"GHEORGHE ASACHI" TECHNICAL UNIVERSITY OF IAŞI
FACULTY OF CIVIL ENGINEERING AND BUILDING SERVICES

MINISTERUL EDUCAȚIEI

CE.219

Probability Theory and Statistics

3rd sem.

Most problems in the various fields of civil engineering cannot be fully and effectively addressed without knowledge of probability and statistics due to uncertainties. The course will cover the concept and definition of random variables and different functions of random variables, probability distribution functions, sampling, regression analysis, estimation of distribution parameters from statistics, testing of hypotheses and their significance.

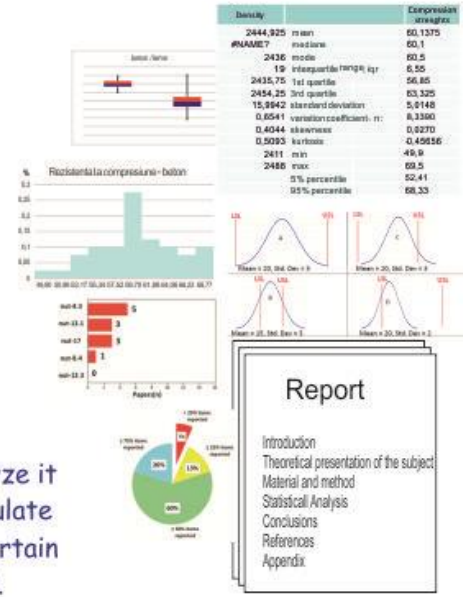
What is it?

where ?

- Determining the characteristics of materials, soils ....
- Loads analysis
- Cost analysis (production, execution, decommissioning ...)
- Analysis of degradation processes
- Risk analysis
- Traffic volume analysis ..... a.s.o..

Data	Densitea (kg/m3)	Rezistenta la compresiune (N/mm2)
21-Sep-92	2437	60,5
29-Jun-92	2437	60,9
26-Jun-92	2425	59,8
14-Apr-92	2427	53,4
31-Mar-92	2428	56,9
19-Mar-92	2448	67,3
9-Mar-92	2456	68,9
7-Feb-92	2436	49,9
28-Jan-92	2435	57,8
18-Dec-91	2446	60,9
6-Sep91	2436	52,5
3-Sep91	2469	54,6
2-Sep91	2455	56,3
29-Aug91	2473	64,9
23-Aug91	2488	69,5
12-Jul91	2454	58,9
9-Jul91	2427	54,4
8-Jul91	2411	58,8

$$\bar{x}=\frac{\sum x}{n} \quad \sigma=\sqrt{\frac{\sum(x_i-\bar{x})^2}{n}} \quad \dots \quad P=\frac{nr.caz.fav.}{nr.total}$$



Report

Introduction
Theoretical presentation of the subject
Material and method
Statistical Analysis
Conclusions
References
Appendix

Once you have the data, you can analyze it and generate statistics. You can calculate the probabilities to see how safe a certain event is, to test your hypotheses.

gathering data → group, classify, analyzes the data → draw conclusions → decisions / prognosis

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Course name	**Special Mathematics**					Course code		**CE219**	
Course type	DF	Category	DO	Year of study	**2**	Semester	**1**	Number of credit points	**2**

Faculty	Civil Engineering and Building Services	Number of teaching and learning hours					
Field	Civil Engineering	Total	L	T	LB	P	IS
Specialization	Civil Engineering	50	28	14			8

Pre-requisites from the curriculum		
	Compulsory	N/A
	Recommended	Mathematical Analysis 1,2

General objective	To be able to model, from a mathematical and physical viewpoint, the complex behavior of building structures To be able to devise and compare modeling and computational approaches towards dimensioning building elements and structures
Specific objectives	To be able to use the methods of differential and integral calculus to solve differential equations and systems of differential equations describing specific problems of strength of materials, statics and dynamics of constructions, elasticity and plasticity theory
Course description	I First-order ordinary differential equations (ODEs); II Higher-order ODEs with constant coefficients; III Systems of first-order linear ODEs with constant coefficients; IV The Laplace transform and its applications; V First-order partial differential equations; VI Scalar and vector fields

Assessment			Schedule	Percentage of the final grade (minimum grade)
A. Final assessment form: Continuous assessment	Class tests along the semester	**50%**	**Week 14**	**75% (minimum 5)**
	Home works	**25%**		
	Other activities	%		
	Examination procedures and conditions:	%		
B. Seminar	Activity during seminar			**25% (minimum 5)**