**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 Engineering /University of Baghdad | 1. Teaching Institution |
| Chemical Engineering Department (CHED) | 2. University Department/Centre |
| Statistical course concerns with the organization of date collected from any research and tabulate them in table and drawings and then analyze them , to give recommendation ,studying binomial distribution ,normal distribution , chi-square distribution ,F-distribution and types of tests like T- test , chi- square test , normal test and F- test . Second course is economics course which deal with economics calculation of the price of equipment using different ways for that like cost indexes calculation for the optimum calculation depending on one variable, two variable , depreciation cost. | 3. Course title/code |
| Chemical Engineering Department (CHED) | 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-week regular subjects. | 5. Modes of Attendance offered |
| 1st & 2nd Semesters/Academic Year 2017 -2018 | 6. Semester/Year |
| 60 hrs. /2hrs per week. | 7. Number of hours tuition (total) |
| 11 October  2017 | 8. Date of production/revision of this specification |
| 9. Aims of the Course | |
| 1. To develop an understanding of the statistical calculation 2. Economic calculation for chemical engineers such as cost calculation, optimum design, depreciation . | |

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| 10· Learning Outcomes, Teaching , Learning and Assessment Method. |
| 1. Knowledge and Understanding   A1. Be able of solving statistics problem  A2. Be able of solving economics calculation problems |
| B. Subject-specific skills  B1. Be able of making statistical calculation on any research data and give recommendation on the problem. |
| C. Thinking Skills  C1. Use statistical programing for engineers and scientists to solve problems. |
| D. General and Transferable Skills (other skills relevant to employability and personal development)  D1. Communication effectively.  D2. work in group and function on multi \_disciplinary teams |
| Teaching and Learning Methods |
| * Lectures * Tutorials * Homework and assignments * Tests and Exams * In-Class questions and discussions * Connection between theory and application * Seminars * In- and Out-Class oral conservations |
| Assessment methods |
| * Examinations, Tests, and Quizzes. * Extracurricular activities and homework. * Student engagement during lectures. |

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| 11. Course Structure | | | | | |
| Assessment Method | Teaching  Method | Unit/Module or Topic Title | ILOs | Hours | Week |
| 1-3 | 1-4 | frequency tables and curves | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 1 |
| 1-3 | 1-4 | The standard deviation and other measures of dispersion | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 2 |
| 1-3 | 1-6 | Theory of probabilities | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 3 |
| 1-3 | 1-5 | Bionomial distribution | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 4 |
| 1-3 | 1-6 | Normal distribution | a,b ,c,d,e,f | 2  1 theo. 1 tut. | 5 |
| 1-3 | 1-6 | poisson distribution | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 6 |
| 1-3 | 1-6 | Confidence intervals | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 7 |
| 1-3 | 1-6 | Tests of hypothesis and significance | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 8 |
|  |  | examination |  | 2  1theo.  1 tut. | 9 |
| 1-3 | 1-6 | Small sampling theory students t- distribution | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 10 |
| 1-3 | 1-5 | chi-square distribution | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 11 |
| 1-3 | 1-6 | F- distribution | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 12 |
| 1-3 | 1-6 | Curve fitting using Least – square method | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 13 |
|  |  | examination |  | 2  1 theo.  1 tut. | 14 |
| 1-3 | 1-6 | Cost Estimation | a,b ,c,d,e,f | 2 1 theo.  1 tut. | 15 |
| 1-3 | 1-5 | Factors affecting the production cost and investment | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 16 |
| 1-3 | 1-6 | Capital investment | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 17 |
| 1-3 | 1-6 | Cost index | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 18 |
| 1-3 | 1-6 | Interest and investment cost | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 19 |
| 1-3 | 1-6 | depreciation calculation methods | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 20 |
|  | 1-6 | straight line method | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 21 |
| 1-3 | 1-9 | declining and double declining balance method | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 22 |
| 1-3 | 1-9 | sum of the years digits | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 23 |
| 1-3 | 1-9 | sinking fund method | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 24 |
| 1-3 |  | examination |  | 2  1 theo.  1 tut. | 25 |
| 1-3 | 1-7 | Test involving the normal distribution Z | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 26 |
| 1-3 | 1-7 | Optimum design | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 27 |
| 1-3 | 1-7 | cost of the mass and heat transfer equipments . | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 28 |
| 1-3 | 1-9 | Process design development | a,b ,c,d,e,f | 2  1 theo.  1 tut. | 29 |
|  |  | examination |  | 2  1 theo.  1 tut. | 30 |

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| 12. Infrastructure | |
| Text Books:  plant design and economics for chemical engineers peter  References:-  1-probability and statistics for engineers Richard johnson John freund Irwin miller  2-statistics for engineers and scientists William  navidi | Required reading:  · CORE TEXTS  · COURSE MATERIALS  · OTHER |
| 1. Available websites related to the subject  2. Excel or similar software for the solution of lengthy problems. | Special requirements (include for example workshops, periodicals, IT software, websites) |
|  | Community-based facilities  (include for example, guest  Lectures , internship , field studies) |

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| 13. Admissions | |
|  | Pre-requisites |
| \_ | Minimum number of students |
| 60 | Maximum number of students |

***Course Instructors***

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