Welcome to course in Health, Safety and Environment (HSE)

Opening: Vice dean Karina Mathisen

HSE at NTNU and NV-faculty:
HSE-advisor Espen Fjærvik

First aid and fire protection:
Midt-Norsk Sikkerhetsopplæring AS (MINSO)
Health, Safety and Environment at NV

Important objectives:

• Ensure a safe working environment and prevent accidents and injuries.

• Ensure that all leaders, employees, and students know their HSE responsibilities and have the knowledge and attitude needed to take care of these responsibilities.

• Include knowledge and awareness of HSE as an important part of the education and research at NV.
Main objective:

- Ensure that employees and students are given the necessary training in HSE to have a safe working environment

This course deals with:

- General HSE conditions at NTNU and NV
- First aid and fire protection

Specific HSE training for laboratory work is given at the departments
You must register for exam in HMS0003 and take a test in Blackboard to pass the course.
Laws, regulations and guidelines

Legal rules

Regulations (authority)

- **Laws (Parliament)**
  - Examples: Working Environment Act, Fire/explosion protection Act
  - Responsible unit: Labour Inspection Authority
  - Regulatory authority: DSB → Fire Department

- **Regulations (Government)**
  - Examples: Workplace regulation, Handling of hazardous substances
    - Responsible unit: Labour Inspection Authority
    - Regulatory authority: DSB → Fire Department

- **NTNU guidelines (Rector)**
  - Examples: Chemicals and gases, Risk assessment
    - Responsible unit: NTNU

- **Local routines (Dean, head of Dep.)**
  - Examples: General and laboratory specific guidelines/routines
    - Responsible unit: Faculty
      - Department
HSE-info and guidelines at NTNU

All information at innsida.ntnu.no

- **HMS, HSE**: Main website HSE
- **HSE** for students
- **HMS ved NV**: (Norwegian) HSE-information and guidelines for NV-faculty

- Laboratory and workshop handbook:
  - Available on Innsida
HSE is taken care of by the «HSE-system» (?)

A WELL FUNCTIONING HSE-SYSTEM IS LIKE A PROTECTIVE WINDOW TO A WORLD FULL OF DANGERS!

TRANSPARENT, BUT STILL SOMETHING YOU CAN LEAN ON WITHOUT....

OOOOPS!

The «system» can not fulfill our responsibilities!

It is what we actually do that counts!
HSE-responsibilities for students

- **Students** participating in teaching or performing lab work, field work etc. that may involve risks, have the **same rights and obligations as employees with regard to HSE** (The Working Environment Act).

- All employees and students have a **personal HSE responsibility**. This implies a **duty to cooperate**.

- HSE is the responsibility of managers at all levels.
  - ✓ The **Head of Department** has the overall responsibility of each department.
  - ✓ Anyone **who lead or supervise** the work of other employees or students, is responsible for ensuring that due care is taken to safety and health.
Responsibility for HSE

Everyone has a **duty to cooperate** (WEA §2-3)

- Assess the risks in their own work
- Know and comply with the relevant guidelines
- Use required protective equipment
- Report dangerous conditions, accident, injury, etc.
- **Contribute actively to a good and safe working environment**
What are the success criteria for good HSE practices?

- Cooperation, participation, inclusion
- Information and training, motivation
- Share and learn from experience
- Good HSE practice is a result of the sum of actions performed.
- The actions are carried out by individuals and controlled by their attitudes

HSE-culture
What is HSE work?

• Ensure a satisfactory work environment

• **Systematic work** aimed at continuous improvement

HSE work at NTNU should be carried out *continuously and systematically,*
- At all levels, integrated in daily work
HSE-problems and discrepancies: **WHAT** is it?

- Incidents causing harm to PEOPLE, environment, materials
- Dangerous situations or near accidents
- Violence and threats
- Violations of routines, procedures or legislation
- You can also report suggestions for improvement related to HSE
**WHY** should we report HSE-problems?

**LEARN** from the incident

**PREVENT** new similar incidents

**IMPROVE**

Because it actually **WORKS**!

Duty to cooperate  →  report problems
HOW to report HSE-problems

**Reporting problems**

- Norwegian and English version and user guide
- Personal information shall not be reported in the system
- The report goes to the case handler (HSE-coordinator) at your unit
- Questions or problems: HSE Coordinator at your unit can help you
- You can always go into the system and follow your case
- If you are in doubt whether to report a problem: **DO IT!**
Notification of unacceptable conditions: “Whistleblowing”

Whistleblowing is to report violations of:

- Laws and regulations
- Ethical standards
- Serious matters that might harm the University or society in general

You may notify your nearest leader, student representative or contact a student advisor at your program.

NTNUs guidelines for whistleblowing

Student representative (faculty/department) can assist you
Student representatives

- Safeguard students interests
- Student representatives at NV
  - ITVs are the students representatives in departments
  - FTVs are students representatives at faculty level.

Student representatives (tillitsvalgte) NV

Student democracy at NTNU (in Norwegian)
Oversikt over tillitsvalgte – V18

Fakultetstillsvalgte - NV
ftv@sr-nv.no

IKP - Institutt for kjemisk prosesssteknologi
kjempros@sr-nv.no
Inger Anna Helmersen
Mandag 11-12
HC-kontoret
Martin Messe
Torsdag 13-14
HC-kontoret

IBI - Institutt for biologi
biologi@sr-nv.no
Thorbjørn Hauge
Torsdag 11-12
Valvemo-kontoret

IKJ - Institutt for kjemi
kjemi@sr-nv.no
Phillip Right
Onsdag 13-14
HC-kontoret
Kenneth Stange
Mandag 12-13
Valvemo-kontoret

IBF - Institutt for bioingeniørfag
bioingeniør@sr-nv.no
Caroline Karlsen
Torsdag 14-15
Nuclear-kontoret
Ragnhild Griegestad
Torsdag 14-15
Nuclear-kontoret

IFY - Institutt for fysikk
fysikk@sr-nv.no
Síer-Marie McDougall
Mandag 12-13
Nabla-kontoret
Andreas Gjestad Forsheim
Torsdag 12-13
Delta-kontoret

IBA - Institutt for biologiske fag, Ålesund
biofag@sr-nv.no
Síer-Sara Axstad

NANO - Nanoteknologi
nano@sr-nv.no
Idan Bakken
Onsdag 11-12
Tomini-kontoret

IBT - Institutt for bioteknologi og matvitenskap
bioteknologi@sr-nv.no
Marie Nustad
Fredag 9-10
TTS-kontoret
Vedle Knudahl Rem
Mandag 12-13
HC-kontoret
Karin Loie
Torsdag 10-11
SR-NV-kontoret

IMA - Institutt for materialteknologi
materialteknologi@sr-nv.no
Ragnhild Kluen
Mandag 11-12
HC-kontoret
Karoline Knutsen Kjølseth
Fredag 12-14
Metallogi
Simen Bøe Kirkstad
Fredag 12-13
TTS-kontoret
Kari Ramstad Kjølseth
Mandag 12-13
HC-kontoret
Safety representatives for employees

- Safety representatives (Verneombud-VO)
  - Elected by employees at each department/unit.
- Local senior safety representatives (LHVO - faculty)
- Senior safety representative (HVO - NTNU)
  Present in the [NTNU Working Environment Committee](https://www.ntnu.no/en) (AMU)
The working environment is made up of many factors

**Physical**
- Air quality, light, noise,
- Chemicals, radiation
- Equipment
- Work Processes, ergonomics
- Safety barriers, protective equipment

**Psychosocial**
- Communication, collaboration,
- Affiliation
- Socializing and meeting points
- Culture/values: Creative, Constructive, Critical and Respectful

**Organizational**
- Communication, collaboration,
- Affiliation
- Socializing and meeting points
- Culture/values: Creative, Constructive, Critical and Respectful

**Training and information**
- Confidence/safety
- Motivation and meaning

**Physical Environment Act:** Should be "fully satisfactory" with respect to factors that may affect the employees' physical and mental health and welfare
Physical work environment

- Adapted to type of work and person
- Satisfactory climate, light etc.
- Technical protective measures
- Personal protective equipment
- First-Aid equipment
Ergonomics

- Important to be aware of ergonomic factors to avoid work-related musculoskeletal problems
- This is important both in laboratory-, workshop and office work
- Listen to your body, take breaks, find good working positions
- Lots of Information about Ergonomics on Innsida:
  - Ergonomics in the laboratory
  - Preventing muscoskeletal problems
  - Sedentary behavior and variation
Psychosocial work environment

• The sum of organizational and social factors that affect the individual's health, well-being, creativity, and performance (in workplace/educational institution)

• Objective criteria are difficult to define:
  – Balance between the demands and expectations placed on a person and the stimulation and learning opportunities on offer.
  – Opportunity for independence and control of work.
  – The social interaction, YOUR contribution counts!
Unacceptable behaviour- harassment and conflicts

• As a student at NTNU you should not experience discrimination, harassment or bullying.

• If you would like to complain about offensive or unacceptable behavior from fellow students or employees at NTNU, the same guidelines apply for students as for employees. NTNU guidelines

• If you need advice in this context you should contact SiT Health Service, Student Services or a student advisor responsible for your program.
Special needs accomodation

https://innsida.ntnu.no/tilrettelegging

Students with special needs or disabilities can get help with individual accommodations.

- Specially equipped reading room places.
- Personal mentor through NAV
- Accommodations for exams (related to chronic illness, disability or injury)

- Contact NV-faculty: Sigurd H. Madsen: Realfagbygget D1-196, sigurd.madsen@ntnu.no
Health services

https://www.sit.no/en/health
https://innsida.ntnu.no/helsetjenester

- Health station, Campus nurse
- Doctors
- Psychologists
- Dentist; refunding
- Extraordinary health expenses; refunding
- Courses
Pregnancy and lab work

• The pregnant student is responsible for informing her supervisor or lecturer of her pregnancy.

• The lecturer/supervisor shall undertake a risk assessment and determine which safety and security measures that should be taken.

• The department has the responsibility to take the necessary actions.

• NTNU guidelines: Pregnancy

• See the NV-guidelines for pregnant women in lab for further description and info: HMS ved NV
Insurance

• NTNU recommend that you have a personal insurance policy.

Links to further information:
• Forsikring for studenter (in Norwegian)
Critical incidents/ emergencies: Emergency preparedness at NV and NTNU

• Emergency preparedness means being prepared when something happens

• Everyone can have a role in an emergency situation as the one detecting an incident and must know the routines for notification.

Emergency preparedness at NTNU (Norwegian and English)
Emergency (Norwegian and English)
Notification of Incident/accident

YOU discover the incident

Emergency numbers
110 Fire
112 Police
113 Ambulance

First Aid?
Secure the scene?

No contact?
Notify nearest leader

See back of keycard

Call for assistance
NTNU guard 918 97 373
Technical guard 918 97 335

NTNU emergency
800 80 388

Save the relevant numbers for notification of emergencies on your phone!

Notification list NV

Norwegian University of Science and Technology
Always prepared?

Things to consider....

- **YES, accidents **MAY happen also here.........**RISK ACKNOWLEDGEMENT**
- **Can we DO** what’s needed if something happens?.... **CAPASITY TO ACT**
- **What can my OWN ROLE** be in an emergency?....... **AM I PREPARED?**
# Categories of signs

<table>
<thead>
<tr>
<th>Mandatory</th>
<th><img src="image" alt="Eye protection" /></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prohibitory</td>
<td><img src="image" alt="No phone" /></td>
</tr>
<tr>
<td>Danger/warning</td>
<td><img src="image" alt="WARNING" /></td>
</tr>
<tr>
<td>Fire fighting</td>
<td><img src="image" alt="Fire extinguisher" /></td>
</tr>
<tr>
<td>Evacuation</td>
<td><img src="image" alt="Evacuation" /></td>
</tr>
</tbody>
</table>

Eye protection mandatory for everyone in eye protection lab. See [Eye protection instruction for NV faculty](#).
Laboratory Coats

Material: cotton

Coat should be **whole and clean**

- Everyone should have two coats
- Coats to be marked with names
  - Family name and first name
- Delivered for washing at the faculty
  - Outside room DU4-103. See [routine for lab coats](#)
  - Clean coats are retrieved from room DU4-103.
Substance index
(«Stoffkartotek»)

- All chemicals, dangerous substances and gases **shall be registered and risk assessment performed** in the substance index (EcoOnline) before use.

- **Safety data sheets** for chemicals/substances are obtained from the substance index. **Read this before you start using the chemical!**

- Everyone working with chemicals have access to the substance index

- Information and logon for substance database: [English](#)

- **Substance index representatives**

- Ordering of chemicals **shall** be done by the departments **purchasing representatives** ("bestiller"). This applies for all kinds of goods.
Room card

- Responsible unit (*hovedvirksomhet*)
- Responsible for room (*romansvarlig*)
- Manager (*linjeleder*)
- Emergency/Guard
- Type of activity and risks
- Gas and flammable liquids
- Verification date

**Room cards**
Risk assessment
- systematic handling of risks

• What should be assessed? *(danger source, object)*
• What can go wrong? *(unwanted incidents)*
• Why can it go wrong? *(causes)*
• What is the *likelihood*?
• What could be the *consequences*?
• What's so far been done? *(existing measures)*
• Is the risk acceptable? *(acceptance criteria)*
• What more can we do? *(new measures/safety barriers)*
Evaluation and quantification
Risk acceptance criteria

Consequence $\times$ Likelihood = Risk value

The colors indicate the degrees of risk:
- **Red**: Unacceptable risk. Measures must be implemented.
- **Yellow**: Assessment area. Measures to be considered.
- **Green**: Acceptable risk. Measures can be considered.
Risk assessment process

• To be carried out for all activity involving risks, before start and before significant changes in an existing activity
• Digital system: RiskManager
• Obtain knowledge of activity (on-site inspection/demonstration)
• Gather all relevant information (data sheets, manuals, etc…)
• “Brainstorming” - what can go wrong and why?
• Describe the risks of all relevant adverse incidents
• Determine and implement measures to reduce the risks
• Consider the end result - are the risks acceptable?

Innsida: https://innsida.ntnu.no/wiki/-/wiki/English/Risk+assessments
Risk assessment of master thesis

• Prior to master thesis work a risk assessment shall be carried out. This assessment shall be included as an attachment to the master agreement.

• The assessment shall be done in cooperation with your supervisor. Also, the HSE-coordinator and others at the departments can give advices.

• Risk assessment should help to ensure that due care is taken to the safety issues in the master project.

• Guidance for performing risk assessment of the master project:

  **HMS ved NV**
Objectives and responsibilities

The supervisor has to assess the feasibility of the project with regard to safety before the master projects are offered to the students. Before the master project starts, risk assessment shall be carried out in cooperation between supervisor and student. It is the supervisor’s responsibility that the risk assessment is performed. The assessment will be included as an attachment to the master agreement.

It is the supervisor’s liability that proper concern for health and safety is taken and the student has an independent responsibility to contribute to this (see Norwegian Working Environment Act §2-3).

http://www.lovdata.no/all/tl-20050617-062-002.html#2-3

If co-supervisors are involved in the training and supervision of the student’s laboratory work, the responsible supervisor must clarify the HSE responsibilities involved and the co-supervisor(s) shall if necessary participate in the risk assessment.

Risk assessment prior to start of the master projects should clarify the responsibility that lies with both the student and supervisor(s) in order to protect health, safety and the environment. The HSE Coordinator can help with general training, information and advice for carrying out the risk assessment.

The risk assessment submitted together with the master agreement, forms a basis for further risk assessment during the master project. The need to update the risk assessment depends on what new items or changes are brought into the project. If changes are made so the risk assessment no longer covers the relevant risk factors and safeguards, an update must be carried out. Student and supervisor are jointly responsible for assessing the need for performing a new risk assessment.
# Important documents in the lab

**We have talked about:**

| **Room card** *(romkort)* | Bills outside entrances to laboratories showing vital information on safety issues to fire fighters and others |
| **Risk assessments** *(risikovurderinger)* | Documentation of risks and how they are controlled. |

**You should also be familiar with:** (see [Lab- and workshop handbook](#))

| **Safety information card** *(vernekort)* | Bills at entrances showing names of the Head of dept, HSE-coordinator, safety representative, .. |
| **Apparatus card** *(apparaturkort)* | Bills situated by the instruments telling who is responsible, what to do in emergency situations, etc. |
| **Operating instructions** *(driftsinstruks)* | Instructions on how to perform a working task or using an instrument. Copies available in the lab. |
Who to ask about HSE-issues?

- Academic supervisor
- Engineer associated with laboratory or team
- Person responsible for instrument / device (“Instrumentansvarlig”)
- Person responsible for laboratory (“Romansvarlig”)
- HSE-coordinator
- Representatives for substance index, radiation, waste….
- Student representative

HSE-roles at the NV-faculty:

Persons at the NV faculty who have been assigned specific HSE-responsibilities and tasks you will find here:  [HMS-roller ved NV](#)
## Schedule HSE-course

<table>
<thead>
<tr>
<th>Time</th>
<th>Place*</th>
<th>Activity</th>
<th>Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:15</td>
<td>Auditorium R7</td>
<td>HSE at NTNU and NV</td>
<td>Common</td>
</tr>
<tr>
<td>10:00</td>
<td>Auditorium R7</td>
<td>First aid, theory</td>
<td>Common</td>
</tr>
<tr>
<td>11:45</td>
<td></td>
<td>Lunch break</td>
<td></td>
</tr>
<tr>
<td>12:20</td>
<td>Auditorium R7</td>
<td>First aid, tasks</td>
<td>Group A</td>
</tr>
<tr>
<td>12:20</td>
<td>Hall, U1 Rfb</td>
<td>First aid, practical exercises</td>
<td>Group B</td>
</tr>
<tr>
<td>12:55</td>
<td>Hall, U1 Rfb</td>
<td>First aid, practical exercises</td>
<td>Group A</td>
</tr>
<tr>
<td>12:55</td>
<td>Auditorium R7</td>
<td>First aid, tasks</td>
<td>Gruppe B</td>
</tr>
<tr>
<td>13:35</td>
<td>Auditorium R7</td>
<td>Fire protection, theory</td>
<td>Group A</td>
</tr>
<tr>
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<td>Fire protection, practical exercises</td>
<td>Gruppe B</td>
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<td>14:40</td>
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<td>Group B</td>
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<td>15:30</td>
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<td>End</td>
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*Rfb: Realfagbygget*