

7 th Semester	RMN7D003	Advanced Surface Mining	L-T-P 3-0-0	3 Credits
--------------------------	----------	-------------------------	----------------	-----------

Module-I:**(14 hours)**

Ground preparation for surface mining: hill top deposits, deposits on plane ground. Latest developments on surface mining equipment: excavators, dozer – ripper, scraper, and ore hauling equipment. Design of large scale bench blasting: coal and non coal: cast blasting, coyote blasting, chamber blasting.

Module-II:**(14 hours)**

Design of opencast/ open pit mines: shovel – dumper, drag lines, bucket wheel excavators. Ultimate pit design, scheduling. Mining by surface miner. In pit crushing and cross pit conveying techniques. Application of skip transportation in open cast mines. Cross pit conveying.

Module-III:**(8 hours)**

Design of mine solid waste dumps. Design of mine haul roads. Equipment used for haul road preparation, calculation of California bearing ratio. Pit slope analysis and design techniques.

Module-IV:**(8 hours)**

Reclamation of mined out areas by selective waste dumps. Application of stacker, and reclaimer. Application and use of GPS and Geomedia software. Dragline balancing technique.

Books:

- [1] Surface Mining by G B Mishra Geomintech Publication, Bhubaneswar, 1st Edition
- [2] Open Pit Mine Planning & Design by William A. Hustrulid, Mark Kuchta, Randall K. Martin, CRC Press, 3rd Edition
- [3] Latest Development of Heavy Earth Moving Machinery by Amitosh De, Annapurna Publishers, Dhanbad

Digital Learning Resources:

Course Name: Surface Mining Technology
 Course Link: https://onlinecourses.nptel.ac.in/noc21_mm40/preview
 Course Instructor: Prof. Kaushik Dey, IIT-Kharagpur