# Assessment and subject description

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| **Óbuda University**<br>Kandó Kálmán Faculty of Electrical Engineering | Institute of Electronics and Communication Systems<br>Department of Microelectronics and Technology |

Subject name and code: **Environmental, quality and safety technology KEEBT1EBNF**
Credits: 3
Full-time

Course: Electrical Engineering

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| Responsible: | Dr. Lendvay, Marianna | Teaching staff: | Csikósné Dr. Pap, Andrea Edit |

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| Prerequisites: | - |

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| Contact hours per week: | Lecture: 1 | Class discussion: 1 | Lab hours: - | Tutorial: - |
| Assessment and evaluation: | Exam: written (test) | | | |

**Subject description**

***Aims*:** Students should learn about the purpose, tools and regulation of environmental protection, global environmental problems, energy industry risks, quality activities, operational processes of quality management systems, the principles and tools of Lean management, as well as the basics of safety technology, the conditions for healthy and safe work, the tasks of electrical safety technology,

***Topics to be covered:***

1. Basic concepts of environmental protection, environmental pollution (waste management, water and air pollution), civilization. Global environmental problems. Industry and environmental protection. Sustainable development.
2. Basic concepts of quality assurance. Quality Planning, Quality Function Deployment. Product Quality Planning and its phases. Risk evaluation. Design and process FMEA. Lean management principles and tools. Quality management systems.
3. Safety technology, concepts of occupational safety, rights and obligations. Hazards, signals, accidents. Humans and electricity, physiological effects.

| Topics: | Week | Lessons |
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| Environmental protection definitions. History of environmental protection. Some main problems of the World. The importance of photosynthesis and biodiversity. Soil and water resources. | 1 | 1 |
| Types of wastewater treatment. The main functions of the atmosphere | 2 | 1 |
| Ozone layer in stratosphere, Ozone Hole, Carbon Footprint. Light pollution (skyglow). Noise and how to reduce it? | 3 | 1 |
| Waste and waste management. Renewable energy sources. New energy policy in EU. Types of power plants. | 4 | 1 |
| Environmental Management International Standard. Eco label. Life-cycle assessment. | 5 | 1 |
| Basics of Quality History of Quality. Quality Activities. | 6 | 1 |
| Quality Planning, Quality Function Deployment. Product Quality Planning and its phases Risk evaluation. Design and process FMEA. | 7 | 1 |
| Quality Activities. Quality Tools, Statistical Process Control | 8 | 1 |
| Lean Production System. The Lean concept. Lean organization. Lean Manufacturing. | 9 | 1 |
| Quality Management Systems. Product, process, system certification. | 10 | 1 |
| Safety technology, concepts of occupational safety, rights and obligations. Hazards, signals, accidents. | 11 | 1 |
| Humans and electricity, physiological effects | 12 | 1 |
| Test will be organized applying the Moodle system, as well. | 13 | 1 |

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| Consultation, conclusion, additional test opportunity. | 14 | 1 |
| **Class discussion:** | **No.** | **Hours** |
| Selecting a project assignment from the list published on the Moodle interface related to the topics of the theoretical curriculum, creating a project group, and interpreting the assignment. | 1 | 1 |
| Research and processing of professional literature. | 2-7 | 6 |
| Consultations and development of tasks related to project tasks. | 8-12 | 5 |
| Submitting and evaluating project assignments. | 13 | 1 |
| Compensating for failed, incomplete or not submitted project tasks. | 14 | 1 |

**Assessment and evaluation:**
The condition for taking the exam is to obtain a signature. The requirements for obtaining a signature are:
- satisfactory completion of the chosen project task, and
- achieving a sufficient level (40% of the maximum score) of the test written in week 13.

**How to make up:**
• An unsuccessful project assignment or one not submitted by the deadline and/or an unwritten or unsuccessful test can be made up in the 14th week.
• A student who did not obtain a signature during the academic period can still obtain a signature during the signature replacement exam once, at a pre-determined time, on one of the first 10 working days of the exam period.

**Examination:** Written (test).
The student can only take the exam if he/she has obtained the signature.
Those who achieve at least 55% of the total points available in the end-of-semester test can receive the recommended exam grade.
The exam paper contains theoretical questions and has 60 minutes to solve them. A student who achieves less than 40% on the exam will receive an insufficient (1) grade. Depending on the % performance achieved on the exam, students will receive the exam grade according to the following table:

| Percentage: | Grade: |
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| 85 - 100 | excellent (5) |
| 70 - 84 | good (4) |
| 55 - 69 | satisfactory (3) |
| 40 - 54 | pass (2) |
| 0 - 39 | fail (1) |

**Learning material**

**Required material:**
Slideshow of the “Environmental, quality and safety technology” subject in Moodle system.

**Suggested material:**


1. P. Dennis: Quality, Safety and Environment 1997. – books.google.com
2. Rebelo. M. F.-Santos, G.-Silva, R.:A generic model for integration of Quality, Environment and Safety Management Systems, The TQM Journal (2014) (https://doi.org/101108/TQM-08-2012-0055)
3. Roger W Berger, Donald W. Benbow, Ahmad K. Elshennawy, and H. Fred Walker **The Certified Quality Engineer Handbook** 2002 by ASQ