

**PROGRAM STRUCTURE****I SEMESTER**

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
1	201HS1T01	Communicative English		✓		Students are able to demonstrate communication skills to express fluently in both written as well as oral form of language which is very much essential for the career growth.
2	201BS1T01	Differential equations and Linear algebra		✓		Students are able to demonstrate problem solving skills by modelling physical phenomenon using ordinary differential equations, system of linear equations in various engineering disciplines.
3	201BS1T02	Engineering Physics				
4	201ES1T04	Principles of Agronomy and Soil Science	✓			Students are able to acquire skills related to crop management practices adopted for increasing the crop productivity enabling them to be employed as agriculture field officer.
5	201ES1T05	Engineering Graphics		✓		This subject helps the student to demonstrate technical skills as they have knowledge about engineering drawing and AutoCAD software for orthographic projections and isometric projection.
6	201HS1L01	Communicative English Lab		✓		Students are able to demonstrate technical skills to express fluently in both written as well as oral form of language which is very much essential for the career growth.
7	201BS1L01	Engineering Physics Lab	✓			
8	201ES1L04	Soil Science and Agronomy Field Lab		✓		Students are able to demonstrate technical skill of crop management practices adopted for increasing the crop productivity.

A.Y. 2020-21

B.Tech Mining Engineering

9	201MC1T01	Environmental Science				
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## II SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
10	201BS2T05	Partial Differential Equations and Vector Calculus		✓		Students are able to demonstrate problem solving skills by modelling physical phenomenon using partial differential equations, vector differentiation, vector integration and their applications in various engineering disciplines.
11	201BS2T08	Chemistry of Materials				
12	201ES2T06	Engineering Mechanics		✓		Students are able to acquire skills related to principles of friction, kinetics, kinematics, resolving forces, trusses etc which forms the crux of design sciences.
13	201ES2T08	Programming for Problem Solving Using C	✓			Students are able to acquire skills related to basic programming using C, enabling them to be employed as software developers.
14	201ES2L07	Engineering Workshop		✓		Engineering Workshop helps the students by improving their skills by knowing the construction of various wooden joints and various fitting joints, by understanding different black smithy work and preparing various sheet metal models.
15	201ES2L12	Computer Aided Drafting Lab		✓		Students are able to acquire skills related to drafting of mechanical components/assemblies through AUTOCAD software enabling them to be employed as a design engineer.
16	201HS2L02	Professional communications skills Lab		✓		Students are able to demonstrate technical skills to express fluently in both written as well as oral form of language which is very much essential for the career growth.
17	201BS2L05	Engineering Chemistry Lab				

18	201ES2L10	Programming for Problem Solving Using C	✓			Students are able to acquire skills related to basic programming using C, enabling them to be employed as software developers.
19	201MC2T02	Constitution of India			✓	This subject helps the student to demonstrate their technical skills for constitution making and its importance for building a democratic India, to make them understand the executive, legislative and judiciary system.



## III SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
20	191BS3T15	Numerical Methods and Integral Transforms		✓		Students are able to demonstrate problem solving skills by learning numerical methods for solving equations, differential equations, integrals ,Fourier Transforms and Laplace Transforms and their applications
21	191ES3T10	Internet of Things	✓			Students are able to acquire skills related to Internet of Things and enabling them to be employed for IoT sector.
22	191ES3T14	Basic Mechanical Engineering		✓		This course demonstrate technical skills to improve the knowledge of the students about the law of thermodynamics, working principles of I.C engines and explain them about fluid statics, kinematics and dynamics.
23	191MI3T01	Mining Geology		✓		This subject helps to enhance student's skills by giving them clear picture about the nature of the material, the attitude of the beds, structures caused by deformed forces, etc. Geology also helps in choosing the method of exploitation, finding the solution for the problems associated with it. Having depth knowledge in this subject students will able to explore different mineral beds under the earth.
24	191MI3T02	Mine Surveying-I		✓		This subject improve the skills of the student as it helps the student to determination of different levels and level difference and computation of areas, volumes which includes determination of capacity of reservoirs, volumes of barrow pits. This subject help the student to make a career as surveyor or asst. surveyor in the mining field.
25	191MI3T03	Development of Mineral		✓		This course demonstrate the technical skills of the student

		Deposits				by giving them knowledge about life cycle of mines, ventilation, lighting and permanent lining of underground mines. It also gives knowledge about modern techniques of shaft sinking.
26	191MI3L01	Geology Lab		✓		This subject helps the student to demonstrate their technical skills as students were able to know the properties of minerals, different faults of minerals and economic justification of minerals. This subject helps the mining students to have ample knowledge about minerals so that they can participate as an independent consultant in buying and selling of minerals.
27	191MI3L02	Basic Mechanical Engineering Lab		✓		This course helps the students to demonstrate their technical skills by making them learn the basic principles of fluid flow, measurement of pressure, discharge and velocity of fluid flow. It also help the students to have practical exposure on the performance evaluation methods of various flow measuring equipment, hydraulic turbines and pumps.
28	191MC3A03	Employability Skills – I	✓			This subject helps the students to acquire skills to be placed in a company as it will impart employability skills in students, which will enable the students to feel comfortable to face several competitive examinations with confidence and competence.
29	191MC3A04	Essence of Indian Traditional Knowledge		✓		This subject demonstrate technical skills as they were able to understand concept of Traditional knowledge and its importance, enactments related to the protection of traditional knowledge and traditional knowledge in Agriculture and Medicine.



## IV SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
30	191BS4T19	Complex Variables and Statistical Methods		✓		Students are able to demonstrate problem solving skills by analytical properties of functions of complex variables and their applications and also about random variables, sampling theory, test of hypothesis.
31	191MI4T04	Mine Surveying-II		✓		This subject helps the student to improve their skills by understanding the correlation and stope survey methods and know and limitations of photogrammetry and modern survey methods.
32	191MI4T05	Surface Mining		✓		This subject demonstrate the technical skills and knowledge of students as they get to know about Opencast Mining, Ground Water control, use of drilling machines, Smooth Blasting and Pre- splitting, Mining methods and selection of high angle conveyor and In-Pit Crusher Conveyor System. This subject helps them to get placed in the surface mines as drilling & blasting expert or a surface mining engineer.
33	191MI4T06	Underground Coal Mining Technology		✓		This subject helps the student to demonstrate their technical skills as they will understand the peculiarities and limitations of metal mining, familiar with different stopping methods, design and planning of stopping methods. Students can be placed in different metal mining companies by possessing a depth knowledge in this subjects.
34	191MI4T07	Fundamentals of Rock Mechanics		✓		This subject demonstrate the technical skills of student by making them learn the basic principles of stress and strain,

						properties of rocks and their determination and also make them aware of failure theories of rock .
35	191MI4T08	Geo-statistics		✓		This subject demonstrate the technical skills to the student as they are able to understand importance of strategic minerals, grading and pricing of minerals, total reserve of minerals, Concept of IRR and NPV and financial project management.
36	191MI4L03	Rock Mechanics Lab		✓		This subject helps the students to improve their technical skills as they will understand geotechnical engineering which will provide an understanding for the assessment of Rock mass characterization based on Rock mass properties.
37	191ES4L18	Mine Surveying Lab		✓		This subject helps the student to improve their skills as they will understand different equipment and compare accuracy levels and to study several experiments and conversant with it.
38	191MC4A05	Employability Skills – II	✓			This subject helps the students to acquire skills to be placed in a company as it will impart employability skills in students, which will enable the students to feel comfortable to face several competitive examinations with confidence and competence.
39	191MC4A06	Biology for Engineers		✓		Students are able to demonstrate skills related to to biology in a general way by providing a framework for understanding life at the cellular and molecular structures



## V SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
40	171MI5T09	Under Ground Coal Mining Technology		✓		This subject helps the student to demonstrate their technical skills as they will understand the peculiarities and limitations of metal mining, familiar with different stopping methods, design and planning of stopping methods. Students can be placed in different metal mining companies by possessing a depth knowledge in this subjects.
41	171MI5T10	Mine Environment Engineering - I		✓		This subject enhance the skill of students to understand atmosphere and mine atmosphere conditions, heat and humidity levels in mines and controlling method. It also help students to know about ventilation standards planning and layout.
42	171MI5T11	Basic Geo Mechanics		✓		This subject helps the student to demonstrate technical skills as they are able to understand In-situ stress, slope stability, mine subsidence and numerical methods in rock mechanics.
43	171MI5T12	Mine Surveying - II		✓		This subject helps the student to improve their skills by understanding the correlation and stope survey methods and know and limitations of photogrammetry and modern survey methods.
44	171HS5T04	Managerial Economics and Financial Analysis		✓		This subject helps the student to acquire skills to understand managerial economic concept, Break even concept, profit & loss concept and balance sheet of an enterprise which enable them to be employed in the field of accounting and trading related jobs in the mines.

45	171MI5E01	Maintenance and Reliability Engineering		✓		This subject helps the student to demonstrate technical skills as they will be able to understand various aspects of maintenance, reliability and reliability management.
46	171MI5E02	Mine Construction and Management		✓		This subject helps the student to demonstrate technical skills to understand the selection sites of mine opening, types of lining, different drivages and surface layouts of different mines.
47	171MI5E03	Industrial Management and Labor Relations		✓		This subject helps the students to demonstrate technical skills as they will be able to understand project management techniques and labour relations and labour welfare activities.
48	171HS5T06	Employability Skills – III	✓			This subject helps the students to acquire skills to be placed in a company as it will impart employability skills in students, which will enable the students to feel comfortable to face several competitive examinations with confidence and competence.
49	171MI5L03	Rock Mechanics Lab		✓		This subject helps the students to improve their technical skills as they will understand geotechnical engineering which will provide an understanding for the assessment of Rock mass characterization based on Rock mass properties
50	171MI5S01	MOOCs-I		✓		Students are able to acquire technical skills by choosing an online course of their choice which is not related to academics
51	171MI5L04	Mine Surveying Lab		✓		This subject helps the student to improve their skills as they will understand different equipment and compare accuracy levels and to study several experiments and conversant with it.



## VI SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
52	171MI6T13	Under Ground Metal Mining Technology		✓		This subject helps the student to demonstrate their technical skills as they will understand the peculiarities and limitations of metal mining, familiar with different stopping methods, design and planning of stopping methods. Students can be placed in different metal mining companies by possessing a depth knowledge in this subjects.
53	171MI6T14	Mineral Processing Technology		✓		This subject help the students to enhance the technical skills of mining engineering students as they will know different mineral processing techniques and also they will get to know about different type of fuel technology. This subject helps the mining student to get placed in different process related plants.
54	171MI6T15	Mine Environment Engineering - II		✓		This subject helps the student to demonstrate their problem solving skills of the students as they will understand the process of spontaneous heating, fires, explosion, inundation and adverse effects, rescue and recovery operation and standards of lighting arrangement.
55	171MI6T16	Mining Machinery		✓		This subject demonstrate technical skills as they will aware of winding engines and other winding accessories, various coal face machinery, they will also get to understand design and construction details of excavating & transporting equipment's used in surface mines
56	171MI6E04	Advanced Geo Mechanics		✓		This subject demonstrate technical skills as student able to understand the in extensometers and bore hole cameras, underground support system and modern instruments of Hydroelectric projects and tunnels.
57	171MI6E07	Advance Surveying Technology		✓		This subject demonstrate technical skills as students able to understand line measurement and triangulation work, hydrographic surveying, principles of photogrammetric, astronomical observations and modern instruments of surveying total station and GPS.



58	171MI6E08	Mine Subsidence Engineering		✓		This subject demonstrate technical skills as students able to understand the theories of mine subsidence and factors affecting it, methods of surface subsidence prediction, mining activities effect and time influence and impact on structure and influence of item on subsidence.
59	171MI6E09	Rock Fragmentation Engineering		✓		This subject demonstrate technical skills of the students by making them know the estimation of rock mass strength, its behaviour during excavation, types of drilling and blasting methods depend on the rock mass characterization.
60	171HS6T07	Employability Skills - IV	✓			This subject helps the students to acquire skills to be placed in a company as it will impart employability skills in students, which will enable the students to feel comfortable to face several competitive examinations with confidence and competence.
61	171MI6L05	Mineral Processing Technology Lab		✓		Mineral Processing lab helps the students to demonstrate technical skills by giving them hands-on experience to the various laboratory techniques and procedures of mineral processing such as sampling, screening, crushing , grinding, etc which helps them to get placed in different process industry.
62	171MI6L06	Environmental Engineering Lab		✓		This subject demonstrate students to improve technical skills as students will familiar with detection of different gases using deferent methods detectors and multi gas detector, to find flammable index of coal dust and understand the rescue and recovery operations using different rescue apparatus.
63	171MI6S02	MOOCs-II		✓		Students are able to demonstrate technical skill of various online courses available adding to their curricular courses

## VII SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
64	171MI7T17	Mine Economics		✓		This subject helps the student to demonstrate technical skills as they are able to understand the estimation and valuation of mineral deposits and they will possess knowledge about project appraisal, finance and accounting.
65	171MI7T18	Mine Health and Safety Engineering		✓		This subject demonstrates the technical skills of different aspects of mine health and safety related problems also it create awareness of the hazardous effect of mining in mining workers health.
66	171MI7T19	Mine Legislation and General Safety		✓		This subject is vital and important subject of mining as it demonstrate the technical skills by provides an insight to various laws, rules and Acts related to Mines Safety and mining legislation. This subject will help the students to qualify different DGMS certification exam of Mines Manager.
67	171MI7E11	Planning of UGCM Project		✓		This subject helps the students to understand different methods of coal mining, advantages and disadvantages which is analysed the logical application of choice of mining methods can be evaluated in the mines.
68	171MI7E12	Planning of Surface Mining Project		✓		This subject helps the student to improve their skills as here entire phasing and sequencing of equipment planning, selection components are discussed for the optimization of the production and increasing the production cycle coupled with financial analysis.
69	171MI7E13	Mine mechanization	✓			This subject helps the student to demonstrate their technical skills as they will able to know surface and pit bottom



						layouts, various coal face machinery. It also upgrade the skills of students as they will be able to know the design and construction details of excavating & transporting equipment's used in surface mines
70	171MI7E14	Advance Underground Coal Mining Technology		✓		This subject demonstrate skills that help the student to understand the extraction of thick seam mining methods, problems and issues on multiple seam mine workings, design of underground workings and extraction of locked up pillars
71	171MI7E15	Mine Blasting operation		✓		This subject demonstrate technical skills as students were able to understand blasting methods and the design related to it.
72	171MI7L07	Mine Planning and Design Lab		✓		This subject demonstrate technical skills of students by letting them know creation and utilization of data base for various studies and applications of the same for planning & design of mining projects.
73	171ES7L16	Mechanical Engineering Lab		✓		This course helps the students to demonstrate their technical skills by making them learn the basic principles of fluid flow, measurement of pressure, discharge and velocity of fluid flow. It also help the students to have practical exposure on the performance evaluation methods of various flow measuring equipment, hydraulic turbines and pumps.
74	171MI7P01	Industry Oriented (Internship) Minor Project	✓			Students will be able to demonstrate problem identification, analysis, design solutions or applications in electronics and communication domain through the acquired technical, cognitive, communication and creative skills to address societal needs.




## VIII SEMESTER

S. No	Course Code	Name of the Course	Employability	Skill Development	Entrepreneurship	Remarks
75	171MI8E16	Mine Systems Engineering		✓		This subject helps the student to demonstrate technical skills as they will able to formulate real-world problems involving decision making, Linear programming problem, transportation and assignment problems also they were able to solve dynamic programming & simulation techniques in real-world problems.
76	171MI8E17	Advance Surface Mining Technology		✓		This subject helps the student to demonstrate technical skills as they will able to understand modern surface mining technology, design large surface mines, simulation of mining operation, and able to prepare feasibility report.
77	171MI8E18	Advanced Underground Metal Mining Technology	✓			This subject helps the student to demonstrate technical skills as they will able to understand different advanced metal mining techniques, design underground metal mines, analyze development of feasibility report & detailed mining report, case studies.
78	171EE8O05	Robotics		✓		Students are able to acquire skills related to the measurement of linear and angular measuring instruments, working of measuring instruments and control systems.
79	171MI8O01	Environmental Impact Assessment	✓			Students are able to acquire skills related to assessment of the impact of any developmental activity in any sector of the environment and mitigation of negative impacts in the environment enabling them to be employed in as environmental managers/engineers.
80	171MI8O02	Mine Closure and Reclamation		✓		This subject helps the student to demonstrate technical skills as they were able to understand strategies and principle of

						mine reclamation, challenges of mine planning and mine closure plan, handling of waste dumps and closure risk assessment.
81	171MI8O03	Fundamentals of Communication		✓		This subject helps the student to demonstrate technical skills as they were able to understand types of signal and its relation, concepts of continuous wave modulation, concepts of digital modulation techniques and different advanced communication networks.
82	171MI8O04	Remote Sensing and GIS		✓		This subject helps the student to demonstrate technical skills as they were able to understand elements of photogrammetry, concept of remote sensing and false colour composite, principal components and image classification.
83	171MI8O05	Quantitative Decision Making		✓		This subject helps the student to demonstrate technical skills as they were able to understand data using histograms, scatter diagrams and summary statistics, models of decision making spreadsheet simulation models.
84	171MI8P02	Major Project	✓			Students will be able to demonstrate problem identification, analysis, design solutions or applications in electronics and communication domain through the acquired technical, cognitive, communication and creative skills to address societal needs.
<b>TOTAL</b>		<b>84</b>	<b>14</b>	<b>65</b>	<b>1</b>	

  
Program Coordinator

  
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