


## FICHE OE / UPorto-FEUP

Country	Portugal	Country and/or Region - Map 
Region	Lisbon and Porto	
Name of Institution/Initiative:	Ordem dos Engenheiros (OE) and Faculdade de Engenharia da Universidade do Porto (UPorto-FEUP)	
URL:	<a href="https://www.ordemengenheiros.pt/pt/">https://www.ordemengenheiros.pt/pt/</a> <a href="https://sigarra.up.pt/feup/pt/web_page.inicial">https://sigarra.up.pt/feup/pt/web_page.inicial</a>	
Focus Area of Skills Acquisition:	Soft skills, microcredentials and accredited continuing education	
Nature of Institution/Initiative:	HEI and Professional Public Association	

### Contextual Snapshot:

<p>Relevance of the Focus Area:</p>	<p>Engineering is a dynamic field that is constantly evolving in response to social, economic, and technological changes. Its challenges have transcended traditional boundaries, to encompass social, environmental, and ethical considerations. While technical expertise remains a foundation of engineering, the increasing complexity of today's challenges demands engineers to possess a broader set of skills that transcend specific disciplines. As a result, cultivating TTS (Transversal and Transferable Skills) throughout an engineer's career is paramount, so that they can succeed in an ever-evolving professional landscape.</p>
<p>Current Status of the Focus Area:</p>	<p>Several engineering HEIs in Portugal are actively working to provide formal opportunities to develop TTS for engineering students. Some are implementing active learning approaches (such as problem-based and challenge-based learning); others are being proactive in contacting industry and companies to collaborate (eg: MSc thesis done in company settings), others are creating, in their programs, courses that develop TTS.</p> <p>OE developed, in addition to CPD (Continuously Professional Development) in all regions, a Continuing Education Accreditation System for Engineers - OE+AcCEdE®, for companies and HEIs, with the goal of ensuring the quality of the training offer of interest to its members, encouraging our engineers to pursue CPD.</p>
<p>Key Challenges:</p>	<p>These efforts developed so far in our country need to be further explored and deepened. More HEIs need to embrace this effort, so that it becomes a general endeavour. Also, there's a difficulty in including more skills in HEIs programs, since a 1st cycle needs to be completed in 3 years and a 2nd cycle in 2 years.</p>

	In regards to CPD, the challenge is to ensure the quality of the courses, post graduations, so that they can meet the expectations of the engineers that enrol. In general, continuous trainings of personal interest should be done in after-work hours, while continuous trainings of interest to companies are done partly in working hours.
<b>Government or Institutional Initiatives:</b>	With the opportunity of the Decree-Law nº 65/2018 that stated the end of the national 5-year Integrated Master's programs in Engineering and the creation of 3-year 1 <sup>st</sup> cycle graduate programs and 2-year 2 <sup>nd</sup> cycle master programs, national HEIs have created TTS courses in their engineering programs. This clearly states that TTS are part of the skills profile of an engineer.  Recently, the Portuguese government started a program, called "Cheque-Formação + Digital" ( <a href="https://www.iefp.pt/cheque-formacao-digital">https://www.iefp.pt/cheque-formacao-digital</a> ), which aims to support and encourage the development of digital skills and competencies of workers, by opening applications for funding of up to 750 €.  OE, through their courses promoted through the various regions of Portugal and the OE+AcCEdE® system, also contributes to this goal at an institutional level.

#### Brief Description of the Institution/Initiative:

UPorto-FEUP has its origins in 1837 and has 14 BS programs and 28 MSc. UPorto-FEUP is proactive in contacting industry and companies and collaborating with them to make learning more meaningful and engaging. It develops active learning methodologies to develop TTS such as challenge-based learning. It also integrated in its engineering programs, mandatory courses of TTS (soft skills, entrepreneurship, digital and green skills).

OE has accredited important courses for its members, since 2002, and created the OE+AcCEdE® System in 2014, in order to better assure the quality of the actions accredited. This system accredits courses for universities, such as post graduations from ISEL and FCT, and for enterprises since 8h -150h formation, for instance EPAL and Comunilog.

#### Table of Services/Programs provided focusing on the Acquisition of Specific Skills:

UPorto-FEUPs [transferable skills program](#) is grouped into 4 types, in accordance with the project E4E taxonomy.

Skills group	Skills
Resilience	Communication, Conflict Management and Negotiation, Lifelong Employability, Leadership, Ethics, Philosophy
Green Skills	Decarbonize the Building Sector to achieve Energy Sustainability, Engineering for sustainability, Challenges of sustainable development, Electrical Power Systems for the Sustainability and Energy Transition
Digital Transformation Skills	Excel, Python, Introduction to Robotics, Mini projects on machine learning and control systems, Automated laboratory data acquisition
Entrepreneurship Skills	Opportunities for innovation, Strategic management of innovation

Since the academic year of 2021/22, Uporto-FEUP has registered 4.000 participations per year, in TTS courses integrated in its BS and MSc engineering programs.

OE, only this year, has already accredited 12 courses and has the accreditation of more 9 courses in progress, in the areas of facility management, HVAC, railways, water and sewage building networks, safety at work, renewable energy management, etc. OE also promotes some courses in soft skills, such as communication, leadership, management, emotional intelligence and wellbeing at work, etc. To be a member of OE, it's mandatory to attend a course in ethics.

#### **Examples of Effective Practice in Skills Acquisition:**

UPorto-FEUPs pedagogical model incorporates active learning approaches that favor the development of TTS such as challenge-based learning (UPorto-FEUP has created 10 TTS courses based on challenges/competitions).

UPorto-FEUP is also proactive in contacting industry and companies and collaborating with them to make learning more meaningful and engaging, for example, through MSc thesis done in company settings (UPorto-FEUP has 74 active protocols with companies and 35% of its dissertations are done in a company setting).

UPorto-FEUP is focused in developing soft skills with a particular emphasis on “communication and collaboration skills” (UPorto-FEUP created a mandatory 1,5 ECTS course on “Professional Communication” offered to all undergraduate students in all its engineering programs).

TTS development can be achieved by infusing such skills in the engineering curricula, along with all other technical content of the courses program OR considering an integrating/embedded approach to TTS development by creating specific courses, in the engineering programs, devoted to develop such skills OR even the bolting-on approach with TTS learned extracurricularly (UPorto-FEUP created 23 mandatory 1,5ECTS TTS courses offered in the scope of its BS and MSC engineering programs (integrating/embedded approach) and 8 extracurricular/bolted-on courses where students can enroll voluntarily).

By adopting these measures, our engineers are better prepared to face the professional landscape, being able to better adapt and face the challenges provided by technological, social and economic evolution. Our HEIs programs are increasingly more solid and balanced between soft and hard skills, providing a more solid foundation for professional engineers, that can complement their knowledge throughout their careers as needed with courses that are provided, for instance, by/through OE+AcCEdE® system or some of the courses/workshops organized by OE.

#### **Internationalization in the Skills Acquisition Process:**

Courses for the first and second cycle of studies at UPorto-FEUP are included in the curriculum of engineering BSc and MSc programs and are only offered for regular students. With a few exceptions, most are taught in Portuguese. Third cycle of studies course units are offered to PhD candidates and researchers and are, in general, taught in English.

The training provided by OE is shared with the professional associations of the Portuguese-speaking countries (Cape Verde, Angola, Mozambique and Brazil), allowing their members to have continuous training.

Since OE is an EURACE accreditation agency, we also contribute to core engineering training at national level, such as UPorto-FEUP, IPL, ISEP and other HEIs, and at international level, through the Lusophone countries.

#### **Partnership Models:**

HEIs are being proactive in contacting industry and companies to collaborate with them to make the learning process more meaningful and engaging, for example, through MSc thesis done in company settings.

OE has a business exchange with over 200 companies, to which more than 500 CPDs have been accredited over the years.

**Impacts and Outcomes:**

Through the activities promoted by UPorto-FEUP and OE, it's possible for students of engineering to leave university better prepared for the demands of today's work world, and for those engineers who are already working, it's possible to adjust more easily to the demands of the working world by enrolling in a course correspondent to their needs that has a quality assurance from OE.