

Constitutive and Numerical Modelling in Geotechnics FS24

Course program:

Lectures:

- 1 – Introduction and Tensor Analysis
- 2 – Stresses
- 3 – Strains
- 4 – Equations of Continuum Mechanics
- 5 – Finite Elements
- 6 – Linear Isotropic Elasticity
- 7 – Anisotropy and Stress Dependency
- 8 – Small Strain Nonlinearity
- 9 – Failure
- 10 – Plastic Flow
- 11 – Dilatancy and Yielding
- 12 – Preconsolidation
- 13 – Critical State
- 14 – Rate Dependency
- 15 – Summary

Timetable:

Tuesday: 15:45 – 17:30
Wednesday: 13:45 – 15:30

Examination: Written exam (2h).

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Homepage:

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Day	Date	Lectures	Lecturer	Exercise	Room
Tue	20.02.24	Introduction and Tensors I	DH	-	HIL E7
Wed	21.02.24	Tensors II and Stresses I	DH	-	HIL E7
Tue	27.02.24	Stresses II and Strains	DH	-	HIL E7
Wed	28.03.24	Equations of Continuum Mechanics	DH	-	HIL E7
Tue	05.03.24	Finite Elements	DH	-	HIL E7
Wed	06.03.24	-		Introduction to Abaqus E 1: Cut and Cover Tunnel	HIL E15.2
Tue	12.03.24	Isotropic Elasticity	AMP	-	HIL E7
Wed	13.03.24	-		E 2: Geometries: Triax, Foundation, Excavation	HIL E15.2
Tue	19.03.24	Anisotropy and Stress Dependency	AMP	-	HIL E7
Wed	20.03.24	-		E 3: Isotropic Elasticity	HIL E15.2
Tue	26.03.24	Small Strain Nonlinearity	AMP	-	HIL E7
Wed	27.03.24	-		E 4: Stress Dependent Elasticity	HIL E7
<i>Easter holiday</i>					
Tue	09.04.24	Failure	AMP	-	HIL E7
Wed	10.04.24	-		E 5: Nonlinear Elasticity	HIL E7
Tue	16.04.24	Plastic Flow	AMP	-	HIL E7
Wed	17.04.24	-		E 6: Failure and Plastic Flow	HIL E7
Tue	23.04.24	-	-	-	-
Wed	24.04.24	-		E 7: Failure and Plastic Flow	HIL E7
Tue	30.04.24	Dilatancy & Yielding	AMP	-	HIL E7
Wed	01.05.24	<i>Labour Day</i>			
Tue	07.05.24	Preconsolidation	AMP	-	HIL E7
Wed	08.05.24	-		E 8: Dilatancy and Yielding	HIL E7
Tue	14.05.24	Critical State	AMP	-	HIL E7
Wed	15.05.24	-		E 9: Critical State	HIL E7
Tue	21.05.24	Rate Dependency	AMP	-	HIL E7
Wed	22.05.24	-		E 10: Rate Dependency	HIL E7
Tue	28.05.24	Summary	AMP	-	HIL E7
Wed	29.05.24	-		E 11: Comparison	HIL E7