Course Type	Course Code	Name of the Course	L	T	P	Credits
DC	NMNC517	Mass Production Mining Technology	3	1	0	4

Course Objective

This course covers both the mass production technology of Underground Coal Mining and Opencast mining, which are not covered in undergraduate level. This course will enable the students to have advanced knowledge on latest concepts and trends of technology in underground as well as opencast mines over the world.

Learning Outcomes

Upon successful completion of this course, students will:

- have an understanding of concept of applicability mass production technology applicable to both opencast and underground mining
- learn latest methods and trends of opencast and underground mining for mass production technology adopted worldwide
- be able to undertake the planning of a high capacity underground and opencast mine.

Units	Course Content	L+T	Learning Outcomes
Unit 1	Mass production technology: Concepts and applicability, system design, cycle of operation etc.	4L+0T	Understanding of basic conceptof Mass production technology
Unit 2	Infrastructure for underground mass production technologies: Features of high- capacity underground coal mining equipment; High-capacity hoisting / conveying of coal; System of ventilation, Mass inertization plant; Pre-drainage of methane; conveyance of man; Heavy material handling – multi-utility vehicle, Other compatible sub-systems; Air chilling plant.	6L+2T	Understanding the infrastructure required in an underground minefor adoption of Mass production technology
Unit 3	Room and pillar mining methods, Integrated mig and haulage systems, flexible conveying system, Long-airdox full dimension continuous haulage system, Wongawalli method,	6L+2T	This will help student understandthe latest technology for developing high capacity mineby Room and Pillar method.
Unit 4	Powered support longwall mining, Longwall top coal caving, Short longwall method for extraction of standing pillars, shortwall method,	6L+2T	The student will understand thelatest technology for developing high capacity mine by Longwalland Shortwall methods
Unit 5	Steeply dipping seam mining: Mass production mining concept, methods and applicability, Sub-level caving method.	4L+2T	It will help student in learning steep seam mining and its applicability
Unit 6	Highwall mining: introduction, applicability and method; "Archveyor" automated mining and	6L+2T	It will help student in learning Highwall

	continuous haulage unit. Punch longwall: applicability condition, layout, advantages and problems.		mining and its applicability
Unit 7	Opencast Coal Mining: Shovel dumper/ in-pit crusher/ conveyor combination • Use of Surface Miner, • Use of Reaper Miner • Use of creeper dumper haulers • Use of high angle conveyor/ inclined skips	6L+4T	The student will understand the latest surface mining technology for developing high-capacity opencast mine.
Unit 8	Bucket wheel excavator/ conveyor combination (specially for lignite mining)	4L+0T	This help student understands the latest mass production technology adopted in surface mining for soft rocks like lignite mining.
	Total	**42L+14T** **(56)**	

Textbooks:

1) Principles and Practices of Modern Coal Mining by R. D. Singh, New Age International Private Limited
2) Underground Wining of Coal by T. N. Singh, Oxford & IBH Publishing Co Pvt.Ltd

Reference Books:

1) Coal Mining by I C F Statham
2) Coal Mining by T C Cantrill
3) SME Mining Engineering Handbook by Howard L Hartman
4) Introductory Mining Engineering by Howard L Hartman
5) Introduction to Mining Engineering by Ratan Raj Tatia