**Course Description Form**

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| 1. Course Name:
 |
| Engineering Statistics |
| 1. Course Code:
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| 1. Semester / Year:
 |
| Third year\ second semester  |
| 1. Description Preparation Date:
 |
| 2024-03-19 |
| 1. Available Attendance Forms:
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| presence in the classroom |
| 1. Number of Credit Hours (Total) / Number of Units (Total)
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| 45 Hours / 3 Units |
| 1. Course administrator's name (mention all, if more than one name)
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| Name: Ahmed oudah kadhimEmail: ahmed.oudah@uowa.edu.iq  |
| 1. Course Objectives
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| **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.**
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| 1. Teaching and Learning Strategies
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| **Strategy** | Assessment is based on hand-in assignments, written exam, Case study, Quizzes,seminars, Practical testing , When it comes to learning and teaching statistics, thereare various strategies that can be effective in helping students grasp the conceptsand develop a strong foundation in statistical reasoning.  |
| 1. Course Structure
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| **Week**  | **Hours**  | **Required Learning Outcomes**  | **Unit or subject name**  | **Learning method**  | **Evaluation method**  |
| 1 | 3 | Learn about theIntroduction Engineering Statistics | Introduction  | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 2 | 3 | Learn about theBasic concepts and definitions | Basic concepts and definitions | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 3 | 3 | Learn about theTypes of data and variables | Types of data and variables | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 4 | 3 | Learn about theData collection methods | Data collection methods  | Lectures presented in PDF format | Daily exams + homework assignments + monthly exams |
| 5 | 3 | Learn about themeasures 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 theregression, | regression, | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 7 | 3 | Learn about thecorrelation | correlation | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 8 | 3 | Learn about thetest of hypotheses | test of hypotheses | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 9 | 3 | Learn about theExperical frequency distribution | Experical frequency distribution | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 10 | 3 | Learn about thelinear 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 thereliability | reliability, | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 13 | 3 | Learn about thestatistical qualitycontrol | statistical qualitycontrol | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 14 | 3 | Learn about thecontinuous and discrete probability distribution, | continuous and discrete probability distribution, | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 15 | 3 | Learn about theapplications (SPSS, static Q, Minitab … etc) | applications (SPSS, static Q, Minitab … etc) | Lectures presented in PDF format | Daily exams + homework assignments + monthly |
| 1. Course Evaluation
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|  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
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| 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 |