

University of Pretoria Yearbook 2019

Surface mining and geotechnics 311 (PMY 311)

Qualification	Undergraduate
Faculty	Faculty of Engineering, Built Environment and Information Technology
Module credits	16.00
Programmes	BEng Mining Engineering BEng Mining Engineering Engage
Prerequisites	PMY 210
Contact time	2 tutorials per week, 3 lectures per week
Language of tuition	Module is presented in English
Department	Mining Engineering
Period of presentation	Semester 1

Module content

Surface mining methods: Introduction, classification of ore reserves and terminology. Earth moving: Loading shovels and methods, haulage trucks, productivity and tires, introduction to bucket wheel excavators, conveyor systems and in-pit crushers, in-pit crushing-conveying system, application of draglines and terminology. Introduction to mine planning, mine development phases, block modelling, methods of sequencing, stripping ratios and breakeven ratios. Introduction to mining environment, rehabilitation and closure, integrated environmental management, environmental impact studies, water management and rehabilitation planning and costing. Geotechnics include understanding discontinuities in rock mass, stereo nets, cohesion and friction. Rock behaviour pertaining to excavations, understanding plane, circular and wedge failures, Rock slope safety factors. Slope stabilisation, neutral line theory, effects of water in a slope, monitoring of slopes and instruments available for slope stability monitoring, Risk concepts pertaining to slopes and a case study is discussed. Aspects of the Mine Health and Safety Act are also dealt with.

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