2025-08-24_v.1

Introduction to Technology, Work and Health, 7.5 credits

COURSE MEMO

Study Period 1 2025

Figure 1. Construction workers. Photo from KTH.

Welcome to the Course!

This course gives an introduction to how work-related factors effect health, and how ergonomists and work environment engineers can work to improve work environments, especially in the field of musculoskeletal loading in the workplace.

During the course, we will review central terms and concepts related to Ergonomics, such as: *HTO (Human, Technology & Organization), Participatory Ergonomics, and Hierarchy of Control*, as well as learn about health hazards in the workplace, do basic assessments of risks related to musculoskeletal loading, and discuss and reflect on professional skills needed in the field. The course also has a particular focus on the set-up and managing of a *Systematic work environment management system* – A system and a way to systematically prevent ill health and accidents as well as to promote favorable work environments.

In this course memo, you will find general information about the course, the intended learning outcomes (ILOs), learning activities, the mandatory course literature, and examination criteria. In the detailed schedule in Canvas you can find more information about the learning activities and how to prepare for them.

Overview of the Course

Start Date: August 25th, 2025
Duration: 9 weeks (weeks 35-43)
Location: Campus weeks (35, 38, and 41) & online/hybrid weeks.
Learning Activities: Lectures live/recorded, 7 seminars, Project Work, Lab Day, Assignments.
Time Commitment: 7.5 credits, corresponding to 200 hours (about 20 hours/week).

Reading connected course literature, and doing assignments prior to or after the seminars, are required to be able to take an active part in the seminars and for you as students to get the most out of the course. You are expected to allocate about *20 hours* weekly for the course for lectures, workshops, seminars, and self-study activities. Please plan time for your studies to make the most of the course and to balance your own workload.

Course Literature

A list of the mandatory course literature is attached as an appendix in this course memo. All material is available online either as links or as files on the learning platform Canvas. Some of the course material is connected to the online course *Work and Technology on Human Terms,* which is integrated in Canvas. Be sure to have checked the literature list in advance.

Please make it a habit to check in to Canvas regularly to stay informed of any changes. Notifications about important updates will also be sent through 'Announcements' in Canvas. Make sure to set up your notifications to suit your needs. Here is KTH guide on how to do that.

We look forward to the course and we hope that you will enjoy, learn, and have some new insights during the course.

/The Teaching Team

The Teaching Team

You are welcome to make contact us via email, but you are encouraged to use the discussion forum in Canvas for general questions regarding the course, literature, or assignments where the answer may be of interest for all students. Email Malin Håkansson, the course coordinator/course responsible, if you have individual questions about the course.

Course Coordinator

Malin Håkansson, PhD and Lecturer, KTH, malinhak@kth.se

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Teaching Assistants

Intended Learning Outcomes (ILOs)

The course is based on constructive alignment. This means that the course objectives run like a red thread through the learning activities, and what is assessed at the examinations is whether you as a student have achieved the learning objectives for the course.

1. Reflect on and exemplify interactions between work and health using a systems (human, technological and organizational, HTO) perspective.

2. Describe and reflect on laws, regulations, and standards in the subject area, and how they are used by ergonomists and work environment engineers to promote systematic work environment management.

3. Exemplify and describe different types of health hazards in the workplace and how these hazards may affect workers' health and performance.

4. Recognize musculoskeletal loading hazards in the workplace and be able to perform basic risk assessments.

5. Discuss and reflect on professional skills in the field of occupational safety and health, including project management, professional ethics, and collaboration competencies.

6. Reflect on how healthy and sustainable work environments contribute to the achievement of the UN Sustainability Goals.

Link to the course syllabus.

Examination and Completion

Examinations

- LAB1 - Laboratory work, 2.0 credits, Grading scale: P, F
- PRJ1 - Project work, 1.5 credits, Grading scale: P, F
- SEM1 - Seminars, 4.0 credits, Grading scale: P, F

Table 1. What intended learning outcomes (ILO) each course module examine

	ILO 1 HTO	ILO 2 Regulations	ILO 3 Hazards	ILO 4 Risk Assessment	ILO 5 Professional Skills	ILO 6 Sustainability Goals
LAB1	x	x	x	x		
PRJ1		x	x		x	
SEM1	x	x	x		x	x

Venue

The schedule is divided into *Campus weeks* (weeks 35, 38, and 41) and O*nline/hybrid weeks*. The lectures and seminars on campus weeks will mostly be "live" at Campus Flemingsberg, *Hälsovägen 11C,* in Huddinge, Sweden.

Learning activities in the non-campus week will be offered online or as *hybrid teaching*. Visit the detailed schedule in Canvas for more information. When there is an opportunity to join online it will show up as '*Digital*' in the scheduling program TimeEdit and as '*Zoom*' in the detailed schedule. The Zoom link for the course is published in Canvas.

Whenever there is a room booked for the class we encourage you to show up in person to get the most out of the class and be able to interact with the teachers and other students in a better way. You can look up where the room/facility is located through the KTH Facility Location tool.

To get attendance for the online seminars you need to log in using your KTH account, by signing in via SSO. Instructions about how to login can be found via this link.

More instructions and tips about Zoom is published in the first module in Canvas.

Seminars (SEM1, 4.0 credits)

The mandatory seminars in the course require in-person participation as well as approved hand-ins in order to fulfill the course requirements. Active participation throughout each seminar is expected. The seminars are graded *Pass/Fail*.

Here is some advice to help you approach the seminars:

- Check the detailed schedule and instructions on Canvas to see if you are expected to do any preparatory work before the seminar, such as completing a specific assignment, reading a text or noting down questions on a topic. Also check the assignment dates for the course work.
- In the room, pick a seat that enables you to contribute to the discussion. We want to sit together. Unfortunately, the room is not always very suitable for round-table discussion but together we can make the most of it.

- Be prepared to talk. Seminars are places where questions are explored, topics are debated and analyzed. You are expected to actively contribute to the seminar discussions.

- Be prepared to listen. Pay attention to and respect the views of other students. You do not have to agree with your teacher and fellow students but listen first, then you are encouraged to clarify any points that need clarification and articulate your view.

- I addition to what is stated above: To be able to actively participate in *online seminars* it is your responsibility to *secure a quiet space* with a good internet connection. We expect that you have your web camera on to promote interaction with other students and us teachers, that you are audible, that you monitor the chat, and that you take part in polls in Zoom. See tips about how to use Zoom in Canvas.

In case of absence, **one** seminar can be substituted with an alternate assignment corresponding to the content of the seminar, including interviewing one student who participated in the seminar. The student needs to email the course coordinator to sign up for an alternate assignment. Typically, the alternate assignment will be published after all the seminars are completed at the end of the course. Students needs to hand in the written alternate assignment in Canvas no later than *two weeks after the course has ended.*

If the student misses more than one seminar the student needs to wait until the following year when the seminar is offered again. It is important that you come prepared for seminars. You are expected to read the literature and do any preparatory work before the seminar, so that our discussions are based on a solid understanding of concepts and theory. You can make the preparation in groups, but the tests or hand-ins before or after the seminars are individual assignments.

PRJ1 –Project work (1.5 credits)

The project work consists of a group project where you are expected to summarize health hazards and ways to systematically identify and prevent risks in a work setting using a framework for systematic work environment management. The project is individually examined using grade *Pass/Fail.*

The examination consists of a **written report** and an **oral presentation** by each project group. All group members are expected to participate actively in the project meetings, the *two mandatory supervisions*, the writing of the report, and the oral presentation.

The groups will be formed by the teaching team during the first study week. Groups will be assembled with an effort to form teams with diverse educational backgrounds and to include one with Swedish language skills to facilitate data gathering.

The report should be written in the students' own words with support from the mandatory course literature and relevant sources about the chosen occupation/work setting, see more under the heading *Referencing & Academic integrity* on the next page.

All groups need to hand in a *Group authorship statement*, with description of who has done what. Detailed instructions about the project, including the content and structure for the report and submission dates are presented in a separate instruction in Canvas.

Workshops Academic Writing, Reading & Learning

Since this is the introductory course in the program, we have designed some voluntary workshops that we hope will help reinforce your skills for academic writing, reading, and learning. The workshops are voluntary, but we think they will give you a head start in the program. Visit the detailed schedule on Canvas to find out more about them.

We can also recommend that you take the guided Library tour at our main campus and that you check the KTH Main Library calendar to find lectures and workshops that can help you in your studies.

Referencing & Academic Integrity

Assignments and the report in the course should be written in the student's own words with support from the mandatory course literature and relevant sources. To pass the students must, where required, relate to concepts/models/theories described in the mandatory course literature, supported by references in the text and in a reference list at the end according to an accepted reference system. We recommend you use APA 7th as the reference system for the report.

All hand-ins in the course will be checked for plagiarism. Failure to cite references in a correct manner can be interpreted as plagiarism and lead to negative consequences for you as a student. To learn more about how to steer away from plagiarism we recommend that you watch the film *Avoid plagiarism and cheating* [<4 min] about how to make a reference to your sources and avoid plagiarism from the KTH Centre for Academic Writing.

You can find more tips in the KTH handbook *Guiding students away from plagiarism* on how to avoid plagiarism. [Note that the English version of the book starts at Adobe page 86]. In the TTAHM Program Canvas you can also find more tips about writing and referencing.

Writing Resources

On this KTH webpage you can find some general information about referencing as well as some films to guide you.

If you struggle with academic writing or want to improve your writing, we suggest you make an appointment with a writing tutor at KTH's *Centre for Academic Writing & Rhetoric*. You can schedule a meeting on Zoom, click here to learn more about how to set up an appointment.

An informative guide to referencing, called Refero, from Linnaeus University.

If you want to start to refresh your academic writing skills this PDF about Academic Writing for Second Language Writers from Lund University can be a good start.

Generative AI

In this course generative AI tools may be used in all examinations and graded assignments as long as the use follows the course guidelines, unless otherwise explicitly stated. More information is presented in **Appendix 2** and Canvas. **Note** that students must honestly disclose the use of any assistance, tools, resources, and references. If you are in doubt about what type of AI tool s are allowed, please ask your teachers.

Support for Students with Disabilities

In case you have a disability, you can apply for compensatory support through KTH's Funka office. See more information about how to apply on the FUNKA website.

We hope you will enjoy the course and learn a lot!

/Malin Håkansson
Course Coordinator
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Appendix 1 - Mandatory Course Literature

Instructions about the mandatory course literature will be given during the introduction. The literature is available in Canvas either as direct links, links to KTH Library or files. Instructions about how to prepare for each learning activity are provided in the detailed schedule in Canvas.

AFS 2023:1. Arbetsmiljöverkets föreskrifter och allmänna råd (AFS 2023:1) om systematiskt arbetsmiljöarbete – grundläggande skyldigheter för dig med arbetsgivaransvar. [Swedish provision about Systematic Work Environment Management]. Swedish Work Environment Authority. https://www.av.se/arbetsmiljoarbete-och-inspektioner/publikationer/foreskrifter/afs-20231/

AFS 2023:2. Arbetsmiljöverkets föreskrifter och allmänna råd (AFS 2023:2) om planering och organisering av arbetsmiljöarbete – grundläggande skyldigheter för dig med arbetsgivaransvar. [Swedish provision about planning and organizing work environment management]. Swedish Work Environment Authority. https://www.av.se/arbetsmiljoarbete-och-inspektioner/publikationer/foreskrifter/afs-20231/

AFS 2023:10. *Arbetsmiljöverkets föreskrifter och allmänna råd (AFS 2023:10) om risker i arbetsmiljön.* [Swedish provision about risks in the work environment]. Swedish Work Environment Authority. https://www.av.se/arbetsmiljoarbete-och-inspektioner/publikationer/foreskrifter/afs-202310/

Akselsson, R. (2015). Safety and Risk. In M. Bohgard et al. (Eds.), *Work and technology on human terms* (pp. 435-471). Prevent.

Berglund, M., Karltun, A., Karltun, J. & Eklund, J. (2015). HTO – A Concept on Humans, Technology, and Organisation in Interaction. In M. Bohgard et al. (Eds.), *Work and technology on human terms* (pp. 1-22). Prevent.

Bohgard, M. et al. (2015). Designing work and Technology on human terms. In M. Bohgard et al. (Eds.), *Work and technology on human terms* (pp. 9-18). Prevent.

Eklund, J. (2003). An extended framework for humans, technology, and organization in interaction. In H. Luczak & K.J. Zink (Eds.) *Human Factors in Organizational Design and Management VII. Re-Designing Work and Macroergonomics - Future Perspectives and Challenges*. IEA Press.

Fischer, K., Thatcher, A., & Zink, K. J. (2021). Human factors and ergonomics for sustainability. In Salvendy G. & Karwowski, W. (Eds.)*, Handbook of Human Factors and Ergonomics,* (5th ed., pp. 1512-1527). John Wiley & Sons. https://app.knovel.com/hotlink/toc/id:kpHHFEE028/handbook-human-factors/handbook-human-factors

Gyi, D., Shalloe, S., & Wilson, J. (2015). Participatory Ergonomics. In J. Wilson & S. Sharples (Eds.), *Evaluation of Human Work* (4th ed., pp. 884-906.). CRC Press.

Harms-Ringdahl, K. (2012). Work in Awkward Postures. In A. Toomingas, S. E. Mathiassen & E. Wigaeus Tornqvist (Eds.), *Occupational Physiology* (pp. 99-116). CRC Press.

Hellström, F. (2012). Work with Highly Repetitive Movements. In A. Toomingas, S. E. Mathiassen & E. Wigaeus Tornqvist (Eds.), *Occupational Physiology* (pp. 117-140). CRC Press.

Human Factors and Ergonomics Society. (2020). Code of Ethics. https://www.hfes.org/about-hfes/code-of-ethics

Hydén, H. (2015). Work Environment Legislation. In M. Bohgard et al. (Eds.), *Work and technology on human terms* (pp. 667 – 702). Prevent.

IEA (2006). *Code of Conduct for Human Factors/Ergonomics (HFE) Practitioners. https://iea.cc/wp-content/uploads/2014/10/IEA-Code-of-Conduct.pdf*

ILO (2014). A 5-step guide for employers, workers, and their representatives on conducting workplace risk assessments. International Labour Office. https://www.ilo.org/safework/info/publications/WCMS_232886/lang--en/index.htm

ILO & IEA (2021). *Principles and Guidelines for Human Factors/Ergonomics (HFE) Design and Management of Work Systems.* Joint Document by the International Ergonomics Association and the International Labour Organization (ILO).

Ouimet, T. C., Bracker, A., Leibowitz, A., Roskelley, D. C., & Throckmorton, J. V. (2011). Industrial Hygiene Professional Ethics. In D. H. Anna, (Ed.), *Occupational Environment - Its Evaluation, Control, and Management* (3rd ed., pp. 25-40). American Industrial Hygiene Association (AIHA).

Rose, L., & Mikaelsson, L-Å. (2015). Occupational Injuries. In M. Bohgard et al. (Eds.), *Work and technology on human terms* (pp. 619-638). Prevent.

Karltun, A., Karltun, J., Berglund, M., & Eklund, J. (2017). HTO – A complementary ergonomics approach. *Applied Ergonomics*, 59(PA), 182-190. https://doi.org/10.1016/j.apergo.2016.08.024.

SFS 1977:1160**.** *Work Environment Act (Arbetsmiljölagen). https://www.government.se/government-policy/labour-law-and-work-environment/19771160-work-environment-act-arbetsmiljolagen/*

Swedish Work Environment Authority. (n.d.) *Guide to improving the work environment*. ADI 683. https://www.av.se/globalassets/filer/publikationer/broschyrer/other-languages/guide-to-improving-the-work-environment-adi683eng.pdf?hl=adi%20683

United Nations (n.d).*The 17 Goals*. Department of Economic and Social Affairs Sustainable Development. https://sdgs.un.org/goals

The list of course literature will be updated in Canvas where you can also find additional readings and more resources.

Appendix 2 – Course specific information about the use of generative AI

Generative AI tools may be used in all examinations and graded assignments as long as the use follows the course guidelines, unless otherwise explicitly stated. You are also advised to follow the course guidelines for non-graded assignments. The guidelines for the use of generative AI are designed to promote learning and the fulfillment of the course learning objectives.

In this course, students are expected to demonstrate professional credibility and ethics, which means taking responsibility as the author of risk assessments - it is important for the public and your clients that you are accountable for true and accurate work.

Guidelines for the use of Generative AI

Generative AI may be used in the course's examination and graded assignments as long as you use it in a manner that is:

- responsible
- ethical
- academically honest

We expect you to take responsibility as a professional and stand as the true author who can guarantee the quality of your work. One example of how to fulfill these guidelines is to be transparent with your use of generative AI, which means that your use must be disclosed. You will find more course-specific examples under the heading "Examples of permitted use".

Note that the guidelines must be followed for examination and graded assignments, but you are advised to also follow them outside of examinations and for non-graded assignments.
Further information about the ethical use of AI can be found in this Student Course on Generative AI.

Examples of Permitted Use

Below are examples of permitted use of generative AI in this course. Consult your teacher if you are considering other areas of use.

- **Text editing and translation**: We encourage you to use generative AI to improve the quality of your writing, correct errors, and increase readability. It is good to get practice using tools in this way, since you will likely use tools like this in your professional life.
    - *Restrictions:* You may only translate sentences or words, not entire paragraphs. You must work further with the idea suggestions; you cannot use the generated answer directly.

- **Coaching:** Ask an AI tool to generate study questions, or ask it to give a summary of writing errors you make and should work on.

- **Idea generation:** Use AI to get inspiration, structure thoughts, or formulate questions to research further. However, it is always good to think independently first, so that the AI tool does not limit your perspective

Note! Remember to critically review material created by generative AI. **You, as a student, are fully responsible** for all material you submit and *must be able to defend and explain it completely* without support from generative AI.

Examples of Prohibited Use

Below is a description of the use of generative AI in examination and graded assignments that is considered unauthorized assistance, attempted deception, or cheating. This is **not** a complete list, always consult your teacher if you are unsure whether your use is permitted.

- **Complete assignment solution:** AI may not be used to generate entire assignments, reports, or other text.

- **Translation without review:** entering translated text into a report without first reviewing it to ensure its correctness is not acceptable.

Disclosure of AI use

To ensure academic transparency, you must disclose whether and how generative AI has been used in your work. Please include the following disclosure statement at the end of your submitted assignments. Even if you have not used AI tools, you still need to include it, but you can simply state that no tools were used.

To better understand which tools involve generative AI, please see the Student course on generative AI. If you are in doubt whether an app involves AI, it is best to disclose its use and how you used it.

The following structure is recommended for declaring what AI tools you have used and for what purpose:

Tool name: (for example, ChatGPT, Canva, Grammarly)

Purpose and Contribution: (e.g., brainstorming, drafting, data analysis, generating an initial draft, providing data insights).

(Add more lines as necessary for additional tools used.)

I hereby declare that the above information is accurate and that I have disclosed all AI-generated content that directly influenced or contributed to this academic work. I understand that failure to disclose AI tool usage accurately may be considered a violation of academic integrity policies. This assignment submission represents my own original work.

Student signature

Disciplinary Action for Unauthorized Use of AI

Everything you submit must be your own work – even if generative AI is used as support, the thinking and conclusions must be your own. You must therefore understand the rationale and logic behind the text, and must be able to both answer questions about it or write an outline of it if asked to do so.

Using generative AI in an unauthorized way for examination and graded assignments is considered an attempt to mislead and **may lead to disciplinary action**. Therefore, be sure to follow the information on this page and disclose your use of generative AI.

Questions or concerns?

Contact the course coordinator for guidance and clarification of this information, or if you are wrongly accused of unauthorized use of generative AI in the course's examination and graded assignments.

Disclosure

This information is based on a KTH template and adapted to this course.