

## Course reader - Design of experiments 2019

A list of some pedagogical papers for the use of experimental design and response surface methodology in various applications. Last updated April 12th 2018.

### Some basics

Brereton R.G. (2016) Basic vector algebra, *Journal of Chemometrics* ([10.1002/cem.2832](https://doi.org/10.1002/cem.2832)).

Brereton R.G. (2017) Basic matrix algebra, *Journal of Chemometrics* ([10.1002/cem.2833](https://doi.org/10.1002/cem.2833)).

Brereton R.G. (2017) Statistical experimental design, *Journal of Chemometrics* ([10.1002/cem.2902](https://doi.org/10.1002/cem.2902)).

Brereton R.G. (2017) Formulating an experimental design mathematically, *Journal of Chemometrics* ([10.1002/cem.2903](https://doi.org/10.1002/cem.2903)).

Brereton R.G. (2018) Design matrices and modelling, *Journal of Chemometrics* ([10.1002/cem.2904](https://doi.org/10.1002/cem.2904)).

### The nitty-gritty

Brereton R.G. (2015) The t-distribution and its relationship to the normal distribution, *Journal of Chemometrics* ([10.1002/cem.2713](https://doi.org/10.1002/cem.2713)).

Brereton (2015) The F distribution and its relationship to the chi squared and t distributions, *Journal of Chemometrics* ([10.1002/cem.2734](https://doi.org/10.1002/cem.2734)).

Brereton R.G. (2018) Degrees-of-freedom, errors, and replicates, *Journal of Chemometrics* ([10.1002/cem.2016](https://doi.org/10.1002/cem.2016)).

Brereton R.G. (2018) Introduction to analysis of variance, *Journal of Chemometrics* ([10.1002/cem.3018](https://doi.org/10.1002/cem.3018)).

Brereton R.G. (2018) ANOVA tables and statistical significance of models, *Journal of Chemometrics* ([10.1002/cem.3019](https://doi.org/10.1002/cem.3019)).

Brereton R.G. (2018) Sources of error, *Journal of Chemometrics* ([10.1002/cem.3017](https://doi.org/10.1002/cem.3017)).

### Papers

Araujo P.W., Brereton R.G. (1996) Experimental design I. Screening, *TrAC Trends in Analytical Chemistry* ([10.1016/0165-9936\(96\)88034-4](https://doi.org/10.1016/0165-9936(96)88034-4)).

Araujo P.W., Brereton R.G. (1996) Experimental design II. Optimization, *TrAC Trends in Analytical Chemistry* ([10.1016/0165-9936\(96\)80762-X](https://doi.org/10.1016/0165-9936(96)80762-X)).

Araujo P.W., Brereton R.G. (1996) Experimental design III. Quantification, *TrAC Trends in Analytical Chemistry* ([10.1016/0165-9936\(95\)00086-0](https://doi.org/10.1016/0165-9936(95)00086-0)).

## Reviews

Hanharan G., Lu K. (2006) Application of factorial and response surface methodology in modern experimental design and optimization, *Critical Reviews in Analytical Chemistry* ([10.1080/10408340600969478](https://doi.org/10.1080/10408340600969478)).

Bas D., Boyaci I.H. (2007) Modeling and optimization I: usability of response surface methodology, *Journal of Food Engineering* ([10.1016/j.jfoodeng.2005.11.024](https://doi.org/10.1016/j.jfoodeng.2005.11.024)).

Bas D., Boyaci I.H. (2007) Modeling and optimization II: comparison of estimation capabilities of response surface methodology with artificial neural networks in a biochemical reaction, *Journal of Food Engineering* ([10.1016/j.jfoodeng.2005.11.025](https://doi.org/10.1016/j.jfoodeng.2005.11.025)).

Bezerra M.A. et al. (2008) Response surface methodology (RSM) as a tool for optimization in analytical chemistry, *Talanta* ([10.1016/j.talanta.2008.05.019](https://doi.org/10.1016/j.talanta.2008.05.019)).

Leari R. (2009) Experimental design in chemistry: a tutorial, *Analytica Chimica Acta* ([10.1016/j.aca.2009.06.015](https://doi.org/10.1016/j.aca.2009.06.015)).

Hibbert D.B. (2012) Experimental design in chromatography: a tutorial review, *Journal of Chromatography B* ([10.1016/j.jchromb.2012.01.020](https://doi.org/10.1016/j.jchromb.2012.01.020)).

Callao M.P. (2014) Multivariate experimental design in environmental analysis, *Trends in Analytical Chemistry* ([10.1016/j.trac.2014.07.009](https://doi.org/10.1016/j.trac.2014.07.009)).

Paulo F., Santos L. (2017) Design of experiments for microencapsulation applications: a review, *Materials Science and Engineering C* ([10.1016/j.msec.2017.03.219](https://doi.org/10.1016/j.msec.2017.03.219)).

Yolmeh M., Jafari S.M. (2017) Applications of response surface methodology in the food industry processes, *Food and Bioprocess Technology* ([10.1007/s11947-016-1855-2](https://doi.org/10.1007/s11947-016-1855-2)).

Mäkelä M. (2017) Experimental design and response surface methodology in energy applications: a tutorial review, *Energy Conversion and Management* ([10.1016/j.enconman.2017.09.021](https://doi.org/10.1016/j.enconman.2017.09.021)).

Ferreira S.L.C. et al. (2017) Multivariate optimization techniques in food analysis – a review, *Food Chemistry* ([10.1016/j.foodchem.2017.11.114](https://doi.org/10.1016/j.foodchem.2017.11.114)).