**TEMPLATE FOR COURSE SPECIFICATION**

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| HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW |

**Course Instructor: Asst. prof. Dr. khalid khazzal hummadi**

**COURSE SPECIFICATION**

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| This course is concerned with the identification of statistical analysis of data that obtained from the experimental researches |

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| University of Baghdad /College of Engineering | 1. Teaching Institution |
| Environmental Engineering Department | 2. University Department/Centre |
| Statistics | 3. Course title/code |
| Annual System: They attend in electronic mode 2 hrs. a Week. | 4. Modes of Attendance offered |
| Annual | 5. Semester/Year |
| 60 hrs./ 2 hrs per week | 6. Number of hours tuition (total) |
| 2019 | 7. Date of production/revision of this specification |
| **8. Aims of the Course** | |
| The main objectives of the course are:  1. To understand statistics fundamentals,  2. To understand the principles of statistics.  3. To perform to dealing with analysis of data in environmental engineering. | |

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| **9· Learning Outcomes, Teaching ,Learning and Assessment Method**   1. **Cognitive goals.**   **At the end of the year the students should gain:**  A1. Essential dealing with principles of statistics  A2. Studying the numerical methods for describing quantitative data.  A3. Measuring of central tendency.  A4. Measuring of variation of data.  A5. Study the probability ,distribution, and confidence intervals .  A6. Attract and welcome undergraduate students to our Bachelor of Science program in Environmental Engineering, and to graduate B.S. students who are innovative problem solvers, who become leaders in their organizations, and who possess the knowledge and skills required for a wide range of careers and career changes. |
| **B. The skills goals special to the course**  **B1.**  Essential of statistics and skills in environmental.  **B2.** Concentrating on scientific research and its leading role in helping to serve the society and solving its problems through conducting application researches  **Teaching and Learning Methods**  1- Lectures.  2- Homework and Assignments.  3- Tests and Exams.  4- In-Class Questions and Discussions.  5- Connection between Theory and Application.  6- In- and Out-Class oral conservations. |
| **Assessment Methods**  1. Examinations, Tests, and Quizzes.  2. Student Engagement during Lectures.  3. Responses Obtained from Students, Questionnaire about curriculum and faculty member (Instructor)***.***  4***.*** Home work related to problem solving. |
| C. Affective and value goals  C1.Applicable skills to learn the role of statistics in environmental .  C2. Dealing with organic to solve the data that obtained from experimental  C3. Research and analysis**.**  C4. Prepare students for successful careers in environmental engineering. |
| Teaching and Learning Methods  Intensive studies of regulations |
| Assessment methods |
| Case studies |
| D. General and rehabilitative transferred skills(other skills relevant to employability and personal development) |
| D1. Become more effective, independent and confident self-directed learners  D2. Improve their general skills for study and career management  D3. Articulate personal goals and evaluate progress towards their achievement  D4. An ability to identify, formulate, and solve engineering problems. |

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| **10. Course Structure** | | | | | |
| Assessment Method | Teaching  Method | Unit/Module or Topic Title | ILOs | Hours | Week |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Review of fundamental concepts in statistical | 1&2 | 2 (Theo.) | 1 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Mean | 1 &2 | 2 (Theo.) | 2 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | median | 1 &2 | 2 (Theo.) | 3 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | mode | 1 &2 | 2 (Theo.) | 4 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | geometric mean and harmonic mean components | 1 &2 | 2 (Theo.) | 5 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Variation and stander deviation | 1,2,&3 | 2 (Theo.) | 6 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Coefficients of variation | 1,2,&3 | 2 (Theo.) | 7 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Standard score | 2,3 &4 | 2 (Theo.) | 8 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Skewness coefficients | 2,3 &4 | 2 (Theo.) | 9 |
| ------------- | Electronic | Examination | -------- | 2 (Theo.) | 10 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Problems in environmental | 2,3 &4 | 2 (Theo.) | 11 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Probability | 2,3 &4 | 2 (Theo.) | 12 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Permutation | 2,3 &4 | 2 (Theo.) | 13 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Combination | 2,3 &4 | 2 (Theo.) | 14 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Distribution of data | 2,3 &4 | 2 (Theo.) | 15 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Normal distribution | 2,3 &4 | 2 (Theo.) | 16 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Binominal distribution | 2,3 &4 | 2 (Theo.) | 17 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Properties of normal distribution | 2,3 &4 | 2 (Theo.) | 18 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Gaussian distribution | 2,3 &4 | 2 (Theo.) | 19 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Problems in distribution | 2,3 &4 | 2 (Theo.) | 20 |
| ------------------ | Electronic | Examination | ------- | 2 (Theo.) | 21 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Confidence interval | 5 | 2 (Theo.) | 22 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Level of significance | 5 | 2 (Theo.) | 23 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Test of confidence value | 5 | 2 (Theo.) | 24 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Problems in environmental | 5 | 2 (Theo.) | 25 |
| ---------------------- | Electronic | Examination | --------- | 2 (Theo.) | 26 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Discussion with statistical and environmental data |  | 2 (Theo.) | 27 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Discussion with statistical and environmental data |  | 2 (Theo.) | 28 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | Correlation and statistical analysis | 1,2,3,4&5 | 2 (Theo.) | 29 |
| Questions during the lectures ,quiz, exam, present in the class | Electronic | industrial problems | 1,2,3,4&5 | 2 (Theo.) | 30 |

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| 11. Infrastructure | |
| **Murray R. Spiegel “ Theory and Problems of statistics" , 1990**  . | 1. Books required reading: |
| **Schaum’s outlines Statistics, fourth edition, 2008** | 1. Main references (sources) |
| **GERALD VAN BELLE, Biostatistics Methodology**  **Paul Mac Berthouex Linfield C. Brown"Statistics *for*Environmental**  **Engineers". CRC Press LLC Lewis Publishers is an imprint of CRC Press LLC, 2002** | A- Recommended books and references (scientific journals, reports…). |
| <https://chem.libretexts.org/Bookshelves/organic_statistic/Book%3A_A> | B-Electronic references, Internet  sites |

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| 12. The development of the curriculum plan  Not to relay on traditional examinations but the creation of reports following the reading of textbooks. These reports are validated and transformed into academic credits for graduation purposes. |