Study program: Civil Engineering

Course: Road engineering 2

Professor/assistant: PhD Dragan Perić / PhD Nenad Stojković

Status of course: compulsory

ECTS credits: 6

Pre-requisites: none

Aims of the course:

The aim of the course is to prepare a student to:

- work on the processing of data obtained by field measurement;
- participate indepen. or as a proj. team member in geodetic works in realization of road constr. projects;
- participate indepen. or as a project team member in production of doc. for road constr. projects;
- read project doc. and analyse elements necessary for carrying out works on the constr. of roads.

Learning outcomes:

After finishing the course, a student will be able to:

- determine the position of the road;
- determine the horizontal alignment, elements of horizontal curves and road length;
- determine the vertical alignment;
- draw road cross sections according to the data of horiz. and vert. alignment and terrain measurements;
- calculate and plan earthworks;
- use modern software tools for road design and production of project documentation.

Syllabus:

Theoretical part

Concept, pre-earthwork, land categories, material looseness. Forms of earthworks. Calculation of earthworks. Calculation of cross-sectional area surfaces, layout of soil masses, mass profile, characteristics of the mass profile lines, determination of the best position of the edge. Execution of earthworks and problems occurring at that time: excavation, cutting of stairs, excavation of stairs, compression of subfloors, making of beds. Cold construction: definition; basic types of pavement structures; materials used by modern pavement structures; dimensioning of flexible pavement structures; construction of flexible pavement structures; types of contemporary concrete structures: basic elements; dimensioning; construction. Determination of the zero line and tangential straightening. Determination of the elements of the horizontal axis of the road and the total length. Determining the elements of the vertical axis of the road; longitudinal profile. Cross-section profiles. Railways: historical development; classification of railways; structural elements of the railway; bottom machine; arranging the track in the direction and curve; free and factory profile of the railway; design of the railway. Upper machine and equipment rail. Construction of the railway.

Practical part

Practical classes on field facilities and visits to the production facilities for asphalt mass. Production of 2 graphic works, which include practical examples of positioning of the road, horizontal and vertical axis guidance, drawing of cross sections and calculation of works. Calculation of works with computer help in "Survey" and "Pythagoras" software systems.

Literature:

1. Đinđić, M., *Zemljani radovi*, Gradina, Univerzitet Beograd, 1996.
2. Jeftinijades, S., *Projektovanje i građenje železničkih pruga*, GAF, Niš, 1980.
3. Jovičić V, Plamenac D., *Saobraćajnice 2*, VGGŠ Beograd, 2011.

Number of active classes			Other forms of teaching:
Lectures: 3	Practical classes: 2	Laboratory classes: 0	

Teaching methods:

Interactive classes incl. solving practical examples.

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.

Pre-commitments	**points**	**Final exam**	**points**
activity during lectures and practice	10	written exam	30
colloquium(s)	10 + 20	oral exam	20
seminar paper(s)	20		
Sum	**50**	**Sum**	**50**