



## Science Methodology – Understanding the Principles of Scientific Research

*A course for students in natural sciences*

Course name: 4603SCMTH-1415FWN

During the BSc and MSc education students learn lots of scientific facts, but do they know how science works? In this course the basic principles of the methodology used in the natural sciences are taught. The aim is to let the student contemplate on concepts like ‘truth’, ‘experiments’, ‘models’, ‘confirmation/falsification’ and make the student aware of the limitations of the ability to make objective observations. Also current practices, like the mechanisms of research funding, ‘publish or perish’ dogma and the importance of impact as well as integrity and ethics in science will be discussed.

The course is meant for **MSc and PhD students in any of the natural sciences** who are performing scientific research projects. It will consist of lectures and discussions. Examination consists of two essays.

Credits: 4 EC

Lecturers: Dr. Victor Gijsbers (Institute of Philosophy, Leiden University)

Prof. Dr. Marcellus Ubbink (Institute of Chemistry, Leiden University)

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*Lectures:* Monday 15:30 – 17:15; *Discussions:* Tuesday 15:30 – 16:45

**Location of the lectures will appear on Blackboard**

	Date	Lecturer	Topic
1	February 16	Gijsbers	What is empirical science?
2	February 17		Discussion
3	February 23	Gijsbers	Theories and observations
4	February 24		Discussion
5	March 2	Gijsbers	Paradigms and revolutions
6	March 3		Discussion
7	March 9	Gijsbers	Objectivity and truth
8	March 10		Discussion
9	March 16	Ubbink	Doing science in current academia
10	March 17		Discussion
11	March 23	Gijsbers	Cheating and stealing – scientific integrity
12	March 24		Discussion
13	March 30	Gijsbers	Science, ethics, politics
14	March 31		Discussion