**Short course on DOE - Design of Experiments**

Lecture 1:  **An Overview of Design of Experiments**

Prof. **Michele Scagliarini**, Unibo - Department of Statistical Sciences

date: 30 November 2021, h. 9-12

Abstract:

An overview of the design of statistical experiments is presented.

After a brief introduction on the simplest experimental designs, the experiments with a single factor, more complex experimental designs will be gradually discussed.

Particular attention will be paid to the randomized complete block design, the two-factor factorial design, the 2k factorial design and the response surface analysis.

Applications are mentioned for industrial quality improvement and biostatistics.

References

D. C Montgomery (2013). Design and Analysis of Experiments, (Eighth Edition). John Wiley & Sons, Singapore.

location: on-line, **sala virtuale del DIMSAI**.

[https://teams.microsoft.com/l/meetup-join/19%3a1034d80865894c51b9647424e28b8f5a%40thread.tacv2/1633952340297?context=%7b%22Tid%22%3a%22e99647dc-1b08-454a-bf8c-699181b389ab%22%2c%22Oid%22%3a%22ddebf034-4a25-427a-abf1-6792b2a25ed6%22%7d](https://teams.microsoft.com/l/meetup-join/19%3A1034d80865894c51b9647424e28b8f5a%40thread.tacv2/1633952340297?context=%7b%22Tid%22%3a%22e99647dc-1b08-454a-bf8c-699181b389ab%22%2c%22Oid%22%3a%22ddebf034-4a25-427a-abf1-6792b2a25ed6%22%7d)

Lecture 2:  **Applications of Design of Experiment**

Prof. **Giorgio Olmi**, Unibo – Department of Industrial Engineering

date: 2nd December 2021, h. 10-13

Abstract:

Design of Experiment is commonly regarded as a design criterion with multidisciplinary applications. Based on its capability of supporting the arrangement of extended experimental campaigns and of assisting data statistical processing, it is widely applied in many fields ranging from engineering to science, medicine and even law and humanistic fields. For instance, a well-organized experiment may assess the influence of geometry or of environmental and service conditions on the structural response of mechanical joints. The juridical validity of a signature may be affected by the posture of the person who is signing. Medication label pictograms may be differently structured, to beneficially improve their comprehension. These are just some examples of the seminar subject.

References:

D. C Montgomery (2013). Design and Analysis of Experiments, (Eighth Edition). John Wiley & Sons, Singapore.

Berger PD, Maurer RE (2002). Experimental design with applications in management, engineering and the sciences. Duxbury Press, Belmont, CA, USA.

Journal papers dealing with DOE applications (most of them will be taken from the scientific activity of the lecturer).

location: on-line, **sala virtuale del DIMSAI**.

[https://teams.microsoft.com/l/meetup-join/19%3a1034d80865894c51b9647424e28b8f5a%40thread.tacv2/1633952500392?context=%7b%22Tid%22%3a%22e99647dc-1b08-454a-bf8c-699181b389ab%22%2c%22Oid%22%3a%22ddebf034-4a25-427a-abf1-6792b2a25ed6%22%7d](https://teams.microsoft.com/l/meetup-join/19%3A1034d80865894c51b9647424e28b8f5a%40thread.tacv2/1633952500392?context=%7b%22Tid%22%3a%22e99647dc-1b08-454a-bf8c-699181b389ab%22%2c%22Oid%22%3a%22ddebf034-4a25-427a-abf1-6792b2a25ed6%22%7d)