



## Sustainable Mines of the Future Summer School Invitation



**Sustainable rock drilling and blasting technique**

**Module 1 (Aalto University)**

Teaching period: 6.8-30.8.2024

Registration opens: 17 June 2024

Registration ends: 6 August 2024 (by midnight 23:59, timings  
are given in Helsinki time zone)

## Module I

### Sustainable rock drilling and blasting technique

- **Lectures**
  - Introduction to mining and rock excavation techniques
  - Modern explosives and detonators
  - Rock drilling and blasting theory
  - Environmental impacts of blasting
  - Sustainable drill and blast design
- **Group work**
  - Blasting design plan and determination of blasting parameters
- **Test site visit**
  - Hands-on experience related to rock blasting in a test site

## Module and Registration details

- **Registration**
  - Bachelor's and Master's students interested in rock drilling and blasting practices in tunnels and mines
  - Maximum of 40 participants
  - **Register via:** <https://forms.gle/Co1SPcSAdVU8D5wp9>
  - Registration opens on 17 June 2024
  - **Deadline for registration:** 6 August 2024 (by midnight 23:59, Helsinki time zone (UTC +3 EEST))
- **Formal aspects**
  - Credits: 1 ECTS
  - A diploma certificate will be awarded to students who complete the course. The module is not an official Aalto course but for Aalto students, there is an opportunity to apply for 1 ECTS after completion of the module
  - Three remote lectures, two hybrid sessions, and one test site visit
  - TERRA Summer School is free of charge!

## Further Information

- Contact:
  - [mikael.rinne@aalto.fi](mailto:mikael.rinne@aalto.fi) (Aalto University)
  - [hamza.javed@aalto.fi](mailto:hamza.javed@aalto.fi) (Aalto University)
- The TERRA Summer School is part of the TERRA initiative:  
[TERRA Project - FEMP](#)



**TERRA project**

Summer School:  
Sustainable Mines of the Future

## **COURSE DESCRIPTION**

*for the Module 1*

**Sustainable rock drilling and blasting  
technique**

*Version 17.6.2024*

<b>Name of the course</b>	Sustainable rock drilling and blasting technique
<b>Teacher in charge</b>	MSc Tuomo Hänninen
<b>Teaching period</b>	6.8- 30.8.2024. After the lectures, students will have about two weeks to finalize and submit their exercises.
<b>Level of the Course</b>	BSc and MSc
<b>To whom is this module beneficial</b>	Any BSc or MSc student interested in the raw materials area
<b>Learning outcomes</b>	Understanding of sustainable rock drilling and blasting principles including controlling environmental impacts
<b>Content</b>	<ul style="list-style-type: none"> <li>• Introduction to mining and rock excavation</li> <li>• Modern explosives and detonators</li> <li>• Rock drilling and blasting theory and technique</li> <li>• Environmental impacts of blasting</li> <li>• Sustainable drill &amp; blast design</li> </ul>
<b>Implementation and assessment methods</b>	Lectures (mandatory) Exercise (mandatory) Tunnel visit (not mandatory)
<b>Course material</b>	Slide shows and animations
<b>Prerequisites</b>	Basic information regarding building or mining industry
<b>Workload, credits, and diploma.</b>	The workload is about 30 hours, corresponding to 1 ECTS. Diploma is awarded to students who pass the course. Ask your supervisor at your home university if this module can be counted as official course completion.
<b>Lectures (contents, when)</b>	06.08.2024 between 16-18, remote lecture 13.08.2024 between 15-17, remote lecture 20.08.2024 between 15-17, remote lecture 27.08.2024 between 16:30-19:30, hybrid mode, at Rakentajanaukio 4, Espoo, Finland. (Lecture room will be confirmed later) 29.08.2024 between 14-18, hybrid mode, at Rakentajanaukio 4, Espoo, Finland. (Lecture room will be confirmed later) 30.08.2024 between 9-12, tunnel visit at Rakentajanaukio 4, Espoo, Finland. <b>Note! All times given in Helsinki time zone (UTC +3 EEST)</b>
<b>Exercises (contents, when)</b>	Group exercise will be organized in context with lectures and will include: <ol style="list-style-type: none"> <li>1. Introduction to a blasting location</li> <li>2. Identifying and evaluating occupational and environmental risks</li> <li>3. Reporting the risk assessment and ways to control environmental impacts</li> <li>4. Designing of sustainable drilling and charging of the blasting field</li> </ol>
<b>Assessment</b>	No exam, the exercise will be graded as 0-5.

<b>Registration for courses</b>	Apply through the Google form: <a href="https://forms.gle/Co1SPcSAdVU8D5wp9">https://forms.gle/Co1SPcSAdVU8D5wp9</a>
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For further information contact:

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mikael.rinne@aalto.fi (Terra Summer School management at Aalto University)