

# ATM359 Eddy covariance intensive course (2020-2023)

HUOM! OPINTOJAKSOJEN TIETOJEN TÄYTTÄMISTÄ KOORDINOIVAT KOULUTUSSUUNNITTELIJAT HANNA-MARI PEURALA JA TIINA HASARI

- 1. Course title
- 2. Course code
- 3. Course status: optional
- 4. Course level (first-, second-, third-cycle/EQF levels 6, 7 and 8)
- 5. Recommended time/stage of studies for completion
- 6. Term/teaching period when the course will be offered
- 7. Scope of the course in credits
- 8. Teacher coordinating the course
- 9. Course learning outcomes
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- 14. Recommended and required literature
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## 1. Course title

Eddy covariance intensive course  
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## 2. Course code

ATM359

## 3. Course status: optional

-Which degree programme is responsible for the course?  
Master's Programme in Atmospheric Sciences

-Which module does the course belong to?  
ATM300 Advanced Studies in Atmospheric Sciences  
optional for

- Study Track in Biogeochemical Cycles
- Study Track in Meteorology

-Is the course available to students from other degree programmes?  
Yes

## 4. Course level (first-, second-, third-cycle/EQF levels 6, 7 and 8)

Master's level, degree programmes in medicine, dentistry and veterinary medicine = secondcycle degree/EQF level 7  
Doctoral level = third-cycle (doctoral) degree/EQF level 8

-Does the course belong to basic, intermediate or advanced studies (cf. Government Decree on University Degrees)?  
Advanced studies

## 5. Recommended time/stage of studies for completion

Can be taken in the early or later stages of studies. However, it is recommended after the [ATM347 Boundary Layer Physics I](#).

## 6. Term/teaching period when the course will be offered

- Spring term, not every year.

## 7. Scope of the course in credits

5 cr

## 8. Teacher coordinating the course

Ivan Mammarella

## 9. Course learning outcomes

- You will learn how to process and analysis the eddy covariance flux measurements.
- You will learn how to use the post-processing software EddyUH.

## 10. Course completion methods

Lectures, practical sessions in the class and final essay. Students will write the final essay after course.

## 11. Prerequisites

- Basics of atmospheric boundary layer physics. Suitable course at the University of Helsinki is [ATM347 Boundary Layer Physics I](#).

Also other courses related to micrometeorological flux measurements ([ATM331 Theory of Micrometeorological Flux Measurements](#)) and time-series analysis ([ATM310 Time Series Analysis in Geosciences](#)) may be useful.

## 12. Recommended optional studies

If you are interested in continuing in the subject courses [ATM332 Terrestrial water, carbon and nitrogen cycles](#) and [ATM328 Global biogeochemical cycles](#) are recommended.

## 13. Course content

- Introduction to energy and gas exchange between biosphere and atmosphere.
- Overview of the theory behind of eddy covariance (EC) method.
- EC setup, sensors, methods, data post-processing and gap-filling.
- Data documentation, harmonisation and storage.
- EddyUH and rawdata post-processing.

## 14. Recommended and required literature

- Lecture notes
- Peer-reviewed articles
- Supplementary reading: Eddy covariance: a practical guide to measurement and data analysis / Marc Aubinet, Timo Vesala, Dario Papale, editors

## 15. Activities and teaching methods in support of learning

Lectures and practical sessions in the classroom.

## **16. Assessment practices and criteria, grading scale**

- Course is graded on the scale pass/fail. In order to pass the course the student should participate lectures and practical sessions, as well as return the final essay.

## **17. Teaching language**

English