
COURSE: CHEMISTRY and TECHNOLOGY of POLYMERS

ACADEMIC YEAR: 2019-2020

TYPE OF EDUCATIONAL ACTIVITY: Free choice

TEACHER: Vincenzo Villani

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website:

phone: 0971205464

mobile (optional):

Language: Italian

ECTS: 6 (lessons e
tutorials/practice)n. of hours: 48 (lessons e
tutorials/practice)Campus: Potenza
Department of Science
Program: CHIMICA (LM-54)Semester: I
01/10/2019 al
20/12/19 - 20/01/20

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

Knowledge: Rheology and Processing of polymer materials.

Ability: Characterization, Models and Technological applications.

PRE-REQUIREMENTSFundamentals of Macromolecular Chemistry and Science of Polymer Materials

SYLLABUS

Non-Newtonian polymer fluids
Bingham fluids
Constitutive relations
Brookfield, Couette, capillary viscometers
Rotational rheometer: plate-plate, plate-cone
Rubber elasticity
Polymer composites
Creep and Complince
Relaxation module
Oscillatory deformation
Linear viscoelasticity
Spectrum of relaxation times
Isolated polymer chain: random coil model
Dynamics of isolated chain: Rouse model
Polymer melt dynamics: tube model
Polymer Processing Technologies
Compression molding
Extrusion
Injection molding
Theory of extrusion

TEACHING METHODSTheoretical lessons.

EVALUATION METHODS

Intermediate verifications or oral examination.

The exam is divided into 3 tests that take place during the course; the test consists of 4 tracks open to play in 2 hours.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIALVillani Vincenzo, *Introduzione alla Scienza dei Materiali Polimerici*, Aracne EditriceNino Grizzuti, *Reologia dei Materiali Polimerici: Scienza ed Ingegneria*, Edizioni Nuova Cultura

INTERACTION WITH STUDENTS

Office hours: Monday, Wednesday and Friday from 11 to 17 in the studio or in lab of Macromolecular Chemistry.
Moreover, the teacher is available on his e-mail.

EXAMINATION SESSIONS (FORECAST)¹

21/02/2020, 27/03/2020, 24/04/2020, 22/05/2020, 26/06/2020, 24/07/2020, 25/09/2020, 23/10/2020,
27/11/2020, 11/12/2020

SEMINARS BY EXTERNAL EXPERTS YES NO

FURTHER INFORMATION

¹Subject to possible changes: check the web site of the Teacher or the Department/School for updates.