



**UNIVERSIDADE FEDERAL DE SÃO CARLOS**  
**PRÓ – REITORIA DE PÓS-GRADUAÇÃO**

**COURSE DESCRIPTION SHEET**



1. Course Name: **Materials Nanoscience and Nanotechnology**
2. Course Code: 102
3. Semester offered: 2<sup>nd</sup>
4. Total course credits: 10
5. Course workload
  - 5.1. Lecture classes: 60h
  - 5.2. Practical classes:
  - 5.3. Seminars: 90h
6. Course Syllabus:
  - What is Nanoscience and Nanotechnology.
  - Surface physical chemistry.
  - Low-dimensionality systems: zero dimension (nanoparticles); one dimension (nanowires and nanorods), two dimensions (thin films).
  - Synthesis and fabrication of nanomaterials; bottom-up and top-down, fullerenes and carbon nanotubes, molecular self-assembly and supramolecular systems.
  - Application of nanomaterials.
7. Main Bibliography:
  - G. Timp, Nanotechnology, Springer 1998.
  - G. Cao, Nanostructures and nanomaterials, Imperial College Press 2004.
  - R. Waser, Nanoelectronics and information Technology, Wiley UCM 2003.
  - M. Ratner e D. Ratner, Nanotechnonology, Prentice Hall 2003.
  - G. A. Ozin, Nanochemistry, Rsc Publishing, 2005.