LEVEL V COURSES

5391 - EXPLORATION GEOLOGY

Teaching Schedule Per Week			Progressive Assessment		Examination Schedule (Marks)			
Lectures	Practical	Credits			Theory		Practical Ex.	Total
3	-	3	-	25	3 Hrs	100	-	125

Pre-requisite	Source	Semester	Theory	Test	Total	TW	PR	Gr Total
4295	MIN	V	75	25	100	50	-	150

Rationale: Geology is the basic foundation of mineral exploration. For the minerals to be extracted the proper geological study is an important criterion. Hence, the course content of this subject has been carefully chosen to make mining students conversant in the practical applications of geology during various stages of mining.

COURSE CONTENTS	Hrs	Mks
1. INTRODUCTION Definition of prospecting, uses, different methods of prospecting, scope and limitations of prospecting.	6	5
2. GEOLOGICAL PROSPECTING Aerial photographs-instruments and preparation of controlled mosaic. Tonal and grain variations. Interpretations of topography structure soils & ground water regions from the aerial photos. Limitations & ground check. Prospecting criteria. Sampling techniques, Principles of classifying workable deposits. Guides to location of ore bodies with special reference to residual and placer deposits. Stratigraphic, lithological and mineralogical guides. Structural control of mineral deposits. Post depositional disturbances and location of missing ore bodies, shapes of ore bodies and their persistence in depth.	14	30
3. GEOPHYSICAL PROSPECTING Concept of geophysics and its application in mining. Criteria for classification of geo-physical methods. Principle, instruments, units of measurements, field procedure of the following methods: Magnetic, electromagnetic, self-potential, resistivity, induced polarisation, gravity, seismic, radioactive, application of geophysical methods in mining & limitations. Important well logging techniques & interpretation.	10	25
4. GEO-CHEMICAL (PROSPECTING) Geo-chemical cycle. Distribution of elements during magnetic, sedimentary and metamorphic process, principal trace elements of minerals and rocks. Dispersion and mobility of trace elements. Dispersion patterns and background values. Principles, methods and equipment for trace element analysis. Interpretation of Geo-chemical data.	12	25
5. GEOLOGICAL MAPPING Brief description of topographical map, geological map, compass, hammer, chisel, magnifying glass, magnet, measuring tape, protractor, field notebook, sketching of surface features, important points in map reading, drawing of geological sections. Methods and techniques of field mapping- geological mapping by compass & tape.	6	15
Total	48	100

REFERENCE BOOKS:

1. Elements of Mineral Exploration by I.B.M. Publications.
2. Exploration and Mining Geology by Peters W.C.
3. Introduction to Geophysical Prospecting by Dobrin, M. B.
4. An Introduction to Geophysical exploration by Kearcy P and M. Brooks.