

JNTUH UNIVERSITY COLLEGE OF ENGINEERING MANTHANI
B.Tech. in MINING ENGINEERING
COURSE STRUCTURE & SYLLABUS (R25 Regulations)
Applicable from AY 2025-26 Batch

I Year I Semester

S. No.	Course Code	Course Title	L	T	P	Credits
1	BSC	Matrices and Calculus	3	1	0	4
2	BSC	Engineering Physics	3	0	0	3
3	CSC	C Programming and Data Structures/ Programming for Problem Solving	3	0	0	3
4	MEC	Computer Aided Engineering Graphics	2	0	2	3
	MEC	Engineering Workshop		0	3	1
5	HSC	English for Skill Enhancement	3	0	0	3
6	BSC	Engineering Physics Laboratory	0	0	2	1
7	CSC	C Programming and Data Structures Laboratory/ Programming for Problem Solving Laboratory	0	0	3	1
8	HSC	English Language and Communication Skills Laboratory	0	0	2	1
9		Induction Program				
		Total Credits	14		12	20

I Year II Semester

S. No.	Course Code	Course Title	L	T	P	Credits
1	BSC	Ordinary Differential Equations and Vector Calculus	3	0	0	3
2	BSC	Applied Chemistry	3	0	0	3
3	CSC	Python Programming	3	0	0	3
4	ESC	Basic Electrical and Electronics Engineering	3	0	0	3
5	DC	Introduction to Mining Engineering	3	0	0	3
6	MEC	Engineering Mechanics/Applied Mechanics	3	0	0	3
7	BSC	Chemistry Laboratory for Engineers	0	0	2	1
8	CSC	Python Programming Laboratory	0	0	2	1
9	ESC	Basic Electrical Engineering Laboratory	0	0	2	1
		Total Credits	18		06	21

II YEAR I SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1	BSC	Probability, Statistics and Complex Variables	3	0	0	3
2	DC	Mine Surveying-I	3	0	0	3
3	DC	Development of Mineral Deposits	3	0	0	3
4	DC	Mining Geology	3	0	0	3
5	DC	Fluid Mechanics and Hydraulic Machines	3	0	0	3
6	BSCL	Computational Mathematics Lab	0	0	2	1
7	DCL	Mine Surveying- I Lab	0	0	2	1
8	DCL	Mining Geology Laboratory	0	0	2	1
9	DCL	Fluid Mechanics and Hydraulic Machines Lab	0	0	2	1
10	SDC	Industrial Training-I	0	0	2	1
		Total Credits	15	0	10	20

Note: Skill Development Course-I: (Industrial Training- 1) Open Cast and underground Coal Mines (Must for One week or atleast two days duration). The training program will be conducted during this Semester, and the report is to be submitted for assessment.

II YEAR II SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1	DC	Surface Mining Technology	3	0	0	3
2	DC	Mine Ventilation	3	0	0	3
3	DC	Mine surveying-II	3	0	0	3
4	DC	Underground Coal Mining Technology	3	0	0	3
5	DC	Mine Mechanization-I	2	0	0	2
6		Innovation and Entrepreneurship	2	0	0	2
7	DCL	Mine Surveying -II Lab	0	0	3	1.5
8	DCL	Mine Ventilation Lab	0	0	3	1.5
9	DCL	Mine Mechanization- I lab	0	0	2	1
10	SDC	Introduction to Data Science for Mining Engineering	0	0	2	1
11	MC	Indian Knowledge System	1	0	0	0
12	(Optional)	Work-based Vocational Course/ Internship or Apprenticeship	0	0	4	2
		Total Credits	16	0	10	21

***Note:** Students who wish to exit after II Year II Semester has to register for this optional course and acquire the credits allotted by doing 6 weeks Work-based Vocational Course/ Internship or Apprenticeship. Please refer R25 Academic Regulations for more information.

III YEAR I SEMESTER

S. No.	Course Code	Course Title	L	T	P	F	Credits
1	DC	Rock Mechanics	3	0	0	0	3
2	DC	Mine Mechanization-II	3	0	0	0	3
3	DC	Mine Hazards and Rescue	3	0	0	0	3
4	DC	Professional Elective-I	3	0	0	0	3
5	OE	Open Elective-I	2	0	0	0	2
6	DCL	Rock Mechanics Lab	0	0	3	0	1.5
7	DCL	Mine Mechanization -II Lab	0	0	3	0	1.5
8	DCL	Mine Hazards and Rescue Lab	0	0	2	0	1
9	SDC	Environment Management in Mining Lab	0	0	2	0	1
10		Field Based Project/ Internship	0	0	0	4	2
11	MC	Gender Sensitization Lab*/ Constitution of India*	1	0	0	0	0
		Total Credits	15	0	10	4	21

***Note: For the courses Gender Sensitization Lab and Constitution of India** - one hour of instruction will be conducted on alternate weeks. For example, if a one-hour class for Gender Sensitization Lab is conducted this week, then a one-hour class for Constitution of India will be conducted in the following week.

III YEAR II SEMESTER

S. No	Course Code	Course Title	L	T	P	Credits
1	DC	Mine Planning & Design	3	0	0	3
2	DC	Mineral Processing	3	0	0	3
3	HSC	Fundamentals of Management for Engineers/ Business Economics and Financial Analysis/ E-Business/ Engineering Economics and Accountancy/ Entrepreneurship/ Introduction to Industrial Engineering/ Organisational Behaviour	3	0	0	3
4	DC	Professional Elective-II	3	0	0	3
5	OE	Open Elective – II	2	0	0	2
6	DCL	Mineral Processing Lab	0	0	3	1.5
7	DCL	Ground Control Lab	0	0	3	1.5
8	DCL	Mine Planning & Design lab	0	0	2	1
9	HSC	Advanced English Communication Skills Laboratory	0	0	2	1
10	SDC	Industrial Training - II	0	0	2	1
11	MC	Environmental Science	1	0	0	0
		Total Credits	15	0	12	20

Note: Skill Development Course-I: (Industrial Training- II) Metal Mines (Visit for One week or at least Two days duration). The training program will be conducted during this Semester, and the report is to be submitted for assessment.

IV YEAR I SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1	DC	Mine Legislation and General Safety	3	0	0	3
2	DC	Underground metal Mining Technology	3	0	0	3
3	HSC	Fundamentals of Management for Engineers/ Business Economics and Financial Analysis/ E-Business/ Engineering Economics and Accountancy/ Entrepreneurship/ Introduction to Industrial Engineering/ Organisational Behaviour	3	0	0	3
4	DC	Professional Elective-III	3	0	0	3
5	DC	Professional Elective – IV	3	0	0	3
6	OE	Open Elective – III:	2	0	0	2
7	DCL	Computer Applications in Mining Lab	0	0	2	1
8	DCL	Mine Safety Lab	0	0	2	1
9	IOMP	Industry Oriented Mini Project/ Summer Internship	0	0	4	2
		Total Credits	17	0	08	21

IV YEAR II SEMESTER

S. No.	Course Code	Course Title	L	T	P	Credits
1	DC	Professional Elective – V	3	0	0	3
2	DC	Professional Elective – VI	3	0	0	3
3		Project Work	0	0	28	14
		Total Credits	6	0	28	20

Professional Elective - I

1	Drilling and Blasting
2	Advanced Surface Mining
3	Material Management in Mines

Professional Elective - II

1	Computer Applications in Mining
2	Dimensional Stone Technology
3	Mining of Deep-Seated Deposits

Professional Elective-III

1	Geo-statistics
2	Mine Systems Engineering
3	Rock Excavation Engineering

Professional Elective-IV

1	Rock Slope Engineering
2	Environmental Management in Mines
3	Rock Fragmentation Engineering

Professional Elective-V

1	Risk Assessment and Management in Mines
2	IoT Applications in Mining
3	GIS and Remote Sensing

Professional Elective-VI

1	Mine Economics
2	Mine Waste Management
3	Sustainable Mining Practices

OPEN ELECTIVES**Open Elective-I:**

1	Introduction to Mining Technology
2	Underground Coal Gasification

Open Elective-II:

1	Applications of Geo Statistics
2	Health and Safety in Mines

Open Elective-III:

1	Slope Stability Technology
2	Tunnelling and Underground Space Technology