. The other respondents were from the United Kingdom and Romania. The ages of the respondents varied mostly between the ages of 20 and 24 years of age (47,1%), and this was followed by 23,5% of respondents whose age varied between 36 to 40 years of age. 17,6% were over the age of 40 and the remainder were between 31 and 35 years of age. Most of our respondents were students, these making up 56.4% of our target population. 25,6% of those who chose to answer this questionnaire belonged to an academic background, 15,4% of our respondents were stakeholders and 2,6% belong to the UPM Management Team. All of this information provides a clearer idea of who explored the learning/ teaching platform and of their backgrounds. The variety of roles they have provide a richer perspective into the alterations that needed to be made as each person explores the platform from a different perspective, according to their expectations and needs.

The next section of this questionnaire focuses on the platform's design. When questioned about the time the platform needed to upload, the respondents all reacted positively to it loading quickly; i.e. 100%. A very positive reaction was noticed when the target audience was questioned on whether the buttons and links allowed them to quickly find information that was needed. 94,9% reacted positively to this question. We noticed however that only 89,7% of our respondents believed that the buttons and links were clearly visible and easily accessible. To this question, 2 respondents explained their perspectives and personal experience with these buttons in further detail and in Portuguese. One of the respondents explained that the carousel buttons were not very visible. The other reported that the login button was far too close to the bottom white line, due to it being 30px in height.

Most users of this platform claim that it is easy to navigate through. Only 12,8% of the users were of the opinion that it was not simple to navigate through. The following question had a more divided reaction as 94,9% of the platform users believed the links were clearly marked and self-explanatory, which made the navigation intuitive. 12,8% were not of the same opinion. In this question, a respondent reported that the ID Logo was misaligned with the site's title, allowing the technicians to realign the opening information on the website.

In relation to the question that reads, 'Does the platform present easy-to-read fonts, maintaining text and background contrast?', 97,4% of the participants agreed that the text on this platform is in fact easily identifiable and legible. The conclusion therefore can be that no alterations need to be made here.

Given that this platform aims at promoting teaching and learning in a virtual environment, it is essential to understand how the students perceive communication and interaction with the teachers. When questioned if the platform promoted active communication and interaction between teacher and students, through the use of technological tools, for example, through forums, email, chat, videos, blogs, wikis, those that answered this questionnaire believed that it did, as 87,2% responded positively to this. The remaining answers to this question fell between the answers of 'no', 'did not know', 'some' or the user was 'not registered'. As the option 'Other' was available in this question, users were able to give more input and they explained that the choice of communication tools was quite limited. One of the users had

expected the teacher to be available during the test trial and expressed their disappointment in a teacher not being there.

When asked to share their views on the design of the website, one of the respondents explained that 'the website needed some improvement', as it lacked animation and icons on the main page 'identifying the form'. This same user commented on the information on the partnerships, claiming they 'should be more presentable or in gallery format'. He/ She also reacted to the course gallery explaining that the 'shadow in the course gallery could have a scroll bar' because 'its better scrolling inside of the gallery instead of the page'. Another user responded in Portuguese with the opinion that the navigation button was far too inclusive as it pushed the text onto the left side of the page, and this made the mobile version misalign completely. On the other hand, one of the respondents was of the opinion that the website had an 'excellent design', whilst another user claimed that 'it was really nice to use that platform'. The access to this constructive data is extremely useful at the stage of improvement of the design of the learning platform.

When questioned in the following section of the questionnaire about the content that could be accessed on the platform, 100% of the users were of the opinion that the platform provided high quality information. 87,2% of the users seemed to find that the information was error-free, whilst 10,3% disagreed and one of the respondents added that there was vocabulary which needed to be revised and 'upgraded', to use the respondent's own words. 92,3% of the population believed the information presented to be up-dates and almost the same percentage, 97,4%, found the platform to be user-friendly. The information on the platform was understood by 64,1% and some of this information was not understood by 35,9% of the target population. Some students explained that as the content was 'very new' to them, it was 'not easy to follow' and 'difficult to follow at first glance'. This data shows an overall positive reaction to the platform and to the means used to disseminate the information.

The next section focused on the accessibility of the platform and when asked whether specific plug-ins were required to view the page, 69,2% replied that they did indeed need them whilst the rest replied they did not. Of those who needed a plug-in, and when asked if this was clearly indicated, 92,3% of the users responded positively to this. This platform was accessible from

any navigator to 76,9% of our users, whilst 23,1% replied that they did not know and the remaining users replied that no, it was not accessible.

These were the results obtained from this questionnaire that helped the technicians understand how they could better organize the information on the platform, making it better designed and more user-friendly.

Next, some of the measures selected to respond to most users' comments are described.

The survey answers helped us identify some of the problems still present in the platform and the suggestions were interesting to tune in some of the functionalities. A first category of comments was related to the user interface and some not proper presentation in some browsers and mobile application. The platform is a bit rigid about some aspects of the format. We tried to minimize some of the referred issues with the template adaptation. The animation slider, at that time of the test, was a simple link to the project page but will include in the future some other contents, such as, news, links to ENSEC events and more information about the platform. The partners' footer was also improved with better design, more aligned and with the correct links. The comment on the gallery scroll bar was not understood by us, so no action was taken, in this case.

Also, it is expected that the utilization of this application implies a use a very diverse group of browsers and mobile environment. This diversity in the access of the VLP make it very difficult to test all possible options in every possible context. As a measure to detect other user interface failures or misalignments, we added more browsers to the test process, trying in this new process to found all existing errors and proceed to their correction.

Another platform tester commented the use of http (insecure communications) instead of https (full encrypted communication, so very secure if last version of the protocols is used). This functionality was planned from the beginning but implement only after the test started. So, the comment was relevant and, very shortly after being referred, the https was the only possible access method to the platform, assuring all users have all their traffic encrypted/secure when they access to the platform.

Another group of comments was about the limited number of communication tools. In our Moodle platform, not all the possible and available tools are activated. By default, only a

restricted set of educational tools is active. Some other tools are already installed, and the Moodle development community offers several new tools per day. So, the main option was to guarantee the availability of all critical tools to teachers and activate only some other not so common tool if was really needed. It is possible to add many other tools, standard in the Moodle repository, or from an external partner.

The following section also present the results of a survey about the course and its contents.

Questionnaire on the Evaluation of the Learning Modules

This questionnaire was applied to users who explored each module and were able to provide feedback according to their perceptions of the content of the modules and the means in which they had been prepared and were presented. This section aims at analysing the data obtained from the questionnaires and reporting on the findings. Some of the results are presented in this report and some more detailed evaluation is included in the 'Monitoring and Evaluation' report (Intellectual Output 4 – Activity 4).

With 48 responses obtained to this questionnaire, the initial question gave a view of what institutions the respondents came from. 39,6% of the respondents were from The Estonian University of Life Sciences, 27,1% were from the University of Madeira and others responded from Universitatea Transilvania din Brasov, Universidad Politécnica de Madrid and Thames Water Company. These respondents are from Estonia, Portugal, Romania, Spain and the United Kingdom. From the data retrieved from the following question in the questionnaire, it can be seen that 54,2% of these respondents are students, whilst 20,8% are employees and 20,8% are employers.

When looking into the modules that had been completed, Introduction to Environment Security and GIS and Environmental Management Security were the two modules that had the highest percentage of completions by those who took this questionnaire. Each of these modules had 12,8% of the respondents' completions. These were closely followed by 10,6% who claimed to have completed the courses in Forests, Poverty and Environmental Security, International Climate Change Governance and Remediation of Polluted Soils. 8,5% reported to have completed Introduction to Soft Skills, Climate Change Mitigation and Adaptation Systems and 6,4% had completed the remaining courses in Climate Change and Waste Land

Restoration, Research Methods and Forest Fire Land Restoration. The level of satisfaction with the quality of the modules was overall quite high, being that 58,3% of the users found the quality to be very satisfactory. 33,3% of the respondents found the quality to be good, whilst 4,2% found the modules they had completed not to be of acceptable quality. 54,2% of the respondents strongly agreed that the module's outlines clearly defined what the students were expected to do, whilst 2,1% found they did not agree with this assumption.

When questioned about the organisation of the module's content, 64,4% of the respondents claimed that they strongly agreed that the content was well organised. 31,1% agreed that the content was reasonably well organised and 2,2% found it to be satisfactory whilst another 2,2% found it to be below average.

Most of the users found that they strongly agreed that the contents of the module were adjusted to the specific learning outcomes in the particular field within which they fell, and this comprised of 56,3% of the users. Only 2,1% of the users did not agree with the aforementioned statement. The same percentage of users also did not agree with the claim that the learning material provided was helpful and content oriented. This however was not the case for 45,8% of the respondents who strongly agreed that the material was indeed extremely helpful and content oriented. 41,7% agreed with this statement whilst 10,4% believed it was satisfactory.

As IT resources were provided as additional material, the users were asked whether they had been able to access these when they needed them. To this, 81,3% of the users found they strongly agreed with the previous statement. Only 14,6% agreed with the statement and 2,1% reacted satisfactorily and 2,1% felt they were unable to access the general IT resources when they needed them. In relation to the library resources which are offered, 43,8% found these to be very adequate for their needs. Once again, only 2,1% of the respondents were of the exact opposite opinion and did not find the library resources to be adequate for their needs. 41,7% of the users claimed that they were adequate and 10,4% agreed that the library resources were acceptable.

The users were also queried about the assessment requirements and marking criteria, namely whether these were made clear at the beginning of the module, to which 66,7% of the respondents agreed strongly with, 18,8% agree and 8,3% of the users react neutrally to. 6,3% express that these were not made clear at the beginning of the module.

This questionnaire also required the users reflect upon their development. Metacognition is required to be able to respond to these statements. 54,2% of the users strongly agreed that the tasks they completed stimulated their learning and developed their skills and knowledge, whilst 33,3% of the users agreed. Only 4,2% considered that their skills and knowledge had not developed and 8,3% of the users neither agreed nor disagreed with the statement. Still in this line of thought, 43,8% strongly agree that the module enabled the user to develop their skills as well as help their employability or career development. 29,2% agree with the previous statement and 27,1% neither agree nor disagree.

It is important to understand if those who went through this MA would recommend it to others and it became clear that most would. 58,3% would strongly recommend this training programme to others. 33,3% would also recommend it but 2,1% said they would not. This reveals an overall positive reaction to the MA courses seeing as more than half of the users would readily recommend the course to other students.

From the general comments, information relating to the quizzes and to resources were most predominant. A few respondents explained they thought the quizzes at the end of each module were 'a good idea'. This user also referred to a module, namely Remediation of Polluted Soils, as being 'very well organised and as having relevant resources'. Another user did however also comment that the questions in the quizzes could be clearer. A different user commented that a quiz ought to be added to the course of GIS and Environmental Management Security. This module was also criticized for offering the main document as the only learning resource and lacking other additional ones. This last notion of additional resources was mentioned by other respondents and some added that it would be helpful if they were more varied.

Two modules were described as 'very well organised' and as offering 'a lot of relevant content and resources'. The two modules are Forests, Poverty and Environmental Security and Remediation of Polluted Soils. The module, Introduction to Soft Skills, was also referred to in a

positive light as it too is seen to have ‘good additional resources and quiz’. The overall perception lies in recognising that the quizzes that were added were viewed positively by the users as contributing to their cognitive development in the field of study. It can also be inferred that users expect added resources in varied formats. These might include videos, links to other websites or forums, blogs, and other such sources of information.

The results of this report will serve as guideline to teachers and content developers to update some of the aspects of the course, from the organization of the course, to the diversity of contents.

The preparation of the platform involved many different tasks and many different persons, each participated as testers to use the course and verify its correctness. The initial process was very helpful to tune some of the guidelines for teachers and to accelerate the content and platform development.

The two surveys, each focusing on different aspects and with the participation of students and other entities outside of the project partners, were fundamental to verify the correctness of the content and the organization of the modules. They also helped to found small details and errors and improve them. The number of filled surveys were considered satisfactory to guarantee a good quality testing of the platform, raising many and diverse aspects of the platform and evaluating all the modules.

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(Pecheanu et al., 2011) E. Pecheanu, D. Stefanescu, L. Dumitriu and C. Segal, "Methods to evaluate open source learning platforms," 2011 IEEE Global Engineering Education Conference (EDUCON), Amman, 2011, pp. 1152-1161, doi: 10.1109/EDUCON.2011.5773292.

Annexes

A.1 ENSEC Virtual Learning Platform (VLP) Opinion Survey

ENSEC VIRTUAL LEARNING PLATFORM (VLP) - OPINION SURVEY -

INTRODUCTION:

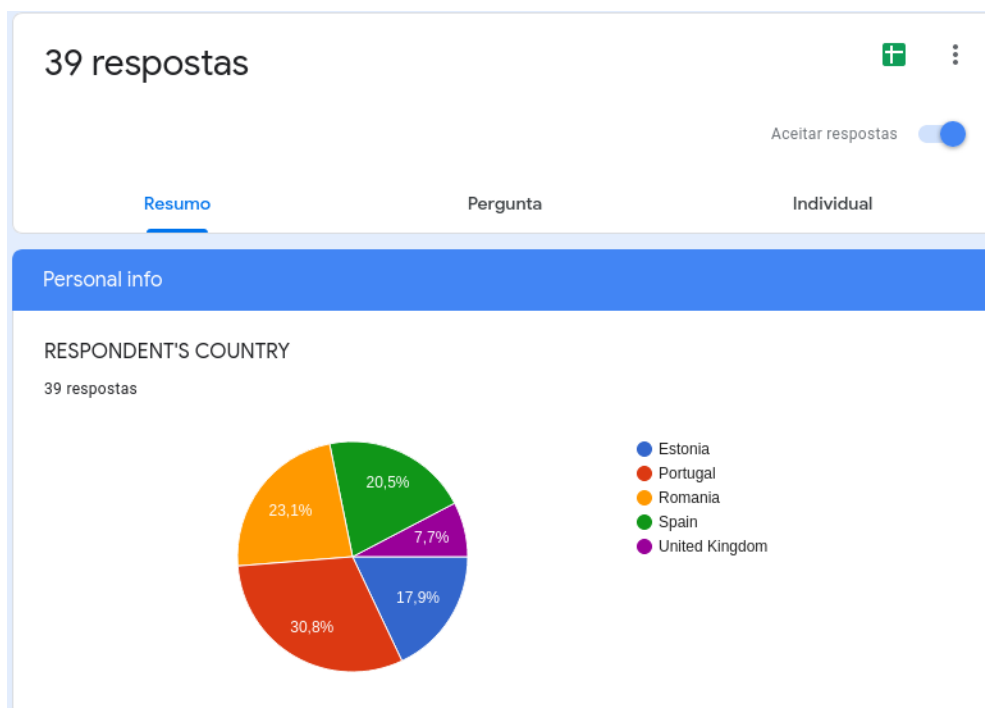
The European Virtual Platform in environmental security modules programme – ENSEC– is an innovative educational product based on recent research, which indicates that there are significant benefits of enhanced technology collaboration on environmental security web-based applications.

The main aim is to promote and support, at a European level, a virtual gateway/platform for skills and knowledge in environmental security in partner countries by implementing a strategic approach through a one-stop offer that supports training courses for postgraduate students at the regional and global level that supply valuable skills to the postgraduate market and enables the industry to have access to research-based solutions.

A mutual beneficial partnership on environmental security electronically supported by training programmes and employment market access will be offered to postgraduate students and access to research knowledge, prototypes and IP to industry.

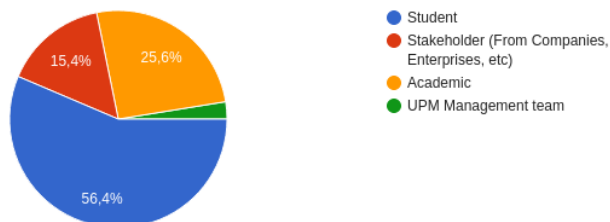
To jointly develop and deliver a training programme technology focused on environmental security in non-hazard settings is based on the “Tuning” project framework.

How to access to the VLP go to <https://ensec.web.uma.pt>



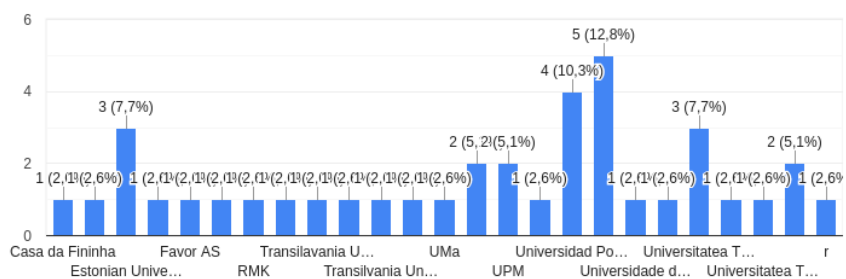
RESPONDENT'S GROUP

39 respostas



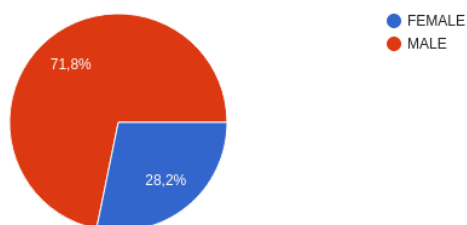
RESPONDENT'S COMPANY/ INSTITUTION/ UNIVERSITY

39 respostas



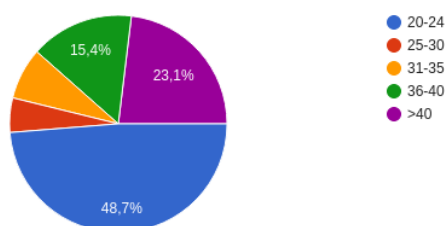
RESPONDENT'S GENDER

39 respostas



RESPONDENT'S AGE GROUP

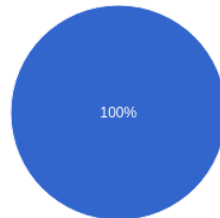
39 respostas



PLATFORM'S PRESENTATION. DESIGN - IS THE WEBSITE WELL DESIGNED?

Does the platform load quickly?

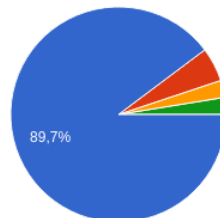
39 respostas



- YES
- NO

Are the buttons and links clearly visible and easily accessible?

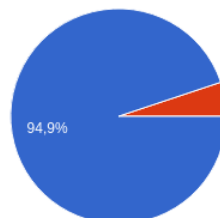
39 respostas



- YES
- NO
- O botão de login está com uma height de 30px o que faz com que fique colado à linha branca em baixo do mesmo
- Os botões do carrousel não são muito visíveis.

Do these buttons and links allow you to find the information you need quickly?

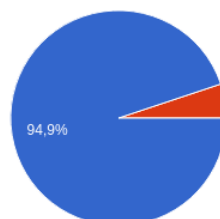
39 respostas



- YES
- NO

Is it easy to navigate through the platform?

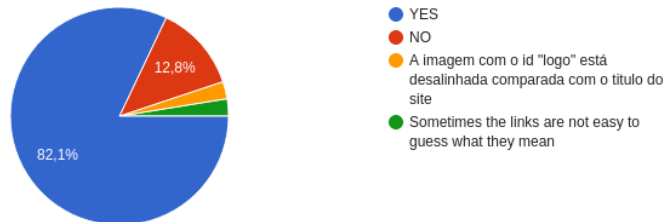
39 respostas



- YES
- NO

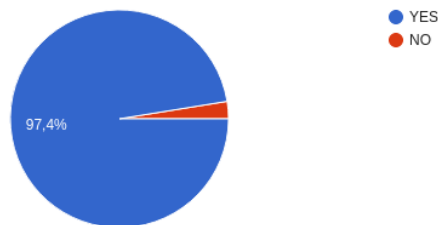
Are the links clearly marked and self-explanatory making navigation intuitive?

39 respostas



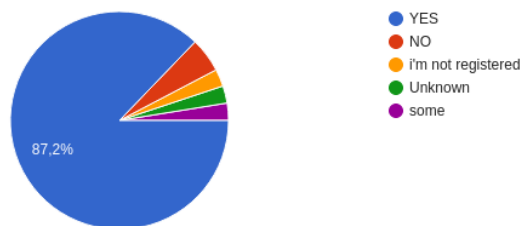
Does the platform present text in easy-to read fonts, maintaining text and background contrast?

39 respostas



Does the platform promote active communication and interaction between teachers and students, through the use of technological tools: forum, email, chat, video, blog, wiki...?

39 respostas



If your response was 'Other' to the previous question, please explain your choice.

3 respostas

- The choice of communication tools is quite limited.
- Could be more dynamic
- Actually there was no teacher available during my test trial.

If you have further comments on the design of the website, please share your views here.

7 respostas

Excellent design

No footer os h3 com estão desalinhados quando comparados com os links abaixo.

Well the website need some improvement beacause need some animation going on... on the main page need icons identifying the form... in the area of partnerships they should be more presentable or in gallery format instead of static... could remove an edge of the shadow in the course gallery and that gallery could have a scroll bar... i think its better scrolling inside of the gallery instead of the page

"Navegation" demasiado intrusiva o que implica que o texto esteja muito à esquerda. Link em modo mobile desconfigurado. Obrigado.

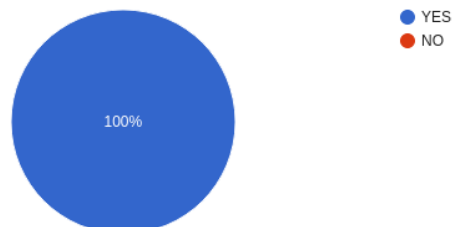
It was really nice to use that platform, thanks!

N/A

CONTENT OF THE PLATFORM

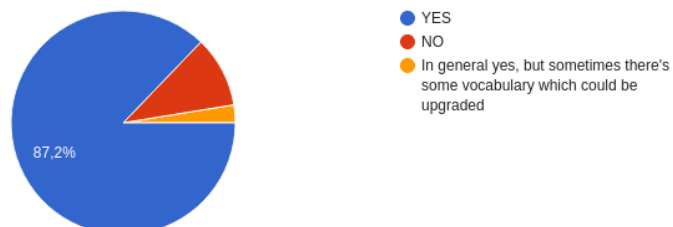
Does the platform provide high quality information?

39 respostas



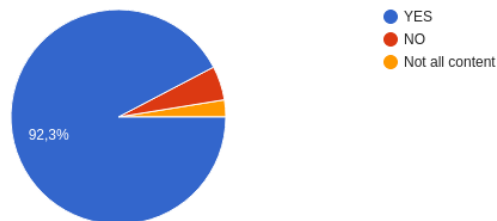
Does the information appear to be error-free? (No errors in spelling, sentence structure, content, etc.)

39 respostas



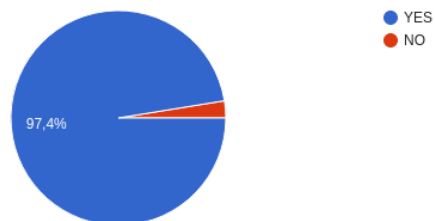
Does the information appear to be up-to-date?

39 respostas



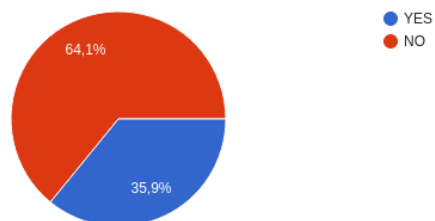
Does the platform provide a user-friendly interface?

39 respostas



Is there any information on the platform that you do not understand?

39 respostas



If you answered 'Yes' or 'Other' to the previous question, please explain your choice.

2 respostas

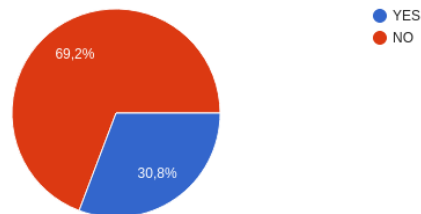
Some information is new for me and therefore it is difficult to understand it at first glance.

For me some content is very new and not easy to follow.

ACCESSIBILITY- IS THE PLATFORM ACCESSIBLE?

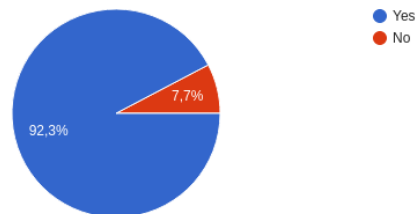
Does the platform require specific "plug-ins" or other types of special viewing helpers?

39 respostas



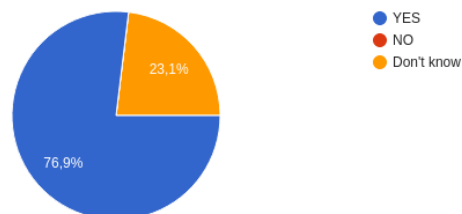
If your response was 'Yes' to the previous question, were they clearly indicated?

13 respostas



Can you access the platform from any navigator: Internet Explorer, Chrome, Firefox?

39 respostas


Further Comments:

2 respostas

I use Chrome

O browser queixa-se de navegação não segura, utilize https.

A2. ENSEC Modules Survey

Evaluation of ENSEC Module

The purpose of this questionnaire is to evaluate the structure, content, quality and adequacy of the learning materials for each module prepared as a base for a future online course in the framework of the European Project ENSEC. All the information, your answers and learning contents that you'll have access to, is confidential and under copyrights laws according to ENSEC project and European Union (EACEA).

In each question, both indicate your agreement or disagreement with each statement using the scale or/and completing the boxes with an extended opinion.



48 respostas



Aceitar respostas

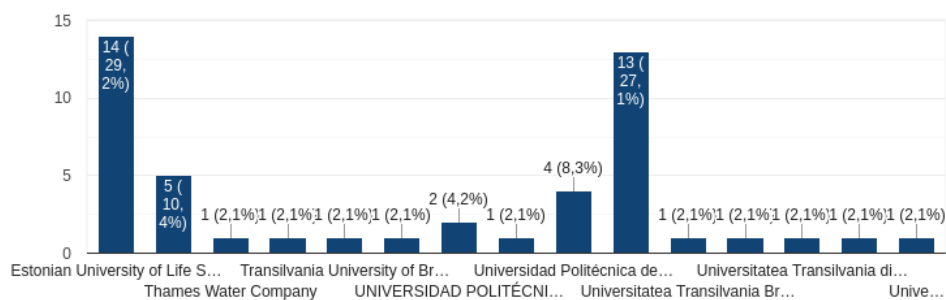
Resumo

Pergunta

Individual

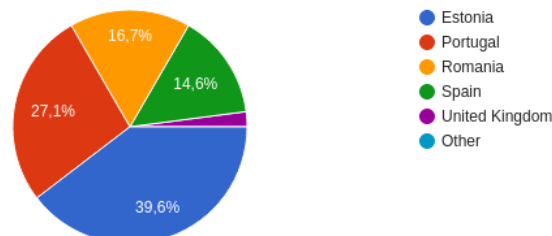
Institution (Company name, University, etc)

48 respostas



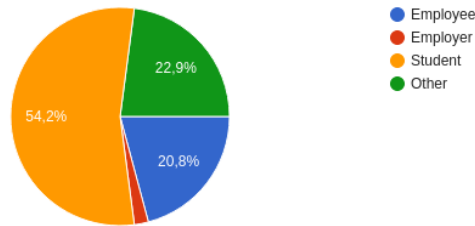
Country

48 respostas



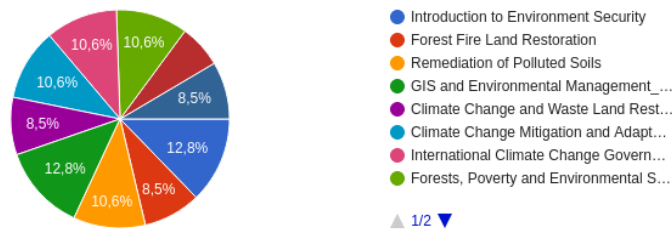
I am a/an

48 respostas



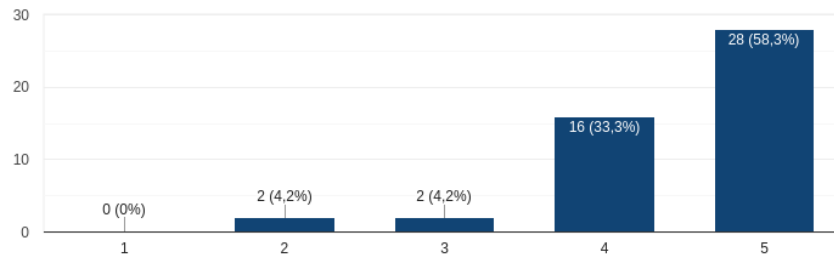
I have just completed the following module:

47 respostas



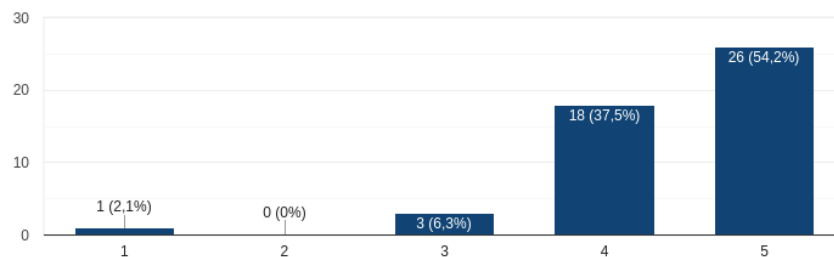
I am generally satisfied with the quality of the whole module.

48 respostas



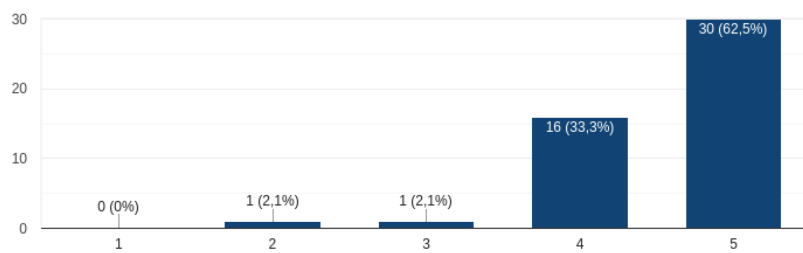
The module's outlines clearly defined what I was expected to do.

48 respostas



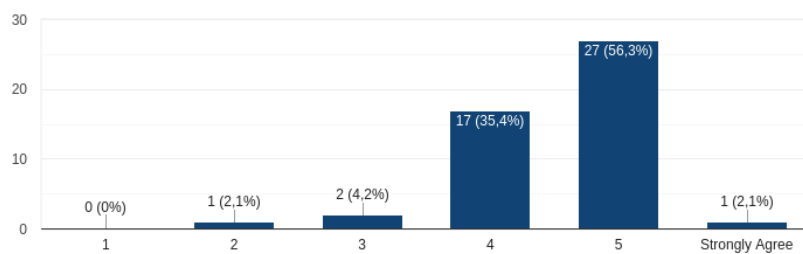
The module's contents were well organised.

48 respostas



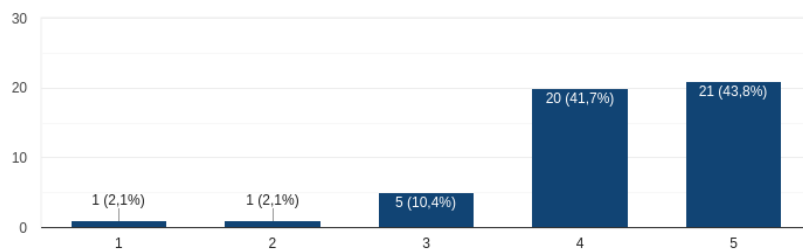
The contents of this module adjust to the specific learning outcomes in this particular field.

48 respostas



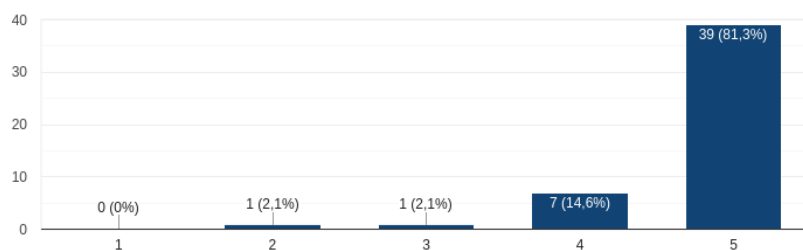
The library resources are adequate for my needs.

48 respostas



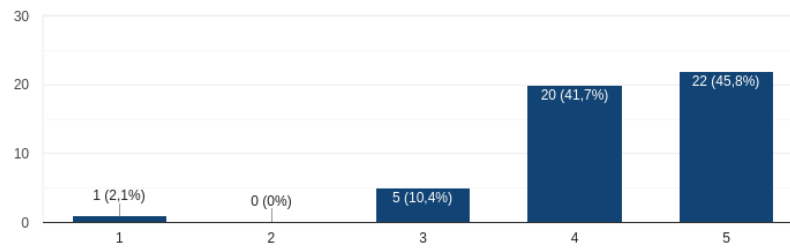
I have been able to access general IT resources when needed.

48 respostas



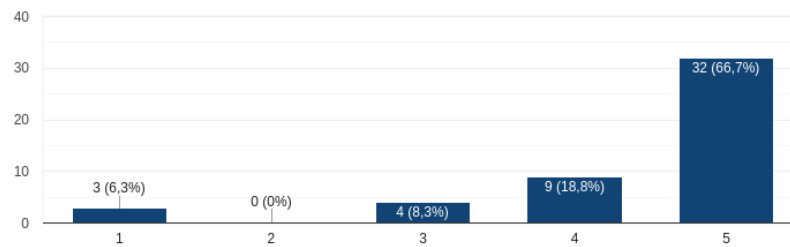
The learning material provided was helpful and content-oriented.

48 respostas



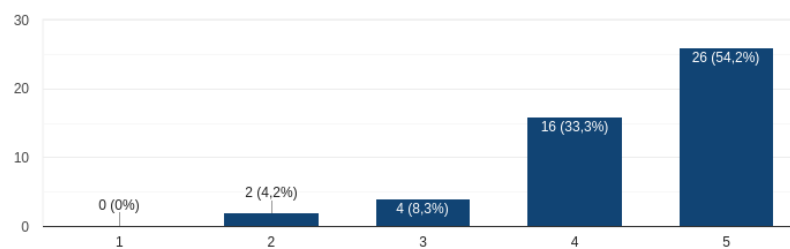
The assessment requirements and marking criteria were made clear at the beginning of the module.

48 respostas



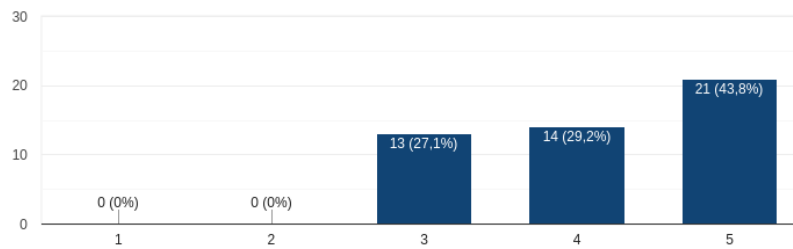
I found the tasks completed so far stimulated my learning and developed my skills and knowledge.

48 respostas



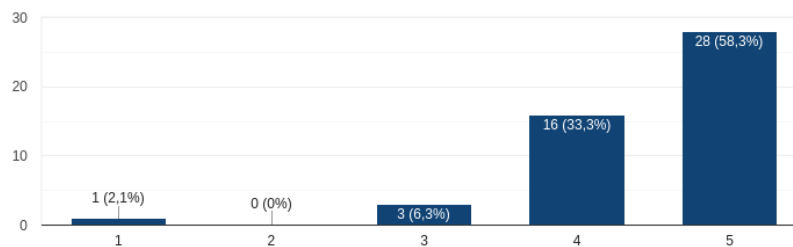
The module enabled me to develop skills that will help my employability or career development.

48 respostas



I would recommend this training program to other students.

48 respostas



If you have any further general comments on the module, please express your views here.

8 respostas

Some of the quiz questions could be written in a more clear way. The quiz also seems to have questions about all units, however it only requires the topics of "Environment and Natural Resource Security" and "Wildfires" to be marked as complete.

The quizzes at end end of each unit are a good idea that could be implemented in other modules. This module is very well organised and provides a lot of relevant resources.

This module could benefit from more varied learning resources (e.g. videos). The quiz at the end of the module is missing.

This unit only provides the main document as a learning resource. More learning resources and a quiz should be added.

The units could have more resources in more varied forms (e.g. videos, documents, etc.).

Very well organised, with a lot of relevant content.

Quizzes for each unit are great but more unit specific resources could be added.

GUIDELINES ON HOW TO USE ENSEC e-LEARNING PLATFORM

Intellectual Output 3 – Activity 4



Authors:

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University of Madeira

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Introduction

ENSEC aims at the development of an International Master's Degree for the Environmental Security Sector. Its curriculum is designed to equip the young academic generation with the specific, basic and transversal competences presently required when planning, in climate change mitigation and vested industries. Given that the curriculum is tailored to current labour market needs in our society, it aims to provide opportunities for students to gain additional skills throughout the study programme.

This Guidelines document contains all the information that a new user may deem necessary. Its focus is also directed at the virtual gateway processes and services by ensuring that the guidelines include:

- Entry requirements
- Resources necessary for the implementation
- Recruitment strategy
- Description of the learning outcomes and teaching materials
- Utilization of the VLP
- Preparation for recognition
- ECTS information
- IP and Services information

Entry Requirements

This program does not request any special requirements for admission. It is essential that the candidates possess a particular interest in the field of Environmental Security. The Modules in ENSEC are designed for easy access of a vast number of people. The target groups are the unemployed or professionals who wish or need to update their curriculum as well as students (graduate and postgraduate students) coming from diverse areas (tourism, biology, etc.).

Recruitment Strategy

Students do not require a recruitment strategy. For companies, a short questionnaire related with their field, interest and main characteristics is requested.

Profile of Teachers

The Modules are delivered by experienced teachers who have experience in the Environmental Security Sector. Each module is coordinated by a member of the ENSEC consortium. Each unit is co-authored by a group of experts in the related topics, either created by one of the Universities or one of the companies of the ENSEC consortium.

Description of Learning Outcomes

For each module, a common learning (educational) guide with clearly defined aims, competences, index, bibliography, and evaluation elements is provided. A key document ranging between 15-20 pages, with a simple format, composed of the core content of the unit, including texts, tables, graphs, figures and references to 'extras' is provided for each module. Within these, each contains between 10-15 bibliographical references, basic references and also additional reading material which may be relevant to the area of study. Concrete, real examples and case studies or practical applications accompany the modules so that the partakers develop a better understanding through practical examples within the course materials.

Students are provided with basic concepts in climate and environmental change. They will acquire further knowledge about more specific topics relating to the main topic area. The key objective for each registered student in this ENSEC project is to achieve a set of competences related to resource management, green materials, and sustainability. The ENSEC Training Program consists of 10 modules. The module titles as well as a summary of their learning outcomes including knowledge, skills and social competences are the following:

Education Recognition Program

A Memorandum of Cooperation has been signed by the partners of the ENSEC project. All members share a commitment in the provision of high-quality education and recognize the value of the international dimension of their activities and the mutual development of resource efficiency. These partners include Buckinghamshire New University (United Kingdom), Universidad de La Laguna (Spain), Transilvania University of Brasov (Romania), Universidad Politécnica de Madrid (Spain), Universidade da Madeira (Portugal), Associação Comercial e Industrial do Funchal – Chamber of Commerce and Industry (Portugal), EVM (Spain), Eesti Metsakeskus OU (Estonia) and Projects Abroad (United Kingdom).

Use of The Virtual Learning Platform (VLP)

A guide for the Virtual Learning Platform (VLP) users can be found in the Appendix. It provides a simple guide of how to access the ENSEC VLP and how to access all learning materials and activities that are available in each module. The ENSEC VLP has been created to provide users who are interested in the topic of the Environmental Security Sector and are from partner regions or any other region, with a tool to improve their knowledge and offer them the chance to network, within the domain of the project, with others from different regions. The User's guide can also be accessed on the Virtual Platform.

ECTs Information

The European Credit Transfer (ECT) was developed by the European Commission in order to provide common procedures to guarantee academic recognition of studies abroad. It provides a way of measuring and comparing learning achievements and transferring them from one institution to another. The ECT system is based on the principle of mutual trust and confidence between the participating higher education institutions.

ENSEC aims to improve the quality and applicability of the proposed graduate modules by seeking input and support within the environmental security sector in order to develop transversal skills in the sector in an emerging labour market and to offer students entrepreneurship mentoring/ coaching from relevant stakeholders.

All of the ENSEC project partners participate in the development of the virtual platform and will later certify that 6 ETCs (European Transfer Credits) per postgraduate module will be attributed with the intent of creating a certification award as a source for funding of the virtual portal beyond the project life itself.

Each module is divided into units and the total amount of ECTs per course is 6. The ENSEC study programme is formed by 10 courses so the total ECTs recognition of the ENSEC Master's Degree is of 60 ECTs.

User Instructions for the e-Learning Virtual Platform

<https://ensec.web.uma.pt>

This appendix aims at supporting users with a simple, easy to follow guide on how to access the ENSEC Virtual Learning Platform (VLP). It should enable the users with the tools and know-how to perform learning activities which are available in the different modules. The ENSEC VLP was created to provide users from the different partner regions, and any others, who may be interested in the topic of Environmental Security with a tool to improve knowledge and it also offers a possibility of networking within this domain with different people from other regions. Figure 1 provides a screenshot of the VLP main page, with the list of all the modules that are offered.

The course modules are implemented on a well-known e-Learning Platform, called Moodle. This platform is widely used by universities and schools all around the world. It is very flexible, easy to use, and provides teachers with diverse tools to build and present content, it allows for rich interactions amongst the students and presents learners and educators with an advanced set of evaluation and feedback tools. For a complete list of these features and characteristics, please see the platform reference below.

The guide will help students navigate throughout the several options of the platform, from the initial registration until the end of the modules. They will also be able to find explanations relating to the different resources used when presenting content and how to interact with other students and with the teachers.

The Moodle platform contains a variety of resources and activities, each with a large number of additional options. The focus of this guide is to explain the basic use of activity, enabling students to complete their modules. Therefore, each page has several links to more detailed documentation which are supported by Moodle creators and Moodle community².

The next sections present the Registration process, Registration for a particular module, the learning activities, the interaction tools and the evaluation activities.











ENSEC Modules

The major challenge concerns the global environmental change, focusing on the interactions between ecosystems and mankind, the effects of global environmental change on environmental degradation, the effects of increasing social request for resources, ecosystem services, and environmental goods. The relevant objects of environmental security are complex, adaptive systems with two main components – the social, characterized by human intent, and the ecological, rising without intent; these have interacted historically, and society strongly determines the landscape ecological components of such systems (Zurlini, Müller, 2008).

In the 10 presented Modules, we intend to give you a broad presentation and, in some aspects, detailed knowledge of Environment Security topics, nowadays challenges and particular subjects related to the management of a rising threat to our planet. Any person can register in ENSEC platform and attend any or all the Modules.

Survey about the Virtual Learning Platform

After visiting ENSEC VLP Platform and/or one or some of the Modules, please, help us improve filling this survey and the Module surveys.

 <p>M01: Introduction to Environmental Security</p> <p>Course ></p>	 <p>M02: Forest Fire Land Restoration</p> <p>Course ></p>
 <p>M03: Remediation of Polluted Soils</p> <p>Course ></p>	 <p>M04: GIS and Environmental Management/Secur...</p> <p>Course ></p>
 <p>M05: Climate Change and Waste Land Restoration</p> <p>Course ></p>	 <p>M06: Climate Change Mitigation and Adaptation ...</p> <p>Course ></p>
 <p>M07: International Climate Change Governance</p> <p>Course ></p>	 <p>M08: Forests, Poverty and Environmental Security</p> <p>Course ></p>
 <p>M09: Research Methods</p> <p>Course ></p>	 <p>M10: Introduction to Soft Skills</p> <p>Course ></p>

Navigation

[Dashboard](#)

Site home

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[My courses](#)

M01IES

M02FFLR

M03PSR

M04GEMS

M05CCWLR

M06CCMAS

M07ICCG

M08FPES

M09RM

M10ISS

Upcoming events

There are no upcoming events

[Go to calendar...](#)

Main menu

 ENSEC Project

Figure 1: Virtual Learning Platform main page

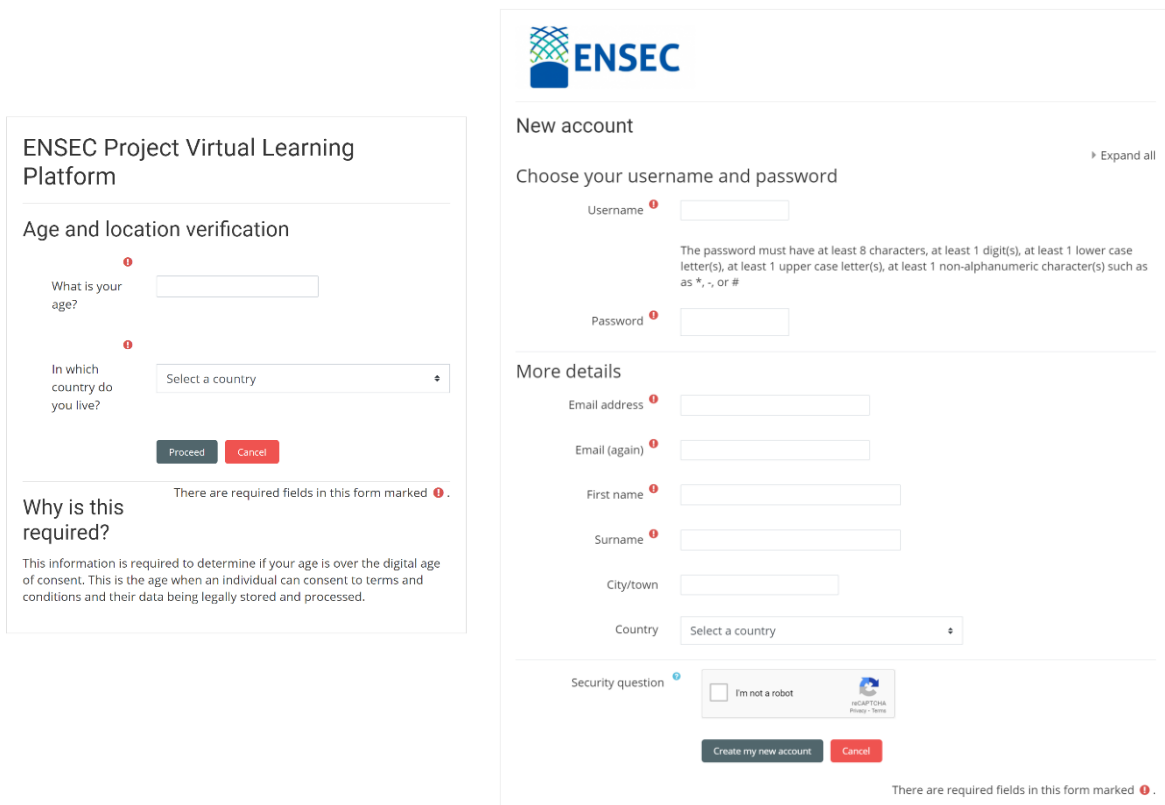
Registration - Initial steps

The use of the ENSEC VLP is free for any learner to access in order to take one or several modules within the course. To be able to access all the content and the assigned activities, a registration on the platform needs to be completed. The initial registration page can be accessed through the top right 'Log In' option, or directly through the link:

- <https://ensec.web.uma.pt/login/index.php>

Once the page has been accessed, instructions about how to create a new account are given in the middle right part of the page. The main steps are:

1. Fill out the New Account form with your details (press the 'Create New Account' button).



The image shows two screenshots of the ENSEC registration process. The left screenshot is titled "ENSEC Project Virtual Learning Platform" and shows an "Age and location verification" section. It asks for the user's age and the country they live in. There are "Proceed" and "Cancel" buttons. Below this is a section titled "Why is this required?" explaining that the information is needed to determine if the user is over the digital age of consent. The right screenshot is titled "New account" and shows a form to "Choose your username and password". It includes fields for Username and Password, with a note that the password must be at least 8 characters, contain at least one digit, one lower case letter, one upper case letter, and one non-alphanumeric character. Below this is a "More details" section with fields for Email address, Email (again), First name, Surname, City/town, and Country. At the bottom, there is a "Security question" section with a checkbox for "I'm not a robot" and a "Create my new account" button. Both screenshots indicate that there are required fields in the form.

Figure 2: Create an account process

2. An email will immediately be sent to your email address and must be checked.

Hi,

A new account has been requested at 'ENSEC Project Virtual Learning Platform' using your email address.

To confirm your new account, please go to this web address:

<https://ensec.web.uma.pt/login/confirm.php?data=SusPAwakgSIaIRL/>

In most mail programs, this should appear as a blue link which you can just click on. If that doesn't work, then cut and paste the address into the address line at the top of your web browser window.

If you need help, please contact the site administrator,

Admin User

Figure 3: Verification Email

3. Read your email and click on the web link it presents you with to proceed with the completion of the registration.
4. Your account will be confirmed, and you will be logged in.

The details requested for registration are the user's basic identification information, such as, username, email, name, and city/country. To minimize misuse and bulk account creation, the page also requires the user perform a visualization of an image with some information to guarantee a 'robot', called captcha3, is not attempting to access the website.

On this page it is also possible to recover the user's password in case it is lost or is considered insecure. Care must be taken when providing an email, because it will be used to send the user a link to change/request a new password.

Once registration has been completed, the user will have full access to the free courses on the platform. At this point, the new user will become part of the news mailing list, which, in the future, will provide other entities in the resource efficiency area with a possible contact point. The reception of emails from the platform can be managed by the user.

Registration for a Module

The modules of the Environment Security Sector course are free and registration for each one is achieved by basically selecting the desired course for registered course users. Simply access the e-Learning Platform's main page and take the time to begin learning the content of one of the modules.

The next section describes the organisation of the course and its modules. Notions for the completion of the e-learning activities are also provided.

Learning Activities

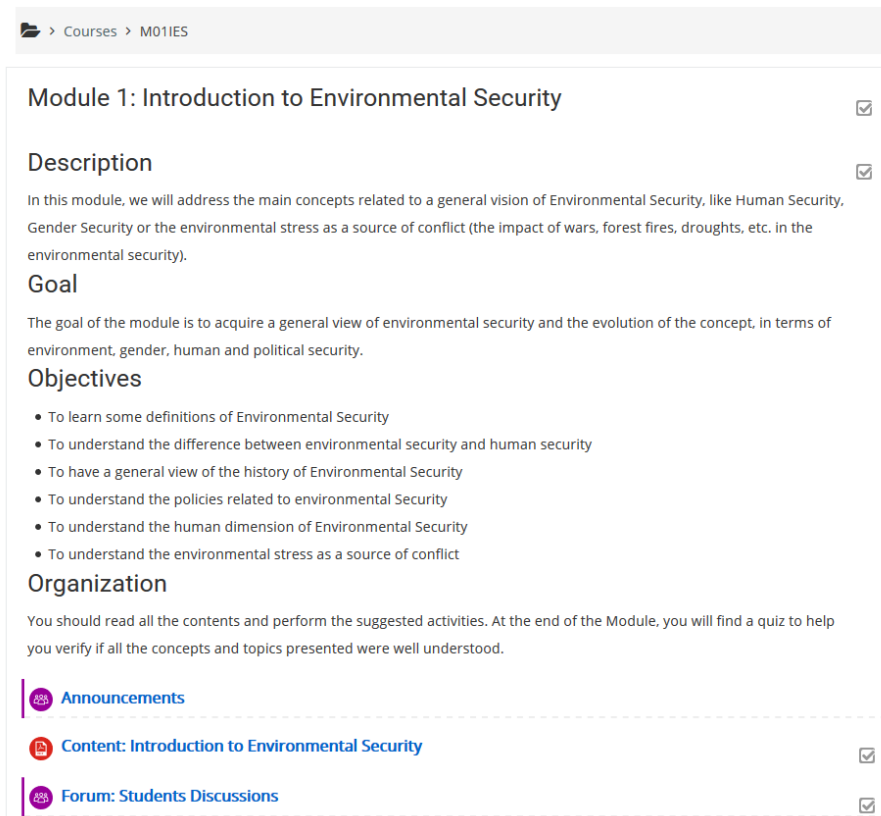
The course is organized into 10 modules. The complete list, with the objectives of each module may be viewed on the platform's main page. The structure and organization of each module is similar, in order to facilitate the user's navigation on the pages to access the content and have a simpler comprehension of the learning activities.

Each module is structured into two sections: Top and Units.

In the Top section the user will find some general elements about the module, such as, announcements, discussion forums and the module documentation. The Units section is divided into a number of content chapters and each offer students' resources and learning activities related to the topic of the chapter.

The next pages describe each one of these sections in detail.

The first section of the module contains global elements for the delivery of the content and is identical in all modules.



> Courses > M01IES

Module 1: Introduction to Environmental Security

Description

In this module, we will address the main concepts related to a general vision of Environmental Security, like Human Security, Gender Security or the environmental stress as a source of conflict (the impact of wars, forest fires, droughts, etc. in the environmental security).

Goal

The goal of the module is to acquire a general view of environmental security and the evolution of the concept, in terms of environment, gender, human and political security.

Objectives

- To learn some definitions of Environmental Security
- To understand the difference between environmental security and human security
- To have a general view of the history of Environmental Security
- To understand the policies related to environmental Security
- To understand the human dimension of Environmental Security
- To understand the environmental stress as a source of conflict

Organization

You should read all the contents and perform the suggested activities. At the end of the Module, you will find a quiz to help you verify if all the concepts and topics presented were well understood.

Announcements

Content: Introduction to Environmental Security

Forum: Students Discussions

Figure 4: Module top section elements

Besides the title and a short text introducing the module, three further elements should be present. These are described next.

A. Announcements.

In this section, teachers, and only teachers, can announce news and leave any course information for all registered participants. Examples of announcements are the availability of some new activity or resource, to inform of some schedule change, etc. This information is sent to the participants' e-mails.

B. Module X Syllabus & Content.

This is a static document (pdf document) with all the module content, that serves as reference for students throughout the time they are taking the module.

C. Discussion forum for the Module.

In this activity, all participants can initiate a discussion thread and participate in discussions created by others. A discussion thread can be developed around a generic question or a particular question about a unit. For example, a new report can be added by a student that can promote the discussion on the content of the report. Another example is when a teacher leaves a challenge about the course to motivate students to improve their knowledge. It is preferable to keep all discussions in one place, but, as an option, more discussion forums can be added throughout the rest of the module. Facilitators ought to moderate online discussions by offering scientific guidelines, when necessary, and by ensuring that the discussion follows common interactive patterns and rules.

The above listed elements are a minimum set that can be found in all modules. However, other elements can also be included in this section by the module authors, such as:

- Initial assessment: a quiz with questions to identify students' prior knowledge related to the module, normally defined by the module facilitator. As an option, a generic quiz could be added before the delivery of the modules (e.g., evaluate language, math, or any other knowledge/skills required for the course).
- Information about the administrative process or rules of the delivery of the module. After the definition of the delivery of the module, a document stating the rules for partaking in this module should be presented to the students to help them clarify any questions about the module.
- User Manual to help with the use of the learning platform. After all the content has been placed on the platform, facilitators may decide whether a manual is required.

The structure for each content unit is provided in the next section along with each possible element to present content and give students some feedback about their learning process.

Unit Sections

The structure of each module follows the previously structure defined in the construction of the modules content, which is normally delivered in a full document (pdf) for the module.

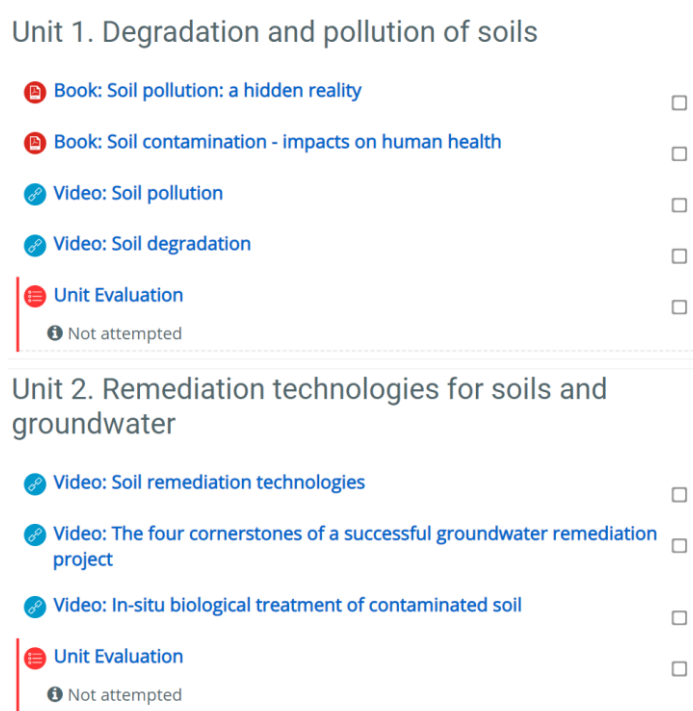


Figure 5: Unit Sections

The content in each unit is presented to the student in an array of activities. The option suggested and presented in Figure 5 is an example where the lessons with tasks, activities and diverse additional materials can be accessed are placed at the students' disposal and, finally, an assessment should be completed by the students. In sequence, and in detail, some of the options of content delivery and activities are explained:

A. Content Page.

This resource is a web page built by the Teacher in an on-line text editor, where text, images, videos, and rich formatting are available for some or all module content. Content can be presented in diverse manners and should be multimodal to appeal to multiple learning intelligences (Gardner, 1983).

B. Lesson.

This is a resource where a set of pages and simple quizzes lead the student throughout the content and allows them to assess their own learning activity metacognitively (Bonk and Cunningham, 1998,

p.29). Contrary to the Content Page where a student only has a top to bottom approach towards the information provided, with a Lesson, the Teacher has the flexibility to facilitate and guide the student along different learning paths, in which they can access diverse sources according to their needs and motivations.

Activities may include a writing assignment, a matching exercise; short or long answer questions; a True/False exercise; multiple choice

C. Book.

This is a resource where Teachers build their content into a book format. Each chapter/sub-chapter of the Book is a Content Page. The Book and Lesson resources are similar in the exhibition of content, but the Lesson is more suitable when Teachers want a more accurate perception of how knowledge is being acquired by students. A Book has chapters and sub-chapters and may include multi-modal sources such as videos and links to forums. It is however not interactive.

D. Quiz.

In each Unit, a quiz with a set of multiple-choice questions is presented and should be completed by the Students so that the Teacher (and the Students) can assess the learning process.



Figure 6: Example of a Quiz at the end of a Unit

Figure 6 provides an example of such a quiz, presenting the detail of a True or False question. Other types of quizzes include matching, short answer, calculated, and others.

Static documents, such as, Portable Document Format (pdf) files or Microsoft Word documents (.doc), and others, can be included and made available to students participating in a Unit. A last element that can also be seen in many units is the Link and this is a connection to a web page or other type of web resource on the internet. In Figure 7, below, an example taken from an actual Unit (Module 8) shows the use of the described elements, organized into Content, Evaluation and Web Resources.

Unit 3. Globalization and poverty






-  [Book: Globalization and poverty](#)
-  [Video: Globalization and the poor -- a look at the evidence](#)
-  [Link: Globalization Index](#)
-  [Unit Evaluation](#)
-  Not attempted

Figure 7: Web resource example

The work screened on the platform also includes information blocks, which are automatically updated, with information about the module. A brief explanation of each block is described next:

- Administration. For each user there are a set of options to define the course. A Teacher can configure several aspects of the course (backups, import, gradebook, course parameters). A Student can administer their registration and access their evaluation.
- Navigation. A tree structure of the courses and current module being accessed is offered to the users and they can navigate between all the elements provided.
- Latest News. The last five announcements added by the facilitators in the Announcements Forum are displayed in this block.
- Upcoming Events. All resources and activities can be made available on specific dates. This block displays the events that are coming up, reminding the students of the next task to achieve.
- Search Forums. A user can search the forums of the module for a word or set of words and receive a list of discussions where those words appear.
- Recent Activity. The platform updates this block for each access of the user, providing information about new and updated elements since the previous last visit.

The next section will exemplify how communication between students and teachers is stimulated.

Interaction tools

The basic interaction tool is the forum. There are two, but on the first, Announcements, only the teacher can add content. The second 'Discussion' can be used by any participant to disseminate information about the module, to promote a discussion or present a question.

To start a new discussion, click on the activity and, at the top of the page, click on the button 'Add a new discussion topic'. The complete form, seen in Figure 8, allows the participant to write a simple text question, or upload a richer document, with a video, or to disseminate a file attached to the forum message between the module participants.

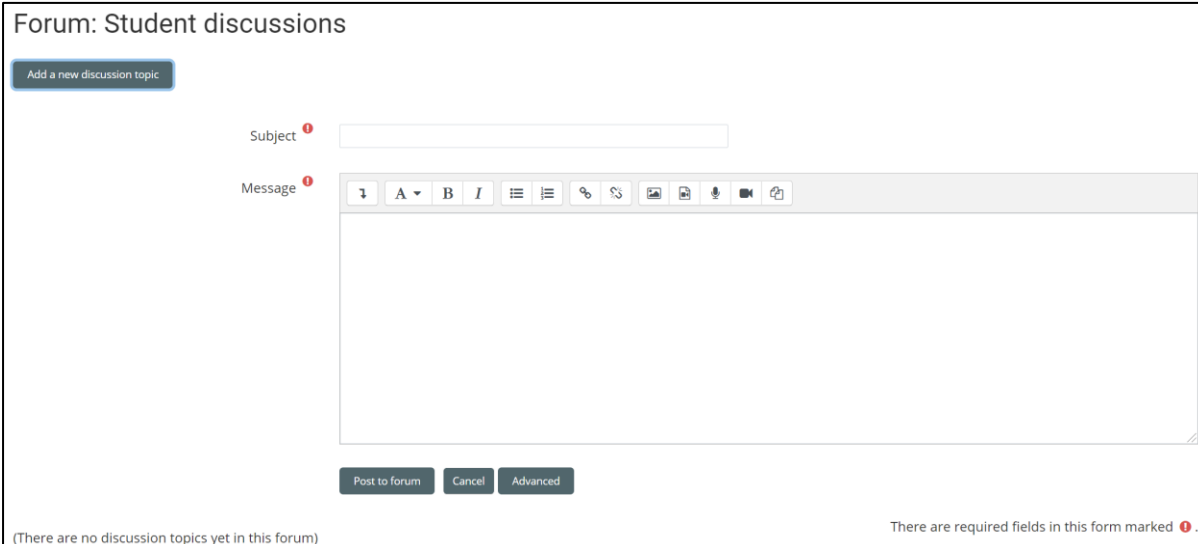


Figure 8: Discussion Forums

The reply to a question or forum post is possible by any registered participant, through the aforementioned procedure.

In both forums, all messages posted are available for consultation by any module participant and they are also sent to the participants' e-mails. If a user does not want to receive any more messages, he/she can unsubscribe the forum by selecting that option, which can be seen in all messages.

Other interaction tools include chats and video conferences, but these will only be available in future course editions.

Evaluation

At the end of each module, there is a quiz about the topics presented in the activities of the module. A student should only access the quiz after completing all learning activities. In some modules, at the end of each Unit, there will be a short quiz, similar to the final one, but with questions only about the Unit being completed.

The quiz is of utmost importance both to teachers and to students. Teachers will be able to assess if the content that has been presented is indeed increasing the students' knowledge within the topics; and the quiz also helps to identify whether each learning activity needs to be revised or maintained.

For the students, this is one of the most helpful feedback moments to assess if effective learning of the content has occurred or if more study and effort to complete the module is needed.

The final quiz structure is the same for every module, for the sake of simplicity, and it includes, at least, 15 multiple choice questions about the module content.

The student can navigate the quiz, completing the questions he/she already knows the answer to and returning later to others that may have been left behind due to doubts or queries. After completing the quiz, the student will receive information indicating the end of the course and which steps to take from there onwards.

Feedback

Upon completing each unit, students can answer a short survey to provide feedback on the module. This questionnaire evaluates the structure, content, quality, and adequacy of the learning materials for each module prepared as a base for a future online course in the framework of the European Project ENSEC. Unlike the quizzes at the end of each unit, the final surveys are anonymous and confidential and under copyright laws according to ENSEC project and the European Union (EACEA). An example of these can be seen in Figure 9, below.

Evaluation of ENSEC Module

The purpose of this questionnaire is to evaluate the structure, content, quality and adequacy of the learning materials for each module prepared as a base for a future online course in the framework of the European Project ENSEC. All the information, your answers and learning contents that you'll have access to, is confidential and under copyrights laws according to ENSEC project and European Union (EACEA). In each question, both indicate your agreement or disagreement with each statement using the scale or/and completing the boxes with an extended opinion.

*** Required**

Institution (Company name, University, etc) *

Your answer _____

Country *

Choose _____

I am a/an *

Choose _____

I have just completed the following module: *

- Introduction to Environment Security
- Forest Fire Land Restoration
- Remediation of Polluted Soils
- GIS and Environmental Management_Security
- Climate Change and Waste Land Restoration
- Climate Change Mitigation and Adaptation Systems
- International Climate Change Governance
- Forests, Poverty and Environmental Security
- Research Methods
- Introduction to Soft Skills

I am generally satisfied with the quality of the whole module. *

1 2 3 4 5

Strongly disagree Strongly agree

The module's outlines clearly defined what I was expected to do. *

1 2 3 4 5

Strongly disagree Strongly agree

The module's contents were well organised. *

1 2 3 4 5

Strongly disagree Strongly agree

The contents of this module adjust to the specific learning outcomes in this particular field. *

1 2 3 4 5

Strongly disagree Strongly agree

The library resources are adequate for my needs. *

1 2 3 4 5

Strongly disagree Strongly agree

I have been able to access general IT resources when needed. *

1 2 3 4 5

Strongly disagree Strongly agree

The learning material provided was helpful and content-oriented. *

1 2 3 4 5

Strongly disagree Strongly agree

The assessment requirements and marking criteria were made clear at the beginning of the module. *

1 2 3 4 5

Strongly disagree Strongly agree

I found the tasks completed so far stimulated my learning and developed my skills and knowledge. *

1 2 3 4 5

Strongly disagree Strongly agree

The module enabled me to develop skills that will help my employability or career development. *

1 2 3 4 5

Strongly disagree Strongly agree

I would recommend this training program to other students. *

1 2 3 4 5

Strongly disagree Strongly agree

If you have any further general comments on the module, please express your views here.

Your answer _____

Submit

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Google Forms

Figure 9: Final Survey

References

Bonk, C. J., & Cunningham, D. J. (1998). Searching for learner-centered, constructivist, and sociocultural components of collaborative educational learning tools. In C. J. Bonk & K. S. King (Eds.), *Electronic collaborators: Learner-centered technologies for literacy, apprenticeship, and discourse* (p. 25–50). Lawrence Erlbaum Associates Publishers.

Gardner, H. E. (1983). *Frames of Mind*. New York: Basic Books.