

## DESCRIPTION OF THE COURSE

- **Course code:** ELR 3109
- **Course title:** ENGINEERING GRAPHICS
- **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		2		
<i>Number of hours/semester*</i>	15		30		
<i>Form of the course completion</i>	written test		completion of tasks		
<b>ECTS credits</b>	2		2		
<b>Total Student's Workload</b>	50		70		

- Level of the course: basic
- **Prerequisites:** The skill to work with computer and Windows system.
- **Name, first name and degree of the lecturer/supervisor:** Krzysztof Makowski D.Sc. Ph.D. Eng.
- **Names, first names and degrees of the team's members:** Paweł Zalas Ph.D. Eng.
- **Year:** 1 **Semester:** 1 2009/10
- **Type of the course:** obligatory
- **Aims of the course** (effects of the course): To learn principles of computer engineering graphics, methods of axonometric and multi-view projection of 2D and 3D geometric objects, dimensioning, sections and intersection of solids, drawing of standard elements and joints in electromechanical constructions, principles of making assembly and detail drawings.
- **Form of the teaching:** traditional
- **Course description:**  
Principles of engineering graphics. Computer engineering graphics – *AutoCAD 2002 LT* program. Methods of projection: axonometric and multi-view projection. Graphic notation of 2D and 3D geometric objects. Standard multi-view projection: views and sections. Dimensioning, toleration, mating, surface texture. Sections and intersection of solids. Drawing of standard elements and joints in electromechanical constructions. Technical documentation – working drawings: assembly and detail drawings.

- **Lecture:**

<i>Particular lectures contents</i>	<i>Number of hours</i>
1. Introduction to the course, requirements. Principles of engineering graphic notation.	2
2. Principles of computer engineering graphics – introduction to AutoCAD 2002 LT.	1
3. Methods of projection: axonometric and multi-view projection. Projection of 2D and 3D geometric objects. Types of drawings, drawing sizes, lines, scales.	2
4. Multi-view projection of 3D geometric objects. Sections and	2

intersection of solids. Projection of elements using straight and complex sections.	
5. Dimensioning: principles, symbols and size dimensions, detailed cases.	2
6. Tolerancing and types of mating. Tolerance of position and form.	2
7. Standard elements and joints in mechanical constructions.	2
8. Technical documentation: detail and assembly drawings.	2

• **Laboratory** – the contents:

1. Introduction to AutoCAD program: tools, drawing and modification of basic geometrical objects.
2. Drawing of plane curves: parabola, hyperbola, spiral of Archimedes and sinusoid.
3. Precisely drawing of 2D elements of different geometrical shapes.
4. Multi-view projection of a plane figure that lies over projecting plane surface.
5. Multi-view projection of plane-wall solids and solids of revolution.
6. Multi-view projection of 3D elements – views
7. Multi-view projection of 3D elements – sections
8. Isometric drawing: 3D model in an isometric projection.
9. Isometric projection of 3D object which is given by multi-view projection.
10. Working drawing of an individual part with sections and dimensioning - sketch.
11. Working drawing of an individual part with sections and dimensioning – CAD.
12. Drawing of standard elements and joints in mechanical constructions – sketch + CAD
13. Assembly drawing of the sub-assembled unit with list of parts and joints - sketch.
14. Assembly drawing of the sub-assembled unit with list of parts and joints – CAD.
15. Completions and credits.

• **Basic literature:**

1. Suseł M., Makowski K.. *Grafika inżynierska z zastosowaniem programu AutoCAD*, Oficyna Wydawnicza Politechniki Wrocławskiej, 2005.
2. Suseł M., *Komputerowa grafika inżynierska. Zbiór zadań*. Oficyna Wydawnicza PWr, 1999.
3. Dobrzański T., *Rysunek techniczny maszynowy*. WNT, Warszawa 1997.
4. Rydzanicz I., *Zapis konstrukcji - zadania*. WNT, Warszawa, 1999.
5. Podręcznik AutoCAD 2002 LT., *Pierwsze kroki*, Autodesk, Inc., 2001.

• **Additional literature:**

1. Zbiór Polskich Norm *Rysunek techniczny maszynowy*.
2. Zbiór Polskich Norm *Rysunek elektryczny*.

- **Conditions of the course acceptance/creditation:** Passing of a written test and completion of drawings made in laboratory.

\* - depending on a system of studies