

**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** | | | | | | | | | | | | | | | | | |
| -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 Museum  Crystal prototypes  Microscope (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 | | | | | | | | | | | | | | |

