## PMN6D201 ADVANCED SURFACE MINING AND DESIGN (HONOR)

**Objective:**
This course aims at familiarizing the students who have already studied surface mining/ opencast mining/ open pit mining, them with advanced treatment of methods for higher productivity and mechanization under widely varied geo-mining conditions, as well as techniques to enhance recovery.

**Module-I:**
Ground preparation for surface mining: hill top deposits, deposits on plane ground. Latest developments on surface mining equipment: excavators, dozer – ripper, scraper, and ore hauling equipment. .Design of large scale bench blasting: coal and non coal: cast blasting, coyote blasting, chamber blasting.

**Module-II:**
Design of opencast/ open pit mines: shovel – dumper, drag lines, bucket wheel excavators. Ultimate pit design, scheduling. Mining by surface miner.In pit crushing and cross pit conveying techniques. Application of skip transportation in open cast mines. Cross pit conveying.

**Module-III:**
Design of mine solid waste dumps.Design of mine haul roads. Equipment used for haul road preparation, calculation of California bearing ratio. Pit slope analysis and design techniques. Reclamation of mined out areas by selective waste dumps. Application of stacker, and reclaimer. Application and use of GPS and Geomedia software.Dragline balancing technique.

## PMN6D202 COAL BED METHANE (HONOR)

**Module-I:**
Coalification process and coal grades, methane generation and storage in coal, Geological control in Coal Bed Methane exploration, methane adsorption, desorption in coal

**Module-II:**
Coal as CBM reservoir: In place methane estimation, transportation of methane in coal bed, drilling and completion of a CBM well, identification and characterization of coal beds by well logs

**Module-III:**
Hydraulic fracturing in coal beds, production performance of a CBM well, water drainage and gas-water separation, Gas volume measurement

**Module-IV:**
Compression and transport, liquefaction and utilization, enhanced recovery by $CO_2$ and $N_2$ adsorption method