

# POSMAT I Programa de Pós-graduação em Engenharia de Materiais



**Course:** Materials Science

**Code:** MEM.001

**Credits:** 03

**Module:** General formation

## Contents:

Introduction; Atomic Structure and Interatomic Bonding; The Structure of Crystalline Solids; Imperfections in Solids; Diffusion; Mechanical Properties; Strengthening Mechanisms; Failure; Phase Diagrams; Phase Transformations: Development of Microstructure; Applications and Processing of Metal Alloys; Structures and Properties of Ceramics, Polymers and Composites

## References:

1. JUNIOR, W.D. CALLISTER.; **Materials Science and Engineering**, 9th Edition, John Wiley & Sons.
2. SCHAFFER, J.P; SAXENA, A.; ANTOLOVICH, S.D.; JUNIOR, T.H.S.; WARNER, S.B.; **The Science and Design of Engineering Materials**, 2nd Edition, McGraw-Hill.
3. ASM International, **ASM Metals Handbook**, Desk Edition, 1st or 2nd Edition.
4. Ronald F. Gibson, **Principles of Composite Material Mechanics**, CRC Press, 2011.
5. ASM International, **ASM Handbook: Composites**, Vol.21 ASM International.