TalTech School of Business and Governance

TMT2020 Working Environment and Ergonomics

Extended syllabus
Spring 2023

Course aims/objectives:	Student is able to (a) to understand the working environment politics and ergonomics as a useful way of creating and handling safe working environment; (b) to identify occupational hazards and control measures, in order to increase productivity and quality as well as to decrease costs; (c) to understand the EU and Estonian occupational health and safety legislation, issues related strategies, evaluation tools of economic aspects of occupational health and safety.
Learning outcomes:	a) competency in evaluation of ergonomics, b) acquisition of knowledge in economic evaluation of occupational health and safety aspects, c) understanding and performing economic assessments of designing-making strategies in order to evaluate occupational health and safety interventions and control measures at the company level, d) familiarity with EU and Estonian legislation and relevant strategies in the field of occupational health and safety, e) know how to avoid health risks, f) acquire the ability to find relevant occupational health and safety information by using international professional databases
Brief description of the course and topics to be covered:	The purpose of the course is to give knowledge and skills about development and new challenges of occupational health and safety management systems. Topics: EU and national legislation, workplace well-being, occupational hazards (noise, poor lighting, indoor climate problems, risks from the equipment, risk of slipping and falling, physiological and psychosocial hazards) and the influence on employees' health and safety, methods of risk assessment, cognitive ergonomics, computer ergonomics and human factors. Economic aspects of occupational health and safety. Decision making considering economic, political and social values. The course includes practical work (measurements of physical hazards and discussion about psychosocial hazards), assessment of computer work and ergonomics, conducting workplace risk assessment, investigation of occupational accidents etc. The course is provided with the support of MOODLE e-learning environment.
Language of the course:	English
ECTS credits:	6 ECTS
Coverage of SDGs and ERS (sustainable development goals, ethics, responsibility and sustainability):	SDGs 3 (Good health and well-being) and 8 (Decent work and economic growth) are thoroughly covered, SDG 5 in a more superficial form. In addition, the role of a responsible employer is discussed throughout the course.
Students:	This is a compulsory course for students studying on TVTB12/22 programme.
Special needs:	Persons with disabilities can participate in this course. Please inform the professor(s) in the beginning of the course of any special instruction, or assessments of this course that may be necessary to enable you to fully participate in this course.
Registration:	Students who would like to take the course should declare the course in the ÕIS (Student Information System) by deadlines set in the academic calendar.
Prerequisite courses and/or knowledge:	Prior courses or knowledge not required.

Prerequisite resources:	MS Office programmes. For free student download see the instructions https://confluence.ttu.ee/it-info/it-arvuti-ja-oppetoeoekoht/tarkvara/microsoft-office-kodukasutus
Professor(s):	Karin Reinhold, PhD, Associate Professor karin.reinhold@taltech.ee
Contacting Professor(s):	Preferred means of contact: e-mail, responses provided within 4 workdays.
Schedule for classes:	Course lasts for 16 weeks.
Study process description:	Once a week, a lecture and exercises.
Course's e-support:	Course materials can be accessed via the e-learning environment Moodle under the course title TMT2020 Working Environment and Ergonomics (Karin Reinhold) https://moodle.taltech.ee/course/view.php?id=4180 Students can enrol to the course themselves using the **password given by the teacher.**
Study literature:	1. R.S. Bridger, Introduction to ergonomics, London, Taylor & Francis, 2003. 2. E. Grandjean, Karl H.E. Kroemer. Fitting the task to the human: A textbook of occupational ergonomics. Philadelphia, Taylor & Francis, 1997. 3. G. Grimvall (Ed), Å. Holmgren (Ed.), P. Jacobsson, T. Thedéen (Ed.) Risks in Technological Systems. Springer, 2012. 4. Frick, P. L. Jensen, M. Quinlan, et al. Systematic occupational health and safety management; perspectives on an international development. Amsterdam, Pergamon, 2000.
ASSESSMENT	Examination

Assessment methods	**Assessment criteria**
Assignments (evaluates learning outcome 1-5)	Differentiated assessment - each group or individual assignment scores a maximum of 4 points, with all assignments (10) scoring 40 points. '1' - The level of individual or group work is poor, i.e. answers to questions or problems are superficial and incomplete; there are several significant errors in the reasoning. Vocabulary is used with errors. The paper/discussion scores 1.5...1.9 points. '2' - The level of individual or group work is satisfactory, i.e. answers are superficial; there are some important aspects which have been overlooked; there are a few important errors in the reasoning, and the vocabulary is used with errors. The paper/discussion scores 2.0...2.4 points. '3' - The level of individual or group work is good, i.e. the answers are detailed and thorough, but there are some minor aspects which have been overlooked; there are a number of minor errors in the reasoning. Relevant vocabulary is acquired. The paper/discussion scores 2.5...2.9 points. '4' - The level of individual or group work is very good, i.e. the answers are very detailed and very thorough, but there are a few minor aspects which have been overlooked, there are a few minor errors in the reasoning. The relevant vocabulary is acquired. The paper/discussion scores 3.0...3.5 points. '5' - The level of individual or group work is excellent, i.e. the answers are very detailed and very thorough, cover all important and minor aspects and there are no errors in the reasoning. The relevant vocabulary is well acquired. The paper/discussion scores 3.6...4.0 points.
Exam (evaluates learning outcomes 1-5) on a pre-announced date in	Distinctive assessment - the maximum points for the exam are 50. Result: '1' - poor level of knowledge - there are a number of significant errors in the multiple-choice answers; the logic of the answers to the open questions is only partially

Assessment methods	Assessment criteria
class, without additional materials, in which each student answers multiple-choice and open questions on topics related to the area covered and solves short problems.	observable and comprehensible; there are a number of important aspects that have been overlooked. The examination will score 51-60% of the maximum points. '2' - Satisfactory level of knowledge, i.e. there are some significant errors in the multiple-choice answers; the logic of the answers to the open questions is mostly clearly observable and comprehensible, but the answers are superficial; there are a few significant aspects which have been overlooked. Examination 61-70% of maximum points. '3' - good level of knowledge, i.e. some minor errors in the multiple-choice answers; the logic of the answers to the open questions is mostly clear and comprehensible, the answers are detailed and thorough, but there are a number of minor aspects which have been overlooked. The examination will score 71-80% of the maximum points. '4' - very good level of knowledge, i.e. there are a few minor errors in the multiple-choice answers, the answers to the open questions are clear and comprehensible, the answers are very detailed and very thorough, but there are a few minor aspects which have been overlooked. The examination will score 81-90% of the maximum points. '5' - Excellent level of knowledge, i.e. no errors in the multiple-choice answers, answers to the open questions are excellent in their use of terminology, are clear to follow and understand, are very detailed and very thorough, covering all relevant and minor aspects. The exam will score a maximum of 91-100% of the points.

Eligibility for assessment: The exam is open to all students.

Final grade formation: 10 practical assignments (group or individual work) - maximum 50 points.
Examination - maximum 50 points.
Lecture activity points – maximum 10 points.
50+50+10= 100 points

Academic integrity: As a student at TalTech School of Business and Governance, you have an obligation to conduct your academic work with honesty and integrity according to University standards. It is expected that all work that you submit will be your own, and that you have actually done the work that you are submitting. Plagiarism and cheating will not be tolerated. Should you be found to be guilty of such activities, it will be followed with grade "0" for the assignment or the whole course and a notice will be filed to the School's Committee for Handling Violations of Academic Practice and Contemptible Behaviour. Depending on the Committee's proposal, it may lead to Dean issuing a letter of reprimand or in case of repeated or very severe misconduct, exmatriculation from the University.

Detailed schedule and topics

The semester plan is preliminary and might be changed in case of cancellations, changes in available reading material, etc.

Week 1: 30 January 2023 - Lecture (14:00, SOC-312) Karin Reinhold

Course overview. Lecture "Working environment and health"

Quality of working environment. Health as a long-term investment in human capital. Definitions of occupational health, safety and ergonomics. Healthy workplaces.

Practical classes: 02 February Film 'Automated Fitness' and discussion. Assignment 1.

Week 2: 06 February 2023 - Lecture (14:00, SOC-312) Karin Reinhold

Lecture 2 "Working environment and safety"

Terms and definitions: safety culture, occupational hazards, workplace safety, sudden events, occupational accidents.

Practical classes: 09 February Discussions about safety, health and young workers. Group work. Assignment 2.

Week 3: 13 February 2023 – Lecture (14:00, SOC-312) Marina Järvis

Lecture "EU Bodies and International Organisations on health and Safety at work."

The role of European Commission, Advisory Committee for Health and Safety. Community of OSH strategy. Soft laws. From EU directives to national rules. Specific EU bodies for Safety and Health at Work (ILO, WHO, HSE, EU-OSHA, NES, IEA, NIOSH, OSHA etc).

Practical classes: 16 February– Assignment 3: Directives of EU to read and comment.

Week 4: 20 February 2023 - Lecture (14:00, SOC-312) Karin Reinhold

Lecture "Contemporary workplaces in the 21st Century"

Innovation in the workplace: 24H society, multi-tasking, multi-skilling, flexibility, pandemic era, telework, virtual teams etc. Advantages and disadvantages of telework in organizational and individual level. Virtual teams.

Practical classes: 23 February Discussion about Assignment 2. Discussion about Assignment 3. No new assignment.

Week 5: 27 February 2023 - Lecture (14:00, SOC-312) Marina Järvis/Henrijs Kalkis ONLINE

Lecture "Effective human resource management in contemporary organizations: human factors and ergonomics approach"

Temporary approaches in human resource management, including effective work organization and efficiency tools. Human factor and LEAN management techniques for improving Strategic Management of Human Resources. Human resource work organization with ergonomics approach.

Practical classes: 02 March Assignment 4 – Legislation on OSH

Week 6: 06 March 2023 - Lecture (14:00, SOC-312) Marina Järvis

Lecture "OHS Management system on the example of Estonia"

Practical classes: 09 March Discussion about Assignment 4.

Week 7: 13 March 2023 - Lecture (14:00, SOC-312) Karin Reinhold

Lecture "Ergonomics and human errors"

Ergonomics and its domains: physical, cognitive and organisational. History of ergonomics. Human factors. Human errors - why do we make mistakes? GEMS model.

Practical classes: 16 March Assignment 5: Lighting measurements

Week 8: 20 March 2023 - Lecture (14:00, SOC-312) Marina Järvis

Lecture 'Building safety culture in the companies. Good leadership for safety culture'

Practical classes: 23 March Preparation of Assignment 6: Catastrophes and human errors.

Week 9: 27 March 2023 - Lecture (14:00, SOC-312) Marina Järvis

Lecture 'Ergonomics in offices'

Practical classes: 30 March Assignment 7: Ergonomic assessment of your working space

Week 10: 03 April 2023 **-** Lecture (14:00, SOC-312) Karin Reinhold

Lecture 'Physical hazards in offices'

Practical classes: 06 April Presentations and discussion of Assignment 6: Catastrophes and human errors.

Week 11: 10 April 2023 - Lecture (14:00, SOC-312) Marina Järvis

Lecture: 'Psychosocial hazards, harassment. Methods how to measure psychosocial hazards'

Practical classes: 13 April Assignment 8: Preparation of psychosocial hazards groupwork

Week 12: 17 April 2023 - Lecture (14:00, SOC-312) Marina Järvis

Lecture 'Mental stressors at workplaces - continued'

Practical classes: 20 April Presentations of Assignment 8.

Week 13: 24 April 2023 - Lecture (14:00, SOC-312) Karin Reinhold

Lecture 'Biological and chemical hazards'

Practical classes: 13 April Assignment 9: Independent work on chemicals and biological agents

Week 14: 01 May 2023 – No class, a free day.

04 May – practical classes: online – Self-control test (Marina Järvis).

Week 15: 08 May 2023 – Lecture (14:00, SOC-312) Karin Reinhold

Lecture 'Risk assessment at workplaces'

Practical classes: 11 May Assignment 10: Groupwork: Risk assessment

Week 16: Lecture (14:00, SOC-312) Karin Reinhold

Lecture - EXAM

Practical classes: 18 May Presentations of assignment 10.