

**I. Tantárgyleírás****1. Alapadatok***1.1 Tantárgy neve***SURVEYING FIELD COURSE***1.2 Azonosító (tantárgykód)***BMEEOAFBSFC003-00***1.3 Tantárgy jellege*

Kontaktórás tanegység

*1.4 Óraszámok*

| Típus                   | Óraszám / (nap) |
|-------------------------|-----------------|
| Laboratóriumi gyakorlat | 48              |

*1.5 Tanulmányi teljesítményértékelés (minőségi értékelés) típusa*

Félévközi érdemjegy

*1.6 Kreditszám*

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*1.7 Tárgyfelelős*

|          |                                                                      |
|----------|----------------------------------------------------------------------|
| név      | Dr. Takács Bence Géza                                                |
| beosztás | Egyetemi docens                                                      |
| email    | <a href="mailto:takacs.bence@emk.bme.hu">takacs.bence@emk.bme.hu</a> |

*1.8 Tantárgyat gondozó oktatási szervezeti egység*

Általános- és Felsőgeodézia Tanszék

*1.9 A tantárgy weblapja*[epito.bme.hu](http://epito.bme.hu)<https://edu.epito.bme.hu/course/view.php?id=5084>*1.10 Az oktatás nyelve*

magyar

*1.11 Tantárgy típusa*

Kötelező az építőmérnöki (BSc) szakon

*1.12 Előkövetelmények*

Párhuzamos követelmény: Geodézia II.

*1.13 Tantárgyleírás érvényessége*

2025. szeptember 1.

## **2. Céltűzések és tanulási eredmények**

### *2.1 Céltűzések*

The goal of the field course is that students shall deepen and apply their knowledge gained over Surveying I and Surveying II throughout complex, and typical civil engineering projects. In addition, students shall develop their skills mainly in team working. Another goal of the field course is that student shall use basic geodetic instruments, such as surveyors level, total station and RTK GNSS receiver.

### *2.2 Tanulási eredmények*

A tantárgy sikeres teljesítése után a hallgató

#### **A. Tudás**

1. Is familiar with geodetic methods applied in civil engineering practice. 2. Understand the basic methods to determine control points, such as free station, leveling line and RTK GNSS technique. 3. Is familiar with basic geodetic instruments used in civil engineering practice, such as surveyors level, total station and RTK GNSS receiver. 4. Understands the geometrical relationships used by measuring programs in a total station, like orientation, polar method for detail point determination, trigonometric heighting, setting out points given by their coordinates. 5. Is familiar with achievable accuracy and limitations of RTK GNSS technique. Is informed in the applications and advantages of RTK GNSS technique. 6. Understands the fundamental geometrical elements (straight, transition curve, radial curve) of the horizontal alignment of linear facilities (roads, railways). Understand the relationship between calculating the geometric quantities required to set structure of the road/railway out. 7. Is familiar with the steps of developing a digital terrain model from the results of detail surveying. 8. Understand the line, detail point and cross-section leveling methods.

#### **B. Képesség**

1. Communicates as an engineer, uses technical drawings. 2. Uses the basic geodetic instruments used in civil engineering practice, such as surveyors level, total station and RTK GNSS receiver. 3. Is able to interpret the accuracy measures got in control point determining. 4. Applies the geodetic calculation methods learned in the previous courses. 5. Applies technical standards and instructions given to use of geodetic instruments and their data processing. 6. Is able to complete specific jobs on their own while cooperates with supervision in more complex civil engineering projects. 7. Is able to do some geodetic jobs related to civil engineering projects. 8. Is able to document the completed geodetic measurements and computations.

#### **C. Attitűd**

1. Is eager to complete their jobs at a high level and the best way they can. 2. Is open to complete their job either on their own or in cooperation with others. 3. Seeks surveying measurements with the required accuracy of the task, recognizes and uses the controlling possibilities. 4. Open to the modern surveying techniques and procedures, and recognizes its importance for a civil engineer.

#### **D. Önállóság és felelősség**

1. Can make decisions on their own in basic geodetic jobs related to civil engineering activity. 2. Collaborates with other students as a part of a team in solving specific tasks. Leads the team in specific tasks. 3. Keeps and urges the team to keep the working safety instructions on the workplace in order to avoid accidents. 4. Carefully handles the surveying instruments, takes moral and financial responsibility for them

### *2.3 Oktatási módszertan*

After a short introduction, students will solve surveying exercises, take measurements, do calculations, planning and documentation tasks in small groups. All of these activities are carried out in a coherent 6-day exercise on a field, suitable for performing measurement exercises.

### *2.4 Részletes tárgyprogram*

1. Arrival, occupation of accommodation, administration (e.g. meal tickets). Describing camp order. Describing the subject requirements. Training on working safety. 2. Control point determination 3. Detail survey 4. Mapping the detail survey 5. Computation of the double curve, planning the setting out 6. Setting out the double curve 7. Line and cross-section leveling 8. Building profile boarding. Geometrical quality control of an existing wall 9. Determining control points on a building required for photogrammetry 10. Digital photogrammetry applied to survey a building 11. Summary. Finalization minutes, preparation of technical descriptions, compilation of documentation. Mid terms 12. valuation, Camp Closing, Leaving

A félév közbeni munkaszüneti napok miatt a program csak tájékoztató jellegű, a pontos időpontokat a tárgy

honlapján elérhető "Részletes féléves ütemterv" tartalmazza.

### *2.5 Tanulástámogató anyagok*

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available in the educational portal

### *2.6 Egyéb tudnivalók*

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1. The subject is taught during the spring semester either in or after the examination period. 2. Accommodation is provided for the students during the field course, it is mandatory to use them. 3. Some of the measurements are carried out outdoors, regardless of the weather. We will publish an advertisement about the necessary clothing, shoes and other items before the field course. 4. Participation in the exercises is compulsory. 5. Internet connection is provided at the field course. Use of your own laptop or equivalent device during the learning and exercises, is highly recommended.

### *2.7 Konzultációs lehetőségek*

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Appointments: The possibility of consultation is continuously ensured during the field course.

*Jelen TAD az alábbi félévre érvényes:*

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**II. Tárgykövetelmények****3. A tanulmányi teljesítmény ellenőrzése és értékelése***3.1 Általános szabályok*

The assessment of the learning outcomes specified in clause 2.2 above and the evaluation of student performance occurs via a practical test, submitted documentation, as well as the student's attitudes and activities during the field course.

*3.2 Teljesítményértékelési módszerek*

| Assessment Name (Type)  | Code | Assessed Learning Outcomes       |
|-------------------------|------|----------------------------------|
| practical test          | PT   | A1, A3-A4, B2-B5, C1, C3, D1, D4 |
| submitted documentation | D    | B1, B3-B5, B8, C1-C2, D1-D2      |
| students activity       | A    | A1-A8, B1-B8, C1-C4, D1-D4       |

A szorgalmi időszakban tartott értékelések pontos idejét, a házi feladatok ki- és beadási határidejét a "Részletes féléves ütemterv" tartalmazza, mely elérhető a tárgy honlapján.

*3.3 Teljesítményértékelések részaránya a minősítésben*

| Code                             | Weight |
|----------------------------------|--------|
| A1, A3-A4, B2-B5, C1, C3, D1, D4 | 33%    |
| B1, B3-B5, B8, C1-C2, D1-D2      | 33%    |
| A1-A8, B1-B8, C1-C4, D1-D4       | 34%    |
| Total                            | 100%   |

*3.4 Az aláírás megszerzésének feltétele, az aláírás érvényessége*

Signature could not be obtained from the subject.

*3.5 Érdemjegy megállapítása*

| Grade            | Score (P)          |
|------------------|--------------------|
| excellent (5)    | $87 \leq P$        |
| good (4)         | $75 \leq P < 87\%$ |
| satisfactory (3) | $62 \leq P < 75\%$ |
| pass (2)         | $50 \leq P < 62\%$ |
| fail (1)         | $P < 50\%$         |

*3.6 Javítás és pótlás*

The practical task can be repeated at one time at the field course. The exact date of the retake is advertised by the camp leader.

*3.7 A tantárgy elvégzéséhez szükséges tanulmányi munka*

| Activity                                                  | Hours/Semester |
|-----------------------------------------------------------|----------------|
| contact hours                                             | 6x8=48         |
| processing the measurements, preparing the documentations | 6x2=12         |

*3.8 A tárgykövetelmények érvényessége*

2025. szeptember 1.

*Jelen TAD az alábbi félévre érvényes:*