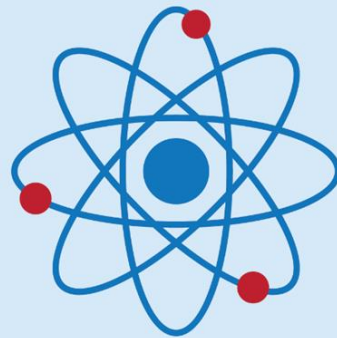


Boosting a novel and innovative
tRAining approaCh of Key
Enabling Technologies



BRACKET

2018-1-HR01-KA202-047493

JOINT CURRICULUM



The **aim of the BRACKET project**, co-funded by the Erasmus+ Programme of the European Union, is to create an innovative didactic content to transfer Key Enabling Technologies, concretely nanotechnology, biotechnology and advanced materials, to Vocational Education and Training (VET). It will comprise a joint curriculum, didactic materials and a collaborative platform in line with the needs of different **target users** identified:

VET providers, students, enterprises and workers, local and regional authorities, etc.

BRACKET will develop and implement an innovative practice, a new training curriculum for KETs, specifically focused in nanotechnology, biotechnology and advanced materials, adapted to the future trends and needs of the whole society in terms of enabling technologies. Thus, BRACKET will reinforce the vocational education and training of the target groups and review those **key competences and skills needed** for providing indispensable technological elements for the development of a wide range of new materials, products, processes and services with greatest added value.

In this short document, you can see the **overview of the planned training course** that will be developed in the framework of the BRACKET project.

You can find more information on the project's website: <https://bracket.erasmus.site/>



BRACKET
JOINT CURRICULUM

1

**Introduction to
Key Enabling
Technologies**

- 1.1 Industry 4.0
- 1.2 Sustainable development
- 1.3 Key Enabling Technologies

2

Nanotechnology

- 2.1 Fundamentals on nanotechnology
- 2.2 Current and emerging applications in three areas: food, medicine and materials
- 2.3 Legislation

3

Biotechnology

- 3.1 Fundamentals on biotechnology
- 3.2 Current and emerging applications of biotechnology
- 3.3 Biocatalysts- biotransformation
- 3.4 Legislation

4

**Advanced
Materials**

- 4.1 Manufacturing of materials with advanced properties
- 4.2 Graphene and carbon-based materials
- 4.3 Renewable adhesives and resins
- 4.4 Advanced engineered wood-based composites

5

**Innovation
regarding Key
Enabling
Technologies**

- 5.1 Innovation management
- 5.2 Entrepreneurial skills
- 5.3 E-leadership
- 5.4 Financing KET project
- 5.5 New T&L methods





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JOINT CURRICULUM DETAIL DESCRIPTION

MODULE 1. INTROCUCTION TO KEY ENABLING TECHNOLOGIES

Lesson 1.1 Industry 4.0

The training unit aims at describing concepts of Industry 4.0 and Key Enabling Technologies. Industry 4.0 will lead to digital transformation in industrial sector.

Lesson 1.2 Sustainable development

The training unit aims at providing some problem-solving skills to perform critical analysis of facts and figures.

Lesson 1.3 Key Enabling Technologies

The unit aims to describe what Key Enabling Technologies are, as well as analyse and compare the differences between them.

MODULE 2. NANOTECHNOLOGY

Lesson 2.1 Fundamentals on nanotechnology

The aim of this unit is to have basic general understanding of nanotechnology, its pros and cons, as well as the potential risks of its usage in different applications.

Lesson 2.2 Current and emerging applications in three areas: food, medicine and materials

The aim of this unit is to provide new ideas for technological applications of nanotechnology, especially in the three areas

Lesson 2.3 Legislation

The objective of this unit is to understand the legislation on intellectual property and the ethical principles in the field of nanotechnology.





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JOINT CURRICULUM DETAIL DESCRIPTION

MODULE 3. BIOTECHNOLOGY

Lesson 3.1 Fundamentals on biotechnology

The training unit aims at providing the basis or the opportunity to be original in the development and/or application of ideas in the field of biotechnology.

Lesson 3.2 Current and emerging applications of biotechnology

The training unit aims at clarifying the capacity of integrating the knowledge and tools of biotechnology to apply them to the different industrial sectors.

Lesson 3.3 Biocatalysts- biotransformation

The training unit aims at understand the use of tools, systems or processes in order to conduct research or solve practical problems in the field of biocatalysts and biotransformation.

Lesson 3.4 Legislation

The objective of this unit is to understand the legislation on intellectual property and the ethical principles in the field of biotechnology.

MODULE 4. ADVANCED MATERIALS

Lesson 4.1 Manufacturing of materials with advanced properties

The aim of the training unit is to understand the use of manufacturing processes to produce materials with advanced properties.

Lesson 4.2 Graphene and carbon- based material

The aim of the training unit is to equip trainees with the knowledge about graphene and carbon-based materials and their use in advanced materials applications.

Lesson 4.3 Renewable adhesives and resins

The aim of the training unit is to equip trainees with the knowledge about renewable adhesives and/or resins to be used in advanced materials.

Lesson 4.4 Advanced engineered wood-based composites

The aim of the training unit is to equip trainees with the knowledge about the use of engineered wood-based composites in the development of new products.





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JOINT CURRICULUM DETAIL DESCRIPTION

MODULE 5. INNOVATION REGARDING KEY ENABLING TECHNOLOGIES

Lesson 5.1

Innovation management

The aim of this unit is to be familiar with the patents and other IPR protection regarding R&D development related to KETs.

Lesson 5.2

Entrepreneurial skills

The aim of this unit is to be able to identify and boost some entrepreneurial skills (social, analytical, creative, and communicative, etc.) to achieve the launch of products from the research to the market.

Lesson 5.3

E-leadership

The objective of this unit is to know some digital trends to exploit operating models with digital marketing and innovative strategic business.

Lesson 5.4

Financing KET projects

In this unit, the student will learn different possibilities to find KET funding in public and private sectors.

Lesson 5.5

New T&L methods

The aim of this unit is to show the possibilities of students to improve their knowledge through online courses and e-learning.

