

(Established as University of Technology in the State of Maharashtra)

(Under Maharashtra Act No. XXIX of 2014)

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PROPOSED COURSE STRUCTURE FOR UNDERGRADUATE DEGREE PROGRAMME

B. TECH. IN

Mining Engineering

With effect from AY 2020-21

Rules and Regulations

1. The normal duration of the course leading to B. Tech degree will be EIGHT semesters.
2. The normal duration of the course leading to M. Tech. degree will be FOUR semesters.
3. Each academic year shall be divided into 2 semesters, each of 20 weeks duration, including evaluation and grade finalization, etc. The Academic Session in each semester shall provide for at least 90 Teaching Days, with at least 40 hours of teaching contact periods in a five to six days session per week. The semester that is typically from Mid-July to November is called the ODD SEMESTER, and the one that is from January to Mid-May is called the EVEN SEMESTER. Academic Session may be scheduled for the Summer Session/Semester as well. For 1st year B. Tech and M. Tech the schedule will be decided as per the admission schedule declared by Government of Maharashtra.
4. The schedule of academic activities for a Semester, including the dates of registration, mid-semester examination, end-semester examination, inter-semester vacation, etc. shall be referred to as the Academic Calendar of the Semester, which shall be prepared by the Dean (Academic), and announced at least TWO weeks before the Closing Date of the previous Semester.
5. The Academic Calendar must be strictly adhered to, and all other activities including co-curricular and/or extra -curricular activities must be scheduled so as not to interfere with the Curricular Activities as stipulated in the Academic Calendar.

REGISTRATION:

1. Lower and Upper Limits for Course Credits Registered in a Semester, by a Full-Time Student of a UG/PG Programme:

A full time student of a particular UG/PG programme shall register for the appropriate number of course credits in each semester/session that is within the minimum and maximum limits specific to that UG/PG programme as stipulated in the specific Regulations pertaining to that UG/PG programme.

2. Mandatory Pre-Registration for higher semesters:

In order to facilitate proper planning of the academic activities of a semester, it is essential for the every institute to inform to Dean (Academics) and COE regarding details of total no. of electives offered (Course-wise) along with the number of students opted for the same. This information should be submitted within two weeks from the date of commencement of the semester as per academic calendar.

3. PhD students can register for any of PG/PhD courses and the corresponding rules of evaluation will apply.
4. Under Graduate students may be permitted to register for a few selected Post Graduate courses, in exceptionally rare circumstances, only if the DUGC/DPGC is convinced of the level of the academic achievement and the potential in a student.

Course Pre-Requisites:

1. In order to register for some courses, it may be required either to have exposure in, or to have completed satisfactorily, or to have prior earned credits in, some specified courses.
2. Students who do not register on the day announced for the purpose may be permitted LATE REGISTRATION up to the notified day in academic calendar on payment of late fee.
3. REGISTRATION IN ABSENTIA will be allowed only in exceptional cases with the approval of the Dean (Academic) / Principal.
4. A student will be permitted to register in the next semester only if he fulfills the following conditions:
 - (a) Satisfied all the Academic Requirements to continue with the programme of Studies without termination
 - (b) Cleared all Institute, Hostel and Library dues and fines (if any) of the previous semesters;
 - (c) Paid all required advance payments of the Institute and hostel for the current semester;
 - (d) Not been debarred from registering on any specific ground by the Institute.

EVALUATION SYSTEM:

1. Absolute grading system based on absolute marks as indicated below will be implemented from academic year 2019-20, starting from I year B.Tech.

Percentage of marks	Letter grade	Grade point
91-100	EX	10.0
86-90	AA	9.0
81-85	AB	8.5
76-80	BB	8.0
71-75	BC	7.5
66-70	CC	7.0
61-65	CD	6.5
56-60	DD	6.0
51-55	DE	5.5
40-50	EE	5.0
<40	EF	0.0

2. Class is awarded based on CGPA of all eighth semester of B.Tech Program.

CGPA for pass is minimum 5.0	
CGPA upto <5.50	Pass class
CGPA \geq 5.50 & <6.00	Second Class
CGPA \geq 6.00 & <7.50	First Class
CGPA \geq 7.50	Distinction
[Percentage of Marks = CGPA * 10.0]	

3. A total of 100 Marks for each theory course are distributed as follows:

Mid Semester Exam (MSE) Marks	20
Continuous Assessment Marks	20
End Semester Examination (ESE) Marks	60

4. A total of 100 Marks for each practical course are distributed as follows:

1.	Continuous Assesment Marks	60
2.	End Semester Examination (ESE)Marks	40

It is mandatory for every student of B.Tech to score a minimum of 40 marks out of 100, with a minimum of 20 marks out of 60 marks in End Semester Examination for theory course. This will be implemented from the first year of B.Tech starting from Academic Year 2019-20

5. Description of Grades:

EX Grade: An „EX“ grade stands for outstanding achievement.

EE Grade: The „EE“ grade stands for minimum passing grade.

The students may appear for the remedial examination for the subjects he/she failed for the current semester of admission only and his/her performance will be awarded with EE grade only.

If any of the students remain Absent for the regular examination due to genuine reason and the same will be verified and tested by the Dean (Academics) or committee constituted by the University Authority.

FF Grade: The „FF“ grade denotes very poor performance, i.e. failure in a course due to poor performance .The students who have been awarded „FF“ grade in a course in any semester must repeat the subject in next semester.

6. Evaluation of Performance:

1. Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA)

A. Semester Grade Point Average (SGPA) The performance of a student in a semester is indicated by Semester Grade Point Average (SGPA) which is a weighted average of the grade points obtained in all the courses taken by the student in the semester and scaled to a maximum of 10. (SGPI is to be calculated up to two decimal places). A Semester Grade Point Average (SGPA) will be computed for each semester as follows:

$$SGPA = \frac{\left(\sum_{i=1}^n c_i g_i \right)}{\left(\sum_{i=1}^n c_i \right)}$$

Where

‘n’ is the number of subjects for the semester,

‘ci’ is the number of credits allotted to a particular subject, and

‘gi’ is the grade-points awarded to the student for the subject based on his performance as per the above table.

-SGPA will be rounded off to the second place of decimal and recorded as such.

B. Cumulative Grade Point Average (CGPA): An up to date assessment of the overall performance of a student from the time he entered the Institute is obtained by calculating Cumulative Grade Point Average (CGPA) of a student. The CGPA is weighted average of the grade points obtained in all the courses registered by the student since s/he entered the Institute. CGPA is also calculated at the end of every semester (upto two decimal places).Starting from the first semester at the end of each semester (S), a Cumulative Grade Point Average (CGPA) will be computed as follows:

$$CGPA = \frac{\left(\sum_{i=1}^m c_i g_i \right)}{\left(\sum_{i=1}^m c_i \right)}$$

Where

'm' is the total number of subjects from the first semester onwards up to and including the semester S,

'ci' is the number of credits allotted to a particular subject, and

'gi' is the grade-points awarded to the student for the subject based on his/her performance as per the above table.

-CGPA will be rounded off to the second place of decimal and recorded as such.

Award of Degree of Honours

Major Degree

The concept of Major and Minors at B.Tech level is introduced, to enhance learning skills of students, acquisition of additional knowledge in domains other than the discipline being pursued by the student, to make the students better employable with additional knowledge and encourage students to pursue cross-discipline research.

A. Eligibility Criteria for Majors

1. The Student should have Minimum CGPA of 7.5 up to 4th Semester
2. Student willing to opt for majors has to register at the beginning of 5th Semester
3. The Student has to complete 5 additional advanced courses from the same discipline specified in the curriculum. These five courses should be of 4 credits each amounting to 20 credits. The students should complete these credits before the end of last semester.
4. Student may opt for the courses from NPTEL/ SWAYAM platform. (if the credits of NPTEL/ SWAYAM courses do not match with the existing subject proper scaling will be done)

Student complying with these criteria will be awarded B. Tech (Honours) Degree.

B. Eligibility Criteria for Minors

1. The Student should have Minimum CGPA of 7.5 up to 4th Semester
2. Student willing to opt for minors has to register at the beginning of 5th Semester
3. The Student has to complete 5 additional courses from other discipline of their interest, which are specified in the respective discipline. These five courses should be of 4 credits each amounting to 20 credits.
4. Student may opt for the courses from NPTEL/ SWAYAM platform. (if the credits of NPTEL/ SWAYAM courses do not match with the existing subject proper scaling will be done)

Student complying with these criteria will be awarded with B.Tech Degree in -----Engineering with Minor in ----- --Engineering.

(For e.g.: B. Tech in Civil Engineering with Minor in Computer Engineering)

For applying for Honours and Minor Degree the student has to register themselves through the proper system.

ATTENDANCE REQUIREMENTS:

1. All students must attend every lecture, tutorial and practical classes.
2. To account for approved leave of absence (eg. representing the Institute in sports, games or athletics; placement activities; NCC/NSS activities; etc.) and/or any other such contingencies

like medical emergencies, etc., the attendance requirement shall be a minimum of 75% of the classes actually conducted.

3. If the student failed to maintain 75% attendance, he/she will be detained for appearing the successive examination.
4. The Dean (Academics)/ Principal is permitted to give 10% concession for the genuine reasons as such the case may be.
4. In any case the student will not be permitted for appearing the examination if the attendance is less than 65%.
5. The course instructor handling a course must finalize the attendance 3 calendar days before the last day of classes in the current semester and communicate clearly to the students by displaying prominently in the department and also in report writing to the head of the department concerned.
6. The attendance records are to be maintained by the course instructor and he shall show it to the student, if and when required.

TRANSFER OF CREDITS

The courses credited elsewhere, in Indian or foreign University/Institutions/ Colleges/Swayam Courses by students during their study period at DBATU may count towards the credit requirements for the award of degree. The guidelines for such transfer of credits are as follows:

- a) 20 % of the total credit will be considered for respective calculations.
- b) Credits transferred will be considered for overall credits requirements of the programme.
- c) Credits transfer can be considered only for the course at same level i.e UG, PG etc.
- d) A student must provide all details (original or attested authentic copies) such as course contents, number of contact hours, course instructor /project guide and evaluation system for the course for which he is requesting a credits transfer. He shall also provide the approval or acceptance letter from the other side. These details will be evaluated by the concerned Board of Studies before giving approval. The Board of Studies will then decide the number of equivalent credits the student will get for such course(s) in DBATU. The complete details will then be forwarded to Dean for approval.
- e) A student has to get minimum passing grades/ marks for such courses for which the credits transfers are to be made.
- f) Credits transfers availed by a student shall be properly recorded on academic record(s) of the student.
- g) In exceptional cases, the students may opt for higher credits than the prescribed.

	Basic Science Course (BSC)				
BTBS101	Engineering Mathematics – I	(3-1-0)4	BTMIC406L	Mine Surveying & Rock Mechanics	(0-0-6)3
BTBS102	Engineering Physics	(3-1-0)4	BTMIC501	Surface Mining Technology	(3-1-0)4
BTBS107L	Engineering Physics Lab	(0-0-2)1	BTMIC502	Mine Environment & Ventilation Engineering	(3-1-0)4
BTBS201	Engineering Mathematics – II	(3-1-0)4	BTMIC503	Underground Coal Mining Technology	(3-1-0)4
BTBS202	Engineering Chemistry	(3-1-0)4	BTMIC506L	Mine Environment & Ventilation Engineering & Underground Coal Mining Technology	(0-0-2)2
BTBS207L	Engineering Chemistry Lab	(0-0-2)1	BTMIC601	Underground Metal Mining Technology	(3-1-0)4
BTBS303	Engineering Mathematics - III	(3-1-0)4	BTMIC602	Mine Hazards, Rescue & Recovery	(3-1-0)4
			BTMIC603	Ground Control in Mines	(3-1-0)4
			BTMIC606L	Mine Hazards, Rescue & Recovery	(0-0-6)3
			BTMIC701	Mine Legislation & Safety	(3-0-0)3
			BTMIC702	Mine System Optimization	(3-1-0)4
	Engineering Science Course (ESC)				
BTES103	Engineering Graphics	(2-0-0)2			
BTES105	Energy and Environment Engineering	(2-0-0)2			
BTES106	Basic Civil & Mechanical Engineering	(2-0-0)Audit			
BTES108L	Engineering Graphics Lab	(0-0-4)2			
BTES203	Engineering Mechanics	(2-1-0)3			
BTES204	Computer Programming	(3-0-0)3			
BTES205	Basic Electrical and Electronics Engineering	(2-0-0)Audit			
BTES206L	Workshop Practice	(0-0-4)2			
BTES208L	Engineering Mechanics Lab	(0-0-2)1			
BTMIES304	Fluid Mechanics	(3-0-0)3			
BTMIES305	Strength of Materials	(3-1-0)4			
BTMIES307L	Fluid Mechanics & Strength of Materials	(0-0-4)2			
BTMIES405	Rock Mechanics	(3-0-0)3			
BTMIES406L	Rock Mechanics	-			
	Humanities and Social Science Including Management Courses (HSSMC)				
BTHM104	Communication Skills	(2-0-0)2			
BTHM109L	Communication Skills Lab	(0-0-2)1			
BTHM405	Management Information System	(3-0-0)3			
BTHM703	Industrial Engineering and Management	(3-0-0)3			
BTHM707	A. Essence of Indian Traditional Knowledge B. Foreign Language Studies C. Indian Constitution	Audit			
	Professional Core Course (PCC)				
BTMIC301	Introduction to Mining Engineering	(3-1-0)4			
BTMIC302	Mining Geology	(3-1-0)4			
BTMIC306L	Mining Geology	(0-0-4)2			
BTMIC401	Mining Machinery	(3-1-0)4			
BTMIC402	Mine Surveying	(3-1-0)4			
				Professional Elective Course (PEC)	
			BTMIPE404A	Drilling & Blasting Engineering	(3-0-0)3
			BTMIPE404B	Production Drilling for Oil Wells	(3-0-0)3
			BTMIPE404C	Mechanization and Materials Handling	(3-0-0)3
			BTMIPE404D	Ore Reserve Estimation and Mine Valuation	(3-0-0)3
			BTMIPE504A	Sea-bed Mining	(3-0-0)3
			BTMIPE504B	Advanced Mine Machinery.	(3-0-0)3
			BTMIPE504C	Mine Electrical Engineering	(3-0-0)3
			BTMIPE504D	Advanced Geology	(3-0-0)3
			BTMIPE604A	Mine Health and Safety Engg	(3-0-0)3
			BTMIPE604B	Mine Planning	(3-0-0)3
			BTMIPE604C	Surface Mine Design	(3-0-0)3
			BTMIPE604D	U/G Coal Mine Design	(3-0-0)3
			BTMIPE704A	Remote Sensing & Geoinformatics	(3-0-0)3
			BTMIPE704B	U/G Metal Mine Design	(3-0-0)3
			BTMIPE704C	Mine Economics	(3-0-0)3
			BTMIPE704D	Finite Element Method	(3-0-0)3
				Open Elective Course	
			BTMIOE505A	Rock Fragmentation Engg.	(3-0-0)3
			BTMIOE505B	Stability of Rock Slopes	(3-0-0)3
			BTMIOE505C	Applied Mine Surveying	(3-0-0)3
			BTMIOE505D	Numerical Modeling Techniques	(3-0-0)3
			BTMIOE605A	Machine Learning	(3-0-0)3
			BTMIOE605B	Artificial Intelligence	(3-0-0)3

BTMIOE605C	Mineral Processing Technology	(3-0-0)3
BTMIOE605D	Tunneling Engineering	(3-0-0)3
BTMIOE606E	Environmental Impact Assessment	(3-0-0)3
BTMIOE705A	Big Data Analytics	(3-0-0)3
BTMIOE705B	Application of IT in Mining	(3-0-0)3
BTMIOE705C	Geo statistics	(3-0-0)3
BTMIOE705D	Reliability Analysis of Engg. Systems	(3-0-0)3
BTMIOE705L	Open Elective III (A-D) Lab-VI	(0-0-6)3
Seminar/Mini Project/Internship		
BTES209S	Seminar-1	(0-0-2)1
BTES210P	Internship – 1 Evaluation	(0-0-0)1
BTMIS407	Seminar II	(0-0-2)1
BTMI408P	Internship – 2	-
BTMIP 507	Mini Project – 1	(0-0-2)1
BTMI 408P	Internship – 2 Evaluation	(0-0-0)1
BTMIP 607	Mini Project – 2	(0-0-2)1
BTMI608P	Internship – 3	-
BTMIP708	Mini Project – 3 & Survey Camp	(0-0-2)2
BTMI608P	Internship – 3 Evaluation	(0-0-0)1
Project (MP)		
BTMIP801/	Project work/	(0-0-24)12
BTMIP801	Internship	

Number of Courses	Semester							
	I	II	III	IV	V	VI	VII	VIII
1	BTBS101 Engineering Mathematics- I	BTBS201 Engineering Mathematics- II	BTMIC301 Introduction to Mining Engineering	BTMIC401 Mining Machinery	BTMIC501 Surface Mining Technology	BTMIC601 Underground Metal Mining Technology	BTMIC701 Mine Legislation & Safety	BTMIP 801/ BTMIP 801 Project Work
2	BTBS102 Engineering Physics	BTBS202 Engineering Chemistry	BTMIC302 Mining Geology	BTMIC402 Mine Surveying	BTMIC502 Mine Environment & Ventilation Engineering	BTMIC602 Mine Hazards, Rescue, Recovery	BTMIC702 Mine System Optimization	--
3	BTES103 Engineering Graphics	BTES203 Engineering Mechanics	BTBS303 Engineering Mathematics - III	BTMIES403 Rock Mechanics	BTMIC503 Underground Coal Mining Technology	BTMIC603 Ground Control in Mines	BTHM703 Industrial Engineering and Management	--
4	BTHM104 Communication Skills	BTES204 Computer Programming	BTMIES304 Fluid Mechanics	BTMIPE404 A-D (Elective-I)	BTMIPE504 A-D (Elective-II)	BTMIPE604 A-D (Elective-III)	BTMIPE704 A-D (Elective-IV)	--
5	BTES105 Energy and Environment Engineering	BTES205 Basic Electrical and Electronics Engineering	BTHM305 Strength of Materials	BTMIES405 Management Information System	BTMIOE505 A-D (Open Elective-I)	BTMIOE605 A-D (Open Elective-II)	BTMIOE705 A-D (Open Elective-III)	--
6	BTES106 Basic Civil and Mechanical Engineering	BTES206L Workshop Practice	BTMIC306L Mining Geology Lab-1	BTMIC406L Lab- III- Mine Surveying & Rock Mechanics	BTMIC506L Lab- IV- Mine Environment & Ventilation Engineering & Underground Coal Mining Technology	BTMIC606 Lab- V- Mine Hazards, Rescue, Recovery & Underground Metal Mining Technology	BTMIOE706 A-D (Open Elective-III) Lab- VI	--
7	BTBS107L Engineering Physics Lab	BTBS207L Engineering Chemistry Lab	BTMIES307L Lab-II- Fluid Mechanics & Strength of Materials	BTMIS407 Seminar II	BTMIP507 Mini Project – I	BTMIP607 Mini Project –II	BTHM707 A. Essence of Indian Traditional Knowledge B. Foreign Language Studies C. Indian Constitution	--
8	BTES108L Engineering Graphics Lab	BTES208L Engineering Mechanics Lab	BTES210P (Internship–1 Evaluation)	BTMI408P (Internship – 2)	BTMI408P (Internship – 2 Evaluation)	BTMI608P (Internship –3)	BTMIP708 Mini Project – III & Survey Camp	--
9	BTHM109L Communication Skills Lab	BTES209S Seminar I	--	--	--	-	BTMI608P (Internship –3 Evaluation)	--
10	--	BTES210P (Internship - 1)	--	--	--	--	--	--

Degree Requirements:

Total Credits: 160

Sr. No.	Category	Number of Subjects in Each Category	Suggested Breakup of Credits by AICTE (Total 160)	Total
1	Humanities and Social Sciences including Management courses	4	12	12
2	Basic Science courses	8	25	24
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc.	12	24	22
4	Professional core courses	16	48	56
5	Professional Elective courses relevant to chosen specialization/branch	4	18	13
6	Open subjects – Electives from other technical and /or emerging subjects	4	18	12
7	Project work, seminar and internship in industry or elsewhere	10	15	21
8	Mandatory Courses [Environmental Sciences, Induction training, Indian Constitution, Essence of Indian Knowledge Tradition]	2	NC	-
Total		60	160*	160

B. Tech in Mining Engineering

Program Educational Objectives and Outcomes

A. Program Educational Objectives (PEOs)

Graduates will be able to–

1. Graduates should excel in engineering positions in industry and other organizations that emphasize design and implementation of engineering systems and devices.
2. Graduates should excel in best post-graduate engineering institutes, reaching advanced degrees in engineering and related discipline.
3. Within several years from graduation, alumni should have established a successful career in an engineering-related multidisciplinary field, leading or participating effectively in interdisciplinary engineering projects, as well as continuously adapting to changing technologies.
4. Graduates are expected to continue personal development through professional study and self-learning.
5. Graduates are expected to be good citizens and cultured human beings, with full appreciation of the importance of professional, ethical and societal responsibilities.

B. Program Outcomes

Engineering Graduate will be able to –

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

C. Program Specific Outcomes (PSOs)

1. Apply knowledge of mathematics, science and engineering to analyze, design and evaluate mechanical components and systems using state-of-the-art IT tools
2. Analyze problems of production engineering including manufacturing and industrial systems to formulate design requirements
3. Design, implement and evaluate production systems and processes considering public health, safety, cultural, societal and environmental issues
4. Design and conduct experiments using domain knowledge and analyze data to arrive at valid conclusions.
5. Apply current techniques, skills, knowledge and computer based methods and tools to develop production systems.
6. Analyze the local and global impact of modern technologies on individual organizations, society and culture.
7. Apply knowledge of contemporary issues to investigate and solve problems with a concern for sustainability and eco-friendly environment.
8. Exhibit responsibility in professional, ethical, legal, security and social issues.
9. Function effectively in teams, in diverse and multidisciplinary areas to accomplish common goals.
10. Communicate effectively in diverse groups and exhibit leadership qualities.
11. Apply management principles to manage projects in multidisciplinary environment.
12. Pursue life-long learning as a means to enhance knowledge and skills.

Course Structure for Semester III (Starting from 2021-2022)

B. Tech. in Mining Engineering

Semester- III										
Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
PCC 1	BTMIC301	Introduction to Mining Engineering	3	1	-	20	20	60	100	4
PCC 2	BTMIC302	Mining Geology	3	1	-	20	20	60	100	4
BSC 7	BTBS303	Engineering Mathematics - III	3	1	-	20	20	60	100	4
ESC 1	BTMIES304	Fluid Mechanics	3	-	-	20	20	60	100	3
ESC 3	BTMIES305	Strength of Materials	3	-	-	20	20	60	100	3
PCC 3	BTMIC306L	Lab I - Mining Geology	-	-	2	60	-	40	100	1
ESC 2	BTMIES307L	Lab II - Fluid Mechanics & Strength of Material	-	-	6	60	-	40	100	3
PROJ-1	BTES210P	Internship –I Evaluation (From Sem II)	-	-	-	-	-	100	100	1
Total			15	3	8	220	100	480	800	23

BSC = Basic Science Course, ESC = Engineering Science Course, PCC = Professional Core Course
PEC = Professional Elective Course, OEC = Open Elective Course, LC = Laboratory Course
HSSMC = Humanities and Social Science including Management Courses

Course Structure for Semester IV (Starting from 2021-2022)

B. Tech. in Mining Engineering

Semester- IV										
Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
PCC 4	BTMIC401	Mining Machinery	3	1	-	20	20	60	100	4
PCC 5	BTMIC402	Mine Surveying	3	1	-	20	20	60	100	4
PEC 1	BTMIPE403 A-D	Elective - I	3	-	-	20	20	60	100	3
ESC 4	BTMIES404	Rock Mechanics	3	-	-	20	20	60	100	3
HSSMC 1	BTHM405	Management Information System	3	-	-	20	20	60	100	3
PCC 6	BTMIC406L	Lab III - Mine Surveying & Rock Mechanics	-	-	6	60	-	40	100	3
PROJ-2	BTMIS407	Seminar II	-	-	2	60	-	40	100	1
PROJ-3	BTMI408P	Field Training / Internship/Industrial Training (minimum of 4 weeks which can be completed partially in the third and fourth semester or in one semester itself)	-	-	-	-	-	-	-	Credits to be evaluated in Sem V
Total			15	3	8	220	100	380	700	22

BSC = Basic Science Course, ESC = Engineering Science Course, PCC = Professional Core Course

PEC = Professional Elective Course, OEC = Open Elective Course, LC = Laboratory Course

HSSMC = Humanities and Social Science including Management Courses

Elective - I

BTMIPE404A	Drilling & Blasting Engineering
BTMIPE404B	Production Drilling for Oil Wells
BTMIPE404C	Mechanization and Materials Handling
BTMIPE404D	Ore Reserve Estimation and Mine Valuation

Course Structure for Semester V (Starting from 2020-2021)

B. Tech. in Mining Engineering

Semester- V										
Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
PCC 7	BTMIC501	Surface Mining Technology	3	1	-	20	20	60	100	4
PCC 8	BTMIC502	Mine Environment & Ventilation Engineering	3	1	-	20	20	60	100	4
PCC 9	BTMIC503	Underground Coal Mining Technology	3	1	-	20	20	60	100	4
PEC 2	BTMIPE504 (A-D)	Elective – II	3	-	-	20	20	60	100	3
OEC 1	BTMIOE505 (A-D)	Open Elective – I	3	-	-	20	20	60	100	3
PCC 10	BTMIL506L	Lab- IV - Mine Environment & Ventilation & Underground Coal Mining Technology	-	-	6	60	-	40	100	2
PROJ-3	BTMIM507	Mini Project – I	-	-	2	60	-	40	100	1
PROJ-4	BTMI408	Internship – 2 Evaluation	-	-	-	-	-	100	100	1
Total			15	3	8	220	100	480	800	22

BSC = Basic Science Course, ESC = Engineering Science Course, PCC = Professional Core Course
 PEC = Professional Elective Course, OEC = Open Elective Course, LC = Laboratory Course
 HSSMC = Humanities and Social Science including Management Courses

Elective - II

BTMIPE504A	Sea-bed Mining
BTMIPE504B	Advanced Mine Machinery.
BTMIPE504C	Mine Electrical Engineering
BTMIPE504D	Advanced Geology

Open Elective - I

BTMIOE505A	Rock Fragmentation Engineering
BTMIOE505B	Stability of Rock Slopes
BTMIOE505C	Applied Mine Surveying
BTMIOE505D	Numerical Modeling Techniques

Course Structure for Semester VI (Starting from 2020-2021)

B. Tech. in Mining Engineering

Semester- VI										
Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
PCC 11	BTMIC601	Underground Metal Mining Technology	3	1	-	20	20	60	100	4
PCC 12	BTMIC602	Mine Hazards, Rescue & Recovery	3	1	-	20	20	60	100	4
PCC 13	BTMIC603	Ground Control in Mines	3	1	-	20	20	60	100	4
PEC 3	BTMIPE604 (A-D)	Elective – III	3	-	-	20	20	60	100	3
OEC 2	BTMIOE605 (A-D)	Open Elective – II	3	-	-	20	20	60	100	3
PCC 14	BTMIL606L	Lab – V - Mine Hazards, Rescue & Recovery & Underground Metal Mining Technology	-	-	6	60	-	40	100	3
PROJ-5	BTMIP607	Mini Project – II	-	-	2	60	-	40	100	1
PROJ-6	BTMI608P	Field Training / Internship/Industrial Training (minimum of 4 weeks which can be completed partially in the third and fourth semester or in one semester itself)	-	-	-	-	-	-	-	Credits to be evaluated in Sem V
Total			15	3	8	220	100	380	700	22

BSC = Basic Science Course, ESC = Engineering Science Course, PCC = Professional Core Course
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Elective - III

BTMIPE604A	Mine Health and Safety Engg
BTMIPE604B	Mine Planning
BTMIPE604C	Surface Mine Design
BTMIPE604D	U/G Coal Mine Design

Open Elective - II

BTMIOE605A	Machine Learning
BTMIOE605B	Artificial Intelligence
BTMIOE605C	Mineral Processing Technology
BTMIOE605D	Tunneling Engineering
BTMIOE606E	Environmental Impact Assessment

Course Structure for Semester VII (Starting from 2020-2021)

B. Tech. in Mining Engineering

Semester – VII										
Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
PCC 15	BTMIC701	Mine Legislation & Safety	3	-	-	20	20	60	100	3
PCC 16	BTMIC702	Mine System Optimization	3	1	-	20	20	60	100	4
HSSMC 3	BTHM703	Industrial Engineering and Management	3	-	-	20	20	60	100	3
PEC 4	BTMIPE704 (A-D)	Elective – IV	3	-	-	20	20	60	100	3
OEC 3	BTMIOE705 (A-D)	Open Elective – III	3	-	-	20	20	60	100	3
OEC 4	BTMIOE706 L (A-D)	Open Elective – III Lab – VI	-	-	6	60	-	40	100	3
HSSMC 4	BTHM707	D. Essence of Indian Traditional Knowledge E. Foreign Language Studies F. Indian Constitution	2	-	-	-	-	-	-	Audit
PROJ- 7	BTMIM708	Mini Project – III & Survey Camp (One Week)	-	-	2	60	-	40	100	2
PROJ-8	BTMI608	Internship – 3 Evaluation	-	-	-	-	-	100	100	1
Total			17	1	8	220	100	480	800	22

BSC = Basic Science Course, ESC = Engineering Science Course, PCC = Professional Core Course
 PEC = Professional Elective Course, OEC = Open Elective Course, LC = Laboratory Course
 HSSMC = Humanities and Social Science including Management Courses

Elective - IV

BTMIPE704A	Remote Sensing & Geoinformatics
BTMIPE704B	U/G Metal Mine Design
BTMIPE704C	Mine Economics
BTMIPE704D	Finite Element Method

Open Elective - III

BTMIOE705A	Big Data Analytics
BTMIOE705B	Application of IT in Mining
BTMIOE705C	Geo statistics
BTMIOE705D	Reliability Analysis of Engg. Systems
BTMIOE705 L	LAB (705 A-D Open Elective III)

Course Structure for Semester VIII (Starting from 2021-2022)

B. Tech. in Mining Engineering

Semester – VII										
Course Category	Course Code	Course Title	Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	CA	MSE	ESE	Total	
PROJ-9	BTMIP801 / BTMIP801	Project Work/ Internship	-	-	24	60	-	40	100	12
Total			-	-	24	60	-	40	100	12

BSC = Basic Science Course, ESC = Engineering Science Course, PCC = Professional Core Course

PEC = Professional Elective Course, OEC = Open Elective Course, LC = Laboratory Course

HSSMC = Humanities and Social Science including Management Courses

Total Credits: 160

Course Code	Type of Course	Course Title	Weekly Teaching Scheme			Evaluation Scheme [§]				Credits
			L	T	P	CA	MSE	ESE	Total	
BTMISS801A	(Self-Study Course) [#]	<i>Presently, no SWAYAM Courses offered for Mining. Have to identify from different online platforms.</i>								
BTMISS801B		03**	--	--	20	20	60	100	3	
BTMISS801C										
BTMISS801D										
BTMISS801E										
BTMISS802A	(Self-Study Course) [#]	<i>Presently, no SWAYAM Courses offered for Mining. Have to identify from different online platforms.</i>								
BTMISS802B		03**	--	--	20	20	60	100	3	
BTMISS802C										
BTMISS802D										
BTMISS802E										
BTMIP803	Project	Project Stage-II or Internship and Project in Industry*	--	--	30	60	--	40	100	6
Total			04	--	30	100	40	160	300	12

[#] The subjects are to be studied on self-study mode using SWAYAM/NPTEL/any other online source approved by the University.

Student who opt for Major in Mining Engineering are not eligible to take same course from self study course list mentioned above. He/She has to take any other course from the self study course listed above.

** If required Coordinator may be appointed for each Self study course and an administrative load of 03 hours per week may be considered for monitoring and assisting the students, and to conduct examination (if required), evaluation and preparation of result.

§ If the examination schedule for the online Self study course chosen by student do not match with the University's Academic Schedule, the University/Institute have to conduct exam for such courses.

* Six months of Internship and Project in the Industry. For this one Faculty guide from the Institute and one Mentor from Industry should be identified to monitor the progress of work. During the Project/Internship period of work, a review of work should be taken twice followed by a final presentation at the end of Project period.