



PhD Course on  
**Adverse Outcome Pathways**  
in environmental toxicology:  
practical applications,  
methods and challenges

**October 15-19, 2018**  
**NTNU Trondheim**

With contributions by  
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Norwegian University of  
Science and Technology

BI8071: My AOP - Practical applications, methods and challenges of Adverse Outcome Pathways in environmental toxicology

Time: 15.-19.10.2018

Organizers: Erik Muller, Martin Wagner

**Please note: Due to technical limitations, the old course description is still online at NTNU's website. <https://www.ntnu.edu/studies/courses/BI8071/> Please apply for this course anyway.**

#### **Facts**

Version: 1

Credits: 7.5 SP

Study level: Doctoral degree level

#### **Coursework**

Term no.: 1

Teaching semester: AUTUMN 2018

No. of lecture hours: 10

Lab hours: 0

Language of instruction: English, Norwegian

Location: Trondheim

#### **Subject area(s)**

Zoology

Ecology

Toxicology

Environmental Toxicology

Environmental Chemistry

#### **Contact information**

Course coordinator: Martin Wagner

Department with academic responsibility

Department of Biology

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#### **Examination arrangement**

Examination arrangement: Oral examination and presentation

Grade: Passed/Failed

<b>Evaluation form</b>	<b>Weighting</b>	<b>Duration</b>	<b>Examination aids</b>
Oral examination	20/100		
Presentation	80/100		

## **Course content**

In this intensive, one-week course we will provide an advanced understanding of the Advanced Outcome Pathways (AOP) framework emerging in the field of environmental toxicology and chemistry. The AOP framework is a powerful conceptual tool to organize and integrate information on the action of a chemicals on different levels of biological organization. It thereby links interactions of chemicals on a molecular level (molecular initiating event) through a series of key events on tissue and organ level to adverse outcomes in individuals or populations.

We will discuss the basic principles of the AOP concept, learn about its applications and critically reflect on advantages and shortcomings using several case studies. Working in groups, we will analyze existing AOPs and the scientific knowledge used to build them. Equipped with such deeper understanding, participants will work jointly on how to embed their PhD research in existing AOPs or construct new AOPs. This will enable the participants to place their own work into a larger toxicological perspective, identify critical knowledge gaps and built better hypotheses.

## **Learning outcome**

- advanced understanding of the theoretical principles of the AOP framework
- advanced understanding of the components of an AOP (molecular initiating events, key events, adverse outcome) based on existing case studies
- embed the own PhD project in an AOP thinking

## **Skills**

- use the AOPWiki and other relevant online platforms
- critically assess existing AOP and generating new AOP
- critically reflect and discuss scientific publications

## **General competence**

- search, read and understand the relevant literature
- present and discuss own analyses

## **Learning methods and activities**

- using the AOPWiki (and similar tools)
- identify gaps and challenges in the AOP framework
- literature search
- presenting and discussing selected case studies
- place own research in existing AOPs
- draft a new AOP for the own research
- presenting the outcomes

Lectures: 10 hours, mandatory

Seminar: 30 hours, mandatory

## **Compulsory assignments**

Semesterdeltagelse

**Specific conditions**

Exam registration requires that class registration is approved in the same semester. Compulsory activities from previous semester may be approved by the department.

**Recommended previous knowledge**

Competence in Environmental toxicology and/or chemistry on a MSc level.

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**Course materials**

Original scientific papers, book chapters, seminars and lectures. All participants must read the syllabus before the start of the course.

**Credit reductions**

Course code	Reduction	From	To
BI8070	7.5		
MNKBI470	7.5		