Course: Statistics for Analytical Chemistry 2 credits: 5

Course code	CHVH24STATISTIEK
Name	Statistics for Analytical Chemistry 2
Study year	2025-2026
ECTS credits	5
Language	Dutch, with parts in English
Coordinator	I. Yacheur

Modes of delivery	Lecture Practical / Training Tutorial
Assessments	Dataverwerking - Other assessment Statistiek voor Analytische Chemie Theorie - Computer, organised by STAD examinations

Learning outcomes

You perform regression analysis, for both external standard method and standard addition method, and apply Goodness of Fit and Lack of Fit tests to assess the accuracy of regression models.

You can during regression analysis: calculate detection limits, interpolate values with consideration of reliability, identify and remove outliers, recognize weighted regression, and apply method comparison.

You perform statistical process control and interpret the results of the Shewhart and Cusum maps, basic validation.

You apply, depending on the experimental design, different ANOVA methods (2-way, blocking, fixed- and random-factors, latin square) and interpret the results.

You calculate with software with fractions, powers, roots, logarithms and you solve algebraic equations.

You solve systems of equations analytically and numerically using Excel, MathCad and WolframAlpha.

You apply the acquired theoretical knowledge about chromatography and statistics in an independent and safe manner while performing an experiment, and communicate about it with an assignments applying correct data processing using software according to the applicable guidelines.

Content

Statistics for Analytical Chemistry 2 focuses on statistics and data processing. The data processing section provides a multifaceted approach to essential concepts and tools. It covers various aspects including basic mathematics, numerical mathematics with MathCad, Excel and WolframAlpha, chemical arithmetic, graph design, text formatting and reporting in Word. In addition, this module also provides in-depth knowledge of linear regression analysis, analysis of variance and the use of control charts. You will learn to construct the best-fit regression equation. In addition, you learn to interpolate and interpret the reliability of a obtained value. You gain knowledge about detection limits, outliers and other applications of regression models.

Included in programme(s)

Chemistry

School(s)

Institute for Life Science & Technology

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