5396 - MINE SURVEYING

Teaching Schedule Per Week			Progressive Assessment		Examination Schedule (Marks)			
					Theory		Practical Ex.	Total
Lectures	Practical	Credits						
3	1	4	25	25	3 Hrs	100	50	200

Pre-requisite	Source
4008	MIN

Semester	Theory	Test	Total	TW	PR	Gr Total
I	75	25	100	50	-	150

Rationale: Course mine surveying is designed to cater the needs of advance knowledge in mine surveying to build up further self confidence in performing the job of surveying in mines. Application of survey & use of modern instruments in surveying is given additional stress.

Objective: On the completion of this course, a diploma holder will be able to carry out surveying works & estimation of reserves that are related to mining.

COURSE CONTENTS	Hrs	Mks
1. INTRODUCTION Role of mine surveying in mineral exploration & Mining. Difficulties in mine surveying. General requirement of surveying, uses of levelling in mining, use of theodolite in mine surveying, introduction to miners dial role of surveyor in Mines, Various methods of settings of under ground roadways curves – instrument, field procedure & calculation. Errors in surveying classification definition source & limits of error.	7	15
2. CORRELATION Definition, purpose, different methods of underground traversing, alignment of drives, shafts, gradient control, transfer of surveys. Precautions in different methods of correlation.	8	15
3. STOPE SURVEYING Purpose of stope surveying, objectives, instruments required, methods, selection of stope survey, survey in moderate inclination stope, maintenance of direction & inclination.	8	15
4. AREAS & VOLUMES Areas of regular & irregular figures, volume of regular solids, volume & weight of coal, measurement of coal stock & mineral stock pile, precautions while measuring a large stock of coal.	9	20
5. PROBLEMS & MODERN SURVEY METHODS (A) Dip, strike, faults, cross –measure drift, problems, determination of rate & direction of full dip of seam, direction & amount of dip from bore holes. (B) Modern Surveying (EDM) :Working principles & application in mine surveying	9	15
6. MINE PLANS & SECTIONS Causes of in accuracy of mine plans, legal requirements to mine plans, types of plan, preparation & preservation, representation of geological & other features on mine plans, method of enlarging & reduction of plans, various methods of plotting a survey, survey office, checking accuracy of mine plans, related regulations.	7	15
Total	48	100

PRACTICALS: (Any Five)

1. Setting out a mine road curve by Rankine's method.
2. Alignment and marking of proposed mine roadways.
3. Determination of face advance by surveying and calculation of excavated volume.
4. Measurement of volume for a given mineral stock pile.
5. Measurement of volume of cutting and filling for an embankment/trench.
6. Calculation of reserve and stripping ratio using bore hole data.
7. Determination of mine boundary by theodolite surveying.
8. Determination of direction and amount of dip-strike from bore hole data.
9. Enlarging and reduction of mine plan.
10. Plotting of a plan from given data.

REFERENCE BOOKS:

1) Surveying Volume 12,3 by B.C. Punmia
2) U.M.S. Series
3) Mine Surveying & Levelling, Vol. 1, 2, & 3 by S. Ghatak
4) Mine Surveying by Ghosh
5) Coal Mining Practice, Vol. 4 by Statham.