

POLYMERIC MATERIALS: STRUCTURE AND PROPERTIES

1.1. Identification

University:	Kungl Tekniska Högskolan (KTH), Stockholm, Sweden										
School:	School of Chemical, Science and Technology										
Course:	Polymeric Materials: Structure and Properties										
ECTS:	7.5										
Semester:	<i>Winter</i>			X	<i>Summer</i>						
Category	<i>Fundamental course</i>					<i>Specialisation course</i>				X	
Module	<i>MFI</i>		<i>MFII</i>		<i>MFIII</i>		<i>MSI</i>		<i>MSII</i>	X	<i>MSIII</i>
Teachers:	Ann-Christine Albertsson										
Language:	<i>English</i>		X	<i>Italian</i>		<i>Swedish</i>	X	<i>Spanish</i>			

1.2. Learning-outcomes

- knowledge about the relation between structure and properties for volume and construction plastics and rubber materials.
- knowledge about polymer properties from the structure for volume and construction plastics and rubber materials

1.3. Competencies

▪ General

- to have critical understanding of technical and scientific tools
- to work and manage teams
- communication skills (both written and oral)
- to work in an international context

▪ Specific

- To provide detailed knowledge of the structure/properties of polymeric materials and their applications
- To develop suitable polymers for different applications in polymer technology; biomaterials, packaging, film and fiber, materials for electronics and IT-applications.

1.4. Contents

Structure/properties of polymeric materials. Applications. Relationship between synthesis/production and technical properties. Commercial use of plastics materials : fibers, rubbers, foils, film, thermosets and thermoplastics. Mixtures, additives, reinforcing. New bulk polymers and special polymers development: design and formulation

1.5. Teaching Methodology

- Lecture sessions
- Practical sessions: “cooperative work” for solving problems
- laboratory sessions

1.6. Evaluation

- Written exams
- Laboratory work
- Exercises

1.7. Bibliography

- Brydson: Plastics materials
- Ulrich: Introduction to Industrial Polymers
- Dyson: Speciality polymers