



**PROGRAMS AND BIBLIOGRAPHY**

<b>Subject</b>	
<b>Code</b>	<b>Name</b>
QF851	Chemometrics and Multivariate Control of Chemical Processes

<b>Vector</b>
OF:S-5 T:002 P:000 L:000 O:000 D:000 HS:002 SL:002 C:002 AV:N EX:S FM:75%

<b>Pre requisite</b>	None
----------------------	------

<b>Summary</b>
Monitoring the state of a chemical process through time is very important. Whenever the process undergoes any unexpected change, the informed user may undertake the due actions in the course of time.

<b>Program</b>
INTRODUCTION CHEMOMETRICS 1. Exploratory data analysis PCA: Principal component analysis HCA: Hierarchical clustering analysis 2. Construction of calibration models PCR: Principal component regression PLS: Partial least-squares regression MULTIVARIATE CONTROL OF CHEMICAL PROCESSES TYPES OF CHEMICAL PROCESSES: CONTINUOUS BATCH PROCESSES MULTIVARIATE MODELLING OF PROCESSES Goals: 1 – Understand the relations between different parts of the process 2 – Maintain the process under control 3 – Improve the quality of products PROCESS CONTROL: Control letters: we will discuss how the theory of control letters may be implemented in a multivariate approach. APPLICATIONS: part of the time will be spent in real industrial or laboratory applications. - Paint and pigment production processes - Oil refinery

<b>Bibliography</b>
Quimiometria, Conceitos, Métodos e Aplicações publicado em 2015 Autora: Márcia M. C. Ferreira Editora: UNICAMP

Introduction to Statistical Quality Control 5a edição publicado em 2005  
Autor: Douglas C. Montgomery  
Editora: John Wiley & sons Inc.  
Multivariate Statistical Process Control with Industrial Applications publicado em 2002  
Autor: Robert L. Mason e John C. Young  
Editora: ASA – SIAM

**Evaluation criteria**

Evaluation criteria are defined by the Instructor on the bases of Section I – General Norms, Chapter V – Student Evaluation in the Subject, from the General Undergraduate Regiment. Attendance: 75 % ( \* Allowance for non-attendance will be considered according to Chapter VI, Section X, article 72 from the General Undergraduate Regiment).