



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

COURSE DESCRIPTION SHEET



1. Course Name: **Introduction to Polymers and Materials from Renewable Sources**
2. Course Code: 101
3. Semester offered: 1st
4. Total course credits: 10
5. Course workload
 - 5.1. Lecture classes: 60h
 - 5.2. Practical classes:
 - 5.3. Seminars: 90h
6. Course Syllabus:
 - Polymer chemistry and review of organic functions. Production history, Definitions and basic concepts. Types and classifications. Terminologies and polymerization processes, Bonding forces in polymers. Chain types and copolymerization. Stereoregularity and conformation. Polymer solutions and Molecular structure: The crystalline state.
 - General concepts in polymer matrix composites. Components of vegetable fibers and polymer composites reinforced with vegetable fibers. Polymer molding processes and polymer matrix composites. Main mechanical tests on polymers and polymer matrix composites. Thermal analyzes (DSC, TG, DMTA) in polymers and polymer matrix composites.
 - Nanocellulose: definition, production methods, properties and applications.
7. Main Bibliography:
 - L. AKCELRUD Fundamentos da Ciência dos Polímeros, Manole, São Paulo, 2006.
 - F.W. BILLMEYER, Textbook of Polymer Science, Wiley, New York, 1984.
 - S. V. CANEVAROLO JR., Ciência dos Polímeros, 20 edição, Artiber, São Paulo, 2007.
 - E. B. MANO, L. C. MEMDES, Introdução à Polímeros, Edgard Blücher, São Paulo, 1999.
 - R. J. YOUNG, R.; P.A. LOVELL, Introduction to Polymers, CRC Press, 1991.
 - L. H. SPERLING. Introduction to Physical Polymer Science, Wiley-Interscience; 4 edition, NJ USA, 2005.
 - M. N. BELCACEM, A. GANDINI, Monomers, Polymers and Composites from Renewable Resources, Elsevier, 2008.
 - FAKIROV, S., Bhattacharyya, D., Engineering of Biopolymers, Homopolymers, Blends and Composites, Hansen, 2007.