GUJARAT TECHNOLOGICAL UNIVERSITY
B. E. SEMESTER: VII
MINING ENGINEERING

Subject Name: **Rock Fragmentation (Department Elective-I)**
Subject Code: **172207**

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam (E)		Mid Sem Exam (Theory) (M)	Practical (Internal)
				Theory	Practical		
4	0	2	6	70	30	30	20

Sr. No	Course Content	Total Hrs.
1	**Present status of drilling and blasting practices in India and abroad:** Methods of drilling for production of minerals from surface and underground mines, rotary, percussive and rotary –percussive drilling, different types of bits, bit wear, different types of machines, hydraulic drills, long hole drilling.	8
2	Variables in drilling, optimization of drilling parameters, mechanics of drilling, drill-ability of rock, boring in rocks.	8
3	Recent developments in explosives and blasting techniques. Explosives and Blasting Systems, Monitoring Blasting Results: Borehole pressure, transducer, V.O.D. Probe, vibration monitor, high speed video camera, blast design, mechanics of blasting. Computational models of blasting. Influence techniques, Overcastting with explosives. Nuclear blasting, Safety.	10
4	**Explosives :** Classification and comparative properties of explosives, blasting devices, general application and uses; safety considerations.	8
5	Blasting damages, ground vibrations and air blast. Impact of ground vibration and air blast on the neighboring structures and communities and mitigate measures, reinforcement and design alternatives.	8
6	**Blasting Systems:** Electric and non-electric methods, delay blasting techniques, priming, charge distribution, Mechanism of rock blasting.	8
7	Alternative methods of rock fragmentation. Novel methods of drilling, choice of drills.	6

Text Books/ Reference Books:

1. A Study of Metalliferous Mining – Y.P.Chacharkar
2. Rock Fragmentation – B.Mohanty
3. Rock Fragmentation – Wayne S. Brown