

Module name		Elective Lecture Introduction to Mass Spectrometry					
Abbreviation		MWV					
Turnus 2-yearly WS odd year	Duration 1 semester	Semester of study 1 to 4	Credits 4	Assignment curriculum M. Sc. Chemistry Subject: AnC Focus: M. M. (here subject: AC or OC) M. Sc. Chemical Biology Subject: SoC			
Module structure							
No.	Course	Type	CP	SWS	Presence-time	Own-study	
1	Introduction to Mass Spectrometry	V	3	2	30 h	60 h	
2	Exercises for Introduction to Mass Spectrometry	Ü	1	1	15 h	15 h	
Total			4		45 h	75 h	
Person(s) responsible for the module		Dr. Sebastian Zühlke					
Lecturer(s)		Dr. Sebastian Zühlke					
Language		English					
Requirements according to examination regulations		None					
Recommended requirements		Sufficient knowledge of Analytical Chemistry and basic knowledge of mathematics is advantageous.					
Study/examination achievements		Written or oral exam at the end of the module Repeatability and rotation according to PO					
Learning objectives		The students gain an overview of mass spectrometry. They acquire knowledge about modern mass spectrometers and their mode of operation as well as their areas of application. In the exercise part, the students learn the practical evaluation based on selected data and spectra.					
Learning outcomes and competencies		By successfully completing this module, students will be able to, <ul style="list-style-type: none"> - classify mass spectrometry as a method within the framework of structure elucidation. - explain the basics of mass spectrometry including the necessary theory. use the acquired theoretical knowledge for the practice-oriented solution of mass spectrometric					

	<p>problems by selecting appropriate strategies for obtaining information.</p> <ul style="list-style-type: none"> - evaluate the validity and safety of information and experimental measurements. - present scientific facts in technical language correctly in speech and writing and discuss them with others.
Content	<ol style="list-style-type: none"> 1. Basics of MS 2. Quadrupoles, ion traps, TOF, Orbitrap, FTICR 3. Ionization techniques for chromatographic coupling (EI, CI, ESI, APCI) 4. MALDI and MALDI imaging 5. Ion mobility 6. Fragmentation reactions of MS 7. IRMS, stable isotopes, radiotracer and radiocarbon method.
Media forms	Powerpoint presentations, blackboard, electronic scripts, online tests, exercises at computer workstations, further working materials
Literature	<ul style="list-style-type: none"> - Jürgen Gross: Mass Spectrometry, Springer-Verlag, 2017 - Matthias Otto: Analytical Chemistry, Wiley-VCH, 2019 - Schwedt, Schmidt, Schmitz: Analytical Chemistry, Wiley-VCH, 2017. - H.-J. Hübschmann: Handbook of GC/MS, Wiley-VCH, 2009
Update	30.06.2022