

## Geotechnical Monitoring and Field Testing

**Subject area:** Civil Engineering/Architecture

<b>University:</b>	CTU
<b>Level:</b>	MA all years, PhD
<b>Teaching mode:</b>	blended: mostly online, but presence on campus required in certain period
<b>Instructor(s):</b>	Jan Zalesky

### Short description

Monitoring of structures and subsoil together with field testing applied as a tool for verification of assumptions made at design stage. Relationship of instrumentation by sensors and reliability to describe subsoil response and development of behavior of monitored structure in real scale. Data gathering for back analyses and modelling of subsoil and structure deformation development. Practical training. Design of field instrumentation and field tests for selected types of structures.

### Full description

Brief introduction – devices, sensors and sensor systems, equipment for monitoring (electro-mechanical, non-electrical - fibre optics used for strain and temperature sensing) and field testing. Application for different tasks related to geotechnical structures verification and characterisation of subsoil behaviour under selected conditions, as foundation pits, retaining structures, foundations, deep excavations, slope stability

Monitoring of structures and subsoil applied as a tool for verification of assumptions made at design stage, selection of input data for calculations and for serviceability approval.

Relationship of instrumentation by sensors and reliability to describe field performance of monitored structure / subsoil in real scale. Data gathering for back analyses and modelling of subsoil and structure deformation development.

Practical training of line-wise monitoring of 3D displacement in instrumented boreholes. Examples of instrumentation and data gathering for different types of displacement sensors, mechanical stress and temperature. Description, execution and evaluation of results gathered by selected field tests.

Examples of use of field tests and applications for design and modelling. Design of field instrumentation and field tests for selected types of structures and site conditions.

### Learning outcomes

Get acquainted with geotechnical monitoring and applications for retaining structures, deep excavations, stability of slopes and use of geotechnical monitoring as a tool for support of safe

construction processes and verification of design assumptions in foundation design in real scale and particular site conditions.

### Recommended in particular for students of the following study programmes

Structural and Transportation Engineering, Civil Engineering, Civil Engineering + Architecture

### General information

<b>Contact hours per week:</b>	3
<b>Total workload:</b>	125 (in student hours for the whole course)
<b>ECTS credits:</b>	5
<b>Language:</b>	English
<b>Course start date:</b>	20 February 2023
<b>Course end date:</b>	28 May 2023
<b>Add. info about start date:</b>	Start course date refers to starting date of spring semester at CTU. Schedule will be available 1 or 2 weeks before semester starts.
<b>Weekly teaching day/time:</b>	
<b>Time zone:</b>	CET (Denmark, Germany, France, Netherlands, Switzerland, Czech Republic)
<b>Further information:</b>	Lectures in pdf sent to students in advance
<b>Prerequisites:</b>	Geology, Soil Mechanics, Foundations – a basic course
<b>Activities and methods:</b>	Lectures, Seminars, Self-study, Practices
<b>Presence on campus:</b>	Training of use of different monitoring devices, 2 sessions per 4 hours each, at least.

### Final examination

<b>Form:</b>	oral
<b>Date:</b>	
<b>Location/format:</b>	
<b>Re-sit possibility:</b>	yes
<b>Transcript available:</b>	end of semester
<b>Add. info/requirements:</b>	Presentation of a self-study on selected problem of geotechnics: monitoring / field tests. Exam related to geotechnical monitoring and field

testing – overview and the self-study theme in detail: design, expected results, benefits and critical points

## Registration

To register for this course, follow the registration requirements of your **home university** as specified here: [www.euroteq.eu/courses-registration](http://www.euroteq.eu/courses-registration).

## Administration

<b>Number of places:</b>	20
<b>Minimum participants:</b>	5
<b>Internal course code:</b>	D35GMZ_EN
<b>Contact:</b>	zalesky@fsv.cvut.cz

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