



DEPARTMENT OF MARINE SCIENCES

OCM101 Basics of Physical Oceanography, 7.5 credits

Grundläggande fysisk oceanografi, 7,5 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Department of Marine Sciences on 2019-06-13 to be valid from 2019-09-02, autumn semester of 2019.

Field of education: Science 100%

Department: Department of Marine Sciences

Position in the educational system

The course can be taken as a free standing course or as a course within a program.

The course can be part of the following programmes: 1) Marine Science, Bachelor's Programme (N1MAV) and 2) Marine Science, Master's Programme (N2MAV)

Main field of studies

Oceanography

Physical Oceanography

Marine Sciences

Specialization

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

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

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

Entry requirements

For admission to the course, 120 credits of completed courses within natural sciences are required, of which at least 15 credits in mathematics (analysis and linear algebra).

Learning outcomes

Upon completion of the course, the student is expected to be able to:

Knowledge and understanding

- Describe how the physical properties of seawater influence oceanic flows
- Define the different terms in the equations of fluid motions
- Describe the main effects of Earth rotation on oceanic flows
- Describe the main properties of flows in hydrostatic and geostrophic balance

Competence and skills

- Know the definition and relevance of the most important physical properties of seawater
- Know the equations of fluid motion for a rotating fluid
- Perform mathematical derivations and make calculations for some idealized flow cases

Judgement and approach

- Know how to apply fundamental principles of physics and mathematics to develop a quantitative understanding of ocean dynamics
- Understand standard simplifications and common limitations that are often associated to studies of ocean processes

Course content

The course provides a basic introduction to the principles that govern the flow in the sea at different scales from the smallest turbulent vortices to the large-scale circulation in the oceans.

A major emphasis is on describing various physical phenomena using a quantitative mathematical expression. The course deals with the following elements: Basic properties of a fluid including the driving equations for mass conservation, momentum and energy, coordinate systems and effects of Earth rotation and the derivation of simplified sets of equation describing large-scale oceanic flows.

Form of teaching

Teaching is mainly in the form of lectures and exercises.

Language of instruction: English

Assessment

By written exam: U / G / VG.

For students who have not been approved at regular examinations, additional examination opportunities are offered. The possibilities of retaking examinations are limited and decided in consultation with the course leader.

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).

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).

For the grade G, 55% is required on the exam. For the grade VG, 75% is required on the exam.

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.