Lecture: **Advanced Materials for New Aapplications**

Given by prof. **Jan Dutkiewicz**, volume 20 hours

1. Historical view of constructional materials and summary of carbon steels and alloyed steels (3 hours)
2. Light alloys and new aluminum and magnesium alloys (3 hours)
3. Metallic and ceramic biomaterials (2 hours)
4. New titanium alloys for construction and biomaterials including shape memory applications (3 hours)
5. Nanomaterials including methods of grain refinement, characterization and application (2 hours)
6. Composites, production, properties, structure and applications (3 hours)
7. Amorphous materials, manufacturing, characterization, properties and application using unique mechanical and magnetic properties (2 hours)
8. Ceramic materials for high temperature use and ultra hard with good wear properties, new materials with high toughness, manufacturing, structure and properties (3 hours)