



## Course Specification

### 434 G: Economic Geology

#### A- Affiliation

Relevant program:	Geology B.Sc. Program
Department offering the program:	Department of Geology
Department offering the course:	Department of Geology
Academic year/level:	Fourth level

#### B - Basic information

Title: Economic Geology	Code: 434 G	Year/level: fourth level
Teaching Hours:	Lectures: 2	Tutorial: 0
	Practical: 2	Total: 3 h/week

#### C - Professional information

##### 1 – Course Learning Objectives:

- To introduce students to classification of resources in terms of their being biological or physical; and renewable or non-renewable,
- Student to investigate formation, discovery, extraction and use of physical resources with respect to ores, fossil fuels and evaporates,
- To familiarize students with the fundamentals of mineral prospecting, exploration, mine development and mineral treatment.

##### 2 - Intended Learning Outcomes (ILOS)

###### a - Knowledge and understanding:

On successful completion of the course, the student should:

- a.1. identify ore deposits in a wide variety of geological environments, and emphasis is placed on their relationship with petrological and geochemical processes and geological settings,
- a.2. assess the theory of light reflection and optical properties of ore minerals under the microscope,
- a.3. characterize each type of the ore deposits, occurrence, setting and mineralogy,
- a.4. demonstrate both in theory (mathematical and physical background) and in practice (applications and training) how earth resources contribute to the industry and development,
- a.5. recognize the methods and techniques used for mineral prospecting and extraction.

**b - Intellectual skills:**

On successful completion of the course, the student should be able to.

- b1. identify the different ore minerals in hand specimen and under the microscope,
- b2. assess mineral paragenesis and textures and reconstruct the ore genesis,
- b3. analyze the setting and genesis of ore textures and their evolution,
- b4. investigate the distribution of ores and industrial materials in the various rock assemblages,
- b5- recognize the economics of ore minerals, with emphasize on the Egyptian ores.

**c - Practical and professional skills:**

On successful completion of the course, the student should be professionally able to:

- c1. study the ore minerals and the associated criteria in the field and in hand specimen,
- c2. characterize each of the mineral deposits and their geologic settings,
- c3. use the reflected light microscope to identify the ore minerals and textures for genetic aspects,
- c4. draw interpretations of the various geologic, mineralogical and economic issues for sake of evaluating ore deposits.

**d - General skills:**

On successful completion of the course, the student should be able to:

- d1. review available literature from text books, published maps, publications and other resources,
- d2. interpret the various types of data and observations into information using software and formulate the results in a readable final form,
- d3. apply knowledge and training in problem solving and new findings.
- d3. cooperate and work in team smoothly and manage the time while going to the targeted goals.

### 3 – Contents

Topic	Lecture hours	Tutorial hours	Practical hours
1. Introduction to earth resources	2	0	2
2. Mineral deposits and their geologic settings	2	0	2
3. Types of mineral deposits and their economics	2	0	2
4. Distribution of ore deposits the world over	2	0	2
5. Ore deposit formation and geological environments	2	0	2
6. Egyptian ore deposits, distribution and genetic issues	2	0	2
7. Ore dressing and upgrading	2	0	2
8. Ore marketing	2	0	2
9. Study of the ore deposits – geologic view	2	0	2
10. Tools applied to exploration of ore minerals	2	0	2
11. Contributors to mineral exploration	2	0	2
12. Mines and quarries in Egypt and national income	2	0	2
<b>Total hours</b>	<b>24</b>	<b>0</b>	<b>24</b>

#### 4 - Teaching and Learning methods:

Intended Learning Outcomes			Lecture	Presentations & Movies	Discussions & Seminars	Practical	Problem solving	Brain storming
Knowledge & Understanding	a1	identify ore deposits in a wide variety of geological environments, and emphasis is placed on their relationship with petrological and geochemical processes and geological settings,	x	0	x	0	0	x
	a2	assess the theory of light reflection and optical properties of ore minerals under the microscope,	x	x	0	0	0	0
	a3	characterize each type of the ore deposits, occurrence, setting and mineralogy,	x	0	0	0	0	x
	a4	demonstrate both in theory (mathematical and physical background) and in practice (applications and training) how earth resources contribute to the industry and deveopment,	x	x	0	0	X	x
	a5	recognize the methods and techniques used for mineral prospection and extraction.	x	0	0	0	0	X
Intellectual Skills	b1	identify the different ore minerals in hand specimen and under the microscope,	x	0	0	0	X	0
	b2	assess mineral paragensis and textures and reconstruct the ore genesis,	x	0	0	0	x	x
	b3	analyze the setting and genesis of ore textures and their evolution,	x	0	0	0	X	0
	b4	investigate the distribution of ores and industrial materials in the various rock assemblages,	x	0	0	0	0	x
	b5	recognize the economics of ore minerals, with emphasize on the Egyptian ores.	x	0	0	0	0	x
Practical and professional skills	c1	study the ore minerals and the associated criteria in the field and in hand speciemen,	x	0	0	0	X	x
	c2	characertize each of the mineral deposits and their geologic settings,	x	0	0	0	X	x
	c3	use the reflected light microscope to identify the ore minerals and textures for genetic aspects,	x	0	0	0	x	x
	c4	draw interpretations of the various geologic, mineralogical and economic issues for sake of evaluating ore deposits.	x	0	0	0	X	0

General Skills	d1	review available literature from text books, published maps, publications and other resources,	x	x	0	0	0	x
	d2	interpret the various types of data and observations into information using software for a readable final form,	x	x	0	0	x	x
	d3	apply knowledge and training in problem solving and new findings,	x	x	0	0	0	x
	d4	cooperate and work in team smoothly and manage the time while going to the targeted goals.	x	x	0	0	x	x

## 5- Students' Assessment Methods and Grading:

- 5.1. Discussion, class activities and quizzes to assess the student progress and personal attitude,
- 5.2. Assignments to assess the student independent work,
- 5.3. Written mid-term exam to ensure the student progress and discover the shortage,
- 5.4. Final written and oral exam to evaluate students and promote for other consequent courses.

Tools	To Measure	Time schedule	Grading
Semester Work	a1, a2, a3, and b2	Fifth week	6 %
Mid-Term Exam	a1, a5, b3, b4.	Seventh week	6 %
Oral exam	a2, a3, a4, a5, b5, b1, c2, c3	Thirteenth week	16 %
Final written exam	a1, a2, a3, a5, b1, b2, b4, b5, c1, c2, c3, d2.	Fourteenth week	72 %
Total			100 %

## **6- List of references:**

### **6-1 Course notes**

Lecture notes prepared by the course instructor(s)  
Power point presentations

### **6-2 Required books**

None

### **6-3 Recommended books**

Walter L. Pohl ., 2011. Economic Geology: Principles and Practice, ISBN: 978-1-4443-3663-4, 680 pages, Wiley-Blackwell

The principles of economic geology by Emmons, William H. (1918)

<https://archive.org/details/principlesofecon00emmoiala>

### **6-4 Periodicals, Web sites, etc.**

Economic Geology  
Ore Geology Reviews  
Mineralium Deposita

## **7- Facilities required for teaching and learning:**

Data show  
Sound system to ensure the ease listening  
Using a blackboard  
Group discussions

**Course coordinator:** Dr. Basem A. Zoheir

**Head of the Department:** Prof. Dr. Mohamed El-Fakharany

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