

Course reader - Design of experiments 2018

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)).

Learidi 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)).