



HN2020 Work Environment Economics

Course guide

Welcome to the course HN2020 Work environment economics!

This course gives you an introduction to the importance of the work environment to an organization's operational performance and financial outcome, and how good working conditions contribute to increased employee performance, health and well-being.

During the course, we review central terms and concepts related to work environment and personnel economics, and discuss how various physical, organizational and social factors can affect the productivity, efficiency and quality of an organization. Furthermore, we study different methods and models to estimate financial effects of the work environment.

The course is given during one study period and you are expected to allocate about 25 hours weekly for the course for lectures, workshops, webinars and self-study activities. Three of the course weeks are held at Campus Flemingsberg and the remaining weeks are off-campus where we keep in touch through webinars and the online learning platform Canvas. The course includes an applied intervention project where you are expected to suggest, describe and argue for a work environment improvement, and estimate the financial impact of the proposed change.

Dr Linda Rose, lrose@kth.se is examiner and responsible for the course. Course assistant is Dr Cecilia Österman cecilia4@kth.se. You are welcome to email us, but we encourage you to use Canvas for general questions regarding the course, literature or assignments that may be of interest for all students.

Time, place and content for lectures and seminars is found in this course guide, but you are expected to check in regularly to Canvas where you will be informed of any changes.

Course learning outcomes and content

The course is assessed with the grades A, B, C, D, E, FX, F and is based on the written exam (3.0 credits), project work (3.0 credits), and active participation in seminars and exercises (1.5 credits).

The overall course aim is for the students to understand the relation between a good work environment and an organisation's operational and financial performance and results, and how good working conditions can contribute towards employee performance, health and well-being.

After the course, each student shall be able to:

- In their own words, describe and exemplify central terms and concepts of work environment economics and personnel economics
- Describe and reflect over methods and models used for analysing the effects of the work environment on an organisation's performance and results.
- Critically review and assess factors that affects an organisation's results, and propose and argue for changes and interventions from a financial perspective, based on scientific literature and to reflect upon them from a Human-Technology-Organisation (HTO) perspective.
- Summarise and present their findings, both orally and in writing, and study, judge and exchange feedback on the project work in a structured way, and reflect on their own development and learning process

Course literature

Abrahamsson, L. (2000). Production economics analysis of investment initiated to improve working environment. *Applied ergonomics*, 31, 1-7.

Broberg, O. & Hermund, I. (2004). The OHS consultant as a 'political reflective navigator' in technological change processes. *International Journal of Industrial Ergonomics*, 33(4), 315-326.

Engwall, M., Jerbrant, A., Karlson, B. & Storm, P. (2018). *Modern industrial management*. (First edition). Lund: Studentlitteratur.

Goggins, RW., Spielholz, P. & Nothstein, GL. (2008). Estimating the effectiveness of ergonomics interventions through case studies: Implications for predictive cost-benefit analysis. *Journal of Safety Research*, 39(3), 339-344.

Ivarsson, A., & Eek, F. (2016). The relationship between physical workload and quality within line-based assembly. *Ergonomics*, 59(7), 913-923.

Rose, LM., Orrenius, UE. & Neumann, WP. (2013). Work environment and the bottom line: Survey of tools relating work environment to business results. *Human Factors and Ergonomics in Manufacturing & Service Industries*, 23(5), 368-381.

Steel, J., Godderis, L., & Luyten, J. (2018). Productivity estimation in economic evaluations of occupational health and safety interventions: a systematic review. *Scandinavian journal of work, environment & health*, 44(5).

Strömberg, C., Aboagye, E., Hagberg, J., Bergström, G., & Lohela-Karlsson, M. (2017) Estimating the effect and economic impact of absenteeism, presenteeism, and work environment-related problems on reductions in productivity from a managerial perspective. *Value in Health*, 20, 1058-1064.

Project work purpose and procedures

The course includes a project work in which a workplace, task or work system is analysed to identify a work environment problem and suggest how it can be solved, based on relevant theory and good practice. Estimated effects of the suggested change on the work environment, personnel and operations should be described and motivated from a business and personnel economics approach. Calculations should demonstrate:

- Costs that can occur if the problem is ignored, and no action is taken
- Economic effects from the proposed change

Both visible and hidden costs should be considered.

The purpose of the project work is to provide a deeper understanding of the work environment's impact on an organization's productivity, efficiency and quality, as well as how these can be calculated. The project work also aims at practicing your skills in identifying and describing potential financial effects of work environment improvements and being able to argue for them from a business perspective.

The project work is done in groups of three and in collaboration with peer groups. The work is presented in a written report submitted via Canvas on a **maximum of 10 A4 pages** including cover sheet, table of contents and references. The work is also presented with an oral poster presentation at the final course meeting in December. Detailed instructions for the peer groups work, report design and records can be found at Canvas.

Disposition of your course project

Choose a workplace, task or work system you are interested in. It is important to have access to the workplace and personnel throughout the course, in order to be able to observe and interview people at the workplace. Start the project with an initial visit to the actual workplace and study the work environment, tasks, tools and different users. Find out if the employees have any thoughts about cognitive, physical and environmental issues related to the workplace or task.

Describe the work environment and the work environment problem that you identified. Who works there and what tasks are performed? How is the work organized? What is the work environment problem you have identified and why is it a problem? Which short- and long-term consequences can the problem cause operations and employee health, safety and well-being if nothing is done? Estimate and calculate direct and indirect costs for the business if the problem is ignored and nothing is done. The work environment problem should be well defined and described with support in relevant theory.

Suggest a realistic and relevant intervention. Describe how the proposed intervention can improve the work environment and the potential effects that can be expected on operations and employee health. Estimate and calculate costs for the intervention and the financial impact on the business that may be expected. The suggested intervention should be argued for with relevant theory.

Discuss the work environment intervention. Are there any conflicting requirements regarding the design of workplaces, tasks and tools? What are the main challenges in the implementation of the proposed action? Is it possible to design the "perfect" work environment?

Webinars

Two webinars are held on a platform called Zoom. We advise you to login using your KTH user name and play around in Zoom before the first webinar to familiarize yourself.

You can access Zoom from a web browser or download the app.

- Go to www.kth-se.zoom.us
- Select Join
- Type the "Meeting ID" that you find in the seminar instructions

It is also possible to dial in to the webinar for audio only. In Sweden dial 08 4468 2488 and enter the "Meeting ID". International numbers are available on www.zoom.us/j/nybJtjDc

Zoom is available for registered students, so you are welcome to use it for your project group meetings.

Key dates and assignments

Teachers: Linda Rose, KTH (LR); Cecilia Österman, KTH (CÖ); Peter Sillén, KTH (PS), Emmanuel Aboagye, Karolinska (EA), Kerstin Tegbrandt, Scania (KT), Anna Jerbrant, KTH (AJ), Helena Fransson, Praktikertjänst (HF)

Time	Content and assignments
Week 44	
Friday November 1 08:15-10:00 T3 (Meitner) LR	<i>Lecture and workshop:</i> Course introduction and introduction to work environment economics (WEE). <i>Read:</i> Chapter 1 and 3 in Engwall et al. (2018).
Friday November 1 10:15-11:00 T3 (Meitner) PS, LR	<i>Guest lecture by Peter Sillén, KTH:</i> The basics of economics for non-economists
Friday November 1 11:15-12:00 T3 (Meitner) LR	<i>Workshop:</i> Creating a concept map of work environment economics
Week 45	
Wednesday November 7 17:00	Deadline for completing <i>On human terms</i> Chapter 12. Upload screen dump on Canvas that shows you have completed chapter 12.
Friday November 8 08:15-12:00 T3 (Meitner) LR	<i>Literature seminar:</i> Work Environment & Economics methods. <i>Read:</i> Goggins et al., (2008). Prepare three questions about the article that you want to discuss. Upload your answers on Canvas and bring them to the seminar. <i>Lecture and workshop:</i> Work environment economics methods, the 'balloon model'.
Friday November 8 13:15-17:00 Project room 2 LR	<i>Workshop:</i> Teamwork. Last hour is dedicated to the project work and supervision. This will take place in room T53.
Week 46	
	<i>Read:</i> Chapter 6.2, 6.4, 9, 13 and 14 in Engwall et al. (2018).
Wednesday November 13 08:00	Deadline for uploading first draft of project report In this first draft you should describe the workplace or task that you are investigating, and the problem that you have identified. The draft should also include a suggested measure to solve the problem and how potential effects can be analysed. Make sure that the draft contains enough information to allow for a good discussion and constructive feedback.
Friday November 15 09:15-11:00 Zoom LR+CÖ	Webinar on the project; planning, presentations, discussions, supervision. Join the Zoom webinar with this URL: https://kth-se.zoom.us/j/759230072

Week 47	
Friday November 22 08:15-12:00 T4 LR, CÖ	<i>Lecture and workshop:</i> Work environment effects on productivity and quality. Student project presentation. <i>Read:</i> Abrahamsson (2000) and Rose et al. (2013).
Friday November 22 13:15-14:00 Project room 1 LR, CÖ	<i>Guest lecture by Dr Anna Jerbrant, KTH:</i> How can we motivate and argue for work environment improvements? Lecture and workshop.
Friday November 22 14:15-15:00 Project room 1 15:15-17:00 T61 LR, CÖ, EA	<i>Guest lecture by Dr Emmanuel Aboagye, Karolinska:</i> The economic effects of the working environment. <i>Read:</i> Strömberg et al. (2017) and Steel et al. (2018). Reflect over the following questions when you read the articles: <ol style="list-style-type: none"> 1. How can the work environment (both physical and psychosocial) affect the health and work performance of employees? 2. What are the economic consequences of work environment problems? Here one could think in terms of "productivity", what it entails, how it can be measured etc. 3. What interventions can be used at the individual or organization to reduce poor health and impaired work performance/ reduced productivity due to work environment related problems? 4. How does one evaluate these interventions to ensure that the economically attractive is chosen? <p>Upload your answers on Canvas and bring them to the lecture.</p> <i>Last hour is dedicated to project work and supervision.</i>
Week 48	
	<i>Read:</i> Chapter 15 and 18 in Engwall et al. (2018).
Friday November 29 08:15-09:00 Project room 1 LR, CÖ, KT	<i>Guest lecture with Kerstin Tegbrandt, Scania:</i> How Scania works with work environment and health.
Friday November 29 09:15-12:00 Project room 1 LR, CÖ, PS	The role of the OSH consultant. Literature seminar. <i>Read:</i> Broberg & Hermund (2004) Q&A with Peter Sillén, followed by project work and supervision
Friday November 29 13:15-14:00 Project room 1 LR, CÖ	Project work presentation by students
Friday November 29 14:15-17:00 Project room 1 LR, CÖ, HF	<i>Guest lecture by Helena Fransson, Praktikertjänst.</i> Work environment economics – Key Performance Indicators for management. Workshop on KPI's. Role play and discussions

Week 49	
Wednesday December 4 08:00	Deadline for uploading second draft of project report In this second draft you should describe your suggested measure(s) to solve the identified problem. You should also have some initial calculations or estimates of the economic effects of your measures. The draft does not have to be a complete report but should be structured and comprehensive enough to allow for a good discussion and constructive feedback at the project seminar.
Thursday December 5 10:00	Feedback on your second draft of project report You will receive written feedback from your tutor on Canvas.
Friday December 6 09:15-11:00 Zoom LR	Webinar on the project work and peer feedback Join the Zoom webinar with this URL: https://kth-se.zoom.us/j/708944594
Week 50	
Tuesday December 10 12:00	Deadline for uploading your final project report and poster presentation
Friday December 13 09:15-12:00 Project room 1 LR, CÖ	Lucia coffee and project presentation seminar with poster presentation and feedback
Friday December 13 13:15-16:00 Project room 1 LR, CÖ	Key competences and collaboration. Wrapping it up: Objectives, theory & practice, and the future Course evaluation and discussion about the course
Week 2, 2020	
Friday January 10 08:00-17:00	Home exam The home exam is available on Canvas at 08:00. Answers to be submitted before 17:00
Monday January 13 08:00	Deadline for uploading your individual final assignment