

**Department of Mining, Petroleum, and Metallurgical Engineering**

**Cairo University
Faculty of Engineering**

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| **Course Specifications** |
| **Program(s) on which this course is given:** | Mining, Petroleum and Metallurgical Engineering |
| **Department offering the program:** | Mining, Petroleum and Metallurgical Engineering |
| **Department offering the course:** | Mining, Petroleum, and Metallurgy |
| **Academic Level:** | Second Year / 4th Term |
| **Date**  | 2014 |
| **Semester (based on final exam timing)** |  Fall Spring |
| **A- Basic Information** |
| **1. Title:** | General Geology and Minerals | **Code:** | MIN 120 |
| **2. Units/Credit hours per week:**  | Lectures | 3 | Tutorial | 2 | Practical | **-** | Total | 5 |
| **B- Professional Information** |
| **1. Course description:** | The objective of this course is to provide the students with the geological information of minerals, various types of mineral deposits, and the geological structures. |
| **2. Intended Learning Outcomes of Course (ILOs):** | **a) Knowledge and Understanding** |
| 1- Concepts and theories of mathematics and sciences, appropriate to the discipline. |
| 2 - Characteristics of engineering materials related to the discipline. |
| 3 - Current engineering technologies as related to disciplines. |
| 4 - Technical language and report writing. |
| **b) Intellectual Skills** |
| 5- Assess and evaluate the characteristics and performance of components, systems and processes. |
| 6 - Investigate the failure of components, systems, and processes |
| **c) Professional and Practical Skills** |
| 7 - Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems. |
| 8 - Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services. |
| 9 – Exchange knowledge and skills with engineering community and industry. |
| 10 – Prepare and present technical reports |
| 11 – Apply of modern science and engineering in the discovery, development, exploitation, and use of natural mineral deposits. |
| 12 – Supervise the operations of extraction, processing and sometimes the primary refinement, of the raw material. |
| **d) General and Transferable Skills** |
| 13 – Collaborate effectively within multidisciplinary team. |
| 14– Effectively manage tasks, time, and resources. |
| 15 – Refer to relevant literatures |
| **3. Contents** |
| **Topic** | **Total hours** | **Lectures hours** | **Tutorial/ Practical hours** |
| Introduction | 3 | - | - |
| Geological structure | 3 | 2 | - |
| * Faults
 | 3 | 2 | - |
| * Folds and joints
 | 3 | 2 | - |
| Types of rocks: igneous, metamorphic, and sedimentary | 3 | 2 | - |
| Introduction to Minerals | 3 | 2 | - |
| Crystal structure of minerals | 3 | 2 | - |
| * Main systems
 | 3 | 2 | - |
| * Identification of crystal structure
 | 3 | 2 | - |
| * Microscopic investigation of minerals
 | 3 | 2 | - |
| Physical properties of Minerals | 3 | - | - |
| * Hardness and cleavage
 | 3 | 2 | - |
| * Color and streak
 | 3 | 2 | - |
| Microscopic investigation of minerals | 3 | - | - |
| * Visible light and Polarized light
 | 3 | 3 | - |
| * Polymorphism and Twinning in minerals
 | 3 | 3 | - |
| **4. Teaching and Learning Methods** | Lectures (\*)  | Practical Training/ Laboratory ( )  | Seminar/Workshop ( )  |
| Class Activity (\*)  | Case Study ( )  | Projects ( )  |
| E-learning (\*)  | Assignments /Homework ( )  | Other:  |
| **5. Student Assessment Methods** |
| * **Assessment Schedule**
 | **Week** |
| -Assessment 1; Class test  | Bi-weekly |
| -Assessment 2; Project Assignment  | Forteenth week |
| -Assessment 3; Presentations  |  |
| -Assessment 3; Midterm Exam | Eighth week |
| -Assessment 4; Final Exam | Fifteenth week |
| * **Weighting of Assessments**
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| -Mid-Term Examination | 20 points |
| -Final-term Examination  | 70 points |
| -Project | 15 points |
| -Class Test | 20 points |
| -Presentation |  |
| -Total | 125 |
| **6. List of References** |
| Course notes |
| Parbin Singh, “Engineering and General Geology”, Katson Publication House, 1987. |
| Krynine and Judd, “Engineering Geology and Geotechniques”, McGraw-Hill Co., 1990 |
| Legeet, “Geology and Engineering”, McGraw-Hill Book Company 1998. |
| **7. Facilities Required for Teaching and Learning** |
| Geological MuseumCrystal prototypesMicroscope (visible and polarized light)Microscope connected to computer with digital camera Computer, Data show. |
| **Course Coordinator:** | Prof. Dr. Ahmed Abdelaziz Ahmed |
| **Head of Department:**  | Prof. Dr.E.M.Elbana |

