2.1.6 Module developmentM06 Safe Workplaces

(See a short description in the attachment)

Module Specification:

Safe Workplaces

Within the Erasmus+ KA2 Capacity Building Project (CBHE)

WORK4CE – Cross-domain competences for healthy and safe work in the 21st century

619034-EPP-1-2020-1-UA-EPPKA2-CBHE-JP

Product Owner: Kanan Hasanov (AzUAC - kananhasanovv@gmail.com), Shahmar Rafili (AzUAC - shahmar.refili@gmail.com)

Team Members: NU-ZP (Galyna Tabunshchyk - galina.tabunshchik@gmail.com, Olena Shytikova), FH Do, ASOIU , Bertha Ngereja (NTNU)

Version 0.2, 07.11.2021

1. Summary

Digitalisation offers the potential for innovative and exciting developments in the workplace, but also presents new challenges. By anticipating the potential challenges for occupational safety and health (OSH), we can maximize the benefits of such new technologies, while ensuring that working environments are safe. Digitalisation, if properly managed, has the potential to minimize occupational dangers while also providing new chances to improve working conditions. Artificial intelligence (AI), sophisticated robots, broad connectivity, the internet of things and big data, wearables, mobile devices, and online platforms are all transforming the nature and location of work, as well as who works when and how work is organized and managed. All areas of our business and society increasingly rely on digital technologies for crucial services. OSH and its management may face new challenges as a result of these changes. These changes are occurring at a faster rate than they have ever been previously.

Robots are getting more mobile, intelligent, and cooperative. Intelligent machines are taking over a wide range of duties that were formerly performed by people, including both manual and cognitive tasks.

Surveillance technology and algorithms are rapidly being used to monitor workers, to the point where they may be governed by intelligent computers in the future. The 24/7 worldwide interconnected economy requires ever more flexible work organization, which has resulted in the emergence of new forms of employment, such as online platform work. Psychosocial and organizational risk factors demand special attention in this context, as they may contribute to higher levels of work-related stress and poor mental health. New safety and ergonomic concerns are also emerging, such as functional safety risks linked to cybersecurity. Last but not least, the application of OSH regulations is challenged by digital technology and new types of labor.

Beyond the transition to I4.0 is the fact that there are growing, fragmented, distributed but interconnected networks of collaboration. And this distributed network is increasing the possibilities of accidents and occupational risks by increasing jobs, decreasing corporate monitoring of OHS and /or policy-based regulations. According to this, it is necessary to take care of the OHS in this new and changing environment if we want to avoid playing the game of failure, for which it is necessary then to think of alternatives of organization, of technological integration, of worker's scope and/or to approach systemically and considering its complexity the integrated system of an organization that wants to take care of its OHS.

The digitization offers the potential for innovative and exciting developments in the workplace, but this is accompanied by new challenges. A clear benefit is that, by anticipating potential challenges to occupational safety and health (OSH), we can maximize the benefits of these new technologies, while ensuring safe working environments. If managed well, digitization can reduce occupational risks and create new opportunities to improve working conditions.

The European Agency for Safety and Health at Work (EU-OSHA) offers some specific technologies that is related to digital era and moder OHS:

- The development of collaborative intelligent robots
- Research and development of exoskeletons for the protection of workers
- Research and development of Big Data, Artificial Intelligence and Algorithms
- The development of intelligent protective equipment
- Applications with augmented and virtual reality
- Additive manufacturing (related to 3D printing)
- The development of online platforms

There are some important difficulties related to the selection of high-risk inspection objects using Big Data and Machine Learning, however, the usefulness of these techniques within a risk-based approach is not in any way diminished. These difficulties may be related to the emergence of new risks that "green" tools may bring when incorporated into the Labour Risk Prevention (LRP) ecosystem.

In addition, according to the digitization of companies dedicated to occupation risk prevention must consider the following key aspects:

- Wearables and connected worker technologies.

- Data science and analysis platforms.
- Augmented or virtual reality and simulations for digital training.
- Stress control and reduction technologies and employee well-being.

The management of occupational risk prevention is affected by a wide range of factors. The following are some of the approaches that may be relevant to understanding how prevention implementation, planning, follow-up and monitoring have been managed so far.

Participants of this module will consider traditional & modern occupational health and safety philosophies for effective control and health protection purposes, and evaluate risk management systems for specific workplace environments in the digital era.

Overall Learning Outcome:

Upon completion of the course the student will know and learn:

- traditional OSH rules & standards
- human factor in occupational health and safety
- digital and sociotechnical transformation of work
- ethical issues of digitalization in work places
- productivity and well-being in digitalized work
- managing organizations in digital transformation
- co-developing sustainable organizational practices
- co-creating a human centered working culture
- enhancing competencies in digital work
- improving cognitive ergonomics at work

Target Group Analysis:

The aim of this course is to ensure that all employees are aware of their own safety and the safety of customers, contractors and the public. This qualification can be tailored to business and individual needs to make the learning experience relevant and fit for purpose. This course is aimed at employees working in any sector of business at all levels from operative to supervisor. Good health and safety standards rely on employers and employees working together to reduce risks and prevent accidents and ill health arising from work activities. Everyone plays an important role in health and safety at the place of work. Successfully completing this course aims to enable people to carry out the job more safely and in a way that protects the health within the new reality of Industry 4.0.

Competences & Learning Outcomes: The main competences according to European Qualification Framework (EQF) Level 7 (Master):

1. **knowledge:** highly specialized knowledge in methods of safe workplaces, which is at the forefront of knowledge in a field of work and study, as the basis for original thinking and/or research, the critical awareness of knowledge issues in a field and at the interface between different fields;
2. **skills:** specialized problem-solving skills on safe workplaces application required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields;
3. **responsibility:** manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches; take responsibility for contributing to professional knowledge and practice.

Selection of Content:

The teaching syllabus will cover the following areas:

- Introduction to occupational health and safety
- Fundamental Principles of Occupational Health
- Principles of health & safety management
- Management systems, audit, laws etc. for OSH, especially the ISO standards
- Risk management and hazard protection
- OSH & digital transformation: the new issues, tools, and methods
- OSH in virtual teams => focus on office work, psychological issues
- OSH in an automated industry => focus on industry 4.0 or robotics related OSH issues
- Digital tools for OSH => focus on how OSH work is supported by digital tools

Activities and Teaching/Learning Methods:

- Existing online courses => search on internet, check, evaluate
- Existing tutorials => search on internet, check, evaluate
- Smaller, modular sets of teaching materials and small explaining videos (e.g. an animated example)
- explanatory video => existing (many on YouTube) or produced => check methodology for explanatory videos (e.g. storytelling)
- eBooks, scientific papers => use "inverted classroom": students get the task to read some paragraph and during the lecture time their questions are discussed or questions are asked
- Development of individual and team assignments.
- Online Discussions, workshops
- VR assignments/and examinations
- Case studies (will be provided in a high quality, comprehensive form with all relevant materials and instructions

This is an entirely Web-based course. It will be a project-based/challenge-based education.
The Activity Plan (see below in Section 3) during one semester includes theory classes and practical works (total 60 contact hours) and self-study (120 hours).

Teaching Materials/Literature/Media/Technical Requirements/Lab Equipment:

- Communication software for collaboration work (Microsoft Teams, Zoom)
- Communication technologies for online learning
- Software for presentation (Microsoft PowerPoint)
- High-Speed Internet Connection
- Microphone, web camera and stream projector
- VR equipment for examination/practical courses
- Hardware and software for the learning process (presentation materials, cooperation work, communication, JIRA)
- Learning Management System (Moodle).

Tailoring & Educational Tracks (Practical, Entrepreneurial, Scientific):

Competence Assessment:

Knowledge: Oral or written exam, online test	30%
Groupwork: developing safe workplace concept => project review	25%
Team presentation 1 for developing safe workplace concept project (activity x)	10%
Groupwork or individual homework: write a case study (company case)	25%
(Team) presentation 2 for case study (activity y)	10%

Change History & Ownership:

Revision	Product Owner	Date of Release	Remarks
1	Isa Muradov	31.03.2021	First Revision of document with regard to developers of Open Cop prepared for review of project quality board.
2	Kanan Hasanov	07.11.2021	Second revision of document with regard to developers of Open Cop prepared for review of project quality board.
3	Kanan Hasanov	19.02.2022	Third revision of document with regard to developers of Open Cop prepared for review of project quality board. Feedback of Carsten Wolf from FH D was considered

Table of Content

2. Introduction to the module

Digitalisation offers the potential for innovative and exciting developments in the workplace, but also presents new challenges. By anticipating the potential challenges for occupational safety and health (OSH), we can maximize the benefits of such new technologies, while ensuring that working environments are safe. Digitalisation, if properly managed, has the potential to minimize occupational dangers while also providing new chances to improve working conditions. Artificial intelligence (AI), sophisticated robots, broad connectivity, the internet of things and big data, wearables, mobile devices, and online platforms are all transforming the nature and location of work, as well as who works when and how work is organized and managed. All areas of our business and society increasingly rely on digital technologies for crucial services. OSH and its management may face new challenges as a result of these changes. These changes are occurring at a faster rate than they have ever been previously.

Robots are getting more mobile, intelligent, and cooperative. Intelligent machines are taking over a wide range of duties that were formerly performed by people, including both manual and cognitive tasks.

Surveillance technology and algorithms are rapidly being used to monitor workers, to the point where they may be governed by intelligent computers in the future. The 24/7 worldwide interconnected economy requires ever more flexible work organization, which has resulted in the emergence of new forms of employment, such as online platform work. Psychosocial and organizational risk factors demand special attention in this context, as they may contribute to higher levels of work-related stress and poor mental health. New safety and ergonomic concerns are also emerging, such as functional safety risks linked to cybersecurity. Last but not least, the application of OSH regulations is challenged by digital technology and new types of labor.

Beyond the transition to I4.0 is the fact that there are growing, fragmented, distributed but interconnected networks of collaboration. And this distributed network is increasing the possibilities of accidents and occupational risks by increasing jobs, decreasing corporate monitoring of OHS and /or policy-based regulations. According to this, it is necessary to take care of the OHS in this new and changing environment if we want to avoid playing the game of failure, for which it is necessary then to think of alternatives of organization, of technological integration, of worker's scope and/or to approach systemically and considering its complexity the integrated system of an organization that wants to take care of its OHS.

The digitization offers the potential for innovative and exciting developments in the workplace, but this is accompanied by new challenges. A clear benefit is that, by anticipating potential challenges to occupational safety and health (OSH), we can maximize the benefits of these new technologies, while ensuring safe working environments. If managed well, digitization can reduce occupational risks and create new opportunities to improve working conditions.

The European Agency for Safety and Health at Work (EU-OSHA) offers some specific technologies that is related to digital era and moder OHS:

- The development of collaborative intelligent robots
- Research and development of exoskeletons for the protection of workers
- Research and development of Big Data, Artificial Intelligence and Algorithms
- The development of intelligent protective equipment
- Applications with augmented and virtual reality
- Additive manufacturing (related to 3D printing)
- The development of online platforms

There are some important difficulties related to the selection of high-risk inspection objects using Big Data and Machine Learning, however, the usefulness of these techniques within a risk-based approach is not in any way diminished. These difficulties may be related to the emergence of new risks that "green" tools may bring when incorporated into the Labour Risk Prevention (LRP) ecosystem.

In addition, according to the digitization of companies dedicated to occupation risk prevention must consider the following key aspects:

- Wearables and connected worker technologies.
- Data science and analysis platforms.
- Augmented or virtual reality and simulations for digital training.
- Stress control and reduction technologies and employee well-being.

The management of occupational risk prevention is affected by a wide range of factors. The following are some of the approaches that may be relevant to understanding how prevention implementation, planning, follow-up and monitoring have been managed so far.

Participants of this module will consider traditional & modern occupational health and safety philosophies for effective control and health protection purposes, and evaluate risk management systems for specific workplace environments in the digital era.

3. Module Description

3.1 Overall Learning Outcomes

Upon completion of the course the student will know and learn:

- traditional OSH rules & standards
- human factor in occupational health and safety
- digital and sociotechnical transformation of work
- ethical issues of digitalization in work places
- productivity and well-being in digitalized work
- managing organizations in digital transformation
- co-developing sustainable organizational practices
- co-creating a human centered working culture
- enhancing competencies in digital work
- improving cognitive ergonomics at work

3.2 Target Group Analysis

- Students and workers
- Students of MSc programs in Computer Science, IT, Project management, Business Administration, Software Development, Digital Transformation, Engineering, Construction, Operational management)
- Education and training providers
- Industrial employers and social partners
- Small Medium Enterprises
- Policymakers at national, regional and international levels

3.3 Competences & Learning Outcomes

- **Health and safety policy development.** The OSH professional will be able to develop an OSH policy that is consistent with the business strategy, drivers and culture and that supports productivity and success.
- **Principles of health and safety and other legislative frameworks.** OSH professional's will be able to interpret and comply with laws and regulations that govern their organisations' operations.
- **Health and safety auditing.** The professional will decide what kind of audit is required, its effective implementation and its use as part of a monitoring strategy

- **Performance management**. Individuals will be able to interpret data to evaluate OSH performance, monitor the integrity and effectiveness of controls and evaluate the factors affecting performance and identify areas for improvement.
- **OSH management systems.** Graduates will be able to work collaboratively with stakeholders to build an organisational structure, plan activities, assign responsibilities, develop safe working practices and implement management procedures
- **Managing digital changes.** The OSH professional will be able to handle modern & digital changes. They will be able to collaborate in virtual teams. Can focus on automated industry and robotics related to OSH

3.4 Content

Core course, obligatory (AzUAC - 4 ECTS)

1. Introduction to occupational health and safety
2. Fundamental Principles of Occupational Health
3. Principles of health & safety management
4. Management systems, audit, laws etc. for OSH, especially the ISO standards
5. Risk management and hazard protection
6. OSH & digital transformation: the new issues, tools, and methods

Technical, Elective course (AzUAC - 2 ECTS)

1. OSH in virtual teams => focus on office work, psychological issues

~~**Technical, Elective course (FH De - 2 ECTS)**~~

1. ~~OSH in an automated industry => focus on industry 4.0 or robotics related OSH issues~~

~~**Technical, Elective course (FH De - 2 ECTS)**~~

1. ~~Digital tools for OSH => focus on how OSH work is supported by digital tools~~

3.5 Teaching & Learning Activity Plan

A)Teaching/learning methods per competence

Knowledge: online courses, videos, literature: books and scientific papers, recent articles from blogs and media (mainly online)
Knowledge and scientific methods: case study analysis (case materials provided online)
Practical skills, professional ability & attitude: Plan and conduct a safe workplace concept project (group work: workshop or virtual project)
Scientific competence, scientific ability: Write a scientific case study on a real-world safe workplace case (individual or group work)

B) Didactic concept:

Online courses, videos, ebook, distance learning for the knowledge, possibly (virtual) lectures, provide material for further reading => use flipped /inverted classroom for discussion of topics, use exams (written, oral, online test) for competence assessment
Project- and problem-based learning for the safe workplace concept project:

- based on a company case provided by industry expert
- own entrepreneurial startup project => work-integrated learning (WIL), challenge-based (e.g. with real investor pitch)
- internship in a company => work-integrated learning (WIL)
- Case-writing method + surveys and interviews for elaboration of scientific case study => use regular reviews by teachers and industry experts, possibly peer review by other student teams => motivate to publish result as scientific paper (+ open data)

C) Teaching & Learning Activity Plan

Activity 1: Theory courses on OHS basis, human factor, risk management, and connection of OSH with digital era, I.4.0. (30 h in total, e.g. 15 x 2h)
The theory courses are online courses, videos or tutorials, and reading materials (ebooks, scientific papers, published media). They are conducted during the whole semester or on the first 3-4 weeks of the semester.
Activity 2: Case study project simulation in teams (e.g. 3-4 students) as a practical assignment (15 h contact time + 60 h team and individual work)
Students conduct a safe workplace concept project based on the types of cases outlined below:

- conduct a safe workplace concept project in an existing company or organization with a focus on organizational change
- conduct a safe workplace concept project in an existing company or organization with a focus on the digital transformation of a business model
- develop a start-up project with a focus on a new, disruptive digital product or service related to OSH

Activity 3: team presentations: a "project kick-off presentation" and a "project end presentation" are provided on activity 2 (see above).
Alternative B for Activity 3: Present a project case from own job
Activity 4: Group or individual homework: writing a case study on a safe workplace concept project (15 h contact time + 60 h individual work)
Students write a scientific case study on an approved (industry/real) project case (can be provided an industry partner, by university or submitted by student) and by using the case writing methods.
Students have to gather the relevant information by themselves, e.g. doing interviews or surveys.
The result is a written case study (e.g. in a wiki) and the respective data (provided as open data) and tools.
Contact time is used in individual consulting and intermediate reviews.
Activity 5: presentation of case study
Students present the case study in a petcha-kutcha pitch format, e.g. 20 slides in 60 seconds in front of teachers, industry partners and students.
To do: Describe predefined "student journeys" through the module, link it to learning trajectories and competence development paths.

3.6 Teaching & Learning Resources

- Communication software for collaboration work (Zoom, Microsoft Teams)
- Communication technologies for online learning (Moodle)
- Software for presentation (Microsoft PowerPoint)
- High-Speed Internet Connection
- Microphone, web camera, graphics tablet and stream projector
- VR equipment for VR assignments/and examinations
- Hardware and software for the learning process (presentation materials, cooperation work, communication, JIRA)
- Learning Management System (Moodle).

3.7 Tailoring & Educational Tracks

Educational Tracks:

- Practical:
- Entrepreneurial:
- Scientific
- Company:

3.8 Assessment Methods

Assessment, Self-Assessment, Peer-Assessment

FORM	%	REMARK
Knowledge: Oral or written exam, online test	30	Based on theory classes
Groupwork: developing digital safe workplace concept => project review	25	Project review is conducted by teachers/industry experts
Team presentation 1 for developing a safe workplace concept project (activity x)	10	Pitch format with industry partners
Groupwork or individual homework: write a case study (company case)	25	Written report following case study method
(Team) presentation 2 for case study (activity y)	10	Petcha-Kutcha (with industry partners)

3.9 Curricula Integration

This module might be implemented in Pilot version in the first or second semester of 2023 in the AzUAC at Master's in emergencies and health & safety engineering.

It will be imparted by professors from AzUAC.

Students are expected from Azerbaijan Universities. Students from other partner universities are also welcomed.

3.10 Quality Assurance - Evaluation

Quality Assurance - Evaluation:

- review and release by IEB/QMB
- pilot teaching with peer review and survey
- via student survey after each teaching of the module
- after curriculum integration: accreditation review

4. Syllabus/Module Handbook

Entry for the Syllabus/Module Handbook

Safe Workplaces

Module Owner AzUAC	Workload 180 h	Credits 6 ECTS	Semester *Spring*	Frequency	Duration 1 Semester

1	Course Title	Contact hours	Self-Study	Planned Group Size
	Safe Workplaces	4 hours per week / 60 h in total	120 h	25 students

2	**Course Description**
	This course examines occupational safety and health practices needed to address occupational safety and health issues in the workplace within new digital era. Students will utilize regulatory standards as a guide to apply policies, procedures, standards and occupational safety and health principles in terms of digital transformation. The management systems and standards, the audit, the risk management and the respective roles, documents and legislations will be part of this module. New OSH issues due to the digital transformation will be considered

3	**Course Structure**
	Core course, obligatory (AzUAC - 4 ECTS) 1. Introduction to occupational health and safety 2. Fundamental Principles of Occupational Health 3. Principles of health & safety management 4. Management systems, audit, laws etc. for OSH, especially the ISO standards 5. Risk management and hazard protection 6. OSH & digital transformation: the new issues, tools, and methods **Technical, Elective course (AzUAC - 2 ECTS)** 1. OSH in virtual teams => focus on office work, psychological issues ~~Technical, Elective course (FH Do - 2 ECTS)~~ 1. ~~OSH in an automated industry => focus on industry 4.0 or robotics related OSH issues~~ ~~Technical, Elective course (FH Do - 2 ECTS)~~ 1. ~~Digital tools for OSH => focus on how OSH work is supported by digital tools~~

4	**Application Focus**
	Students will be guided through a case study project where they plan a safe workplace concept developing project for an example case. This example case will be taken preferably from a real company project. Companies can bring their safe workplace concept projects as a case study. Students form teams to prepare the respective project and present it in a kick-off presentation to the companies.

5	**Scientific Focus**
	For the scientific component, students **write a case study** based on a real company of their choice to highlight how it managed its safe workplace concept. Students are encouraged to perform interviews or surveys with their case study company to gain detailed data for their case study. Student will write a scientific report in the form of an academic case study description. The case study will be presented at the end of the course as a Pecha Kucha presentation, meaning that they only have 20 slides which automatically change after every 20 seconds. **Methods are:** Literature review, Case study method, Semi-Structured Interviews and Survey. Deductive own research based on the literature. Scientific reflection and discussion in the teams.

6	**Parameters**
	• ECTS: 6 • Hours of study in total: 180 • Weekly hours per semester: It will depend on the calendar organisation - Contact hours: 60 - Self-Study hours: 120 • Course characteristics: • Course frequency: every year - summer semester • Maximal capacity: 25 students • Course admittance prerequisites: bachelor degree • Skills trained in this course: theoretical, practical and scientific skills and competences • Assessment of the course: continuous evaluation, including exam • Teaching staff: to be determined.

7	**Learning outcomes**
	• **knowledge:** highly specialized knowledge in methods of safe workplaces, which is at the forefront of knowledge in a field of work and study, as the basis for original thinking and/or research, the critical awareness of knowledge issues in a field and at the interface between different fields; • **skills:** specialized problem-solving skills on safe workplaces application required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields; • **responsibility:** manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches; take responsibility for contributing to professional knowledge and practice.

8	**Teaching and training methods**
	Lectures introducing concepts, methods and tools, own literature reading, group work in the case-based projects to practice concepts and methods, to develop skills and to work on case study presentations to communicate results and do a scientific discussion and reflection

9	Curricula Integration
	This module might be implemented in Pilot version in the first or second semester of 2023 in the AzUAC at Master's in emergencies and health & safety engineering.
	It will be imparted by professors from AzUAC.
	Students are expected from Azerbaijan Universities. Students from other partner universities are also welcomed
10	References

1. https://osha.europa.eu/en/emerging-risks/developments-ict-and-digitalisation-work
2. Commission Communication "COM/2016/0356 COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS A European agenda for the collaborative economy
Commission Communication on "Safer and Healthier Work for All Modernisation of the EU Occupation al Safety and Health Legislation and Policy, adopted on the 10 January 2017, COM(2017) 12 final Cost of lost labour input (2014). Ministry of Social Affairs and Health. http://stm.fi/documents/1271139/1332445/Cost+of+lost+labour+input_en.pdf/d57900888e3e4d13a5cd56c23b67de0c
3. Digitalization changes the world –are new statistics needed to support economic policy? Published by Prime Minister's Office 28.4. 2017, 2/2017
European Parliament Resolution on 15 June 2017 on a European Agenda for the collaborative economy 2017/2003(INI)
Government Programme, PublishedbyPrimeMinister'sOffice 29 May 2015. http://valtioneuvosto.fi/en/sipila/governmentprogramme
4. Kaupan liitto, Liikenneja viestintäministeriö, Tekes, Teknologiateollisuus ja Verkkoteollisuus (16.6.2016). Digibarometri 2016. Helsinki: Taloustieto Oy. http://www.digibarometri.fi; http://www.finlandhealth.fi//digibarometerfinlandleadsthewayindigitalization
5. Larjovuori, RiittaLiisa, Mäkiniemi JaanaPiia, Nuutinen Sanna, HeikkiläTammi Kirsi (2017). "How are leadership and organisational culture associated with levels of business digitalisation?" IFKAD 2017, 12th edition of the International Forum on Knowledge Asset Dynamics.
6. United Nations Development Programme (UNDP), Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable, 2021. Available from: https://sdgs.un.org/goals/goal11.
7. MTSFB, Guideline on smart sustainable cities standardisation framework in relations to information and communication technologies (ICT) aspects, Malaysian Technical Standards Forum Bhd, 2016

5. References

[1] EU: The European Qualifications Framework: supporting learning, work and cross-border mobility, Luxembourg: Publications Office of the European Union, 2018

[2] EU: Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG), https://enqa.eu/index.php/home/esg/, Brussels, Belgium, 2015

[3] Gruen, G.; Tritscher-Archan, S.; Weiß, S.: Guidelines for the Description of Learning Outcomes, ZOOM partnership (www.zoom-eqf.eu), 2009

[4] Rajala, S.A.: Beyond 2020: Preparing Engineers for the Future. Proceedings of the IEEE, Vol. 100, pp. 1376-1383, DOI 10.1109/JPROC. 2012.2190169, 2012

[5] European Institute of Innovation and Technology (EIT), "Quality for learning" EIT Quality Assurance and Learning Enhancement Model, https://eit.europa.eu/sites/default/files/eit_label_handbook.pdf, 2016