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

DYNAMIC – Towards responsive engineering curricula through europeanisation of dual higher education
588378-EPP-1-2017-1-DE-EPPKA2-KA

DYNAMIC – Newsletter 1

Dear readers,

The DYNAMIC project is addressed to the needs of flexible and responsive engineering curricula. Tendencies nowadays show that presence of modern engineering educational programs is a challenge in order to keep pace with the rapid technological advancement and increasing innovation pressure.

In EU aspect, the need for modernizing the ongoing engineering curricula is particularly acute in the new Member States Bulgaria, Romania and Croatia which were ranked as the modest innovators in the EU scoring the last three places in the 2016 European Innovation Scoreboard. This leads to missed economic opportunities for both the states and EU investors since industrial sectors such as manufacturing represent one of the main sectors of opportunity in the region.

In regard to this the key objective of the DYNAMIC project is to develop, implement, test and validate 3 undergraduate programmes in the field of Mechatronics and Robotics (Sibiu, Romania), Shipbuilding and Construction (Varna, Bulgaria) and Mechanical Engineering and Production (Pula, Croatia). As a result, the main outputs of the project will include:

- Methodological guidelines for design and implementation of practice-integrated dual higher education programmes in Science & Technology Studies;
- A Toolkit for implementation and documentation of dual higher education programmes and Train the trainer course;
- Pilot implementation of ECTS-mapped periodical practical phases for 3 dual engineering practice-integrated dual programmes;
- A dissemination plan that will ensure sustainable long-term exploitation of project results beyond the project life-time and outside the partnership.

News

1. First meeting under the project "DYNAMIC" in Wismar, Germany

The project coordinator Hochschule Wismar – University of Applied Sciences Technology, Business and Design, welcomed 26 participants from 16 partner organizations

This project has been funded with the support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

DYNAMIC – Towards responsive engineering curricula through europeanisation of dual higher education
588378-EPP-1-2017-1-DE-EPPKA2-KA

Between 13th – 14th of December, 2017 in Wismar, Germany , was held the First International Kick-Off Meeting of the project "DYNAMIC – Towards responsive engineering curricula through europeanisation of dual higher education in sectors of Innovation & Smart Specialisation".

Host of the event was the project coordinator Hochschule Wismar – University of Applied Sciences Technology, Business and Design. Sixteen partners from five countries attended the meeting: Hochschule Wismar – Germany, Lucian Blaga University of Sibiu – Romania, Marquardt Schaltsysteme SCS Sibiu – Romania, Continental Automotive Systems Sibiu – Romania, German-Bulgarian Chamber of Commerce and Industry – Bulgaria, Technical University Varna – Bulgaria, Keppel FELS Baltech Ltd – Bulgaria, MTG-Dolphin PLC – Bulgaria, Fachhochschule Joanneum – Austria, Polytechnic Pula – Croatia, Holcim (Hrvatska) d.o.o. – Croatia, ULJANIK Shipyard – Croatia, RAABE – Bulgaria, German- Romanian Chamber of Commerce and Industry – Romania, Croatian Chamber of Economy – Croatia and Region of Istria – Croatia.

The meeting started with an opening speech by Hochschule Wismar's rector - Prof. Wiegand-Hoffmeister and continued with presentations by participants in which they showcased the main activities of their organizations. Dual study models in different countries, the needs of innovation in higher education and companies' requirements in terms of student's competences were key topics at the event.

The focus was put on the main objectives and target groups of the project, which were presented at the meeting. Detailed work plan, expected results, task allocation and transfer possibilities of dual studies in Bulgaria, Romania and Croatia were also discussed. Tasks, activities and results for the period until the second Meeting in June, 2018 in Pula, Croatia were outlined.

The good start of a successful working cooperation was set up with the signing of partnership agreements.

This project has been funded with the support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

DYNAMIC – Towards responsive engineering curricula through europeanisation of dual higher education

588378-EPP-1-2017-1-DE-EPPKA2-KA

This project has been funded with the support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

2. First regional focus group meeting under the project "DYNAMIC" in Pula, Croatia

Participants introduced the designing of a dual educational plan between teaching and practical processes on undergraduate study program of Polytechnic Pula College of Applied Sciences

On February 26th, 2018 in Polytechnic Pula – Croatia was held the first regional focus group meeting, part of "DYNAMIC" project. In the event participated 12 professionals from Holcim Hrvatska, Polytechnic Pula and Uljanik brodogradilište.

The Dean of Polytechnic Pula, MSc Davor Mišković opened the meeting with welcome speech. Polytechnic Pula's DYNAMIC project manager - Mrs. Tamara Žufić Košara gave an introduction about the possibility for designing a dual educational plan between teaching and practical processes on undergraduate study program of Polytechnic. The agenda proceeded with a discussion about the possible courses which can be involved in the dual education, numbers of ECTS, content and learning outcomes from each course involved in dual education.

All participants received tasks and obligations for the project's implementation in the next months and the upcoming regional focus group meetings were announced as well as a press conference within Open doors of Polytechnic Pula in March.

This project has been funded with the support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

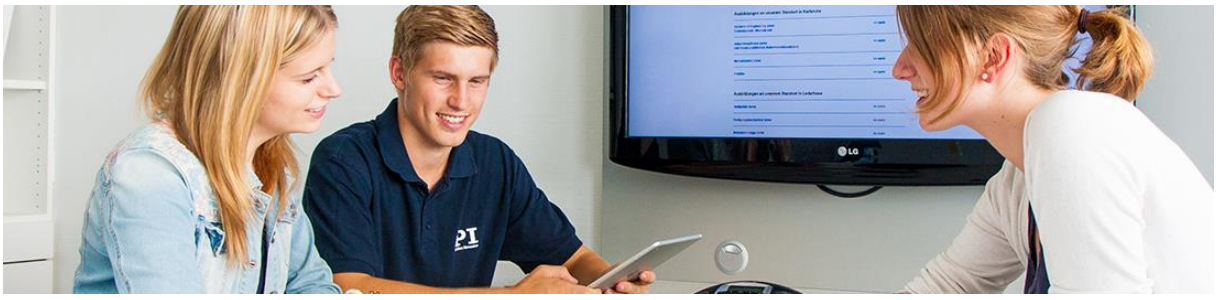
3. Pilot implementation of the practice-integrated dual curriculum in DYNAMIC project

3 undergraduate programs in the field of Mechatronics and Robotics, Shipbuilding and Construction and Mechanical Engineering and Production will prepare students for the business world and successful career start

The programs are designed to integrate practical phases and theoretical ones with periodical rotation, which allows students to receive flexible and also fixed practical hours. This model has been selected because it allows integration of the practical phases without major restructuring of the curricular plan.

The partnership will test the dual approach and optimise the modules while providing various best practice examples of university-business cooperation for the region. Based on the evaluation results, the partners will improve and further develop the programs. The details about the dual curricula in each higher education institution are as follows:

- **Pilot implementation of dual program in the field of Mechatronics and Robotics – Sibiu, Romania** (includes cooperation between Lucian Blaga University of Sibiu, Schaltsysteme SCS Sibiu and Continental Automotive Systems Sibiu) – 4-year bachelor program, intended for 10 students, which will start in October 2018 with a theoretical phase. The program will continue with 2 theoretical phases during 3th and 4th academic semesters, as well 2 practical phases per 3 months during summer breaks and 60 to 90 flexible practical hours per semester.
- **Pilot implementation of dual program in the field of Shipbuilding and Construction – Varna, Bulgaria** (includes cooperation between Technical University Varna, Keppel FELS Baltech Ltd and MTG-Dolphin PLC) – 4-year bachelor program, intended for 10 students, which will start in October, 2018 and will follow the same model as the described above in Sibiu.
- **Pilot implementation of dual program in the field of Mechanical Engineering and Production - Pula, Croatia** (includes cooperation between Polytechnic Pula, Holcim and SUC) – 3-year bachelor program, intended for 5 students, which will start in October 2018 and will follow the model as ones in LBUS & TUV with one difference - dual students will have only fixed in-company practical trainings for 3 months in summer and 1 month in winter breaks.



This project has been funded with the support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

https://www.physikinstrumente.com/en/careers/training-dual-curriculum-education/?tx_avsoftgarden_joboverview[type]=&tx_avsoftgarden_joboverview[audience]=&tx_avsoftgarden_joboverview[location]=&tx_avsoftgarden_joboverview[searchterm]=&tx_avsoftgarden_joboverview[subscriptionSuccess]=&tx_avsoftgarden_joboverview[action]=filter&cHash=8ecf83362c4f7ee0339f903c1fc00484

4. What is dual education?

Dual programs in higher education set up a balance between practice-orientated and theoretical learning

Higher education in many countries around Europe offers dual programs. Europe has long tradition in using vocational education in order to prepare youth for entry into the workforce. Austria, Germany, and Switzerland are one of the countries with strongest presence of dual education in which the links between the education system and industry are very close.

The specific characteristics about dual programs are their practice-oriented courses, which are delivered by academic institution in cooperation with corporate partners or other organizations.

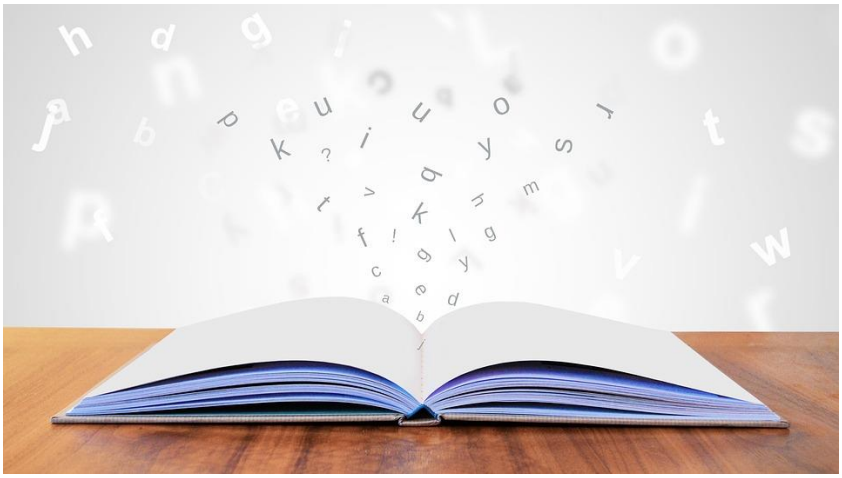
Students receive academic studies at the participating university and work-based learning at a partner company that is qualified to deliver this training. A common practice suggests that seniors spend approximately the same time with each training partner and are paid by the company on a contractual basis.

The main objective of dual programs in higher education is to increase the relevance of higher education and to respond to rising demand for highly skilled workers in a number of areas. Dual training is seen as benefiting all parties: the companies receive can recruit future employees trained according to their specific profiles, higher education institutions are able to modernize their curriculum in collaboration with their training partners and use the companies' expertise and equipment to offer high-level training to their students. Students also benefit from dual programs – they gain work experience alongside their training, earn a salary and have a good chance of being offered a job at their training company upon graduation.

Sources: https://ec.europa.eu/education/compendium/dual-higher-education-programmes_en ;

http://hanushek.stanford.edu/sites/default/files/publications/Hanushek.2012.CESifo%20Forum.pdf

This project has been funded with the support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



https://pixabay.com/bg/%D0%BB%D0%B8%D1%82%D0%B5%D1%80%D0%B0%D1%82%D1%83%D1%80%D0%B0-%D0%BA%D0%BD%D0%B8%D0%B3%D0%B0-%D1%81%D1%82%D1%80%D0%B0%D0%BD%D0%B8%D1%86%D0%B0-%D1%87%D0%B8%D1%81%D1%82%D0%B0-3033196/

5. What is engineering?

Engineers can be distinguished from other professionals by their ability to solve complex problems and implement solutions in cost effective and practical ways.

Engineering is the application of scientific knowledge to solving problems in the real world. While science (Physics, Chemistry, Biology, etc.) allows individuals to gain an understanding of the World and the Universe, Engineering enables this understanding to come to life through problem solving, designing and building things.

The ability to interpret mathematical equations and understand scientific concepts are just some of the skills that engineers use to develop a concept or product. There are engineers in practically every field, from biomedical and chemical to mechanical nuclear. Engineers use problem solving skills combined with practical application in order to come up with inventions that present resolutions to everyday quandaries.

Engineering has matured and expanded over the centuries along with humans' knowledge and understanding of science, mathematics and the laws of physics and their applications. Today, engineers apply both well-established scientific principles and cutting-edge innovations in order to design, build, improve, operate and maintain complex devices, structures, systems and processes.

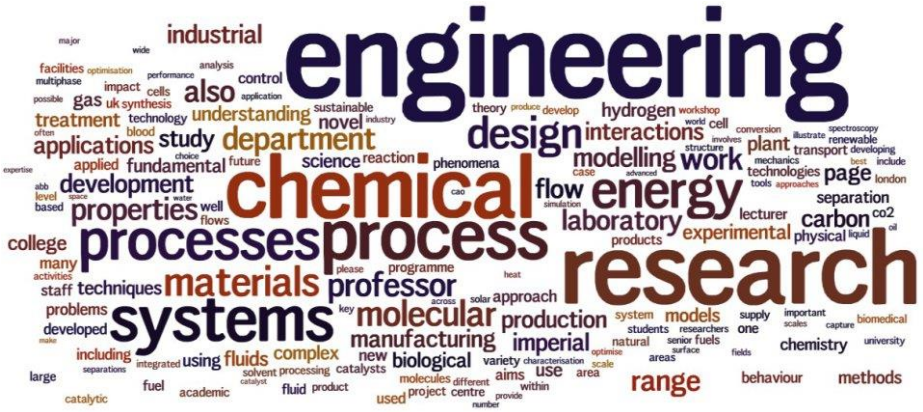
The field of engineering is divided into a large number of specialty branches:

- Aerospace engineering

This project has been funded with the support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

- Biological engineering
- Civil engineering
- Chemical engineering
- Ceramics engineering
- Computer Science
- Electrical engineering
- Engineering physics
- Financial engineering
- Fire protection engineering
- Industrial engineering
- Materials Engineering
- Mechanical Engineering
- Military engineering
- Nuclear engineering
- Offshore engineering
- Optical engineering
- Petroleum engineering
- Planetary engineering / Climate engineering (Geoengineering)
- Software engineering
- Systems engineering
- Textile engineering

Source: https://onlinemasters.ohio.edu/a-closer-look-at-engineering-professions/



http://www.ugi.ac.in/blog/wp-content/uploads/2017/05/Engineering-Courses.jpg

This project has been funded with the support from the European Commission. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.