

**TISHK INTERNATIONAL UNIVERSITY**  
**FACULTY OF ENGINEERING**  
**Department of CIVIL ENGINEERING,**  
**2020-2021 Spring**  
**Course Information for CE 228 STATISTICS FOR CIVIL ENGINEERING**

<b>Course Name:</b>	STATISTICS FOR CIVIL ENGINEERING				
<b>Code</b>	<b>Regular Semester</b>	<b>Theoretical</b>	<b>Practical</b>	<b>Credits</b>	<b>ECTS</b>
CE 228	2	2	-	2	3
<b>Name of Lecturer(s)- Academic Title:</b>	Abdulfattah Ahmed -				
<b>Teaching Assistant:</b>	/				
<b>Course Language:</b>	English				
<b>Course Type:</b>	Area Elective				
<b>Office Hours</b>	Wednesday (11:00 -12:00)				
<b>Contact Email:</b>	abdulfattah.amin@epu.edu.iq Tel: 00964-770 445 8199				
<b>Teacher's academic profile:</b>	Ph.D.(Lecturer) in Civil/Environmental Engineering				
<b>Course Objectives:</b>	Course Objectives are as follows: 1.The course emphasizes the use of basic probability concepts and statistical theories in the prediction and modeling the solutions of civil engineering problems. 2.MINITAB software program is used to facilitate the analysis of data sets.				
<b>Course Description (Course overview):</b>	Descriptive statistics, histograms, central tendency, dispersion, and correlation measures. Basic probability concepts, random variables, probability density function and mass function. Hypotheses testing, analysis of variance, confidence intervals. Law of large numbers and Central limit theorem. Regression analysis. Applications in civil engineering. Reliability and hazard functions. Structural and mechanical reliability.				

**COURSE CONTENT**

<b>Week</b>	<b>Hour</b>	<b>Date</b>	<b>Topic</b>
1	2	31/1-4/2/2021	Introduction to Engineering Statistics
2	2	7-11/2/2021	Statistics descriptive and data analysis • Measures of location • Measures of variability)
3	2	14-18/2/2021	Statistics descriptive and data analysis (Cont'd) • Graphical Method
4	2	21-25/2/2021	Probability • Sample Space, • Events
5	2	28/2-4/3/2021	Probability (Cont'd) • Probability of an event • Multiplicative Rule
6	2	7-11/3/2021	Random Variables and Discrete • Probability Distributions • Random Variable • Discrete Probability Distribution
7	2	28/3-1/4/2021	Continuous Probability Distributions • Continuous Random Variables • Probability Density Function
8	2	4-8/4/2021	Simple Linear Regression and Correlation • Regression Analysis • Linear Regression Analysis
9	2	11-15/4/2021	Midterm Exam
10	2	18-22/4/2021	Midterm Exam
11	2	25-29/4/2021	Fundamental Sampling Distributions and Data Descriptions • Random Samples • Normal Population Distribution
12	2	2-6/5/2021	Fundamental Sampling Distributions and Data Descriptions (Cont'd) • Developing Sample Distribution • Central Limit Theorem
13	2	9-13/5/2021	Hypothesis Testing • Hypothesis Testing • Level of Significance

14	2	16-20/5/2021	Hypothesis Testing (Cont'd) • Error in Testing • Decision Making
15	2	23-27/5/2021	Hypothesis Testing (Cont'd) • Testing of Population Mean • Statistical Inference about Two Populations
16	2	30/5-3/6/2021	Hypothesis Testing (Cont'd) • Testing of Population Mean • Statistical Inference about Two Populations
17	2	6-10/6/2021	Final Exam
18	2	13-17/6/2021	Final Exam

### COURSE/STUDENT LEARNING OUTCOMES

- 1 Statistical Description of Data
- 2 Graphical Description of Data
- 3 Sets and Probability.
- 4 Analysis of Complex Data in Civil Engineering
- 5 Modeling Civil Engineering Problems and Predicting Responses of Structures

### COURSE'S CONTRIBUTION TO PROGRAM OUTCOMES

(Blank : no contribution, I: Introduction, P: Profecient, A: Advanced )

#### Program Learning Outcomes

	Cont.
1 Apply principles of mathematics, science, and engineering	P
2 Design and conduct experiments, as well as analyze and interpret data accurately.	P
3 Design an engineering system, component, or process to meet desired industrial needs.	I
4 Identify, formulate and solve complex engineering problems	P
5 Apply, in design and construction, the most modern design codes, standards and specifications such as; AISC, ACI, ASCE 7, IBC, etc.	I
6 Use the techniques, skills, and modern engineering tools, such as surveying instruments, and designing software that are necessary for engineering practices.	I
7 Apply knowledge and skills in construction project management and recognition of international standards and methodologies	I
8 Manage to work with multi-disciplinary teams and communicate effectively.	I
9 Identify the moral values that ought to guide the Civil Engineering profession and resolve the moral issues in the profession.	I
10 Apply the principles of sustainable development in their professional duties which go in line with the paramount safety, health and welfare of the public.	I
11 Analyze the impact of engineering solutions in a global and social context	I
12 Identify the need and have the ability to engage in lifelong learning and knowledge of contemporary issues.	I

<b>Prerequisites (Course Reading List and References):</b>	Calculus, Differential Equations
<b>Student's obligation (Special Requirements):</b>	Scientific Calculator and MINITAB software
<b>Course Book/Textbook:</b>	Textbook: • Probability & Statistics for Engineers and Scientists/ Walpole, Myers, Myers and Ye / 8th Edition. Publisher: Prentice Hall, Upper Saddle River, NJ 07458 ISBN: 0-13-187711-9
<b>Other Course Materials/References:</b>	Other References: • Applied Statistics and Probability for Engineers/ Douglas C. Montgomery, George C. Runger/3rd edition ISBN 0-471-20454-4 (acid-free paper) • Engineering Statistics Fifth Edition/Douglas C. Montgomery, George C. Runger, Norma Faris Hubele /5th edition ISBN-13 978- 0-470-63147-8 • Statistics for Engineers and Scientists/ William Navidi/3rd edition ISBN 978-0-07-337633-2 • Probability and Statistics for Engineers and Scientists/ Anthony Hayter /4th edition. ISBN-13: 978-1-111-82704-5 ISBN-10: 1-111-82704-4 • OpenIntro Statistics/ Paperback/2nd edition ISBN: 1478217200 • Probability and Statistics for Engineering and the Sciences /JAY DEVORE/8th edition ISBN-13: 978-0-538-73352-6 ISBN-10: 0-538-73352-7
<b>Teaching Methods (Forms of Teaching):</b>	Lectures, Excersises, Presentation, Assignments, Demonstration

### COURSE EVALUATION CRITERIA

<b>Method</b>	<b>Quantity</b>	<b>Percentage (%)</b>	
Participation	1	5	
Quiz	1	10	
Homework	1	10	
Project	1	5	
Midterm Exam(s)	1	30	
Final Exam	1	40	
<b>Total</b>		<b>100</b>	
<b>Examinations:</b> True-False, Fill in the Blanks, Multiple Choices, Matching			
<b>Extra Notes:</b>			
<b>ECTS (ALLOCATED BASED ON STUDENT) WORKLOAD</b>			
<b>Activities</b>	<b>Quantity</b>	<b>Workload Hours for 1 quantity*</b>	<b>Total Workload</b>
Theoretical Hours	18	2	36
Practical Hours	18	0	0
Final Exam	1	1	1
Participation	1	10	10
Quiz	1	10	10
Homework	1	10	10
Project	1	10	10
Midterm Exam(s)	1	1	1
<b>Total Workload</b>			<b>78</b>
<b>ECTS Credit (Total workload/25)</b>			<b>3.12</b>

**Peer review**

Signature:

Name:

Lecturer

Signature:

Name:

Head of Department

Signature:

Name:

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