



Science Methodology – Understanding the Principles of Scientific Research

A new course for students in natural sciences

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 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 ‘publish or perish’ dogma and the importance of impact and rankings as well as fraud and integrity 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.

Credits: 4 EC

Lecturers: Dr. Victor Gijsbers (Institute of Philosophy)
Dr. Sarah de Rijcke (Centre for Science and Technology Studies)
Prof. Dr. Paul Wouters (Centre for Science and Technology Studies)
Prof. Dr. Jan Sixma (National Board for Scientific Integrity, LOWI)

Co-ordinator: Prof. Dr. Marcellus Ubbink (Institute of Chemistry)
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Mondays and Wednesday at 15:30 – 17:15, location to be announced.

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|-----|--------------------|----------------------|--|
| 1. | <i>February 13</i> | <i>dr Gijsbers</i> | From observation to theory I |
| 2. | <i>February 15</i> | <i>dr Gijsbers</i> | From observation to theory II |
| 3. | <i>February 20</i> | <i>dr Gijsbers</i> | Truth and objectivity |
| 4. | <i>February 22</i> | <i>dr Gijsbers</i> | Truth and empiricism |
| 5. | <i>March 5</i> | <i>dr Gijsbers</i> | Reduction and emergence |
| 6. | <i>March 7</i> | <i>dr Gijsbers</i> | Causality |
| 7. | <i>March 14</i> | <i>dr Gijsbers</i> | The scientific method in the current practice |
| 8. | <i>March 19</i> | <i>dr de Rijcke</i> | Evaluation of scientific research |
| 9. | <i>March 21</i> | <i>prof. Wouters</i> | Sense and nonsense of rankings |
| 10. | <i>March 28</i> | <i>prof. Sixma</i> | Ethics, integrity and fraud in Science |

Registration: Blackboard > Courses FWN > Life Science and Technology > Master > Vakken 2011-2012 > Science Methodology (LST-SM-1112FWN), enroll