



مركز الاعتماد
وإضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER



The University of Jordan

Accreditation & Quality Assurance Center

Course Syllabus

Course Name:

Industrial Geomaterials

موارد الارض الصناعية

1	Course title	Industrial Geomaterial مواد الارض الصناعية	
2	Course number	0305431	
3	Credit hours (theory, practical)	3 hours (3,0)	
	Contact hours (theory, practical)	3 hours (3,0)	
4	Prerequisites/corequisites	0305231	
5	Programtitle	Applied and Environmental Geology	
6	Programcode		
7	Awarding institution	الجامعة الاردنية The University of Jordan	
8	Faculty	Science	
9	Department	Geology	
10	Level of course	Fourth year	
11	Year of study andsemester (s)	2017/2018 first or second (mostly second)	
12	Final Qualification	BSc.	
13	Other department(s) involved in teaching the course	None	
14	Language of Instruction	English	
15	Date of production/revision	2017/2018	

16. Course Coordinator:Dr. Khitam Ahmad Alzughoul

Officenumbers,officehours, phonenumber, andemailaddresses shouldbelisted.

Office No.: G207

Office Hours: S, M, T, Th (11:00-12:00)

Phone No. : 22260

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17.Other instructors:

Officenumbers,officehours, phonenumber, andemailaddresses shouldbelisted.

18. Course Description:

As statedin the approvedstudy plan.

Classification of industrial Earth's materials (rocks and minerals); origin of industrial rocks and minerals; cycles of principal elements of industrial materials in nature; deposits of industrial minerals; deposits of industrial rocks; deposits of building raw materials; prospecting for industrial Earth's materials; gemstones: classification, properties, origin and uses.

1. 19. Course aims and outcomes:

A- Aims:

During this course, students will learn:

1. To understand the geology, chemical and mineral composition and physical characteristics of Industrial Earth materials such as clay minerals, aggregates, phosphates, evaporites, etc.....
2. To understand the specific parameters and measurements and tests to evaluate the quality of geological raw materials and their suitable uses.
3. train students in the fields of industrial materials and on related aspects at undergraduate level.
4. To provide an opportunity to (i) improve the skills in mineral exploration with emphasis on industrial minerals and rocks, their beneficiation and management of industrial minerals and rock industry and (ii) exploit and process industrial minerals to use as industrial raw materials.
5. To provide necessary background knowledge for research in industrial minerals and rocks.
6. Contribute scientifically and ethically to the development of the society.

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to...

1. Acquire the scientific knowledge to distinguish industrial rocks and minerals among other geological commodities;
2. Understand the specifications of industries as regards physical and chemical properties of industrial materials
3. Classify and explain the uses of different industrial minerals and rocks.
4. Carry out efficient exploration survey for industrial materials and being able to work with people of different disciplines.
5. Contribute to Environmental Impact Assessment projects for Natural Industrial Resources, (mining and industrial factories).
6. Demonstrate good inter-personal (Team work) and communication skills through writing, oral presentations and critical groups' discussions.
7. Show how every-day-decisions made by individuals affect the land we live on, the water we drink, and air we breathe. to obtain the ethical responsibility towards the development of the society

20. Topic Outline and Schedule:

Reference	Assessment	Outcomes	Instructor	Week	Topic
Introduction Ch. 1	- Assignment -Quiz -First Exam	1-7	Dr. Khitam Alzughoul	1-2	1- INTRODUCTION • Definitions. • Minerals: The foundations of society
Chapter 2	- Assignment	1-7	Dr. Khitam Alzughoul	2-3	2- Resources- Reserves • Aggregates

	-Quiz - First Exam				
Ch3 Handout	- Assignment -Quiz - First Exam	1-7	Dr. Khitam Alzughoul	4 -5	<ul style="list-style-type: none"> • Industrial Clay Minerals • Kaolinite • Bentonite • Palygorskite & Sepiolite
Chapter 4,	- Assignment -Quiz - First Exam	1-7	Dr. Khitam Alzughoul	6-7	<p>4- Minerals for chemical Industry & Agriculture</p> <ul style="list-style-type: none"> • Fertilizer : phosphate, sodium carbonate, • halite, potash salts, borates, • Sulphur and zeolites
Ch 5	- Assignment Quiz hand samples, Groups -Second Exam	1-7	Dr. Khitam Alzughoul	8	<p>5- Fired products: the need for high temperature processing</p> <ul style="list-style-type: none"> • Practical Application of Phase Diagrams
Ch 6	- Assignment -Quiz - second Exam	1-7	Dr. Khitam Alzughoul	9	<p>6. Glass Industry</p> <ul style="list-style-type: none"> • The chemistry of the glass manufacture
Ch 7	- Assignment -Quiz - Second Exam	1-7	Dr. Khitam Alzughoul	10-11	<p>7- Cement Industry</p> <ul style="list-style-type: none"> • Plaster, Clinker • Manufacture of Portland cement • The Lime Saturation Index, Factor LSF
Hand outs	- Assignment -Quiz - Second Exam	1-7	Dr. Alzughoul	12	8. Oil Shale
Hand Outs		1-7	Dr. Alzughoul	12	9. Assessment of mineral deposits
Articles,websites& books	-Seminars -Project Discussion & Presentations	1-7	Students & Alzughoul	13- end	10- Projects & Presentations
			Dr. Alzughoul	TBD	11- final examination

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

1. Power point presentations; Presentations of pictures, images, Cartoons and videos
2. Show and tell of samples representing different types of Industrial materials of building materials, raw materials of phosphates, evaporites, aggregate, clays, gravel, sand, from different locations among the world
3. show and tell of product samples and characterizations, testing equipment and models
4. Class Discussion, group discussions
5. E learning
6. Website visit Watching videos related to topic
7. Field trips
8. Seminars, Term Projects, Team work assignments

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

1. delivering Assignments
2. Quizzes
3. Reports
4. Exams
5. Seminars
6. Posters
7. solving problems through discussion

23. Course Policies:

A- Attendance policies: Daily checking

All students are expected to attend all classes and should arrive on time. **Attendance** is essential to learning, be there. Students should maintain discipline and respect one another in both words and action. They are expected to come prepared and participate actively in class discussion. **Be on time.** Active participation is essential to learning.

According to University regulations, the maximum absence allowed is 15% of classes. Makeup exams be given for accepted excuses.

B- Absences from exams and handing in assignment on time:

-Following the University rules in this regards: if the student provide a legitimate excuse, then another compensation exam will be given.

A quiz will be given during most lectures (unless an exam is scheduled). Each quiz will be 2-4 questions and based on the previous week's lecture. Quizzes cannot be made up. The lowest quiz grade will be dropped.

Late Assignments

It is essential that papers and other assignments be completed and submitted on time. Once the due past, without notice and justification, the submission is not accepted.

C- Health and safety procedures:

Following The University regulations

D- Honesty policy regarding cheating, plagiarism, misbehavior:

* If the cheating have been proven or if student cause any disturbance during the exam; then the legislations and violation approved by the University of Jordan will be followed.

(If cheating is proven, then student/s, will be showed up upon investigation committee and university's regulation rules. In this regards will be followed.)

* اذا ثبت غش الطالب في الامتحان او ساهم في تعكير النظام الصفي فيتم تطبيق العقوبات المعمول بها في كلية العلوم و الجامعة الاردنية و حسب الأصول

E- Grading policy:

* First Exam (20%) Midterm Exam 25%, Assignments + Quizzes (5%) midterm project (10%) and Final Exam (40%)

___ Grades will be calculated based on points accumulated during the semester. At the end of the semester there will be a comprehensive final exam. This exam will constitute 40% of your final semester grade.

Attendance, Quizzes, Participations & Assignments 10%

F- Available university services that support achievement in the course:

* The Library, Computer Center, and Hard rocks and Minerals Labs.

24. Required equipment:

1. The Library
2. Computer and Data Show
3. Internet and electronic services
4. Transmitted Polarizing Microscope (regular and Reflected), Specified samples (metallic and nonmetallic), Lenses, magnets, scales, Maps, Movies of mining and exploration methods and Environmental Impacts.

25. References:

A- Required book (s), assigned reading and audio-visuals:

- Manning, D. C: 2005, Introduction to Industrial minerals, Chapman & Hall, London , United Kingdom

- **Kogel J., Trivedi, Barker, Krukowski, S. - 2006: Industrial Minerals & Rocks, Commodities, Markets, and Uses, 7th Edition, Published by Society for Mining, Metallurgy, and Exploration, USA.**

B. Recommended books, materials, and media:

Other recommended books

خوري 2008: المعادن و الصخور الصناعية في الاردن، عمادة البحث العلمي- الجامعة الاردنية

<http://minerals.usgs.gov/minerals/pubs/commodity/myb/>

<http://minerals.usgs.gov/minerals/pubs/commodity/myb/>

Aggregates : <http://geopubs.wr.usgs.gov/open-file/of00-011/>

<http://www.minerals.com/>

26. Additional information:-

Name of Course Coordinator: Dr. Khitam Ahmad Alzughoul---Signature: ----- Date: -----

Head of curriculum committee/Department: ----- Signature: -----

Head of Department: --Dr. Ghaleb Jarrar -Signature: -----

Head of curriculum committee/Faculty: ----- Signature: -----

Dean: ----- -Signature: -----

Copy to:

Head of Department
Assistant Dean for Quality Assurance
Course File