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| The title of the course | **Standardization and quality management** |
| Faculty | [Faculty of Mechanical Engineering and Computer Science](http://eng.ath.bielsko.pl/index.php/faculties/gerg) |
| The level of studies | Engineer (BSc) |
| Semester | Winter/summer |
| The form of classes and number of hours | Lectures |
| Language of instruction | English |
| The number of ECTS | 3 |
| Teacher | Wojciech Płowucha, PhD |
| The aims of the course  (maximum 500 characters) | To acquaint students with the need of standardization and the role of quality management systems in the industry. Familiarize with ISO 9001 and quality management system documentation. Get to know the statistical methods used in quality management. |
| The content of the course: main topics and key ideas | 1. Standardization. Standardization bodies (ISO, IEC, CEN, CENELEC, PKN). Standards (ISO, IEC, EN, BS). Technical Committees for Standardization.  2. Examples of technical areas of standardization: the system limits and fits of shafts and holes, thread tolerance system, GPS, gears.  3. Examples of standardization in safety, environment and health area.  4. Quality. Standards and documents for quality management (ISO 9001, QS 9000, VDA 6.1, ISO 14001, ISO 18001, ISO 17025). Certificate of quality management system. Certification bodies.  5. The quality management system according to ISO 9001. Process approach. Quality policy. Procedure. Instructions. Records. Management responsibility.  6. Resource management. Human resources. Training. Implementation of the product. Planning of product realization. Customer-related processes (definition of product requirements, review product requirements, communication with the client). Design and development.  7. Purchasing (verification of purchased product). Production and service.  8. Monitoring of control and measuring equipment. Calibration of measuring equipment. Calibration status.  9. Measurement, analysis and improvement.  10. Internal audit. Continuous improvement. Corrective action. Preventive action.  11. Statistical methods in quality management: descriptive statistics.  12. The capability of systems and process, histogram, grid distribution, box-plot.  13. Sampling, control charts, SPC.  14. Design of experiment (DOE).  15. The capability of the measurement process. Uncertainty of measurement |
| Didactics methods | Lecture |
| Course requirements | Exam/presentation/attendance/seminar paper |
| Literature (basic and supplementary) | 1. EN ISO 9001 (2009): Quality management systems. Requirements.  2. ISO/TR 10017 (2005): Guidance on statistical techniques for ISO 9001:2000  3. ISO/TS 16949:2009 Quality management systems -- Particular requirements for the application of ISO 9001:2008 for automotive production and relevant service part organizations  Suplementary literature:  1. GUM: Guide to the Expression of Uncertainty in Measurement (JCGM 100:2008, GUM 1995 with minor corrections) |
| The effects of the education   * knowledge * skills * social competences | - student has basic knowledge on quality management system  - student is able to obtain information from literature, databases, and other sources  - understands the need and knows the possibility of continuous training |