

## FUNCTIONAL MATERIALS

### 1.1. Identification

University:	Kungl Tekniska Högskolan (KTH), Stockholm, Sweden											
School:	School of Chemical, Science and Technology											
Course:	Functional Materials											
ECTS:	6											
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:	Rolf Sandström											
Language:	<i>English</i>		X	<i>Italian</i>		<i>Swedish</i>	X	<i>Spanish</i>				

### 1.2. Learning-outcomes

- knowledge about materials which are not primarily used for their mechanical properties but for other properties such as physical
- knowledge about what "functions" can be built into the materials and how to maximise their performance.

### 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 determine the specific properties of functional materials which are used in high-tech applications.

### 1.4. Contents

Shape memory metals. Invar alloys. Magnetic materials. Electric contact material. Conducting thermoplastics and polymer composites. Surface coatings. Biomaterials

**1.5. Teaching Methodology**

- Lecture sessions
- Seminars
- Cooperative work
- Study visit

**1.6. Evaluation**

- written exams
- oral evaluation of the problems solved by “cooperative work”

**1.7. Bibliography**

- Electrical and magnetic properties of materials / William Bolton, Longman Scientific and Technical, 1992
- Compendium. Review and conference articles from the modern scientific literature.