

CHOICE BASED CREDIT SYSTEM

(Applicable to all students registering from the academic year 2021-22 onwards)

Department of Mining Engineering

B.E (Mining Engineering)

Curriculum

ACADEMY OF MARITIME EDUCATION AND TRAINING (AMET)

DECLARED AS DEEMED TO BE UNIVERSITY

135, EAST COAST ROAD

KANATHUR, CHENNAI-603112



AMET
ACADEMY OF MARITIME EDUCATION AND TRAINING
DEEMED TO BE UNIVERSITY
(Under Section 3 of UGC Act 1956)

Vision and Mission of the Institution

Vision

To sustain identity as a World Class Leader in Maritime Education and empower learners with wholesome knowledge through progressive innovation in training, research and development which will render students a unique learning experience and a transformation impact on the Global Society.

Mission

AMET will strive continuously to

- ❖ Impart value-based higher education and technical knowledge with uncompromising strides of an outstanding quality.
- ❖ Emerge as a Centre of Excellence inculcating skill development in recent technologies in accordance with industrial trends.
- ❖ Create World class research capabilities on par with the finest in the world and broaden student's horizons beyond classroom education.
- ❖ Nurture talent and entrepreneurship to enable all round personality development among students.
- ❖ Empower students across socio economic strata
- ❖ Make a positive difference to society through technical education.

Vision and Mission of the Department

Vision :

To establish the department as a premier and one stop destination for all Mining related education in India.

Mission

1. Produce mining Engineers in the field in the mining operation and mine planning by strengthening the basic scientific and engineering knowledge.
2. Cultivate students for pursuing higher education in mining operations and planning related fields.
3. Develop the entrepreneurship skill in students related to the mining business.
4. Establish high quality teaching and research environment to offer practical knowledge to the

Program Educational Objectives (PEOs)

Program Educational Objectives (PEO's)

1. Become successful Mining Engineers with quality knowledge and essential skills as per the industry needs.
2. Pursue higher education and engage in cutting edge research to offer solutions to complicated field programmes.
3. Demonstrate high standard of ethical conduct, positive attitude and social responsibilities.

Programme Objectives (PO's)

POs	DESCRIPTION
PO1	Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems
PO2	Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusion using first principles of mathematics, natural science and engineering science
PO3	Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and the cultural, societal and environmental considerations
PO4	Use research –based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusion
PO5	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
PO6	Apply reasoning informed by the contextual knowledge to asses societal and environmental contexts, and demonstrate the knowledge of and need for sustainable development
PO7	Understand the impact of the professional ethics and responsibilities and norms of the engineering practice.
PO8	Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practices
PO9	Function effectively as an individual, and a member or leader in diverse teams, and in multidisciplinary setting
PO10	Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effectively reports and design documentation, make effective presentations and give and received clear instructions
PO11	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.
PO12	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.

Program Specific Objectives (PSOs)

PSOs	Description
PSO1	Analyze, design, operate, maintenance and evaluate various components, methods and systems using state-of-art technology
PSO2	Effectively practice as professional engineers, managers, and leaders in the mining industries and/or a wide variety of other fields as engineers.
PSO3	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

Mapping of PEO's with PO's

S. No	Program Educational Objectives	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O 2	PS O 3
1.	Become successful Mining Engineers who are able to competent, innovative and productive in addressing the needs of the Industry, or pursue higher education and research.		✓	✓		✓	✓			✓	✓		✓	✓	✓	✓
2.	Grow professionally with their knowledge and proficient skills throughout their Career.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
3.	Demonstrate high standard of ethical conduct, positive attitude and societal Responsibilities.				✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	



CBCS CURRICULUM (2020-21)
DEPARTMENT OF MINING ENGINEERING
CURRICULUM FOR B.E. (Mining Engineering)
ACADEMIC YEAR - 2021-2022
SEMESTER I

COMMON TO ALL BRANCHES OF UG –Mech, Naval, Harbour, Petro and Mining Engg (Slot B)

S. No	Course code	Category	Course Title	Contact Hours	L	T	P	C
THEORY								
1.	UELEC01	Humanities and Social Science including Management Courses	Technical English	2	2	0	0	2
2.	UEPHC01	Basic Science Course	Engineering Physics I	3	3	0	0	3
3.	UEMTC01	Basic Science Course	Engineering Mathematics I	4	3	1	0	4
4.	UEEEEC01	Basic Science Course	Basic Electrical Engineering	3	3	0	0	3
5.	UEMDC01	Mandatory Course-1	Universal Human Values I- Induction program	3 weeks	-	-	-	-
PRACTICALS								
6.	UELECPA	Humanities and Social Science including Management Courses	Communication Skills Laboratory-I	2	0	0	2	1
7.	UEEECPA	Engineering Science Lab	Basic Electrical Engineering Lab	2	0	0	2	1
8.	UEMCCPA	Engineering Science Lab	Engineering Graphics	4	0	2	2	3
9.	UEWSCPA	Engineering Science Course	Workshop Practices	4	0	0	4	2
TOTAL				25	11	4	11	19



S. No	Course Code	Category	Course Title	Contact Hours	L	T	P	C
THEORY								
1	UECHC01	Basic Science Course	Engineering Chemistry	3	4	0	0	3
2	UEPHC02	Basic Science Course	Engineering Physics-II	2	2	0	0	2
3	UEMTC02	Basic Science Course	Engineering Mathematics II	4	3	1	0	4
4	URITC01	Engineering Science Course	Python for Problem Solving	3	2	1	0	3
5	UEMDC02	Mandatory Course 2	Environmental Science	2	2	0	0	0
6	UEMDC03	Mandatory Course 3	Gender Sensitivity	2	2	0	0	0
PRACTICAL								
7	UELECPB	Humanities and Social Science including Management Courses	Communication Skills Laboratory-II	2	0	0	2	1
8	UEPHCPA	Basic Science Course	Engineering Physics Lab	2	0	0	2	1
9	UECHCPA	Basic Science Course	Engineering Chemistry Lab	2	0	0	2	1
10	UEITCPA	Engineering Science Course	Python Programming Lab	2	0	0	2	1
TOTAL				24	17	1	8	16

CBCS CURRICULUM (2020-21)



AMET
 ACADEMY OF MARITIME EDUCATION AND TRAINING
 DEEMED TO BE UNIVERSITY
 (Under Section 3 of UGC Act 1956)

CBCS CURRICULUM (2020-21)

SEMESTER III

S. No	COURSE CODE	Category	Course Title	Cont act Hour s	L	T	P	C
THEORY								
1	UEMTC03	Basic Science Course	Engineering Mathematics III- Probability and Statistics	4	3	1	0	3
2	UEMCC01	Engineering Science Course	Engineering Mechanics	3	2	0	0	2
3	UEMN301	Professional Core Course1	Mining Geology	3	3	0	0	3
4	UEMN302	Professional Core Course2	Mine Surveying	3	3	0	0	3
5	UEMN303	Professional Core Course 3	Introduction to Mining Engineering	4	3	0	0	3
6	UEMN304	Professional Core Course 4	Fluid Mechanics	2	3	0	0	2
7		Engineering Science Course	Basic Electronics Engineering	3	3	0	0	3
8	UEMDC04	Mandatory Course 4	Constitution of India	2	-	-	-	-
9	UEVCC01	Employment Opportunity Course	Value Added Training Program-1	-	-	-	-	-
10	UEVCC02	Industrial Visit	Industrial Visit - I	-	-	-	-	-
PRACTICAL								
11	UEMN3PA	Professional Lab Course 1	Mining Geology Laboratory	2	0	0	2	1
12	UEMN3PB	Professional Lab Course 2	Mine Surveying lab-I	2	0	0	2	1
13	UEMN3PC	Professional Lab Course 3	Fluid Mechanics Lab	2	0	0	2	1
14	UEEE3PC	Engineering Science Course	Electronics Engineering Lab	2	0	0	2	1
15	UELECD	Humanities and Social Science including Management Courses	Interpersonal Communication Lab- III	2	0	0	2	1
TOTAL				32	21	1	10	24

**CBCS CURRICULUM (2020-21)
SEMESTER IV**

S. No	COURSE CODE	Category	Course Title	Contact Hours	L	T	P	C
THEORY								
1	UEMN401	Professional Core Course 5	Rock Mechanics-I	4	4	0	0	3
2	UEMN402	Engineering Science Courses	Material Science	3	3	0	0	3
3	UEMDC05	Humanities and social science including Mangement	Universal Human Values2- Understanding Harmony	3	3	0	0	3
3	UEMN403	Professional Core Course 6	Drilling & Blasting	4	4	0	0	3
4	UEMNO 01/02/03	Open Elective Course 1	OEC 1	3	3	0	0	3
5	UEMNE 01/02/03	Professional Elective Course 1	PEC 1	3	3	0	0	3
6	UEMTC04	Engineering Science Courses	Mathematical Foundation for Data Science and Artificial Intelligence	2	2	0	0	2
7	UEMDC05	Mandatory Course 5	Essence of Indian Knowledge Tradition	2	2	0	0	0
8	UEMN404	Professional Core Course 7	Remote sensing and geospatial Technology	2	0	0	0	2
9	UEVCC03	Industrial Visit	Industrial Visit - II	0	0	0	0	0
PRACTICAL								
10	UEMN4PA	Professional Lab Course 4	Rock Mechanics Lab-I	2	0	0	2	1
11	UEMN4PB	Professional Lab Course 5	Remote sensing and Geospatial Lab	2	0	0	2	1
12	UELECPD	Humanities and Social Science including Management Courses	Professional Communication	2	0	0	2	1
TOTAL				27	17	0	6	23



SEMESTER V

S. No	COURSE CODE	Category	Course Title	Contact Hours	L	T	`	C
THEORY								
1	UEMN501	Professional Core Course 8	Rock Mechanics and Ground control Systems	3	3	0	0	3
2	UEMN502	Professional Core Course 9	Underground Metal Mining	4	4	0	0	4
3	UEMN503	Professional Core Course 10	Underground Coal Mining	4	4	0	0	4
4	UEMNE 04/05/06	Professional Elective Course2	PEC2	3	3	0	0	3
5	UEMN504	Professional Core Course 11	Surface Mining	4	4	0	0	4
6	UEITC02	Engineering Science Courses	Data Science	3	0	0	0	3
7	UEMNO 04/05/06	Open Elective Course2	OEC2	3	3	0	0	3
8	UEVCC04	Employment Opportunity Course	Gate Coaching	2	2	-	-	0
9	UEVCC05	Industrial Visit	Industrial Visit-III	-	-	-	-	-
PRACTICAL								
10	UEMN5PA	Professional Lab Course 6	Rock Mechanics-II Lab	2	0	0	2	1
11	UEMN5PB	Internship	Intenship-1	0	0	0	0	1
12	UEMN5PC	Professional lab course 7	Mine survey lab-2	2	0	0	2	1
TOTAL				27	25	0	2	23



**CBCS CURRICULUM (2020-21)
 SEMESTER VI**

No	Subject Code	Category	Course Title	Contact Hours	L	T	P	C
THEORY								
1.	UEMN601	Professional Core Course 12	Mining Machinery –I	4	4	0	0	3
2.	UEMN602	Professional Core Course 13	Mine Ventilation Engineering	4	4	0	0	3
3	UEMN603	Professional Core Course 14	Surface Mine Planning and Design	4	3	0	0	3
4	UEMNE 07/08/09	Professional Elective Course 3	PEC 3	3	3	0	0	3
5	UEITC03	Engineering Science Courses	Artificial Intelligence	3	3	0	0	2
6	UEMN604	Professional core course 15	Mineral Processing	3	3	0	0	2
7	UEMNO 07/08/09	Open Elective Course 3	OEC 3	3	3	0	0	3
8	UEVCC06	Employment Opportunity Course	Gate Coaching	2	2	-	-	0
9	UEVCC07	Industrial Visit	Industrial Visit-IV	-	-	-	-	-
PRACTICAL								
10	UEMN6PA	Professional Lab Course 8	Mining Machinery Lab	2	0	0	2	1
11	UEMN6PB	Professional Lab Course 9	Mine Ventilation Lab	2	0	0	2	1
12	UEMN6PC	Professional Lab Course 10	Mine Planning & Design Lab	2	0	0	2	1
13	UEMN6PD	Professional Lab Course 11	Mineral processing lab	2	0	0	2	1
14	UEMN6PE	Project	Mini Project	2	0	0	2	1
TOTAL				30	20	0	10	24



**CBCS CURRICULUM (2020-21)
SEMESTER VII**

S. No	Course Code	Category	Course Title	Contact Hours	L	T	P	C
THEORY								
1	UEMN701	Professional Core Course 16	Mining Machinery –II	4	4	0	0	3
2	UEMNE 10/11/12	Professional Elective Course 4	PEC 4	3	3	0	0	3
3	UEMN702	Professional Core Course 17	Mine Legislation Safety, Hazard and Rescue	4	4	0	0	3
5	UEMNO 10/11/12	Open Elective Course 4	OEC-4	3	3	0	0	3
5	UEVCC08	Employment Opportunity Course	Gate Coaching	2	2	-	-	0
6	UEVCC09	Industrial Visit	Industrial Visit – V	-	-	-	-	-
PRACTICAL								
7	UEMN7PA	Professional Lab Course 12	Mining Hazards and Rescue Lab	2	0	0	2	1
8	UEMN7PB	Project	Project Work - Phase 1	6	0	0	6	2
TOTAL				24	16	0	8	15



SEMESTER VIII

S. No	Course Code	Category	Course Title	Contact Hours	L	T	P	C
THEORY								
1	UEMNE 13/14/15	Professional Elective Course 5	PEC 5	3	3	0	0	3
2	UEMNE 16/17/18	Professional Elective Course 5	PEC 6	3	3	0	0	3
PRACTICAL								
2	UEMN 8PA	Project	Project Work - Phase 2 Seminar Comprehensive Viva Voce	16	0	0	16	8
TOTAL				19	6	0	16	11



CBCS CURRICULUM (2020-21)

List of professional elective courses (PEC) offered by the Department

Sl. No.	SUBJECT CODE	Title of the PEC	Contact Hours	L	T	P	C
PEC1-Semester IV							
1	UEMNE01	Advanced Mining Geology	3	3	0	0	3
2.	UEMNE02	Bankable and Engineering Feasibility Report	3	3	0	0	3
3	UEMNE03	Geostatistics / Numerical Modeling					
PEC2- Semester V							
4	UEMNE04	Data Science in mining	3	3	0	0	3
5	UEMNE05	Machine language Applications in Mining	3	3	0	0	3
6	UEMNE06	Geo Statistics and Resource Modeling	3	3	0	0	3
PEC3- Semester VI							
7	UEMNE07	Advanced Surface Mining and technology	3	3	0	0	3
8	UEMNE08	Management Practices in Mining	3	3	0	0	3
9	UEMNE09	Mineral processing and coal cleaning technology	3	3	0	0	3
PEC4- Semester VII							
10	UEMNE10	Numerical modeling in mining	3	3	0	0	3
11	UEMNE11	Advanced Coal Mine Mechanization	3	3	0	0	3
12	UEMNE12	Introduction to Explosive Engineering	3	3	0	0	3
PEC 5 - Semester VIII							
13	UEMNE13	Mine Safety and Engineering management	3	3	0	0	3
14	UEMNE14	Mine System Engineering	3	3	0	0	3
15	UEMNE15	Modern mine design - modeling	3	3	0	0	3
PEC 6 – Semester VIII							
16	UEMNE16	Advanced Rock Blasting Technology	3	3	0	0	3
17	UEMNE17	Underground Mine planning	3	3	0	0	3
18	UEMNE18	Mine Economics.	3	3	0	0	3



CBCS CURRICULUM (2020-21)

List of open elective courses (OEC) offered by Department of Mining Engineering

IV Semester

Sl. No.	SUBJECT CODE	Title of the OEC1	Contact Hours	L	T	P	C
1	UEMNO01	Introduction to Indian Minerals	3	3	0	0	3
2	UEMNO02	Over view of Mining	3	3	0	0	3
3	UEMNO03	Electrical and Mechanical Application in Mining	3	3	0	0	3

V Semester

Sl. No.	SUBJECT CODE	Title of the OEC2	Contact Hours	L	T	P	C
1	UEMNO04	Geology for Engineers	3	3	0	0	3
2	UEMNO05	Engineers Role in Mining	3	3	0	0	3
3	UEMNO06	Disaster Management	3	3	0	0	3

VI Semester

Sl. No.	SUBJECT CODE	Title of the OEC3	Contact Hours	L	T	P	C
1	UEMNO07	GDP Growth and Mining	3	3	0	0	3
2	UEMNO08	Remote Sensing for Natural Resources	3	3	0	0	3
3	UEMNO09	Impact of Mining to the Society	3	3	0	0	3

VII Semester

Sl. No.	SUBJECT CODE	Title of the OEC3	Contact Hours	L	T	P	C
1	UEMNO10	Modern Surveys for Natural resources Application	3	3	0	0	3
2	UEMNO11	Risk Management For engineers	3	3	0	0	3
3	UEMNO12	Human Sustainability through Mining	3	3	0	0	3



CBCS CURRICULUM (2020-21)

Humanities	Basic Science	Engineering Science	Professional Core	Professional Elective	Open Elective	Project /Internship	Total
6	26	20	69	15	12	15	163

Semester	Contact Hours	Lecture	Tutorial	Practical	Credits
Semester 1	25	11	2	12	20
Semester 2	25	16	1	8	17
Semester 3	36	21	1	12	25
Semester 4	32	24	0	6	22
Semester 5	27	24	0	4	25
Semester 6	36	25	0	10	22
Semester 7	28	20	0	8	18
Semester 8	22	6	0	16	14
Total	231	147	4	76	163



**CBCS CURRICULUM (2020-21)
 COMMON FRAME WORK FOR CURRICULUM DEVELOPMENT**

AMET CURRICULUM –CREDIT SHARE

sem	HS	BS	ES	PC	PEC	OEC	INTERN	PROJ	TOTAL
I	3	11	6	0	0	0	0	0	20
II	1	12	4	0	0	0	0	0	17
III	1	3	7	15	0	0	0	0	26
IV	1	0	3	10	3	3	0	0	20
V	0	0	0	16	3	3	1	0	23
VI	0	0	0	15	3	3	0	2	23
VII	0	0	0	13	3	3	1	3	23
VIII	0	0	0	0	3	0	0	8	11
Total	6	26	20	69	15	12	2	13	163

S.No.	Category	Suggested Breakup of Credits (Total 160)
1	Humanities and Social Sciences including management courses	6
2	Basic Science courses	26
3	Engineering Science courses including workshop, drawing, basics of electrical/mechanical/computer etc.	20
4	Professional Core courses	69
5	Professional elective courses relevant to chosen specialization/branch	15
6	Open subject-Electives from other technical and/or emerging subject	12
7	Project work, seminar, and internship in industry or elsewhere	15
8	Mandatory courses (environmental science, Induction Training, Indian Constitution, Essence of Indian traditional knowledge)	No-Credit
	Total	163