**Fourth Stage/ Soil investigation G415**

**Course Description Form**

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| **This course provides the basic concept for soil mechanics and the soil investigation test on site as the borehole, standard penetration and cone penetration test. The most laboratory test will be illustrated through a video with a technical practice about the solution of the soil with problems. The data that will obtain from the geotechnical investigation, how we can evaluate it and define the data that we need. The students will be able to choose a case study and do presentation.** |

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| College of Science/ University of Basrah | 1.Educational Institution  |
| Geology  | 2. Department  |
| Soil investigation G415 | 3. Course name/Code 1. Programs included in it |
| Bachelor | 4. Programs included in  |
| Weekly | 5. Attendance Form Available |
| 2022-2023 | 6. Semester/ Year |
| 30 hours + 60 practical hours | 7. Total of study hours |
|  prepared in 27/9/2022  | 8. The course description was  |
| 9. Aims of the Course |
| The objective of this course is to provide the attendees all the required information about soil mechanics and soil investigation in the laboratory and the filed. The types of soil and its behavior under the foundation will be illustrated in this course. The target to provide rule of thumb and practical way to define scope of work and to read the soil report and how to monitoring the soil tests in laboratory and filed. |

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| 1. Course outcomes and methods of teaching, learning and assessment
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| 1. **Knowledge and Understanding goals**
2. Recognize the importance of soil instigation before held and infrastructure.
3. Recognize of Environment hazard.
4. Evaluated and measured the consolidation test result.
5. Mitigate of environment hazard.

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| Learning Methods |
| 1. Explanation and Discussion of the Lectures2. It is boosting the student to conduct research and reports.3. Practical application, which includes an explanation of the important geological foundations in knowing. |
| Evaluating Methods |
| 1- Daily test and reports2- Monthly exams2- Final exams  |
| C- Emotional and evolutional goals Usually, the student learns about the looking at different case studies at different situation.  |
| Learning Methods |
| 1. Explanation and Discussion of the Lectures2. Boosting the student to conduct research and reports.3. The student PowerPoint presentations.  |
| d- General qualification skills transferred (other skills related toemployability and personality development)1. Developing the mental abilities of the student2. Developing the skills3- Giving a student an opportunity to do lab work and improve their ability to analysis the data. |

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| This course description provides a brief summary of the most importantcharacteristics of the course and the learning outcomes expected of the student toachieve, demonstrating whether he has made the most of the available learningopportunities. It must be linked to the description of the program. |
| 1. **Sequencing of course content**
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| **Evaluation****method** | **Learning****method** | **Course Outcomes** | **Unit name** | **Hours** | **Week** |
| **Daily andmonthly tests** | **Understand the****evolving state****of knowledge****learn to carry****out practical****work, in the****field and in the****laboratory** | **Knowledge and****understanding of** **lectures** | Theoretical: Introduction of soil investigation Practical: Knowledge of the principals of soil test | **2 h. lect.****2h. lab.** | **1 st week,****2ed, 3ed****weeks** |
| **Daily andmonthly tests** | **Understand the****evolving state****of knowledge****learn to carry****out practical****work, in the****field and in the****laboratory** | **Knowledge and****understanding of** **lectures** | Theoretical: Developing the inspection skills to investigate the soil and distinguish between different types of the soilpractical:Solve some soil problems | 2 h. lect.2h. lab. | **4 th week,****5 th** **and 6th****weeks** |
| **Daily andmonthly tests** | **Understand the****evolving state****of knowledge****learn to carry****out practical****work, in the****field and in the****laboratory** | **Knowledge and****understanding of** **lectures** | Theoretical:How to validate the compaction and introduction to problematic soil  Practical:Compaction test | **2 h. lect.****2h. lab.** | **7 th week,****and 8th****weeks** |
| **Daily andmonthly tests** | **Understand the****evolving state****of knowledge****learn to carry****out practical****work, in the****field and in the****laboratory** | **Knowledge and****understanding of** **lectures** | Theoretical:Understanding the consolidation theoryPractical:Consolidation test | **2 h. lect.****2h. lab.** | **9 th week,****and 10th****weeks** |
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| **Daily andmonthly tests** | **Understand the****evolving state****of knowledge****learn to carry****out practical****work, in the****field and in the****laboratory** | **Knowledge and****understanding of** **lectures** | Theoretical: Understanding the serious importance of the long-time settlement due to consolidation process Practical: Case studies1(Presentations) | **2 h. lect.****2h. lab.** | **11 th week,****and 12th****weeks** |
| **Daily andmonthly tests** | **Understand the****evolving state****of knowledge****learn to carry****out practical****work, in the****field and in the****laboratory** | **Knowledge and****understanding of** **lectures** | Theoretical: Geotechnical investigation for earthquake engineering Practical: Case studies2(Presentations) | **2 h. lect.****2h. lab.** | **13 th week,** |
| **Daily andmonthly tests** | **Understand the****evolving state****of knowledge****learn to carry****out practical****work, in the****field and in the****laboratory** | **Knowledge and****understanding of** **lectures** | Theoretical:Identification, assessment and mitigation of liquefaction hazardsPractical : Case studies3(Presentations) | **2 h. lect.****2h. lab.** | **14 th week,****and 15th****weeks** |

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| 12. Course Development Plan |
| Course development based on recent versions of books and references. .The adoption of modern interactive teaching methods.Develop new ways for students to participate in updating the curriculum and making their own presentations |

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| **11. Infrastructure** |
| Powrie, William. *Soil mechanics: concepts and applications*. CRC Press, 2018. | **1- Textbooks required for the course** |
| Mengé, P. (2020). Soil investigation results at Sint-Katelijne-Waver (Belgium). In Screw piles–installation and design in stiff clay (pp. 19-62). CRC Press. | **2 References** |
|  | Recommended readings  |
|  | Electronic website |