5th Semester	RMN5C001	Surface Mining	L-T-P 3-0-0	3 Credits

Module-I: **(4 Hours)**

Basic concepts, deposits amenable to surface mining, types of surface mining system-applicability, advantages, disadvantages, classification and choice, unit operations

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

Elements of surface mine planning, concept of stripping ratio, bench geometry, bench slope, overall pit slope, selection of machineries, opening of mine, box cut, formation of benches, ground preparation for excavation, drilling and blasting, types of explosives, classification and properties of explosives.

Module-III: **(18 Hours)**

Shovels, operation, productivity, applications and limitations of shovels, hydraulic excavators, selection of size, correlation between shovel capacity, dumper capacity and crusher's mix feed size, dragline, front end loader, scrapper, bucket wheel excavator and continuous surface miner, Transporting equipment, applications and limitations of dumper, conveyor, in pit crushing and conveying

Module-IV: **(4 Hours)**

Extraction of mineral deposits: bedded, vein, pipe, cap, massive

Module-V: **(10 Hours)**

Mine waste management, solid waste dump, layout equipment, construction, precaution to be taken against runoff water, dump stabilization process, Introduction to placer deposits, effect of surface mining on environment and mitigating measures

Books:

[1] Surface Mining, G.B. Mishra, Geominetech Publications, Bhubaneswar, 1st edition, 2007
[2] Surface Mining Technology, S. K. Das, Lovely Prakashan, Dhanbad, 1st edition, 1994
[3] Open Pit Mine Planning and Design, W. Hustrulid and M. Kuchta, Volume-1, A. A. Balkema, 1st Edition, 1995
[4] Elements of Mining Technology, Volume-1, D. J. Deshmukh, Denett & Company, 2016

Digital Learning Resources:

Course Name: Drilling and Blasting Technology

Course Link: https://nptel.ac.in/courses/123/105/123105003/

Course Instructor: Dr. Kaushik Dey, IIT Kharagpur