

Generic Elective Course (GEC)

Name of Programme: M. Sc. Applied Geology

Course Code: GEO-621

Title of the Course: Mining Geology

No of Credits: 03

Effective from AY: 2023-24

Prerequisites for the course	Students should have undergone M.Sc. Semester I and II.	
Objective	To introduce the students to the concepts of mining, types of mining and processes involved in winning the ore, as well as consideration of the safety, environment and laws governing mining activities.	
Content	Module 1 Introduction to mining geology and exploration methods. Role of geologists in mining. Mining methods for metal and coal mining. Outlines of surface methods of mining. Underground mining: Shaft sinking and development of mine, stoping methods, mine ventilation. Recent development in shaft sinking.	15 hours
	Module 2 Principles of sampling and sampling methods. Core drilling (wet and dry). Type of core bits. Casing and their applications. UNFC classification and estimation of ore reserves, using geostatistical methods, dewatering techniques in open cast and underground mines. Mineral beneficiation techniques.	15 hours
	Module 3 Impact of mining on environment. Pollution aspects, slope stability in open cast mines, mine gases and associated health hazards, Environment management EIA, mine reclamation. Mine evaluation, mineral economics, legislation associated with mining, National Mineral Policy, Mineral Taxation and Mine Leasing. Conservation and substitution.	15 hours
Pedagogy	Lectures, Case studies, Discussions and Assignments.	
References/ Readings	1. Armstrong, M. (1998). <i>Basic linear geostatistics</i>. Springer Science & Business Media. 2. Arogyaswamy, R. N. P. (1980). <i>Courses in mining geology</i>. Oxford and IBH. 3. Dhar, B. B. (2000). <i>Mining Environment Scenario Beyond 2001. Mining, Challenges of the 21st Century</i>, 73. 4. Evans, A. M., Barrett, W. L., Bell, T., Milsom, J., Moon, C. J., & Scott, B. C. (1993). Introduction to mineral exploration. 5. John Wiley Sons, (1964). <i>Elements of Mining</i> by Lewis, Robert Publication: New York 6. McKinstry, H. E. (1980). <i>Mining Geology</i>. Asia Publishing House. 7. Peters, W. C. (1987). <i>Exploration and mining geology</i>. 8. Saxena, N. C., Singh, G., Pathak, P., Sarkar, B. C., & Pal, A. K.	

	(2004). <i>Mining Environment Management Manual</i>. Scientific Publishers.. 9. Sinha, Sharma (1970). <i>Mineral Economics</i>. Oxford & IBH Publishers. 10. Warhurst, Alyson .(2000). <i>Environmental policy in mining : corporate strategy and planning for closure / by</i> . Publication : Boca Raton : Lewis Publishers. 11. Youn, G. J. (1984). <i>Elements of Mining Geology</i>. McGraw Hill.
Course outcomes	1. The students will be able to understand the different types of mining. 2. They will be able to understand different sampling procedures in exploration. 3. They will get a comprehensive idea of drilling techniques. 4. They will get an overview of various mining related laws and compliances. 5. The student will understand the various health issues related to mining and environment related issues.