COURSE CODE: MATSCHE

COURSE TITLE: Fundamentals of Material Science and Engineering

DEPARTMENT: Chemical Engineering

TEXTBOOK:

Callister, W. D. and Rethwisch, D. G. (2014). Materials Science and Engineering: An Introduction, Hoboken, New Jersey: Wiley.

REFERENCES:

- Askeland, D. R. and Wright, W. J. (2014). Essentials of Materials Science and Engineering, Stamford, Connecticut: Cengage Learning.
- Callister, W. D. and Rethwisch, D. G. (2012). Fundamentals of Materials Science and Engineering: An Integrated Approach, 4th Edition, Hoboken, New Jersey: Wiley.
- Carey, F. A. and Giuliano, R. M. (2014). Organic Chemistry, New York: McGraw-Hill.
- Chung, Y. W. (2007). Introduction to Materials Science and Engineering. Boca Raton, Florida: CRC / Taylor & Francis.
- Gere, J. M. and Goodno, B. J. (2013). Mechanics of Materials, Stamford, Connecticut: Cengage Learning
- Lee, J. G. (2012). Computational Materials Science: An Introduction, Boca Raton, FL: Taylor & Francis.
- Perry, R.H. and Green, D.W., editors (2007). Perry's Chemical Engineers' Handbook. New York: McGraw-Hill Professional.

READING LIST:

- Callister and Rethwisch (2014)
- Chapter 1. Introduction to Material Science and Engineering
- Chapter 2. Atomic Structure and Interatomic Bonding
- Chapter 3. The Structure of Crystalline Solids
- Chapter 4. Imperfection of Solids
- Chapter 5. Diffusion
- Chapter 6. Mechanical Properties of Solids
- Chapter 8. Failure
- Chapter 9. Phase Diagrams
- Chapter 10. Phase Transformations
- Chapter 12-13. Ceramics
- Chapter 14-15. Polymers
- Chapter 16. Composites
- Chapter 18-21. Electrical, Thermal, Magnetic and Optical Properties of Materials

REQUISITE EQUIPMENT/MATERIALS FOR THE COURSE: N/A