



Faculty of Earth Sciences



Department of Mineral Resources & Rocks 3rd & 4th Years Program



The Geological Society
Accredited degree courses

Course Name	Course ID	Prerequisite
Introduction to Petrology	EMR 304	EMR 211 and EPS 211

Course Description

An introductory course for studying Igneous, Metamorphic and Sedimentary rocks

Course description:

Definition of physical and chemical properties of magma. Occurrences and forms of igneous rocks. Mode of formation of magmatic melts and their relationship to plate tectonics. Mineralogy, textures and classification of igneous rocks. Origin of sedimentary rocks and their mineralogical composition. Classification of sedimentary rocks. Petrographic properties of sedimentary rocks. Definition of metamorphism and metamorphic rocks. Factors and types of metamorphic processes. Mineralogy and textures of metamorphic rocks. Classification of metamorphic rocks. Metamorphic facies of both contact and regional metamorphism and the characteristic minerals in each of them.

Course Objectives

1. To identify the common types of minerals and textures of igneous rocks.
2. To know the general classifications of igneous rocks and their types
3. To describe and identify the common igneous rocks from both hand specimen and polarizing microscope.
4. To know the general classifications of sedimentary rocks and their types.
5. To describe the common clastic and non-clastic sedimentary rocks.
6. To identify metamorphic rock, deal with it and has the ability to recognize it among other types of rocks.
7. To identify types and factors of metamorphic processes
8. To identify the common metamorphic minerals and textures .
9. To identify Metamorphic facies

General References for the Course: (Books/Journals...etc.)

- 1- Best, M. G. and Christiansen E. H. (2000) Igneous Petrology , Blackwell Science.

- 2- Winkler's (1993) "Petrogenesis of metamorphic rocks: 6th Edition".
- 3- Tucker, M.E (2000) Sedimentary Petrology. Blackwell, Science Oxford
- 4- Nichols, G. (1999). Sedimentology and Stratigraphy. 1st edition, Blackwell Publishing Limited

- ٥- كتاب وصف الصخور النارية والمتحولة ممدوح عبدالغفور و فؤاد محمد المرزوقي. مركز النشر العلمي-جامعة الملك عبد العزيز.
- ٦- كتاب الأرض: مقدمة للجيولوجيا الطبيعية. تأليف تار بوك / لوتجنز. ترجمة: د. عمر سليمان حموده، د. البهلول على اليعقوبي ، د. مصطفى جمعه سالم. منشورات مجمع الفاتح للجامعات ١٩٨٩.
- ٧- عصام بن يحيى الفيلاي (٢٠٠٥) كتاب مقدمة في الصخور المتحولة. مكتبة الأنجلو - مصر.
- ٨- محمد حسين بسيوني (٢٠٠٣) الوصف الحقل للصخور الرسوبية. جامعة الملك عبد العزيز (مركز النشر العلمي).
- ٩- أحمد عبد الله الأسود (٢٠٠١) علم الصخور الرسوبية. جامعة الملك سعود (النشر العلمي والمطابع)

List of URLs for this Course

1. <http://earthsci.org/education/teacher/basicgeol/igneous/igneous.html>
2. <http://geology.csupomona.edu/alert/igneous/texture.htm>
3. http://www.intute.ac.uk/cgi-bin/search_harvester.pl?limit=75&term1=+sediment&subject=sciences
4. http://www.whitman.edu/geology/winter/JDW_PetClass.htm
5. <http://www.geolab.unc.edu/Petunia/IgMetAtlas/mainmenu.html>
6. http://facstaff.gpc.edu/~pgore/geology/historical_lab/sedrockslab.php
7. <http://www.geosci.unc.edu/faculty/glazner/Images/SedRocks/SedRocks.html>
8. <http://csmres.jmu.edu/geollab/Fichter/SedRx/SimpModl.html>
9. <http://teachserv.earth.ox.ac.uk/courses/es2-metrock/lectures.html>
10. <http://www.union.edu/PUBLIC/GEODEPT/COURSES/geo-10/metamorphic.htm>
11. <http://seis.natsci.csulb.edu/bperry/metarock/INTRODUCTION.htm>

Course Outcome

1. Student can be able to classify the different types of magmas and recognize their formation sites. Know the meaning of magmatic differentiation.
2. Student can familiarize with the different kinds of igneous rocks forming minerals.
3. Student can be able to identify the common types of the textures of igneous rocks.
4. Student can be acquainted with the general classifications of igneous rocks
5. Student can identify the sedimentary rocks in the lab
6. Student can able to differentiate between the different types of the sedimentary rocks
7. Student can be acquainted with the general classifications of sedimentary rocks.
8. Student can be able to describe the common clastic and non-clastic sedimentary rocks.

9. Student can be able to identify Metamorphism and its factors
- 10.** Student can be familiar with types and classification of metamorphic rocks
11. Student can be able to identify textures and facies and common metamorphic minerals
12. Student can be acquainted with contact metamorphism and regional metamorphism