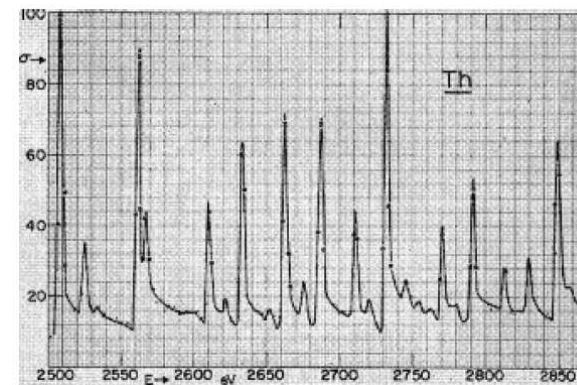*MECA0010 – Reliability and stochastic modeling of engineered systems*

Introduction

Maarten Arnst and Marco Lucio Cerquaglia
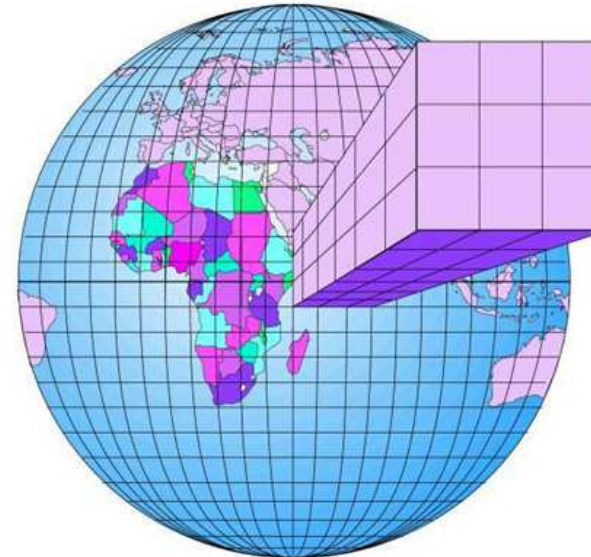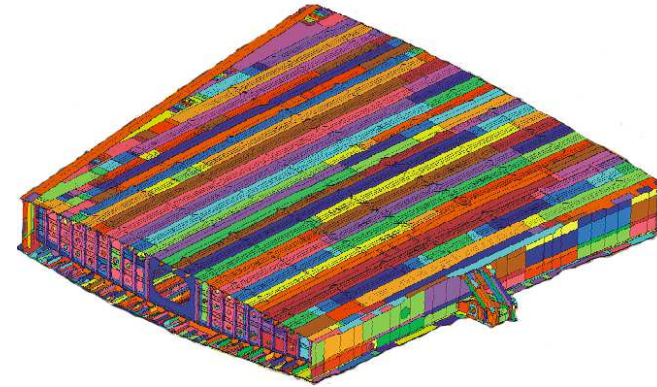
September 20, 2017

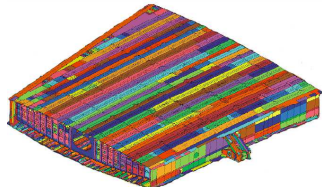This course is about using random numbers in engineering.

Reliability of engineered systems.

Uncertainty quantification.

	September 20	Introduction, notations, and review of background material	
UQ	October 4	Functions of random variables	
	October 11	Monte Carlo simulation	
	October 18	Sensitivity analysis	
	October 25	Surrogate modeling	
	November 8	Intermediate presentation N. Deom and J. Hardy: concept of Kalman filter S. Yankeu: concept of interval method (to be confirmed)	
Reliability	November 15	P. Morato and D. Thuong: reliability in wind turbine engineering Introduction to reliability Homogeneous Poisson process	
	November 22	Nonhomogeneous Poisson process Parameter estimation	
	November 29	Model selection Applications	
	TBD	Final presentation N. Deom and J. Hardy: application of Kalman filter S. Yankeu: application of interval method (to be confirmed) J. Todesco: surrogate-based uncertainty quantification	

- Grading is based on a written report, an intermediate presentation, and a final presentation for an assignment related to either "Reliability" or "UQ."

- There is no final exam.

- The final grade is a weighted average of the grades obtained for the written report, the intermediate presentation, and the final presentation.

- We will discuss about the written report, the intermediate presentation, and the final presentation in detail later.

- Maarten Arnst

  Aerospace and Mechanical Engineering

  Office: B52 0/419

  Email: maarten.arnst@ulg.ac.be

- Marco Lucio Cerquaglia

  Aerospace and Mechanical Engineering

  Office: B52 2/541

  Email: MarcoLucio.Cerquaglia@ulg.ac.be