UNIVERSIDADE ESTADUAL DE CAMPINAS
INSTITUTO DE QUÍMICA

PROGRAMS AND BIBLIOGRAPHY

Subject	
Code	**Name**
QG636	Experimental Design

Vector
OF:S-2 T:004 P:000 L:000 O:000 D:000 HS:004 SL:004 C:004 AV:N EX:S FM:75%

Pre requirement	QG108 *ME414

Summary

Statistical Introduction. Factorial designs. Model Building. Mixture Models. Simplex Optimization.

Program

1. Introduction (concepts and nomenclature)
2. Factorial designs – Effect calculations, interpretation of results, Pareto charts, erro analysis, ANOVA (analysis of Variance), confidene intervals, lack of fit, applications
3. Fractional factorial desgns, How to build designs, resolution concept, factor screening, applications.
4. Optimization of experiments, central composite designs, full factorial designs in three factor levels Box-Behnken designs, Doelhert matrix.
5. Mixture designs, three component mixtures, mixtures with more than three components.
6. Basic and modified simplex optimization.

Bibliography

Bruuns, R. E., Scarminio, I. S., Barros Neto, B. De, *Statitical Design- Chemometrics*, 1 ed.; Elsevier, Amsterdam, 2006.

Montgomery, D. C. *Design and analysis of Experiments,* John Wiley & Sons, New York, 2001.

Box, G. E. P., Hunter, W. B., Hunter, J. S., Statistics for Experimenters: An Introduction to Design, Data Analysis and Model Building. John Wiley & Sons, New York, 1978.

Meyers, R. H., Montgomery, D. C. *Response Surface Methodology: Process and Product Optimization Using Designed Experiments,* John Wiley & Sons, New York, 2002.

Evaluation criteria
For grading policy, see: Regimento Geral de Graduação, Seção I – Normas Gerais, Capítulo V – Da Avaliação do Aluno na Disciplina. Students are required to attend 75 % of the lectures. For further details, see: Regimento Geral de Graduação, capítulo VI, seção X, artigo 72.