

World Engineering Day 2023

Celebration at Senate of Czech Republic

The role of professional engineers and engineering in addressing the current state of society and expected developments; preparing engineering professionals and ensuring continuing professional growth.

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AECEF, UPorto

14 March 2023

Some facts about Engineers and Continuing Professional Development

- Engineering bodies – Engineers Europe (ex-FEANI), Engineers Ireland, Engineers Malaysia
- Educational Associations – SEFI Working Groups, ASEE, JSEE
- Industry – Internal universities
- Higher education – Georgia Tech, Stanford
- Government - CACEE
- Private – HolonIQ, Evollution
- Mixed - IACEE

Skills of Workforce Europe

- Growing number of jobs and vacancies in highest skills level areas
- New trends change the skills mix and jobs
- Demographic change requires stronger reliance on re-training and professional education
- Growing importance of IT
- Growing importance of highest level skills education and training
- Growing importance of certification of new skills and experiential learning validation systems

Promoting Online Training Opportunities for the Workforce in Europe"

- EASME/DG GROW of the European Commission "Towards an efficient learning ecosystem for European SMEs: Fully exploiting the potential of online training"
- Work based learning – Provider, employer, individual, learning contract
- Accreditation and validation
- Little or No time for external training
- Needs are Just in time
- Diversity of training
- None or small funds



E4E - Engineers for Europe

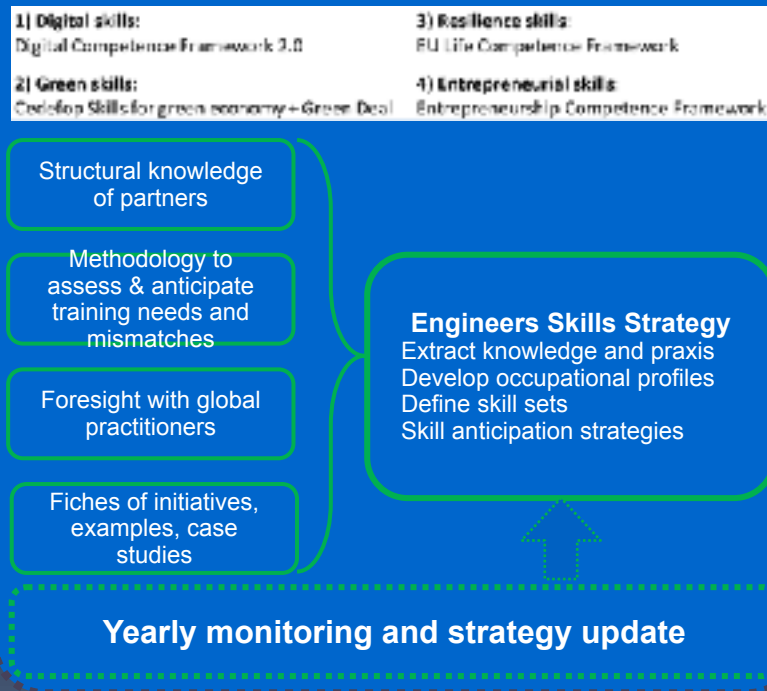
European Engineering Professional Skills Council

New Trends in Engineering Education

Innovative Training

Consortium	13 organisations from 8 EU countries
Duration	36 months
Grant	EUR 1.5 million (FEANI : EUR 268k)
Donor	EU Commission, Programme Erasmus+
Score criterion)	89/100 total score (25/25 for Relevance

WP 2 E4E Skills Council; Skills Anticipation and Monitoring



WP 3 Develop Innovative E4E Curriculum & Training

Benchmark Occupational Profile against EQF, ESCO, EU Skill Panorama

Develop demand-driven joint curricula (HE + VET + Profession / Industry)

Align EQF, EQVET, EQAVET

Develop training materials, teaching methodologies and delivery means

Certification: set up certification model/mechanism/process

WP 4 Deliver E4E Training

- Deliver the E4E curricula
- Validate content and structure
- Finalise E4E Curricula
- Develop manuals and tools for full-scale deployment and uptake of E4E education and training solutions

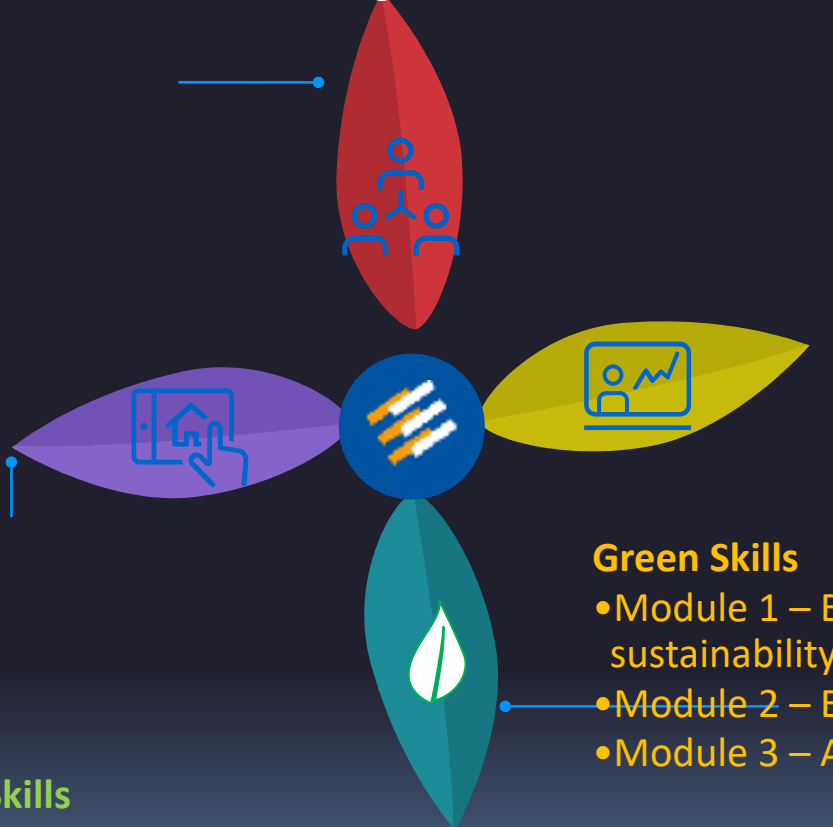
WP 5 Quality Assurance

WP 6 Dissemination & Exploitation



E4E Course on Life Competences

- Module 1 - Empathy
- Module 2 - Flexibility
- Module 3 – Self Regulation



Entrepreneurship Skills

- Module 1 – Financial & Economic Literacy
- Module 2 – Creativity
- Module 3 – Planning & Management



Green Skills

- Module 1 – Embracing complexity in sustainability
- Module 2 – Envisioning sustainable futures
- Module 3 – Acting for sustainability



Digital Skills

- Module 1 – Safety / Cybersecurity
- Module 2 – Information
- Module 3 – Data literacy



Global sustainability: challenge or opportunity for engineering?



Global sustainability: challenge and opportunity for engineering

- Engineers are the great problem solvers of the world
- Understanding the problem
- Climate, environment, resources, ...
- United Nations 17 Sustainable Development Goals
- God created the World and engineers change it!

UNESCO II Engineering Report (4Mar21)

- **Engineering for Sustainable Development**
- 4.ENGINEERING EDUCATION AND CAPACITY-BUILDING FOR SUSTAINABLE DEVELOPMENT
- 4.1 Engineering education for the future;
- 4.2 Lifelong learning in engineering: an imperative to achieve the Sustainable Development Goals;
- 4.3 Engineers' continuing professional development

Engineering Qualification Frameworks

- **Tuning-AHELO framework;**
- **EUCEET framework;**
- **EUR-ACE framework;**
- **International Engineering Alliance (IEA) framework;**
- **ABET framework;**
- **Conceiving, Designing, Implementing, Operating (CDIO) Initiative framework;**
- **National Society of Professional Engineers framework;**
- **American Society of Civil Engineering (ASCE) framework.**

CALOHEE (Tuning)

Comparing Achievement of Learning Outcomes in Higher Education

- **Knowledge and understanding**
- **Analysis and problema solving**
- **Design**
- **Research**
- **Practice**
- **Decision Making**
- **Team working**
- **Communication**
- **Lifelong Learning**

GreenComp

- The European sustainability competence framework (Jan22)
- Knowledge, Skills and Attitudes descriptors
- Embodying sustainability values
- Embracing complexity in sustainability
- Envisioning sustainable futures
- Acting for sustainability

Sustainability Competences of Engineers (Use GreenComp)

- Inclusion on all engineering education/training programs of competences/learning outcomes
- Training for active engineers (mandatory!)
- Continuing Professional Development/Lifelong learning
- Required by professional organizations to keep status
- Medium and long term impact - graduates
- Short term impact - professionals

Děkuji!

Thank you!