



Universidad
del País Vasco

Euskal Herriko
Unibertsitatea

KIMIKA
FAKULTATEA
FACULTAD
DE QUÍMICA

Guía docente INGLÉS:

INDUSTRIAL APPLICATIONS OF POLYMERS (Aplicaciones industriales de los polímeros)

DESCRIPCION Y CONTEXTUALIZACION DE LA ASIGNATURA

The main objective of this course is to provide the student with a combination of current scientific knowledge in various fields of polymers applications, with a vision of applied technology. A especial attention is payed to two types of applications, one of them in structural materials, composite materials or composites, and the other in functional materials, coatings and adhesives.

This will allow the student to get on in the industry, either in companies that supply raw materials for the different applications, or in those in which they have to perform the different formulations, the processing, or the final application.

COMPETENCIAS/ RESULTADOS DE APRENDIZAJE DE LA ASIGNATURA

At the end of the course, the student has to be able to obtain information about advanced materials from the specialized bibliography and through the contact with others specialists in the field. Additionally, they have to be able to choose a polymeric material to address a certain problem and know and distinguish different materials suitable for use in different applications.

CONTENIDOS TEÓRICO-PRÁCTICOS

- 1.-Industrial applications of polymers
- 2.-Composites: general concepts
- 3.-Polymeric composites components
- 4.-Processing and properties of polymeric composites
- 5.-Applications of polymeric composites
- 6.-Coatings and adhesives: general concepts
- 7.-Resins and other components
- 8.-Adhesion. Mechanisms and adhesion tests
- 9.-Coatings properties
- 10.- Industrial applications of coatings and adhesives

MATERIALES DE USO OBLIGATORIO

Not required

BIBLIOGRAPHY

BASIC BIBLIOGRAPHY

- ASHBY M.F., JONES D.R.H., "Engineering Materials1: An Introduction to their properties and applications", Pergamon



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Press, Oxford, 1993.

- WICKS Z.W.Jr., JONES F.N. & S.P. PAPPAS, "Organic Coatings: Science and Technology", John Wiley and Sons Inc.,

New York, 2007.

- TRACTON A.A., "Coatings technology: Fundamentals, Testing, and Processing Techniques", CRC Press, Boca Ratón, 2006.

- KHANNA A.S., "High Performance Organic Coatings", CRC Press, Boca Ratón, 2008.

- MAKHLOUF A.S.H., "High Performance Coatings for Automotive and Aerospace Industries, Nova Science Pub Inc., 2010.

- SUDHANGSHU B., "High Temperature Coatings", Elsevier, New York, 2007.

- P. K. MALLICK, S. NEWMAN (EDS.), "Composite Materials Technology". Hanser, Munich, 1990

- M. REVNE, "Technologie des Composites". Hermes, Paris, 1998

- L. E. NIELSEN, R. F. LANDEL, "Mechanical Properties of Polymers and Composites". MARCEL DEKKER, New York, 1994

- P. K. MALLICK, "Fiber Reinforced Composites". CRC PRESS, New York, 2008

ADVANCED BIBLIOGRAPHY

The student will be provided with recent articles about various aspects of each topic.

JOURNALS

Journal of Applied Polymer Science

Progress in Organic Coatings

Journal of Paint Technology

Surface and Coating Technology

Polymer Composites

Composites Science and Technology

Composites Part A, Applied Science

WEBSITES

The student will be provided with different website addresses along the course.