

# ADVANCED FOUNDATION ENGINEERING

|           |   |   |  |
|-----------|---|---|--|
| <b>1</b>  | Course Title:   | ADVANCED FOUNDATION ENGINEERING   |  |
| <b>2</b>  | Course Code:  | INS5072   |  |
| <b>3</b>  | Type of Course:   | Optional  |  |
| <b>4</b>  | Level of Course:  | Second Cycle  |  |
| <b>5</b>  | Year of Study:  | 1   |  |
| <b>6</b>  | Semester:   | 2   |  |
| <b>7</b>  | ECTS Credits Allocated:                                 | 6.00  |  |
| <b>8</b>  | Theoretical (hour/week):                                | 3.00  |  |
| <b>9</b>  | Practice (hour/week):                                   | 0.00  |  |
| <b>10</b> | Laboratory (hour/week):                                 | 0   |  |
| <b>11</b> | Prerequisites:  |   |  |
| <b>12</b> | Language:   | Turkish   |  |
| <b>13</b> | Mode of Delivery:                                       | Face to face  |  |
| <b>14</b> | Course Coordinator:                                     | Doç. Dr. YEŞİM SEMA ÜNSEVER   |  |
| <b>15</b> | Course Lecturers:                                       |   |  |
| <b>16</b> | Contact information of the Course Coordinator:          | unsever@uludag.edu.tr   |  |
| <b>17</b> | Website:  |   |  |
| <b>18</b> | Objective of the Course:                                | To calculate the bearing capacity of foundations and design the foundation properly by using laboratory and in-situ test results. |  |
| <b>19</b> | Contribution of the Course to Professional Development: | This course teaches to evaluate laboratory and in-situ test results to design foundations.  |  |
| <b>20</b> | Learning Outcomes:                                      |   |  |
|           |   | 1   | Design a foundation by using soil and rock properties                        |
|           |   | 2   | Calculate bearing capacity of a foundation by using soil and rock properties |
|           |   | 3   | Learn application of various types   |
|           |   | 4   | Learn application of foundation design on difficult soils                    |
|           |   | 5   | Learn soil improvement methods   |
|           |   | 6   |  |
|           |   | 7   |  |
|           |   | 8   |  |
|           |   | 9   |  |
|           |   | 10  |  |
| <b>21</b> | Course Content:   |   |  |
|           |   | <b>Course Content:</b>  |  |
| Week      | Theoretical   | Practice  |  |
| <b>1</b>  | Introduction  |   |  |
| <b>2</b>  | Site Investigation Methods                              |   |  |
| <b>3</b>  | Retaining Walls   |   |  |
| <b>4</b>  | Retaining Walls   |   |  |
| <b>5</b>  | Supported Piles   |   |  |
| <b>6</b>  | Anchored Sheet-pile                                     |   |  |
| <b>7</b>  | Sheet piles   |   |  |

|    |                                       |  |
|----|---------------------------------------|--|
| 8  | Shallow Foundations                   |  |
| 9  | Single and Continuous Foundations     |  |
| 10 | Raft Foundations and Deep Foundations |  |
| 11 | Caisson Foundation                    |  |
| 12 | Foundations on Difficult Soils        |  |
| 13 | Reinforced Soil                       |  |
| 14 | Soil Improvement Methods              |  |

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|----|---|---|
| 22 | Textbooks, References and/or Other Materials: | Craig, R. F. (1997), "Soil Mechanics", E & FN Spon, Taylor & Francis Group, 6th edition, Van Nostrand Reinhold (UK); Das, B. M. (2011). "Principles of Foundation Engineering", Thomson, 4th Edition. Birand, A. (2001). "Kazıklı Temeller", Teknik Yayınevi, Ankara. |
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| 23 | Assesment |  |
|----|-----------|--|

| TERM LEARNING ACTIVITIES   | NUMBE R | WEIGHT   |
|--|---------|--|
| Midterm Exam   | 1       | 40.00  |
| Quiz   | 0       | 0.00   |
| Home work-project  | 0       | 0.00   |
| Final Exam   | 1       | 60.00  |
| Total  | 2       | 100.00   |
| Contribution of Term (Year) Learning Activities to Success Grade |         | 40.00  |
| Contribution of Final Exam to Success Grade                      |         | 60.00  |
| Total  |         | 100.00   |
| Measurement and Evaluation Techniques Used in the Course         |         | Written exams of numerical and theoretical questions and assignments |

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|----|-------------------------------|
| 24 | <b>ECTS / WORK LOAD TABLE</b> |
|----|-------------------------------|

| Activites                  | Number | Duration (hour) | Total Work Load (hour) |
|----------------------------|--------|-----------------|------------------------|
| Theoretical                | 14     | 3.00            | 42.00                  |
| Practicals/Labs            | 0      | 0.00            | 0.00                   |
| Self study and preperation | 14     | 9.00            | 126.00                 |
| Homeworks                  | 1      | 10.00           | 10.00                  |
| Projects                   | 0      | 0.00            | 0.00                   |
| Field Studies              | 0      | 0.00            | 0.00                   |
| Midterm exams              | 1      | 2.00            | 2.00                   |
| Others                     | 0      | 0.00            | 0.00                   |
| Final Exams                | 1      | 2.00            | 2.00                   |
| Total Work Load            |        |                 | 182.00                 |
| Total work load/ 30 hr     |        |                 | 6.07                   |
| ECTS Credit of the Course  |        |                 | 6.00                   |

|     |  |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |
|-----|--|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|
| 25  | <b>CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS</b> |     |     |     |     |     |     |     |     |      |      |      |      |      |      |      |
|     | PQ1  | PQ2 | PQ3 | PQ4 | PQ5 | PQ6 | PQ7 | PQ8 | PQ9 | PQ10 | PQ11 | PQ12 | PQ13 | PQ14 | PQ15 | PQ16 |
| ÖK1 | 5  | 5   | 4   | 5   | 4   | 3   | 3   | 0   | 3   | 3    | 3    | 0    | 0    | 0    | 0    | 0    |

|     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ÖK2 | 5 | 5 | 4 | 5 | 4 | 3 | 3 | 0 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 |
| ÖK3 | 4 | 4 | 4 | 5 | 4 | 4 | 3 | 0 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 |
| ÖK4 | 5 | 4 | 5 | 5 | 3 | 3 | 3 | 0 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 |
| ÖK5 | 5 | 5 | 4 | 5 | 4 | 4 | 4 | 0 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 |

**LO: Learning Objectives    PQ: Program Qualifications**

|                            |                   |              |                 |               |                    |
|----------------------------|-------------------|--------------|-----------------|---------------|--------------------|
| <b>Contribution Level:</b> | <b>1 very low</b> | <b>2 low</b> | <b>3 Medium</b> | <b>4 High</b> | <b>5 Very High</b> |
|----------------------------|-------------------|--------------|-----------------|---------------|--------------------|