



Sveriges lantbruksuniversitet  
Swedish University of Agricultural Sciences

# SLUkurs

## Syllabus

**PVSo168 In vitro toxicology, effect-based methods and toxicological modelling, 3.0 credits**

## Syllabus approved

2020-10-21

## Subjects

Biomedical science

## Education cycle

Third cycle

## Grading scale

Pass / Failed

The requirements for attaining different grades are described in the course assessment criteria which are contained in a supplement to the course syllabus. Current information on assessment criteria shall be made available at the start of the course.

## Language

English

## Prior knowledge

Admitted to a postgraduate program in toxicology, biochemistry, food science, nutrition, animal science, biology, veterinary medicine, or related subjects, or to a residency program in veterinary science.

## **Objective, including learning outcomes**

After completing the course the student shall be able to:

- 1) Describe and explain the principle of effect-based methods and how these can be used in toxicological research
- 2) Describe the principal design for the most important in vitro assays used in current toxicological research
- 3) Perform an effect-based evaluation of an environmental sample of pure compound, using in vitro assays based on cultured human cells, including practical lab work, data handling and evaluation of the results
- 4) Apply the in vitro results to model concentration-response relationships and perform in vitro-in vivo extrapolation based on estimated internal concentrations in human cells

## **Content**

In vitro methods and modelling are valuable research tools in current toxicological research. These tools can be used to expand our understanding of the presence of toxic compounds in the environment and the biological effects that can occur when organisms are exposed to these compounds. Effect-based methods can be combined with advanced chemical analysis in an effectdirected analysis approach to allow the identification of previously unknown toxic compounds in the environment. Modelling is applied to characterize a concentration-response relationship based on the measured effects in vitro and compare those results to existing in vivo data. Learning objective is a better understanding the influence of the dose metric (external vs. internal exposure concentrations). This course will include: lectures (3 days), practical laboratory work and modelling exercise (5 days), reading assignments (2 days).

## **Requirements for examination**

Mandatory attendance on all lectures and the practical laboratory work, written report.

## **Additional information**

Maximum number of participants: 10

## **Responsible department**

Department of Biomedical Sciences and Veterinary Public Health