Mindluster Platform

About the course Underground Space Technology

Course Presenter : IIT Roorkee July 2018

The Underground Space Technology course explores the utilization of underground spaces for various applications. Gain insights into tunneling, underground construction, geotechnical engineering, underground transportation systems, and underground storage facilities. This course covers the design, planning, and management of underground space projects, as well as the technologies and techniques involved. Join us to acquire knowledge and skills in harnessing the potential of underground spaces and contribute to sustainable urban development. IIT Roorkee July 2018

Technology Category's Courses

Course Lesson(61)

Lesson 1 : **Underground Space Technology**

Lesson 2 : **Lecture1 Basics of Rock Engineering Introduction**

Lesson 3 : **Lecture 2 Basics of Rock Engineering coring sampling UCS of intact rock**

Lesson 4 : **Lecture 3 Basics of Rock Engineering Tensile strength and shear strength of intact rock**

Lesson 5 :
Lecture 4 Basics of Rock Engineering Classification of intact rocks concept of rock mass RQD

Lesson 6 : **Lecture 5 Basics of Rock Engineering Classification of rock mass 1**

Lesson 7 : **Lecture 6 Basics of Rock Engineering Classification of rock mass Q system and GSI**

Lesson 8 : **Lecture 7 Basics of Rock Engineering Failure criteria for rocks 1**

Lesson 9 : **Lecture 8 Basics of Rock Engineering Empirical failure criteria**

Lesson 10 : **Lecture 9 Tunneling underground excavations**

Lesson 11 : **Lecture 10 Tunneling Ground conditions**

Lesson 12 : **Lecture 11 Planning of and exploration for underground construction projects**

Lesson 13 : **Lecture 12 Underground excavation failure mechanisms**

Lesson 14 : **Lecture 13 Application of stereographic projection method roof failure**

Lesson 15 : **Lecture 14 Application of stereographic projection method sidewall failures 1**

Lesson 16 : **Lecture 15 Application of stereographic projection method sidewall failures 2**

Lesson 17 : **Lecture 16 Elastic stress distribution around circular tunnels 01**

Lesson 18 : **Lecture 17 Elastic stress distribution around circular tunnels 02**

Lesson 19 : **Lecture 18 Elastic analysis of circular tunnels displacements**

Lesson 20 : **Lecture 19 Thick wall cylinder in biaxial stress field**

Lesson 21 :

Lecture 20 Stress distribution around non circular openings in elastic ground conditions 01

Lesson 22 :
Lecture 21 Stress distribution around non circular openings in elastic ground conditions 02

Lesson 23 : Lecture 22 Stress distribution under different in situ stress conditions design principles

Lesson 24 : Lecture 23 Stress distribution for multiple openings

Lesson 25 : Lecture 24 Openings in laminated rocks 01

Lesson 26 : Lecture 25 Openings in laminated rocks 02

Lesson 27 : Lecture 26 Openings in laminated rocks 03

Lesson 28 : Lecture 27 Openings in laminated rocks 04

Lesson 29 : Lecture 28 Elasto plastic analysis of tunnels Tresca yield criterion 01

Lesson 30 : Lecture 29 Elasto plastic analysis of tunnels Tresca yield criterion 02

Lesson 31 : Lecture 30 Elasto plastic analysis of tunnels Mohr Coulomb criterion

Lesson 32 :
Lecture 31 Application of rock mass classification system Terzaghi s rock load theory 01

Lesson 33 :
Lecture 32 Application of rock mass classification system Terzaghi s rock load theory 02

Lesson 34 : Lecture 33 Application of rock mass classification system rock mass rating RMR

Lesson 35 : Lecture 34 Tunnel hazards

Lesson 36 : Lecture 35 Tunnel hazards squeezing ground conditions

Lesson 37 : Lecture 36 Application of rock mass classification system rock mass quality Q system 01

Lesson 38 :
Lecture 37 Application of rock mass classification system rock mass quality system 02 NATM NMT

Lesson 39 :
Lecture 38 Modulus of deformation of rock mass using Q system rock mass number plate loading test

Lesson 40 : Lecture 39 Modulus of deformation of rock mass uni axial jacking plate jacking test

Lesson 41 :
Lecture 40 Modulus of deformation of rock mass radial jacking test and Goodman jack test

Lesson 42 :
Lecture 41 Rock mass support interaction analysis ground response and support reaction curves 01

Lesson 43 :
Lecture 42 Rock mass support interaction analysis ground response and support reaction curves 02

Lesson 44 :
Lecture 43 Rock mass support interaction analysis influencing factors Ladanyi s E P analysis

Lesson 45 :
Lecture 44 Ladanyi s elasto plastic analysis of tunnels analysis of stresses and deformations

Lesson 46 :
Lecture 45 Rock support interaction analysis required support line analysis of available support

Lesson 47 :
Lecture 46 Rock support interaction analysis for shotcrete concrete lining blocked steel sets

Lesson 48 :
Lecture 47 Rock support interaction analysis for ungrouted rock bolts grouted rock bolts cables

Lesson 49 : **Lecture 48 Calculation sequence for rock support interaction analysis 01**

Lesson 50 : **Lecture 49 Calculation sequence for rock support interaction analysis 02**

Lesson 51 : **Lecture 50 Calculation sequence for rock support interaction analysis example**

Lesson 52 : **Lecture 51 Methods of tunnel excavation various support systems shotcrete**

Lesson 53 : **Lecture 52 Shotcrete**

Lesson 54 : **Lecture 53 Various support systems rock bolts**

Lesson 55 : **Lecture 54 Permeability and groutability 01**

Lesson 56 : **Lecture 55 Permeability and groutability 02**

Lesson 57 : **Lecture 56 Rock stress determination flat jack test**

Lesson 58 : **Lecture 57 Rock stress determination hydraulic fracturing technique**

Lesson 59 : **Lecture 58 Instrumentation and monitoring of tunnels 01**

Lesson 60 : **Lecture 59 Instrumentation and monitoring of tunnels 02**

Lesson 61 : **Lecture 60 Few case studies**

Related courses

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business@mindluster.com