**TEMPLATE FOR COURSE SPECIFICATION**

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| HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW |

 **COURSE SPECIFICATION**

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| This Course Specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. It should be cross-referenced with the program specification.  |

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| College of EngineeringUniversity of Baghdad | 1. Teaching Institution |
| Environmental Engineering Department | 2. University Department/Centre |
| Soil Science & Pollution EnE 307This course introduce the followings:Origin and composition of soils, soil structure, chemical and physical properties of soil, soil permeability and flow of water through soils, soil behavior under stress, compressibility, shear strength, environmental geo-technology, soil erosion and pollution, ion exchange in soils, soil as an aid to waste disposal. | 3. Course title/code and description |
| Environmental Engineering Department | 4. Program (s) to which it contributes |
| Annual System: There is only one mode of delivery, which is a “Day Program”. The students are full time students, and on campus. They attend full day program in face-to-face mode. The academic year is composed of 30-weeks regular subjects. | 5. Modes of Attendance offered |
| 1st and 2nd / Academic Year 2014-2015 | 6. Semester/Year |
| 120 hrs./ 3 hrs per week, 2hrs (lab.) 1st course per week | 7. Number of hours tuition (total) |
| 2015 | 8. Date of production/revision of this specification  |
| **9. Aims of the Course** |
| The student will be capable of understanding the origin, composition and structure of soil. Understanding of these topics with physical and chemical properties of the soil will be very for pollution propagation, control and remediation processes.  |

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| 10· Learning Outcomes, Teaching ,Learning and Assessment Method1. Understanding the soil origin, constituents and structures.
2. Understanding the methods used in the classification of soil such as sieve analysis…………..etc.
3. Understanding the soil permeability and flow of water through the soil with its application.
4. Understanding the behavior of soil under the compression stress. This needs to study the compaction, compressibility indexes ……..etc.
5. Understanding the sources of soil pollution.
6. Understanding the mechanisms that control the contaminant transport and sorption processes.
7. Understanding the soil erosion and remediation techniques.
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| ***11. Teaching and Learning Methods***1- Lectures.2- Tutorials.3- Homework and Assignments.4- Lab. Applications.5- Tests and Exams.6- In-Class Questions and Discussions.7- Connection between Theory and Application.9- Extracurricular Activities.11- In- and Out-Class oral conservations. |
| ***12. Assessment Methods***1. Examinations, Tests, and Quizzes.2. Extracurricular Activities.3. Student Engagement during Lectures.4. Responses Obtained from Students, Questionnaire about curriculum and faculty member (Instructor) |

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| ***13. Grading Policy***1. Quizzes: - There will be four quizzes during the academic semester. The quizzes will count 5% of the total course grade.  2. Exams: - There will be three closed books and notes exam during the academic year, The mid-term exam will count 20% of the total course grade. 3. HomeworkThere will be homework after each week and will account 5% of the total course grade7. Final Exam:  - The final exam will be comprehensive, closed books and notes,  The final exam will count 70% of the total course grade.  |

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| 14. Course Structure |
| Assessment Method | TeachingMethod | Unit/Module or Topic Title | ILOs | Hours | Week |
|  |  | Origin and composition of soils |  | 3 (Theo.) + 2 (Lab.) | 1 |
|  |  | Origin and composition of soils |  | 3 (Theo.) + 2 (Lab.) | 2 |
|  |  | Origin and composition of soils |  | 3 (Theo.) + 2 (Lab.) | 3 |
|  |  | Soil structure |  | 3 (Theo.) + 2 (Lab.) | 4 |
| 1 – 5 Quiz  |  | Soil structure |  | 3 (Theo.) + 2 (Lab.) | 5 |
|  |  | Chemical and physical properties of soil |  | 3 (Theo.) + 2 (Lab.) | 6 |
|  |  | Chemical and physical properties of soil |  | 3 (Theo.) + 2 (Lab.) | 7 |
|  |  | Chemical and physical properties of soil |  | 3 (Theo.) + 2 (Lab.) | 8 |
|  |  | Chemical and physical properties of soil |  | 3 (Theo.) + 2 (Lab.) | 9 |
|  |  | Soil permeability and flow of water through soils |  | 3 (Theo.) + 2 (Lab.) | 10 |
|  |  | Soil permeability and flow of water through soils |  | 3 (Theo.) + 2 (Lab.) | 11 |
|  |  | Soil permeability and flow of water through soils |  | 3 (Theo.) + 2 (Lab.) | 12 |
|  |  | Soil behavior under stress and compressibility |  | 3 (Theo.) + 2 (Lab.) | 13 |
|  |  | Soil behavior under stress and compressibility |  | 3 (Theo.) + 2 (Lab.) | 14 |
| 1 – 15 Exam |  | Soil behavior under stress and compressibility |  | 3 (Theo.) + 2 (Lab.) | 15 |
|  |  | Environmental geo-technology |  | 3 (Theo.) | 16 |
|  |  | Environmental geo-technology |  | 3 (Theo.) | 17 |
|  |  | Environmental geo-technology |  | 3 (Theo.) | 18 |
|  |  | Environmental geo-technology |  | 3 (Theo.) | 19 |
|  |  | Soil erosion and pollution |  | 3 (Theo.) | 20 |
|  |  | Soil erosion and pollution |  | 3 (Theo.) | 21 |
|  |  | Soil erosion and pollution |  | 3 (Theo.) | 22 |
| 16 – 23 Quiz |  | Soil erosion and pollution |  | 3 (Theo.) | 23 |
|  |  | Ion exchange in soils |  | 3 (Theo.) | 24 |
|  |  | Ion exchange in soils |  | 3 (Theo.) | 25 |
|  |  | Ion exchange in soils |  | 3 (Theo.) | 26 |
|  |  | Soil as an aid to waste disposal |  | 3 (Theo.) | 27 |
| 16-28 Exam |  | Soil as an aid to waste disposal |  | 3 (Theo.) | 28 |
|  |  | Soil as an aid to waste disposal |  | 3 (Theo.) | 29 |
|  |  | Soil as an aid to waste disposal |  | 3 (Theo.) | 30 |

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| 15. Infrastructure |
| Text Book:1- Contaminant Hydrogeology 1999 by Fetter. References1- Geo-environmental Engineering 2000 by Reddi | Required reading:· CORE TEXTS· COURSE MATERIALS· OTHER |
| Available electronic books related to the subject.Extracurricular activities. | Special requirements (include for example workshops, periodicals, IT software, websites) |
| Soil Laboratory. | Community-based facilities(include for example, guestLectures , internship , field studies) |

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| 16. Admissions |
| EnE 204 | Pre-requisites |
| / | Minimum number of students |
| 28 | Maximum number of students |
| **Instructor: Assistant Prof. Dr. Ayad Abdulhamza Faisal**Soil and Groundwater Pollution Environmental Engineering DepartmentCollege of EngineeringUniversity of BaghdadCell phone: 009647904208688E-mail: ayadabedalhamzafaisal@yahoo.com | 17. Course Instructor |