

## Curriculum “Mineral Resources Engineering”, 2020-2021

**1<sup>st</sup> Semester**

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
	<b>Core</b>				
MATH 101	DIFFERENTIAL & INTEGRAL CALCULUS I	4	0	4	5
MATH 105	INTRODUCTION TO COMPUTER PROGRAMMING	3	2	5	6
MRED 101	GEOLOGY	2	2	4	5
PHYS 101	PHYSICS I	3	2	5	6
CHEM 101	GENERAL CHEMISTRY	2	2	4	5
MRED 102	MINERALOGY (PRINCIPLES & METHODS)	2	1	3	5
	<b>Foreign Language (choose one)</b>				
LANG 101	ENGLISH I	2	2	4	2
LANG 103	GERMAN I	2	2	4	2
	<b>TOTAL</b>	18	11	29	<b>34</b>

**2<sup>nd</sup> Semester**

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
	<b>Core</b>				
MATH 102	DIFFERENTIAL & INTEGRAL CALCULUS II	4	0	4	5
PHYS 102	PHYSICS II	3	2	5	6

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
CHEM 102	ANALYTICAL CHEMISTRY	2	2	5	6
MECH 102	ENGINEERING MECHANICS - STATICS	3	1	4	5
MRED 201	SYSTEMATIC MINERALOGY	2	1	3	4
	<b>Foreign Language (choose 1)</b>				
LANG 102	ENGLISH II (1 <sup>st</sup> sufficiency test)	2	2	4	2
LANG 104	GERMAN II (1 <sup>st</sup> sufficiency test)	2	2	4	2
	<b>Electives (choose 1)</b>				
MATH 106	Επιστηµηνικός Πρθηγραµµατισµός	2	2	4	5
KEP 102	POLITICAL ECONOMY	3	0	3	4
KEP 302	INDUSTRIAL SOCIOLOGY	3	0	3	4
KEP 104	INTRODUCTION TO PHILOSOPHY	3	0	3	4
KEP 202	HISTORY OF CIVILIZATION	3	0	3	4
	<b>TOTAL</b>	19-20	13	30	<b>35-36</b>

### 3<sup>rd</sup> Semester

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
	<b>Core</b>				
MATH 203	ORDINARY DIFFERENTIAL EQUATIONS	3	-	3	5

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
MECH 201	STRENGTH OF MATERIALS	3	1	4	5
CHEM 201	PHYSICAL CHEMISTRY	3	1	4	6
MATH 201	NUMERICAL LINEAR ALGEBRA	4	1	5	5
MRED 202	PETROLOGY	2	2	4	5
	<b>Electives (choose 1)</b>				
KEP 201	MICRO/MACRO ECONOMICS	3	0	3	4
KEP 204	INTRODUCTION TO TECHNICAL LEGISLATION	3	0	3	4
MPD 102	OPERATIONS RESEARCH	3	1	4	5
	<b>Foreign Language (choose 1)</b>				
LANG 201	ENGLISH III	2	2	4	2
LANG 203	GERMAN III	2	2	4	2
	<b>TOTAL</b>	20	8	28-29	<b>32-33</b>

#### 4<sup>th</sup> Semester

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
	<b>Core</b>				
MATH 202	NUMERICAL METHODS	4	1	5	6
MECH 306	TECHNICAL THERMODYNAMICS	3	0	3	4

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
MPD 121	ELECTRIC CIRCUITS	3	1	4	5
MRED 204	APPLIED GEOPHYSICS	2	2	4	5
MRED 310	PROBABILITY \& STATISTICS FOR ENGINEERS	2	2	4	5
MRED 702	FIELD TRIP I	0	2	2	3
	<b>Foreign Language (choose one)</b>				
LANG 202	ENGLISH IV (2nd sufficiency test)	2	2	4	2
LANG 204	GERMAN IV IV (2nd sufficiency test)	2	2	4	2
	<b>TOTAL</b>	16	8	24	<b>27</b>

### 5<sup>th</sup> Semester

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
	<b>Core</b>				
MRED 301	MINERAL EXPLORATION	2	1	3	5
MECH 303	MACHINE ELEMENT DESIGN	2	0	2	5
MRED 312	HYDROGEOLOGY \& WATER MANAGEMENT PROJECTS	2	2	4	5
MRED 410	INDUSTRIAL ECOLOGY	2	2	4	5
MRED 203	SEISMIC METHODS	2	1	3	5
MRED 704	FIELD TRIP II	0	3	3	2

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
MRED 530	GEOGRAPHIC INFORMATION SYSTEMS	2	3	5	5
	<b>TOTAL</b>	10	9	21	<b>27</b>

## 6<sup>th</sup> Semester

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
	<b>Core</b>				
MRED 304	GEOCHEMISTRY	2	2	5	6
MRED 303	ENGINEERING GEOLOGY, SOIL MECHANICS	2	2	4	5
MRED 306	ORE DEPOSITS GEOLOGY	2	2	4	5
MRED 302	ORE PROCESSING	3	2	6	6
MRED 308	APPLIED FLUID MECHANICS	2	2	4	5
MRED 706	FIELD TRIP III	0	2	2	3
	<b>Electives (choose 1)</b>				
MRED 316	COMPUTER AIDED DRAFTING	0	2	2	3
MPD 222	SYSTEMS MANAGEMENT FOR ENGINEERS	3	0	3	4
MPD 422	INVESTMENT DECISION ANALYSIS	2	2	4	4
MRED 314	PHYSICAL PROCESS ENGINEERING	2	1	3	4
	<b>TOTAL</b>	13-14	13-14	27-29	<b>33-34</b>

**NOTICE:**

The curricula of semesters ## 7 – 9 are divided into 3 specialisation branches in the following subject areas:

- A. Mineral exploitation and geotechnical works
- B. Processing of industrial minerals and ores
- C. Utilisation of energy resources

**7<sup>th</sup> Semester: Curriculum A****Mineral exploitation and Geotechnical Works**

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
	<b>Core</b>				
MRED 403	DRILLING, BLASTING & BORING OF UNDERGROUND OPENINGS	3	1	4	6
MRED 407	RESERVOIR ENGINEERING I	3	2	5	6
MRED 405	ENGINEERING GEODESY	2	3	5	6
MRED 413	COMPUTER AIDED MINE PLANNING	2	1	3	5
MRED 511	APPLIED GEOSTATISTICS	2	1	3	5
	<b>TOTAL</b>	12	8	20	<b>28</b>

**7<sup>th</sup> Semester: Curriculum B****Processing of Industrial Minerals and Ores**

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
	<b>Core</b>				
MRED 403	DRILLING, BLASTING & BORING OF UNDERGROUND OPENINGS	3	1	4	6

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
MRED 407	RESERVOIR ENGINEERING I	3	2	5	6
MRED 405	ENGINEERING GEODESY	2	3	5	6
MRED 411	MATERIAL SCIENCE	3	0	3	5
MRED 417	INDUSTRIAL MINERALS & ROCKS	3	2	5	6
	<b>TOTAL</b>	14	8	22	<b>29</b>

**7<sup>th</sup> Semester: Curriculum C**  
**Utilisation of Energy Resources**

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
	<b>Core</b>				
MRED 403	DRILLING, BLASTING & BORING OF UNDERGROUND OPENINGS	3	1	4	6
MRED 407	RESERVOIR ENGINEERING I	3	2	5	6
MRED 405	ENGINEERING GEODESY	2	3	5	6
MRED 415	FOSSIL FUELS	2	1	3	5
MRED 511	APPLIED GEOSTATISTICS	2	1	3	5
	<b>TOTAL</b>	12	8	20	<b>28</b>

**8<sup>th</sup> Semester: Curriculum A****Mineral Exploitation and Geotechnical Works**

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
	<b>Core</b>				
MRED 402	ROCK MECHANICS	3	1	4	6
MRED 708	FIELD TRIP IV	0	2	2	3
MRED 404	HEALTH AND SAFETY IN MINING & UNDERGROUND CONSTRUCTIONS	2	1	3	5
MRED 406	SURFACE MINING	2	1	3	5
MRED 424	QUALITY CONTROL AND EQUIPMENT RELIABILITY	2	1	3	5
	<b>Electives (choose 1)</b>				
MRED 416	REMOTE SENSING	2	2	4	5
MRED 418	GEOTECHNICAL ENGINEERING & TUNNELING	2	2	4	5
MRED 422	MICROSCOPY OF MINERALS & INDUSTRIAL MATERIALS	2	1	3	5
MRED 318	GEOLOGY & ORE GEOLOGY OF GREECE	3	0	3	5
MPD 433	SMALL-MEDIUM ENTERPRISES & INNOVATION	2	2	4	5
	<b>TOTAL</b>	11-13	7-8	18-19	<b>29</b>



**8<sup>th</sup> Semester: Curriculum B**  
**Processing of Industrial Minerals and Ores**

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
	<b>Core</b>				
MRED 402	ROCK MECHANICS	3	1	4	6
MRED 708	FIELD TRIP IV	0	2	2	3
MRED 404	HEALTH AND SAFETY IN MINING & UNDERGROUND CONSTRUCTIONS	2	1	3	5
MRED 406	SURFACE MINING	2	1	3	5
MRED 318	GEOLOGY & ORE GEOLOGY OF GREECE	3	0	3	5
	<b>Electives (choose 1)</b>				
MRED 428	NON-METALLIC MATERIALS TECHNOLOGY	2	1	3	5
MRED 416	TREMOTE SENSING	2	2	4	5
MRED 422	MICROSCOPY OF MINERALS & INDUSTRIAL MATERIALS	2	1	3	5
MRED 424	QUALITY CONTROL AND EQUIPMENT RELIABILITY	2	1	3	5
MPD 433	SMALL-MEDIUM ENTERPRISES & INNOVATION	2	2	4	5
	<b>TOTAL</b>	12	6-7	18-19	<b>29</b>

**8<sup>th</sup> Semester: Curriculum C**  
**Utilisation of Energy Resources**

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
	<b>Core</b>				
MRED 402	ROCK MECHANICS	3	1	4	6
MRED 708	FIELD TRIP IV	0	2	2	3
MRED 404	HEALTH AND SAFETY IN MINING & UNDERGROUND CONSTRUCTIONS	2	1	3	5
MRED 412	COAL BENEFICIATION	2	2	4	5
MRED 414	RESERVOIR ENGINEERING II	2	1	3	5
	<b>Electives (choose 1)</b>				
MRED 416	REMOTE SENSING	2	2	4	5
MRED 426	ORGANIC GEOCHEMISTRY	2	1	3	5
MPD 433	SMALL-MEDIUM ENTERPRISES & INNOVATION	2	2	4	5
	<b>TOTAL</b>	11	8-9	19-20	<b>29</b>

**9<sup>th</sup> Semester: Curriculum A**  
**Mineral Exploitation and Geotechnical Works**

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
	<b>Core</b>				
MRED 709	SUMMER PRACTICAL TRAINING/ INTERSHIP	0	4	4	6

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
MRED 505	UNDERGROUND MINING METHODS	2	2	4	6
MRED 401	METALLURGICAL PROCESSES FOR METAL & CERAMICS PRODUCTION	2	2	4	6
	<b>Electives (choose 2)</b>				
MRED 521	FRACTURE MECHANICS	3	0	3	6
MRED 513	AGGREGATE & BUILDING MATERIALS	2	1	3	6
MECH 321	REINFORCED CONCRETE STRUCTURE ANALYSIS	4	-	4	6
MRED 501	ENVIRONMENTAL REMOTE SENSING	2	2	4	6
	<b>TOTAL</b>	8-10	11-12	18-21	<b>30</b>

### 9<sup>th</sup> Semester: Curriculum B

#### Processing of Industrial Minerals and Ores

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
	<b>Core</b>				
MRED 709	SUMMER PRACTICAL TRAINING/ INTERSHIP	0	4	4	6
MRED 505	UNDERGROUND MINING METHODS	3	1	4	6
MRED 401	METALLURGICAL PROCESSES FOR METAL & CERAMICS PRODUCTION	2	2	4	6
	<b>Electives (choose 2)</b>				
MRED 513	AGGREGATE & BUILDING MATERIALS	2	1	3	6

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
MRED 501	ENVIRONMENTAL REMOTE SENSING	2	2	4	6
MRED 527	ENVIRONMENTAL GEOCHEMISTRY	2	1	3	6
MRED 507	WELL LOGGING	2	1	3	6
	<b>TOTAL</b>	9	9-11	18-20	<b>30</b>

### 9<sup>th</sup> Semester: Curriculum C Utilisation of Energy Resources

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
	<b>Core</b>				
MRED 709	SUMMER PRACTICAL TRAINING/ INTERSHIP	0	4	4	6
MRED 401	METALLURGICAL PROCESSES FOR METAL & CERAMICS PRODUCTION	2	2	4	6
MRED 503	GEOHERMY	2	1	3	6
MRED 517	SOLID FUELS EXPLOITATION TECHNOLOGIES	2	1	3	6
	<b>Electives (choose 1)</b>				
MRED 507	WELL LOGGING	2	1	3	6
MRED 501	ENVIRONMENTAL REMOTE SENSING	2	2	4	6
MRED 527	ENVIRONMENTAL GEOCHEMISTRY	2	1	3	6
MRED 505	UNDERGROUND MINING METHODS	3	1	4	6

Code	Course Name	Lecture hours	Labor./ Tutoring exercises	Week total hours	ECTS
MRED 509	DRILLING ENGINEERING	3	0	3	5
	<b>TOTAL</b>	9-10	8-9	17-18	<b>29-30</b>

### 10<sup>th</sup> Semester

	FINAL PROJECT AND THESIS	30
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