

**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:** | Materials and Metallurgical Engineering |
| **Department offering the program:** | Department of Mining, Petroleum and Metallurgical Engineering |
| **Department offering the course:** | Department of Mining, Petroleum and Metallurgical Engineering |
| **Academic Level:** | Fifth year |
| **Date**  | 2014 |
| **Semester (based on final exam timing)** |  Fall Spring |
| **A- Basic Information** |
| **1. Title:** | Advanced Materials  | **Code:** | **MET 445** |
| **2. Units/Credit hours per week:**  | Lectures | 3 | Tutorial | 1 | Practical | - | Total | 4 |
| **B- Professional Information** |
| **1. Course description:** |  |
| **2. Intended Learning Outcomes of Course (ILOs):** | **a) Knowledge and Understanding** |
| 1. Fundamental properties of nano materials (thermodynamic, mechanical, electronic, magnetic, optical and bio-chemical properties). |
| 2. Applications of nano materials, ceramics and polymers |
| 3. Processing of ceramic and polymeric materials. |
| 4. Mechanical properties of ceramic and polymeric materials. |
| 5. Coating |
| **b) Intellectual Skills** |
| 6. Identifying different methods for synthesis, characterization of nano materials  |
| 7. Identifying most advanced nano fabrication methods |
| 8. Identifying different Processing techniques for polymers and ceramics  |
| **c) Professional and Practical Skills** |
| 9. How are electronic devices manufactured.  |
| 10. Processing techniques for ceramics and polymers. |
| **d) General and Transferable Skills** |
| 11. Working in a team. |
| 12. Presenting a report.  |
| **3. Contents** |
| **Topic** | **Total hours** | **Lectures hours** | **Tutorial/ Practical hours** |
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| **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  |  |
| -Assessment 2; Project Assignment  |  |
| -Assessment 3; Presentations  |  |
| -Assessment 3; Midterm Exam |  |
| -Assessment 4; Final Exam |  |
| * **Weighting of Assessments**
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| -Mid-Term Examination |  |
| -Final-term Examination  |  |
| -Project |  |
| -Class Test |  |
| -Presentation |  |
| -Total |  |
| **6. List of References** |
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| **7. Facilities Required for Teaching and Learning** |
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| **Course Coordinator:** |  |
| **Head of Department:**  |  |

