



DEPARTMENT OF MARINE SCIENCES

MAR455 Applied Analytical Chemistry in Marine Sciences, 15 credits

Tillämpad analytisk kemi inom marin vetenskap, 15 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Department of Marine Sciences on 2020-10-22 to be valid from 2021-01-18, spring semester of 2021.

Field of education: Science 100%

Department: Department of Marine Sciences

Position in the educational system

The course is a second cycle course for a Master's Degree, it may also be included (at the level 120-180 credits) within a Bachelor's Degree. The course can be taken as a freestanding course or as an elective course in a programme.

The course can be part of the following programmes: 1) Atmosphere, Climate and Ecosystems, Master's Programme (N2ACE), 2) Marine Science, Master's Programme (N2MAV), 3) Environmental Sciences (N2MVN) and 4) Master's Programme in Chemistry (N2KEM)

Main field of studies

Chemistry

Marine Sciences

Specialization

A1N, Second cycle, has only first-cycle course/s as entry requirements

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Entry requirements

Completed and passed courses comprising 120 credits in the field of natural science or engineering are required, including at least 30 credits within chemistry.

Learning outcomes

On successful completion of the course the student will be able to:

Knowledge and understanding

- Describe and use instrumental analytical techniques such as liquid and gas chromatography, mass spectrometry, spectroscopy (UV-VIS, IR, Raman) in studies of environmental phenomenon
- Describe theory and practise of marine sensors
- Describe analytical figures of merit

Competence and skills

- Plan, formulate, delimit and interpret an analytical problem
- Interpret and apply statistical evaluation methods
- Present and apply sample technology and strategies

Judgement and approach

- Reflect over and connect the outcome of the analytical chemical interpretation and a sustainable social progress
- At an advanced level compile, evaluate and present, in oral as well as in written form, an analytical marine project

Course content

The course provides knowledge in the following fields of marine analytical chemistry:

- The use of instrumental analytical techniques
- The use of sensor technology
- Determination of trace organic and inorganic compounds in seawater and sediment

Sub-courses

1. **Project and theory** (*Projekt och teori*), 8 credits
Grading scale: Pass with Distinction (VG), Pass (G) and Fail (U)
2. **Practical exercises in laboratory and in field** (*Praktiska övningar på laboratorier och i fält*), 7 credits
Grading scale: Pass (G) and Fail (U)

Form of teaching

Teaching will be performed as lectures, exercises, laboratory sessions, fieldwork, and practicals. Within several parts of the course oral as well as written presentations are

included.

The compulsory components of the course are laboratory sessions (including written and oral presentations) and fieldwork, as well as a written exam.

Language of instruction: English

Assessment

Examination for sub-course 1 (8 credits) is a written exam.

Sub-course 2 (7 credits) examination takes place by written and oral presentations of laboratory sessions.

If a student, who has failed the same examined component twice, wishes to change examiner before the next examination, a written application shall be sent to the department responsible for the course and shall be granted unless there are special reasons to the contrary (Chapter 6, Section 22 of Higher Education Ordinance).

If a student has a recommendation from the University of Gothenburg regarding special educational support, the examiner (in case it is compatible with the course's objectives and if not unreasonable resources are required) can decide to give the student an alternative examination form.

In cases where a course has been discontinued or has undergone major changes, the student shall normally be guaranteed at least three examination occasions (including the ordinary examination) during a period of at least one year, but maximum two years from the last time the course was given.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

Sub-course 1: For grade G 60% of the total on the written examination and for grade VG 80% is needed. Sub-course 2: For grade G, active participation and passed oral and written presentations in all laboratory sessions are required. For grade G on the entire course, both sub-courses must be approved. Grade VG on the full course requires VG on sub-course 1 and G on sub-course 2.

Concerning application of the ECTS scale for grade please see Vice-Chancellor's decision 28/05/2007, No. G 8 197/07 as well as 28/02/2011, No. O 2009/05545.

Course evaluation

A written evaluation is done at the end of the course. In the written evaluation, the student is anonymous. The results and possible changes to the course will be shared with students who participated in the evaluation and students who are starting the course.

