**Course Description Form**

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| 1. Course Name: | | | | | | | | |
| Engineering Statistics | | | | | | | | |
| 1. Course Code: | | | | | | | | |
|  | | | | | | | | |
| 1. Semester / Year: | | | | | | | | |
| Third year\ second semester | | | | | | | | |
| 1. Description Preparation Date: | | | | | | | | |
| 2024-03-19 | | | | | | | | |
| 1. Available Attendance Forms: | | | | | | | | |
| presence in the classroom | | | | | | | | |
| 1. Number of Credit Hours (Total) / Number of Units (Total) | | | | | | | | |
| 45 Hours / 3 Units | | | | | | | | |
| 1. Course administrator's name (mention all, if more than one name) | | | | | | | | |
| Name: Ahmed oudah kadhim  Email: ahmed.oudah@uowa.edu.iq | | | | | | | | |
| 1. Course Objectives | | | | | | | | |
| **Course Objectives** | | | | * **Understanding Basic Statistical Concepts: The module aims to introduce** * **students to fundamental statistical concepts such as data types, variables,** * **population, sample, descriptive statistics, and probability.** * **Data Collection and Sampling: Students learn about different methods of** * **data collection, including surveys, experiments, and observational studies.** * **They also understand the importance of sampling techniques and how to** * **select an appropriate sample for analysis.** * **Exploratory Data Analysis: The module aims to teach students how to** * **explore and summarize data using graphical and numerical techniques. They** * **learn how to create histograms, box plots, scatter plots, and compute** * **summary statistics such as mean, median, and standard deviation.** * **Probability Theory: Students gain an understanding of probability concepts,** * **including basic principles, conditional probability, independence, and Bayes'** * **theorem. They learn how to calculate probabilities and apply them in realworld** * **scenarios.** * **Statistical Inference: The module aims to introduce students to the process of** * **making inferences about populations based on sample data. They learn** * **about confidence intervals and hypothesis testing, including concepts like** * **null and alternative hypotheses, p-values, and significance levels.** * **Regression Analysis: Students are taught the basics of regression analysis,** * **including simple linear regression and multiple regressions. They learn how** * **to build regression models, interpret coefficients, assess model fit, and make** * **predictions.** * **Critical Thinking and Interpretation: The module aims to develop students'** * **critical thinking skills by teaching them how to interpret statistical results and** * **draw meaningful conclusions. They learn to evaluate the strengths and** * **limitations of statistical analyses and make informed decisions based on data.** * **Ethical Considerations: Some statistics modules incorporate discussions on** * **ethical considerations in data analysis and research. Students explore topics** * **such as data privacy, bias, and the responsible use of statistics.** * **Overall, the aims of a statistics module are to provide students with a solid** * **foundation in statistical concepts, methods, and applications. It equips them** * **with the necessary skills to analyze data, draw meaningful conclusions, and** * **make informed decisions in various fields of study and professional settings.** | | | | |
| 1. Teaching and Learning Strategies | | | | | | | | |
| **Strategy** | | Assessment is based on hand-in assignments, written exam, Case study, Quizzes,  seminars, Practical testing , When it comes to learning and teaching statistics, there  are various strategies that can be effective in helping students grasp the concepts  and develop a strong foundation in statistical reasoning. | | | | | | |
| 1. Course Structure | | | | | | | | |
| **Week** | **Hours** | | **Required Learning Outcomes** | | **Unit or subject name** | | **Learning method** | **Evaluation method** |
| 1 | 3 | | Learn about the  Introduction  Engineering Statistics | | Introduction | | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 2 | 3 | | Learn about the  Basic concepts and definitions | | Basic concepts and definitions | | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 3 | 3 | | Learn about the  Types of data and variables | | Types of data and variables | | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 4 | 3 | | Learn about the  Data collection methods | | Data collection methods | | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 5 | 3 | | Learn about the  measures of central tendency and measures of dispersion | | measures of central tendency and measures of dispersion | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 6 | 3 | | Learn about the  regression, | | regression, | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 7 | 3 | | Learn about the  correlation | | correlation | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 8 | 3 | | Learn about the  test of hypotheses | | test of hypotheses | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 9 | 3 | | Learn about the  Experical frequency distribution | | Experical frequency distribution | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 10 | 3 | | Learn about the  linear interference & auto correlation | | linear interference & auto correlation | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 11 | 3 | | Learn about the  , estimation | | , estimation | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 12 | 3 | | Learn about the  reliability | | reliability, | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 13 | 3 | | Learn about the  statistical quality  control | | statistical quality  control | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 14 | 3 | | Learn about the  continuous and discrete probability distribution, | | continuous and discrete probability distribution, | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 15 | 3 | | Learn about the  applications (SPSS, static Q, Minitab … etc) | | applications (SPSS, static Q, Minitab … etc) | | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 1. Course Evaluation | | | | | | | | |
|  Daily exams with practical and scientific questions. ‏   Participation scores for difficult competition questions among students   Establishing grades for environmental duties and the reports assigned to them   Semester exams for the curriculum, in addition to the mid-year exam and final exam | | | | | | | | |
| 1. Learning and Teaching Resources | | | | | | | | |
| Required textbooks (curricular books, if any) | | | | | | "Statistics for Business and Economics" by Paul Newbolt,  William L. Carlson, and Betty Thorne  "Introduction to Probability and Statistics" by MIT and  "Statistics and R" | | |
| Main references (sources) | | | | | | "Introductory Statistics" by Perm S. Mann | | |
| Recommended books and references (scientific journals, reports...) | | | | | | All reputable scientific journals that are related to the broad concept of Engineering Statistics | | |