

## Tárgytematika / Course Description

### Road pavements and materials

**EKNB\_KETA010**

**Tárgyfelelős neve /**

**Teacher's name:** Nagy Richárd

**Félév / Semester:** 2023/24/2

**Beszámolási forma /**

**Assesment:** Vizsga

**Tárgy heti óraszám /**

**Teaching hours(week):** 2/0/1

**Tárgy féléves óraszám /**

**Teaching hours(sem.):** 0/0/0

### OKTATÁS CÉLJA / AIM OF THE COURSE

The students will learn the design of pavement structures, the design and production technology of the various materials and mixtures required for their construction. They will hear about laboratory and field testing methods for materials and finished pavements, and the basics of grading. They will learn about dimensioning and design of pavement structures, road construction technologies and production processes.

### TANTÁRGY TARTALMA / DESCRIPTION

|        |   |
|--------|---|
| Week 1 | Types and construction of pavement structures for low-traffic roads.                          |
| Week 2 | Material parameters in the dimensioning models, dimensioning criteria.                        |
| Week 3 | Design and dimensioning of pavement structures and tile pavements. Reinforcement design.      |
| Week 4 | Granular base layers. Dimensioning of cap and protection layers.                              |
| Week 5 | Technology and construction of hydraulic binders. Stabilizations, lean concrete base courses. |
| Week 6 | Aggregates, binders. Types of asphalt, their composition and base materials.                  |

|         |  |
|---------|--|
| Week 7  | Base and pavement layers: function, character requirements.                                |
| Week 8  | Quality assurance. Road construction testing testing.                                      |
| Week 9  | Asphalt production. Production technology production, delivery, installation.              |
| Week 10 | Use of modified binders. Use of special and in pavement rehabilitation.                    |
| Week 11 | Application of thin layers. Properties of thin construction.                               |
| Week 12 | Stress absorbing membrane layer.   |
| Week 13 | Application of emulsions. Emulsion asphalt   |
| Week 14 | Reuse of road construction materials. On-site recycling.                                   |
| Week 15 | Concrete pavement design, materials. Concrete construction, testing. Construction of stone |

### SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESSMENT'S METHOD

|  |  |   |  |
|--|--|---|--|
| Total number of lessons:3                    |  | Requirements for participation in the session                 |  |
| Number of lecture hours:2                    |  | Participation in the session is <b>compulsory</b>             | <b>compulsory for all laboratory exercises</b> |
| Number of hours for curricular exercises:1/2 |  | Participation in the session is <b>compulsory</b>             | <b>study trip obligatory</b>                   |
| Number of hours of laboratory practical: 1/2 |  | Certification and make-up in case of absence from the session |  |

|  |  |  |  |   |  |  |  |
|--|--|--|--|---|--|--|--|
|  |  |  |  | <b>Total number of absences: max. 3 occasions</b> |  |  |  |
|  |  |  |  | <b>of which one occasion uncertified</b>          |  |  |  |
|  |  |  |  | <b>of which two occasion certified</b>            |  |  |  |

**Inquiry of knowledge**

|   |  |  |  |  |                         |            |
|---|--|--|--|--|-------------------------|------------|
| <b>Mid-semester</b>   |  |  |  | <b>End of semester</b>   |                         |            |
|   |  |  | <b>Total number: 4</b>   |  |                         |            |
| <b>Submission of laboratory exercises, preparation of a semester project and lecture notes ongoing. Last week of March: pencil version of term plan to be ready</b> |  |  | <b>Date(s) will be given in the NEPTUN system</b>  | <b>submission of semester project, submission of protocols, completion of mid-term examination notes</b> |                         |            |
| <b>Mid-term exam: 2</b>   |  |  | <b>Type: laboratory reports, mid-term exams, semester work, preparation of lecture notes</b> | <b>Signature:</b>  | <b>yes</b>              |            |
|   |  |  |  |  | <b>Practical grade:</b> | <b>yes</b> |
|   |  |  |  | <b>yes</b>   |                         |            |
|   |  |  |  |  |                         |            |

**Topics: 1. Exam: syllabus 1-8. 2. final exam: points 9-15 of the syllabus, semester project: asphalt production instruction**

**Preparation of laboratory protocols.**

**Possibility of substitution in case of justified absence and possibilities of correction: one substitution for 1 examination**

|  |  |  |                   |  |  |  |
|--|--|--|-------------------|--|--|--|
|  |  |  | <b>Evaluation</b> |  |  |  |
|--|--|--|-------------------|--|--|--|

|   |                 |   |          |  |                |
|---|-----------------|---|----------|--|----------------|
| <b>semester project</b>                   | 5 grades        | <b>signature condition: attendance of classes, study trip</b>                     | 2 grades |  | 5 grades       |
| <b>Laboratory exercises</b>               | 5 grades        | <b>Successful completion of 2 mid-term exam, submission of a mid-term project</b> |          |  | <b>oral</b>    |
| <b>Lecture notes</b>                      | 5 grades        | <b>completion of laboratory exercises, submission of reports</b>                  |          |  | <b>written</b> |
| <b>Mid-term exams</b>                     | NEPTUN          | <b>submission of lecture notes</b>  |          |  |                |
| <b>lecture note submission</b>            | at last lecture |   |          |  |                |
| <b>submission of laboratory protocols</b> | at last lecture | <b>Type of assessment, mark scheme: combined</b>                                  |          |  |                |
| <b>submission of semester project</b>     | at last lecture | <b>mid-term exams=30%, semester project=20%, Semester exam=50%</b>                |          |  |                |

Number and type of compulsory, individual or group assignments: 1 individual semester project, 5 individual lecture notes, 2 mid-term exams assignments

## KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL

Related PIARC technical documents: [www.piarc.org](http://www.piarc.org)

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## AJÁNLOTT IRODALOM / RECOMMENDED MATERIAL