

# Module 1 – Design in Environmental Engineering

## Lesson Plan

Deliverable: IO1.A4.2



DATE

ARC

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Project Number: 2020-1-UK01-KA201-078934



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

The European Commission's support for the production of this publication does not constitute an endorsement of the contents, which reflect the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

## REVISION HISTORY

Version	Date	Author	Description	Action	Pages
1.0	20/01/2021	HESO	Creation	C	TBS

(\*) Action: C = Creation, I = Insert, U = Update, R = Replace, D = Delete

## REFERENCED DOCUMENTS

ID	Reference	Title
1	2020-1-UK01-KA201-078934	IPinSTEAM Proposal
2		

## APPLICABLE DOCUMENTS

ID	Reference	Title
1		
2		

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# 1. Environmental Engineering

## 1.1 General Information

Engineers are at the center of designing solutions to address these issues and they place a lot of attention on passive solar heating as a means of reducing our dependence on non-renewable energy sources. Passive solar design is best incorporated into new buildings and structures; it is more challenging to add to existing buildings.

Students will learn about Intellectual Property rights and about the importance of Engineering Design Through Environmental Projects.

### 1.1.1 Brief Description

The following lesson plan will involve a small exercise to teach about design rights, within the context of Engineering Design Through Environmental Projects. This lesson plan we will define and understand what is a design in Environmental Engineering topic. Then we try ourselves to design an object using exclusive right, taking action against someone who violates their design even if not copied. The generation of design solutions based on existing Intellectual Property (IP) documents may not be appropriate for all design situations.

### 1.1.2 Learning Objectives

The following lesson plan has the objective of teaching in a funny way about how designs are created, how they work within the business world and finally how to register them. Design gives the holder an exclusive right to create the design., that the person who creates the design will own the copyright and design rights.

Students will be able to:

- Learn about relationship between Engineering Design and Intellectual Property
- Learn the importance of Engineering Design Through Environmental Projects

### 1.1.3 Links to curriculum

The following lesson plan links to the STEAM subjects, specifically to Environmental Engineering. This lesson plan will be linked to Engineering Design Through Environmental Projects, motivating student achievement in STEM disciplines, computer science, and other fields of study such as innovation and entrepreneurship.

### 1.1.4 Duration

The following lesson plan can last from 1 hours in a classroom of about 25 to 30 students.

### 1.1.5 Extra materials required

- One blackboard per classroom
- Pen, crayons or pencil colours
- Paper

## 1.2 Step-by-step instructions

The lesson plan created to teach more deeply about design rights and how they work in Environmental Engineering. The teacher will explain the context for students to be familiar with the topic treated. Students to understand how design rights work, presenting the ways to register a design. A product does not have to be produced on an industrial scale or have artistic value in order for it to be a design.

### Activity 1 - Zero-Energy Housing

**Execution:** in a class with access at internet, proposing a video **Zero-Energy Housing**, <https://www.youtube.com/watch?v=iV-aTj-bow> . Engineers are at the center of designing solutions to address these issues and they place a lot of attention on passive solar heating as a means of reducing our dependence on non-renewable energy sources. Passive solar design is best incorporated into new buildings and structures; it is more challenging to add to existing buildings.

Students will investigate passive solar building design with a focus solely on heating. They will learn how insulation, window placement, thermal mass, surface colors, and site orientation play important roles in passive solar heating. They will use this information to design and draw their own.

Teacher will invite students are to create their new designs and to present their product to be registered. A design needs to be registered in order to get full protection. Designs may be registered at country level through national IP offices.

Products will be evaluated on the originality of the design, on the quality of their presentation and on the accuracy of the information on how to register these design rights.

### Activity 2 - Create a design protection strategy for an ECO HOUSE – ECO FRIENDLY BUILDING

Students have to imagine that they have to create a new design, to commercialise and distribute their product in the European Union (EU) market. They will be afraid that others will reap the benefits of their newly drafted design. They have to learn to protect it. A debate and around the classroom discussion can be initiated on topic.

Teacher will invite students are to debate all aspects of design protection:

- *Putting a product on the market incorporating the protected design (or to which the design is applied) without the consent of its proprietor would be considered illegal.*
- *Offering a product for sale incorporating a protected design without the consent of its proprietor would be considered illegal.*
- *Marketing a product incorporating the protected design without the consent of its proprietor would be considered illegal.*

### 1.2.1 Introduction or orientation

In this phase the topic to be studied or investigated is presented to the students by their teacher. In this case, the topic is Engineering Design Through Environmental Projects / Zero-Energy Housing. The teacher's role in this phase is to encourage students to express ideas, prior knowledge and questions about the topic, while promoting interaction and communication between them.

## 1.2.2 Preparation or conceptualization

In this phase the teacher can answer potential questions or clarify any doubts, presenting the theoretical material about the topic which includes concept definitions, theoretical knowledge and other prerequisite background information. Students can ask questions and get any clarification from their teacher before starting the exercise. They will debate videos presented from youtube, for eg at link <https://www.youtube.com/watch?v=iV-aTj-bow>, analysing the process of IP designs.

## 1.2.3 Investigation

In this phase the teacher invites students to create designs and ecological houses, offering the material for students to work on, such as paper worksheets with instructions, before starting the main exercise.

## 1.2.4 Conclusion

In the conclusion phase, main points, answers, results and steps are summarized. In this phase students may have discussion, communication and reflection to wrap-up key topics addressed in the lesson plan. Students are encouraged to express their views and their opinions.

## 1.3 Key questions for knowledge testing

A short quiz of about 4 key questions that can be used to check the learners' knowledge acquisition. Correct answers can be marked in bold.

Question 1: Protection is conferred by way of registration upon the right holder for those design features of a product with are shown visibly in an application and made available to the public by way of publication

**True/ False**

Question 2: Does not correspond to the definition of design: not a product, e.g. living organisms – representations of them in their natural state, not resulting from an industrial or manual processing

**True/ False**

Question 3: The design shall not, however, be deemed to have been made available to the public for the sole reason that it has been disclosed to a third person under explicit or implicit conditions of confidentiality.

**True/ False**

Question 4: Scope of protection of community designs not includes any design which does not produce on the informed user a different overall impression.

**True/ False**

## 2. Additional resources

### 2.1 Further reading

<https://www.youtube.com/watch?v=iV-aTj-bow>

<https://www.homebuilding.co.uk/advice/what-is-an-eco-home>

[Recycled Towers - YouTube](#)

Design Rights. (2020). Oury Clark. <https://www.ouryclark.com/resource-library/quick-guides/intellectual-property/design-rights.html>

Moulton, L. (2021, May 25). A basic guide to design rights. Wright Hassall.

<https://www.wrighthassall.co.uk/knowledge-base/a-basic-guide-to-design-rights>

### 2.2 Appendix

Attach or include here any additional items such as student worksheets, hand-outs that accompany this lesson plan

## References

<https://www.youtube.com/watch?v=iV-aTj-bow>

[Zero-Energy Housing - Activity - TeachEngineering](#)

[Environment Lessons, Worksheets and Activities \(teacherplanet.com\)](#)

[A Violation of Privacy - Markkula Center for Applied Ethics \(scu.edu\)](#)

[https://internationalipcooperation.eu/sites/default/files/arise-docs/2020/carIPI\\_jan2020\\_27-4-2020-RCD-Overview-BARBADOS.pdf](https://internationalipcooperation.eu/sites/default/files/arise-docs/2020/carIPI_jan2020_27-4-2020-RCD-Overview-BARBADOS.pdf)

[cub\\_housing\\_lesson05\\_activity1\\_designchallengehandout\\_draft2\\_tedl\\_dwc.pdf \(teachengineering.org\)](#)