

## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Civil Engineering - NOC:Underground Space Technology

Subject Co-ordinator - Prof. Priti Maheshwari

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

- Lecture 1 - Basics of Rock Engineering: Introduction
- Lecture 2 - Basics of Rock Engineering: coring, sampling, UCS of intact rock
- Lecture 3 - Basics of Rock Engineering: Tensile strength and shear strength of intact rock
- Lecture 4 - Basics of Rock Engineering: Classification of intact rocks, concept of rock mass, RQD
- Lecture 5 - Basics of Rock Engineering: Classification of rock mass - 1
- Lecture 6 - Basics of Rock Engineering: Classification of rock mass: Q-system and GSI
- Lecture 7 - Basics of Rock Engineering: Failure criteria for rocks - 1
- Lecture 8 - Basics of Rock Engineering: Empirical failure criteria
- Lecture 9 - Tunneling: Underground excavations
- Lecture 10 - Tunneling: Ground conditions
- Lecture 11 - Planning of and exploration for underground construction projects
- Lecture 12 - Underground excavation failure mechanisms
- Lecture 13 - Application of stereographic projection method: roof failure
- Lecture 14 - Application of stereographic projection method: sidewall failures - 1
- Lecture 15 - Application of stereographic projection method: sidewall failures - 2
- Lecture 16 - Elastic stress distribution around circular tunnels - 1
- Lecture 17 - Elastic stress distribution around circular tunnels - 2
- Lecture 18 - Elastic analysis of circular tunnels-displacements
- Lecture 19 - Thick wall cylinder in biaxial stress field
- Lecture 20 - Stress distribution around non-circular openings in elastic ground conditions - 1
- Lecture 21 - Stress distribution around non-circular openings in elastic ground conditions - 2
- Lecture 22 - Stress distribution under different in-situ stress conditions: design principles
- Lecture 23 - Stress distribution for multiple openings
- Lecture 24 - Openings in laminated rocks - 1
- Lecture 25 - Openings in laminated rocks - 2
- Lecture 26 - Openings in laminated rocks - 3
- Lecture 27 - Openings in laminated rocks - 4
- Lecture 28 - Elasto-plastic analysis of tunnels: Tresca yield criterion - 1
- Lecture 29 - Elasto-plastic analysis of tunnels: Tresca yield criterion - 2

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- Lecture 30 - Elasto-plastic analysis of tunnels: Mohr-Coulomb criterion
- Lecture 31 - Application of rock mass classification system: Terzaghi's rock load theory - 1
- Lecture 32 - Application of rock mass classification system: Terzaghi's rock load theory - 2
- Lecture 33 - Application of rock mass classification system: rock mass rating (RMR)
- Lecture 34 - Tunnel hazards
- Lecture 35 - Tunnel hazards: squeezing ground conditions
- Lecture 36 - Application of rock mass classification system: rock mass quality system - 1
- Lecture 37 - Application of rock mass classification system: rock mass quality system - 2, NATM, NMT
- Lecture 38 - Modulus of deformation of rock mass using Q-system, rock mass number, plate loading test
- Lecture 39 - Modulus of deformation of rock mass: uni-axial jacking/plate jacking test
- Lecture 40 - Modulus of deformation of rock mass: radial jacking test and Goodman jack test
- Lecture 41 - Rock mass support interaction analysis: ground response and support reaction curves - 1
- Lecture 42 - Rock mass support interaction analysis: ground response and support reaction curves - 2
- Lecture 43 - Rock mass support interaction analysis: influencing factors, Ladanyi's E-P analysis
- Lecture 44 - Ladanyi's elasto-plastic analysis of tunnels: analysis of stresses and deformations
- Lecture 45 - Rock-support interaction analysis: required support line, analysis of available support
- Lecture 46 - Rock-support interaction analysis: for shotcrete/concrete lining and blocked steel sets
- Lecture 47 - Rock-support interaction analysis: for ungrouted rock bolts, grouted rock bolts/cables
- Lecture 48 - Calculation sequence for rock-support interaction analysis - 1
- Lecture 49 - Calculation sequence for rock-support interaction analysis - 2
- Lecture 50 - Calculation sequence for rock-support interaction analysis - example
- Lecture 51 - Methods of tunnel excavation, various support systems: shotcrete
- Lecture 52 - Shotcrete
- Lecture 53 - Various support systems: rock bolts
- Lecture 54 - Permeability and groutability - 1
- Lecture 55 - Permeability and groutability - 2
- Lecture 56 - Rock stress determination: flat jack test
- Lecture 57 - Rock stress determination: hydraulic fracturing technique
- Lecture 58 - Instrumentation and monitoring of tunnels - 1
- Lecture 59 - Instrumentation and monitoring of tunnels - 2
- Lecture 60 - Few case studies