| CLAY MINERALS |   |   |   |  |  |  |  |  |  |
|---------------|---|---|---|--|--|--|--|--|--|
| 1             | Course Title:   | CLAY M  | INERALS   |  |  |  |  |  |  |
| 2             | Course Code:  | TOP696  | )   |  |  |  |  |  |  |
| 3             | Type of Course:   | Optional  |   |  |  |  |  |  |  |
| 4             | Level of Course:  | Third Cy  | cle   |  |  |  |  |  |  |
| 5             | Year of Study:  | 1   |   |  |  |  |  |  |  |
| 6             | Semester:   | 2   |   |  |  |  |  |  |  |
| 7             | ECTS Credits Allocated:                                   | 6.00  |   |  |  |  |  |  |  |
| 8             | Theoretical (hour/week):                                  | 2.00  |   |  |  |  |  |  |  |
| 9             | Practice (hour/week):                                     | 0.00  |   |  |  |  |  |  |  |
| 10            | Laboratory (hour/week):                                   | 2   |   |  |  |  |  |  |  |
| 11            | Prerequisites:  | There is  | no prerequisite for the course                  |  |  |  |  |  |  |
| 12            | Language:   | Turkish   |   |  |  |  |  |  |  |
| 13            | Mode of Delivery:   | Face to f   | face  |  |  |  |  |  |  |
| 14            | Course Coordinator:                                       | Prof. Dr.   | Cumhur Aydınalp                                 |  |  |  |  |  |  |
| 15            | Course Lecturers:   |   |   |  |  |  |  |  |  |
| 16            | Contact information of the Course<br>Coordinator:         | Bursa Uludağ Üniversitesi, Ziraat Fakültesi,Toprak Bilimi ve Bitki<br>Besleme Anabilim Dalı<br>16059 Görükle Kampüsü, Nilüfer/Bursa<br>Tel: 0-224-2941537<br>E-posta: sdirim@uludag.edu.tr                                    |   |  |  |  |  |  |  |
| 17            | Website:  |   |   |  |  |  |  |  |  |
| 18<br>19      | Objective of the Course:<br>Contribution of the Course to | The aim of the course is the formation of clay minerals, the basic concepts and their application areas to learn the various methods for the determination.<br>Recognizes clay minerals, learns how they are diagnosed, gains |   |  |  |  |  |  |  |
|               | Professional Development:                                 | knowledge about their behavior in the natural environment and their technological usage areas.  |   |  |  |  |  |  |  |
| 20            | Learning Outcomes:  |   |   |  |  |  |  |  |  |
|               |   | 1   | To know formation of clay minerals.             |  |  |  |  |  |  |
|               |   | 2   | To determine the clay minerals                  |  |  |  |  |  |  |
|               |   | 3   | To obtain information on areas of clay minerals |  |  |  |  |  |  |
|               |   | 4   |   |  |  |  |  |  |  |
|               |   | 5   |   |  |  |  |  |  |  |
|               |   | 6   |   |  |  |  |  |  |  |
|               |   | 7   |   |  |  |  |  |  |  |
|               |   | 8   |   |  |  |  |  |  |  |
|               |   | 9   |   |  |  |  |  |  |  |
|               |   | 10  |   |  |  |  |  |  |  |
| 21            | 21 Course Content:  |   |   |  |  |  |  |  |  |
|               | Course Content:   |   |   |  |  |  |  |  |  |
| Week          | Theoretical   |   | Practice  |  |  |  |  |  |  |
| 1             |   |   |   |  |  |  |  |  |  |
| 2             | Importance of clay minerals                               |   |   |  |  |  |  |  |  |
| 3             | Origin of clay minerals                                   |   | Laboratory                                      |  |  |  |  |  |  |
| 4             | I ype of clay minerals                                    |   | Laboratory                                      |  |  |  |  |  |  |

|   |   |                | L    | .0: L  | earr | ning C           | )bjec                | tives  | 6 F      | PQ: P                                      | rogra        | m Qu   | alifica | tions  | 5    |       |      |
|---|---|----------------|------|--------|------|------------------|----------------------|--|----------|--|--------------|--------|---------|--------|------|-------|------|
| OK3   | 5   | 5              | 4    | 2      | 2    | 3                | 3                    | 3  | 3        | 3  | 5            | 4      | 1       | 1      | 0    | 0     | 0    |
| ÖR2   | 5   | ,              | ა    | 2      | 2    | 2                | 2                    | 3  | 4        | <u></u>                                    | <sup>4</sup> | 2      |         |        | 0    |       | 0    |
| ÖK2   |   | -              | 3    | 2      | 2    | 2                | 2                    | 3  | <u> </u> | 2  |              | 2      | 1       | 1      | 0    | 0     | 0    |
| ÖK1   | Ę   | 5              | 3    | 5      | 3    | 4                | 5                    | 2  | 5        | 1  | <b>0</b>     | 2      | 1       | 3<br>1 | 0    | 0     | 0    |
|   | F   | PQ1            | PQ2  | PQ3    | PQ4  | PQ5              | PQ6                  | PQ7  | PQ8      | PQ9  | PQ1          | PQ11   | PQ12    | PQ1    | PQ14 | PQ15  | PQ16 |
| 25 CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME<br>QUALIFICATIONS |   |                |      |        |      |                  |                      |  |          |  |              |        |         |        |      |       |      |
| ECTS  | ECTS Credit of the Course                         |                |      |        |      |                  |                      |  |          |  |              |        | 6.00    |        |      |       |      |
| Total w   | al work load/ 30 hr                               |                |      |        |      |                  |                      | 6.00   |          |  |              | 6.00   |         |        |      |       |      |
| Total W   | Work Load   |                |      |        |      |                  |                      | 180.00   |          |  |              | 180.00 |         |        |      |       |      |
| Final E   | Exams   |                |      |        |      |                  |                      |  | 1        |  |              | 15.00  | 15.00   |        |      | 15.00 |      |
| Others  | IS  |                |      |        |      |                  |                      | (  | 0        |  |              | 0.00   | 0.00    |        |      | 0.00  |      |
| Mi <b>2l4</b> ern   |   |                |      |        |      |                  |                      |  | 1        |  |              | 13.00  | 13.00   |        |      | 13.00 |      |
| Field S   | Id Studies  |                |      |        |      |                  |                      | 3 6.0  |          |  | 6.00         | 5.00   |         | 18.00  |      |       |      |
| Measu   | leasurement and Evaluation Techniques Used in the |                |      |        |      |                  | e T                  | The measurement and evaluation of the course is do   |          |  |              |        | one     |        |      |       |      |
| Homew   | omeworks  |                |      |        |      |                  |                      | 2 15.00 30.00  |          |  |              |        |         |        |      |       |      |
| Self stu  | elf study and preperation                         |                |      |        |      |                  |                      | 6.00   |          |  | 48.00        |        |         |        |      |       |      |
| Practic   | uccess Grade                                      |                |      |        |      |                  |                      | 14   |          |  | 2.00         |        |         | 28.00  |      |       |      |
| ငှေရုန္ဌားခြမ္မားချာ of Term (Year) Learning Activities to          |   |                |      |        | 40   | 401Q0 2.00 28.00 |                      |  |          | nour)                                      |              |        |         |        |      |       |      |
| Home v<br>Activit   | work-i<br>tes                                     | proie          | ect  |        |      |                  | 1                    |  | 10       | 10.00<br>Number Duration (bour) Total Work |              |        |         |        |      | Vork  |      |
| Quiz  |   |                |      |        |      |                  | 2                    |  | 10       | .00  |              |        |         |        |      |       |      |
| Midtern   | n Exa   | ım             |      |        |      |                  | 1                    |  | 20       | .00  |              |        |         |        |      |       |      |
| TERML   | EAR   | NING           | ACTI | VITIES |      |                  | N<br>R               |  | W        | EIGHT                                      |              |        |         |        |      |       |      |
| 23  | Asse  | esme           | nt   |        |      |                  |                      |  |          |  |              |        |         |        |      |       |      |
| 22  | Textbooks, References and/or Other<br>Materials:  |                |      |        |      |                  | Th<br>B.<br>B.<br>G. | The prepared lecture notes from various sources<br>B. Weide 1992,Introduction to Clay Minerals<br>B. Velde, A. Meunier 2008,The Origin of Clay Minerals in<br>Soils and Weathered Rocks<br>G.Lagaly and F.Bergaya 2006, Handbook of Clay Science |          |  |              |        |         |        |      |       |      |
| 14  | Use of clay minerals                              |                |      |        |      |                  | La                   | borato   | ry       |  |              |        |         |        |      |       |      |
| 13  | Definition of clay minerals                       |                |      |        |      |                  | La                   | Laboratory   |          |  |              |        |         |        |      |       |      |
| 12  | Sulfate minerals                                  |                |      |        |      |                  | La                   | borato   | ry       |  |              |        |         |        |      |       |      |
| 11  | Carbonates  |                |      |        |      |                  | La                   | borato   | ry       |  |              |        |         |        |      |       |      |
| 10  | Imog  | Imogolite      |      |        |      |                  |                      | La   | borato   | ry   |              |        |         |        |      |       |      |
| 9   | Allop   | Allophanes     |      |        |      |                  |                      | La   | borato   | ry   |              |        |         |        |      |       |      |
| 8   | Hydr  | Hydrous oxides |      |        |      |                  | La                   | Laboratory   |          |  |              |        |         |        |      |       |      |
| 7   | Meta  | al oxi         | des  |        |      |                  |                      |  | La       | Laboratory                                 |              |        |         |        |      |       |      |
| 6   | Silicate clays                                    |                |      |        |      | La               | Laboratory           |  |          |  |              |        |         |        |      |       |      |
| 5   | Charge development on clays                       |                |      |        |      | La               | Laboratory           |  |          |  |              |        |         |        |      |       |      |

| Contrib | 1 very low | 2 low | 3 Medium | 4 High | 5 Very High |
|---------|------------|-------|----------|--------|-------------|
| ution   |            |       |          |        |             |
| Level:  |            |       |          |        |             |