Advanced Polymeric Materials

Academic Year: (2019 / 2020) **Review date: 11-10-2019**

Department assigned to the subject: Materials Science and Engineering and Chemical Engineering Department

Coordinating teacher: SERRANO PRIETO, MARIA BERNARDA

Type: Compulsory ECTS Credits : 6.0

Year : 1 Semester : 1

DESCRIPTION OF CONTENTS: PROGRAMME

Advanced polymer materials specific topics:
- Introduction. Polymer technology.
- Macromolecular conformations. Molecular weights
- Polymer Synthesis. Polymerization Techniques
- Solid State of Polymers. Relaxations in amorphous polymers, melting and crystallization.
- Viscoelasticity.
- Elasticity of rubber.
- Polymer Blends and multicomponent systems.
- Advanced techniques of synthesis and functionalization, polymers for advanced applications.
- Hydrogels
- Polymers for biomedical applications
- Dielectric and conductive properties of polymers and their applications
- Simulation with molecular dynamics of Polymers

% end-of-term-examination:	50
% of continuous assessment (assigments, laboratory, practicals…):	50

BASIC BIBLIOGRAPHY

- Dietrich Braun, Harald Cherdron, Matthias Rehahn, Helmut Ritter, Brigitte Voit Polymer Synthesis: Theory and Practice, Springer Berlin Heidelberg, 2013
- M. Rubinstein, Ralph H. Colby Polymer Physics , OXFORD UNIVERSITY PRESS, 2003
- D.R. Paul, C.B. Bucknall, Polymer Blends, Vol. I: formulation y Vol. II: performance; Ed. Willey-Interscience, N.Y., 2000..
- E.A. Turi Polymer Blends and Block Copolymers¿ en ¿Thermal Characterization of Polymeric Materials, Vol 1, and Vol 2 Academic Press, USA, 1997..
- L.H. Sperling Physical Polymer Science, Wiley-Interscience third edition, USA, 2001.
- Montgomery T. Shaw, William J. MacKnight Hardcover $117.25 Introduction to Polymer Viscoelasticity, 3rd edition, Willey-Interscience, USA, 2005