ESOGU CIVIL ENGINEERING DEPARTMENT

COURSE INFORMATION FORM

Course Name	Course Code
STATISTICS	**151413561**

Semester	Number of Course Hours per Week		ECTS
	Theory	Practice	
3	3	0	3

Course Category (Credit)				
Basic Sciences	**Engineering Sciences**	**Design**	**General Education**	**Social**
1	2			

Course Language	Course Level	Course Type
Turkish	Undergraduate	Elective

Prerequisite(s) if any	
Objectives of the Course	Learn to understand the importance and uses of statistics in civil engineering, to recognize the concept of probability, averages, to be informed about deviations, regression analysis and correlation able to make distributions to know, to have information about sampling and Statistical tests.
Short Course Content	The importance of statistics in civil engineering and applications, the concept of probability, averages, deviations, regression analysis and correlation, distributions, sampling, statistical tests

	Learning Outcomes of the Course	Contributed PO(s)	Teaching Methods *	Measuring Methods **
1	Knows the importance of statistics for Civil Engineering	1, 7	1,2,5,6,10	A, D
2	Classifies averages and deviations	2, 3	1,2,5,6,10	A, D
3	Can express and interpret relationships mathematically	4, 9	1,2,5,6,10	A, D
4	Knows the concept of probability	5, 6	1,2,5,6,10	A, D
5	Classifies and applies distributions	5, 6	1,2,5,6,10	A, D
6	Knows statistical tests	8, 10, 11	1,2,5,6	A, D
7				
8				

***Teaching Methods** **1:**Expression, **2:**Discussion, **3:**Experiment, **4:**Simulation, **5:**Question-Answer, **6:**Tutorial, **7:**Observation, **8:**Case Study, **9:**Technical Visit, **10:**Trouble/Problem Solving, **11:**Induvidual Work, **12:**Team/Group Work, **13:**Brain Storm, **14:**Project Design / Management, **15:**Report Preparation and/or Presentation

****Measuring Methods** **A:**Exam, **B:**Quiz, **C:**Oral Exam, **D:**Homework, **E:**Report, **F:**Article Examination, **G:**Presentation, **I:**Experimental Skill, **J:**Project Observation, **K:**Class Attendance; **L:**Jury Exam

Main Textbook	**Beyazıt, M. and Oğuz, B., Mühendisler için İstatistik, Birsen Yayınevi**
Supporting References	İstatistik Ders Notları, İlker Bekir Topçu, Eskişehir Osmangazi Üniversitesi, Mühendislik Mimarlık Fakültesi, İnşaat Mühendisliği Bölümü, Eskişehir, 2006. Çömlekçi, N., İstatistik, İ.T.İ.A., 1978, Eskişehir. Kıcıman, M., Mühendisler için İhtimaller Hesabı ve İstatistiğe Başlangıç, ODTÜ, 1975. Kara, İ., Olasılık, Bilim Teknik Yayınevi, 1983. Beyazıt, M., İnşaat Mühendisliğinde Olasılık Yöntemleri, İTÜ, İnşaat Fak. Matbaası, 1996. Akün, F., İstatistik ve Kalite Kontrolü, İTÜ Kütüphanesi, Sayı 923, 1973, İstanbul. **Benjamin, J.R. ve Cornell, C.A., Probability, Statistics and Decision for Civil Engineers, Mc Graw-Hill, 1970.**
Necessary Course Material	

Course Schedule	
1	Introduction to Statistics, History, The Importance of Statistics, Application Areas, Importance and Uses of Statistics in Civil Engineering.
2	Means, Series, Mode, Median, Geometric Mean, Harmonic Mean, Mean, Means Between Relations, averaging Facilities, Solved Examples.
3	Means, Series, Mode, Median, Geometric Mean, Harmonic Mean, Mean, Means Between Relations, averaging Facilities, Solved Examples.
4	Deviations, Mean Deviation, Standard Deviation, Coefficient of Variation, Solved Examples.
5	Regression Analysis and Correlation, Regression Equations, Least Squares Method, Least Squares Method, Using Various Equations Obtained that the normal equations, Solved Examples.
6	Regression Analysis and Correlation, Regression Equations, Least Squares Method, Least Squares Method Using Various Equations Obtained that the normal equations, Solved Examples.
7	The Concept of Probability, Random Variables, Random Event, Composite Events, Probability Multiplication Rule, Rule of Total, Mathematics Expectation, Bayes' Theorem, Solved Examples.
8	Mid-Term Exam
9	The Concept of Probability, Random Variables, Random Event, Composite Events, Probability Multiplication Rule, Rule of Total, Mathematics Expectation, Bayes' Theorem, Solved Examples.
10	Distributions, Distributions Types, Normal Distribution, Normal Curve Properties, Binomial Distribution, Binomial Distribution Facilities, Calculation of Areas Under the Normal Curve, Solved Examples
11	Distributions, Distributions Types, Normal Distribution, Normal Curve Properties, Binomial Distribution, Binomial Distribution Facilities, Calculation of Areas Under the Normal Curve, Solved Examples
12	Sampling Simple Random Sampling, Sampling in Civil Engineering, Application Fields and Applications, Sampling and Quality Control of Concrete Technology.
13	Sampling in Civil Engineering, Application Fields and Applications, Sampling and Quality Control of Concrete Technology.
14	Statistical Tests, Test Left Side, Right Side Test, Two-Sided Test, Solved Examples.
15	Statistical Tests, Test Left Side, Right Side Test, Two-Sided Test, Solved Examples.
16,17	Final Exam

Calculation of Course Workload			
Activities	**Number**	**Time (Hour)**	**Total Workload (Hour)**
Course Time (number of course hours per week)	14	3	42
Classroom Studying Time (review, reinforcing, prestudy,….)	14	1	14
Homework	2	3	6
Quiz Exam	1	0	0
Studying for Quiz Exam	1	0	0
Oral exam	1	0	0
Studying for Oral Exam	1	0	0
Report (Preparation and presentation time included)	1	0	0
Project (Preparation and presentation time included)	1	0	0
Presentation (Preparation time included)	1	0	0
Mid-Term Exam	1	2	2
Studying for Mid-Term Exam	1	14	14
Final Exam	1	2	2
Studying for Final Exam	1	10	10
		Total workload	**90**
		Total workload / 30	**3**
		Course ECTS Credit	**3**

Evaluation	
Activity Type	**%**
Mid-term	40
Quiz	
Homework	10
Bir öğe seçin.	
Bir öğe seçin.	
Final Exam	50
Total	100

RELATIONSHIP BETWEEN THE COURSE LEARNING OUTCOMES AND THE PROGRAM OUTCOMES (PO) (5: Very high, 4: High, 3: Middle, 2: Low, 1: Very low)

NO	PROGRAM OUTCOME	Contribution
1	Sufficient knowledge of engineering subjects related with mathematics, science and civil engineering; an ability to apply theoretical and practical knowledge on solving and modeling	3
2	Ability to determine, define, formulate and solve complex civil engineering problems; for that purpose an ability to select and use convenient analytical and experimental methods.	3
3	Ability to design a complex system, a component and/or an engineering process under real life constrains or conditions, defined by environmental, economical and political problems; for	3
4	Ability to develop, select and use modern methods and tools required for civil engineering applications; ability to effective use of information technologies.	3
5	In order to investigate civil engineering problems; ability to set up and conduct experiments and ability to analyze and interpretation of experimental results.	4
6	Ability to work effectively in inner or multi-disciplinary teams; proficiency of interdependence.	3
7	Ability to communicate in written and oral forms in Turkish/English; proficiency at least one foreign language.	2
8	Awareness of life-long learning; ability to reach information; follow developments in science and technology and continuous self-improvement.	4
9	Understanding of professional and ethical issues and taking responsibility	3
10	Awareness of project, risk and change management; awareness of entrepreneurship, innovativeness and sustainable development.	3
11	Knowledge of actual problems and effects of engineering applications on health, environment and security in global and social scale; an awareness of juridical results of engineering	3

LECTUTER(S)				
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Signature(s)				

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