

Study program(s):	Industrial Engineering / Road Traffic / Environmental Protection		
Course title:	Engineering Drawing		
Professor:	PhD. Miloš S. Ristić		
Type of course:	compulsory		
ECTS credits:	7		
Pre-requisites:	-		
<p>Aim of the course is a student trained to sketch, define and create a complete technical documentation of the position or assembly, by examining the space and solids (models) in space, and a student who understands technical drawing.</p> <p>The teaching process aims at:</p> <ul style="list-style-type: none"> ▪ understanding the point and its projections in space (octant), defining the lines (edges) and the solids, designing them on three orthogonal planes, as well as determining the right size of the lines, ▪ reading and understanding technical documentation, as well as developing certain positions and assemblies; ▪ adopting concepts such as 2D drawing commands, commands for object editing, and CAD dimensioning commands. 			
<p>Learning outcomes</p> <p>Upon the successful completion of the course, a student successfully:</p> <ul style="list-style-type: none"> ▪ projects a point, line and solid on three orthogonal planes in space ▪ makes a physical model of a complex body created by intersection of two solids ▪ orthographically projects machine parts or solids according to SRPS EN ISO 12100 ▪ creates and interprets technical documentation of a position and assembly according to ISO 7200; ▪ uses CAD tools in creating technical documentation. 			
<p>Syllabus</p> <p><u>Theoretical part</u> - Fundamentals of descriptive geometry and modes of presenting objects. Orthographic projection of geometric solids. Standards and rules of drawing in mechanical engineering. Harmonized standards - directives for a new and global EU approach. Orthographic projection. Elements of dimensioning. Tolerance. Intersections. Technical drawings. Technical documentation. The process of assessing product compliance assessment "CE" mark. Mechanical sketch - modeling. General principles for construction according to EN 292 and SRPS EN ISO 12100: 2012. Developed surfaces. Elements of vertical and horizontal signaling. Dimensioning vehicle positioning. Sketching mechanical parts. Application and importance of CAD tools. Drawing and modifying 2D objects.</p> <p><u>Practical part</u> - Projection of a point, line and solid. Intersection of a solid and a plane (a pattern of newly created object). Interpenetration of two solids (penetration model). Technical documentation - ISO 7200. Sketching the machine part by processing stages. Basics of drawing using CAD tools. Working area and CAD tools. User environment and the use of drawing tools for 2D objects. General properties of solids. Section lining. Text on the drawing. Creating and modifying blocks. Dimensioning a solid and its position.</p>			
<p>Literature</p> <ol style="list-style-type: none"> 1. Ristić S., <i>Tehničko crtanje sa nacrtom geometrijom, Visoka tehnička škola strukovnih studija Niš, Niš 2010</i> 2. Ristić S., Dakić N., Cvetanović B., Ristić M., <i>Praktikum iz tehničkog crtanja sa nacrtom geometrijom III dopunjeno izdanje, Visoka tehnička škola strukovnih studija Niš, Niš, 2007.</i> 3. Ristić S., Jovanović M., Cvetanović B., <i>Zbirka rešenih ispitnih zadataka iz tehničkog crtanja sa nacrtom geometrijom – III dopunjeno izdanje, Viša tehnička škola u Nišu, Niš, 2003.</i> 4. Simmons C., Maguire D., <i>Manual of Engineering Drawing, Elsevier, 2005.</i> 			
Number of active classes			Other forms of teaching:
Lectures: 2	Practical classes: 3	Research work:	
<p>Teaching methods</p> <p>Theoretical classes are held in the amphitheater, using presentations on the computer and the board. Practical classes: sketching the model as well as understanding the body in space by drawing on paper. Exercises on the computer are carried out using modern software tools in computer facilities, sketching the model is done on the field (production plants, traffic flows).</p>			
<p>Grading system (maximum 100 points), grading scale from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade 7 from 61-70 points, grade 8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.</p>			
Pre-exam obligations	points	Final exam	points
activity during theoretical lectures	10	Practical work	50
practical training	20		
colloquium(s)/seminar papers	20		
Sum	50	Sum	50