

DESCRIPTION OF THE COURSES

- Course code: ELR1203
- Course title: TECHNOLOGICAL PROCESSES IN INDUSTRY
- Language of the lecturer: Polish

<i>Course form</i>	<i>Lecture</i>	<i>Classes</i>	<i>Laboratory</i>	<i>Project</i>	<i>Seminar</i>
<i>Number of hours/week*</i>	1		1		
<i>Number of hours/semester*</i>	15		15		
<i>Form of the course completion</i>	written test		reports		
<i>ECTS credits</i>	1		1		
<i>Total Student's Workload</i>	30		30		

- Level of the course (basic/advanced): basic
- Prerequisites: Physics
- Name, first name and degree of the lecturer/supervisor: Bolesław Mazurek, prof., D.Sc., Ph.D., B. Eng.
- Names, first names and degrees of the team's members:
 1. Jan Ziaja, Ph.D., B. Eng.
 2. Zbigniew Zubel, Ph.D., B. Eng.
 3. Leszek Woźny, Ph.D., B. Eng.
 4. Anna Kisiel, Ph.D., B. Eng.
 5. Paweł Żyłka, Ph.D., B. Eng.
 6. Jerzy Rutkowski, Ph.D., B. Eng.
 7. Bożena Łowkis, Ph.D., B. Eng..
- Year:....III..... Semester:.....6.....
- Type of the course (obligatory/optional): obligatory
- Aims of the course (effects of the course): Acquaintance with basic industrial processes of manufacturing various materials and methods of modification of their properties. Ability to application of this knowledge to obtainig of thin film materials.
- Form of the teaching (traditional/e-learning): traditional
- Course description:
The physical and chemical basic of technological process. The methods getting superconductors, semiconductor, conductors and dielectric materials. Technology of thin films (vacuum evaporation, electron-beam, plasma process, plasma polymerization, laser). Fudamentals of vaccum technology.
- Lecture:

<i>Particular lectures contents</i>	<i>Number of hours</i>
1. Introducing to lecture, program, requirements.	1
2. Physical phenomenon of evaporation and ion-bean sputtering.	3
3. The physical basic of magnetron sputtering DC, AC, RF, and flasch evaporation.	4
4. Plasma reactors.	4

5. Plasma polymerization.	2
6. Written test.	1

- Classes – the contents:
- Seminars – the contents:
- Laboratory – the contents:
 1. Vacuum evaporation
 2. Ion-beam sputtering
 3. Magnetron DC, AC sputtering and flash
 4. Plasma polymerization
- Project – the contents:
- Basic literature:
 1. Mieczysław Hering, Podstawy elektrotermii, WNT, Warszawa 1992
 2. Janusz Groszkowski, Technika wysokiej próżni, WNT, Warszawa 1983
- Additional literature:
 1. Conrad Krampitz, Elktrotechnologie, VEB Verlag Technik, Berlin 1978
 2. Alfred Grill, Cold plasma in materials fabrication, IEEE Press, New York 1993
- Conditions of the course acceptance/creditation:
All laboratory classes credited and lecture-related test successfully written.

* - depending on a system of studies