

<b>Name of the course</b>	<b>Chromatographic methods in environmental analysis</b>
Number of instruction hours	20
Outline of course/module content	<p>Theory of chromatography. Retention. Band broadening. Resolution. Signal detection and information obtaining. Qualitative and quantitative analysis. Development and optimization of chromatographic methods. Sample preparation for chromatographic analysis.</p> <p>Gas chromatography (GC): mobile phases, stationary phases, detectors.</p> <p>Liquid chromatography (LC): mobile phases, stationary phases, detectors. Normal phase and reversed phase chromatography. Modern chromatographic techniques: high performance liquid chromatography (HPLC), ultra high performance liquid chromatography (UHPLC), high temperature liquid chromatography (HTLC), hydrophilic interaction liquid chromatography (HILIC).</p> <p>Multidimensional chromatographic techniques (GCxGC, LCxGC, LCxLC).</p> <p>Hyphenated chromatographic (GC, LC) – mass spectrometric techniques (MS, MSn, IT, TOF, Orbitrap).</p> <p>Application of chromatographic techniques in environmental analysis. Analysis of organic contaminants (persistent organic pollutants (POPs), pesticides, pharmaceuticals and personal care products (PPCPs), drugs of abuse, surfactants, plasticizers, perfluorinated compounds) in environmental samples (water, soil, sediment, sludge, biota). Trace and ultratrace analysis. Fate and behaviour of organic contaminants in the environment (mobility, transformation), prediction of transformation pathways. Analysis of organometallic compounds.</p>
Description of instruction methods	Lectures, consultations and seminar papers
Description of course/module requirements	Oral presentation of the seminar paper, oral exam