



Volcanology Course (Geo 421)

Academic Year 1431- 1432H (2010 – 2011)

- i. Course Director: *Dr. Bassam A. Abu Amarah*
- ii. Contributor: *Mr. Nayif Al Otahbi*
- iii. Course Title: *Volcanology*
- iv. Course Code: *Geo 421*
- v. Credit hours: *3 credit hours (3(2+1)).*
- vi. Level/ year the course is offered: *1st semester (2010-2011) of the 8th level / 4th year.*
- vii. Course pre-requisites: *Geo 224(Optical mineralogy) , Geo 320 (Petrology) 5th level, and field Geology courses.*
- viii. Group Number: *4320*
- ix. Lecture theater (room): *1 B 068 (1 04 01 40)*
- x. Course objectives and Learning Outcomes for this Course:

1- Students of this course :

- a. should learn and gain the understanding how to identify the volcanic products and their formation processes.*
- b. Will be expose to the volcanoes characteristics (Size, shape, magma type and eruptive style), and their different types of volcanoes activities (Shield volcanoes, composite (or strato-) volcanoes, cinder cones, domes, and flood lavas.*
- c. Will gain the petro graphic knowledge of the different types of volcanic Rocks(mineral composition, and textures; depending upon the both chemical composition of magma and its physical conditions) of solidification of magma.*
- d. Will be able to identify volcanic rocks in hand specimen and thin section.*
- e. Will gain an understanding of the earth structure (magma formation, magma compositions, heat generation, the concept of plate tectonics, the relationships between plate tectonics setting and classifying the different types of volcanoes and its volcanic activities) and its relationships with the formation of volcanoes.*
- f. Will increase the student's knowledge in the fields of volcanoes risks, benefits of living in potential and active volcanoes districts.*

g. Will known locate the volcanoes formed in the Arabian Shield and its history.

Therefore, We expect from our students with a major in Geology to demonstrate that they have the ability to analyze and interpret scientific data, identify and interpret the origin of volcanic rocks, and its minerals contents in both hand specimen and thin section, to be used and to be interpreted in the field , so as to understand to read, to locate, in terms of drawing the geologic and tectonic history of any region, as well as, to construct a geological map based on its field studies.

2- Course Evaluation during the semester:

No	Evaluation Tasks	Week due	Proportion of the final evaluation % assessment
1	Homework	5 -9- 12	10%
2	Write Report	7	5%
3	First test	6	10%
4	Practical test	13	15%
5	Second test	14	10%
6	Final Exam	15	50%

xi. Essential References and text books:

1. Required Text(s) :

- **T. Kusky**, (2008), *Volcanic eruption and their volcanic hazards*, Facts On File. Inc., Newyork.
- **J. Marti and G. Ernst**, (2005), *Volcanoes and environment*, Cambridge University Press, New York.
- **L. Magloff**, (2003) , *Volcano*, DK Publishing Inc. New york.
- **C. Firth, W. McGuire**, (1999), *Volcanoes in the Quaternary*, The geological Society Publishing House, UK.
- **J. McPhie, M. Doyle, and A. Allen**, (1993), *Volcanic Texture" a guide to interpretation of texture in volcanic rock"* Tasmanian Government Printing Office.
- **Maccdonald**. (1972). *Volcanoes*, Prentice-Hall, Englewood Cliffs, Newjersey.
- **S. Mc Collum,..** (2007). *Volcanic Eruption, earth quakes, and Tusnamis*. Chelsea House, Newyork.

2. Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)

- **Maccdonald**. (1972). *Volcanoes*, Prentice-Hall, Englewood Cliffs, New jersey.
- **T. Kusky**, (2008), *Volcanic eruption and their volcanic hazards*, Facts On File. Inc., Newyork.

3. Other learning material such as computer-based programs/CD, professional standards/regulations.

No. of Wk	Lecture Time	Date	Lecture's Title	No. Of Weeks	Contact hours
1	2-3pm	Sat 23/10/1431 2/10/2010	Introduction to Volcanology: Basic concept and reviewing the definitions applied in Volcanology	1	2
	2 – pm	Mon 25/10/1431 4/10/2010			
2	2 –3pm	Sat 1/11/1431 9/10/2010	Volcanoes linkage with Plate Tectonic and magma (structure of the earth).	1	2
	2 – 3pm	Mon 3/11/1431 11/10/2010			
3	2 – 3pm	Sat 80/11/1431 15/10/2010	magma and Volcanoes heat generation	1	2
	2 – 3pm	Mon 10/11/1431 18/10/2010			
4	2 – 3pm	Sat 15/11/1431 23/10/2010	Type of magma and its origin.	1	2
	2 – 3pm	Mon 17/11/1431 25/10/2010			
5	2 – 3pm	Sat 22/11/1431 30/10/2010	Dynamic of volcanoes. Type of volcanoes , and type of eruptions+ (Homework)	1	2
	2 – 3pm	Mon 24/11/1431 1/11/2010			
6	2 – 3pm	Sat 29/11/1431 6/11/2010	Spreading centre volcanism, subduction zone volcanism, and intera plate volcanism (Hajj vacation from 4/12 to 16/12/ 1431 h)	1	2
	2 – 3pm	Mon 2/12/1431 8/11/2010			
7	2 – 3pm	Sat 14/12/1431 20/11/2010	(Hajj vacation from 4/12 to 16/12/ 1431 h)	1	2
	2 – 3pm	Mon 16/12/1431 22/11/2010	Volcano's products and its classifications.		

8	2 – 3pm	Sat 21/12/1431 27/11/2010	First assessment exam	1	2
	2 – 3pm	Mon 23/12/1431 29/11/2010	Volcano's products and its classifications.		
9	2 – 3pm	Sat 28/12/1431 4/12/2010	Volcano's products and its classifications.	1	2
	2 – 3pm	Mon 30/12/1431 6/12/2010			
10	2 – 3pm	Sat 5/1/1432 11/12/2010	The internal structure and mechanism of volcanoes.	1	2
	2 – 3pm	Mon 7/1/1432 13/12/2010	Physo-chemical factors influencing its volcanic eruptions.		
11	2 – 3pm	Sat 12/1/1432 18/12/2010	Physo-chemical factors influencing its volcanic eruptions.	1	2
	2 – 3pm	Mon 14/1/1432 20/12/2010	Volcanic and earthquake activities in Saudi Arabia/ and its historical activities.		
12	2 – 3pm	Sat 19/1/1432 25/12/2010	Volcanic and earthquake activities in Saudi Arabia /and its historical activities.	1	2
	2 – 3pm	Mon 21/1/1432 27/12/2010			
13	2 – 3pm	Sat 26/1/1432 1/1/2011	Volcanoes and environment	1	2
	2 – 3pm	Mon 28/1/1432 3/1/2011	Volcanoes risk and benefits.		
14	2 – 3pm	Sat 3/2/1432 8/1/2011	Volcanoes risk and benefits.	1	2
	2 – 3pm	Mon 5/2/1432 10/1/2011	Volcanoes in solar system.		
15	2 – 3pm	Sat 10/2/1432 15/1/2011	Volcanoes records in Saudi Arabia.	1	2
	2 – 3pm	Mon 12/2/1432 1/1/2011	Second assessment exam		

		18- 29 /2/1432	<i>1st semester Final exams starting and ending dates.</i>		
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N.B.:

- ♣ *1st semester course starting date on Sat. 16/10/1431 corresponding to 25/9/ 2010-10-02.*
- ♣ *- Al Adha vacation starts on Wed. 4/12/1431 – 10/11/2010.*
- ♣ *- Commencing the semester study session by Mon. 16/12/1432 -22/11/2010.*
- ♣ *- 1st semester exams will start on 18/2/1432 – 22/1/2011.*
- ♣ *- Med year vacation will start by Wed. on 29/2/1432 -2/2/2011.*
- ♣ *- Commencing date of the Second semester session will be on Sat. 9/3/1432 -*