



Course Syllabus

Department/Faculty School of Engineering
Graduate Program Materials Engineering and Nanotechnology
Degree <input checked="" type="checkbox"/> Academic Master's <input checked="" type="checkbox"/> Doctorate (PhD) <input type="checkbox"/> Professional Master's
Course Name Advanced Topics in Applied Chemistry
Professor(s)
Office hours 48
Course Overview Emerging topics in Nanotechnology Chemistry; New areas of application of procedures, techniques, and/or instrumentation in Chemistry; New applications of chemical concepts for the development of Nanotechnology;
Topics outline 1. Nanotechnology chemistry 2. Use of chemical concepts in the development of nanostructures. 3. Energetics of Chemical phenomena. 4. Obtaining new functionalities and properties. 5. Integrated chemical systems. 6. Building Blocks in Supramolecular Chemistry.
Letter Grade Assignment Grade A (Excellent) - Grade points between 9 and 10 Grade B (Good) - Grade points between 8 and 8.9 Grade C (Satisfactory) - Grade points between 7 and 7.9 Grade D (Unsatisfactory) - Grade points between 0 and 6.9



Texts, Materials, and supplies

1 Bibliografia Básica

- 1- Klimpel, M., Kovalenko, M.V. & Kravchyk, K.V. Advances and challenges of aluminum–sulfur batteries. *Commun Chem* 5, 77 (2022).
- 2- Su, S., Zhang, Y., Peng, S. et al. Multifunctional graphene heterogeneous nanochannel with voltage-tunable ion selectivity. *Nat Commun* 13, 4894 (2022).
- 3- TOMA, H. E. Nanotecnologia molecular- materiais e dispositivos, 1ª edição. Blucher, São Paulo, 2016.

Bibliografia Complementar

- 1- Wang, Xianwen and Zhong, Xiaoyan and Li, Jianxiang and Liu, Zhuang and Cheng, Liang. Inorganic nanomaterials with rapid clearance for biomedical applications. *Chem. Soc. Rev.* 2021.
- 2- Haoxin Mai, Tu C. Le, Dehong Chen, David A. Winkler, and Rachel A. Caruso. Machine Learning for Electrocatalyst and Photocatalyst Design and Discovery. *Chemical Reviews*, 122 (16), 2022.
- 3)- GODDARD, W. A. et al. Handbook of Nanoscience, Engineering, and Technology, 2nd ed., CRC Press: Boca Raton, 2007.