Draft programme: Endocrine disruptors – Identification and Assessment
February 15-19, 2027
Lectures and group discussions are online using Zoom.
IMM Institute of Environmental Medicine, Karolinska Institutet.
Course leaders: Johanna Zilliacus, Annika Hanberg, Anna Beronius

Monday Feb 15	**Tuesday Feb 16**	**Wednesday Feb 17**	**Thursday Feb 18**	**Friday Feb 19**
9.00-9.30 Welcome and introduction to the course (JZ, AH, AB)	9.00-9.15 Wrap-up from previous day	9.00-9.15 Wrap-up from previous day	9.00-9.15 Wrap-up from previous day	9.00-9.15 Wrap-up from previous day
9.30-10.30 Introduction of participants	9.15-10.15 Endocrine disruptors and female reproduction (PD)	9.15-10.00 Group assignment 1 continued	9.15-10.00 Group assignment 2 continued	9.15-10.00 Group assignment 3 continued
10.30-10.45 Break	10.15-10.30 Break	10.00-10.15 Break	10.00-10.15 Break	10.00-10.15 Break
10.45-11.30 Introduction of participants, group discussions	10.30-11.30 Endocrine disruptors and male reproduction (TS)	10.15-11.00 Presentation and discussion of group assignment 1	10.15-11.00 Presentation and discussion of group assignment 2	10.15-12.00 Presentation and discussion of group assignment 3
11.30-12.30 Lunch	11.30-12.30 Lunch	11.00-11.15 Break	11.00-11.15 Break	12.00-13.00 Lunch
12.30-13.30 Introduction to endocrine disruptors (AH)	12.30-13.30 Endocrine disruptors and thyroid disorders (AB)	11.15-12.15 In vitro and mammalian in vivo tests to identify endocrine activity (JZ)	11.15-12.15 Adverse outcome pathways and mode of action analysis to identify endocrine disruptors (AB)	13.00-17.00 Take home exam handed in at 17.00
13.30-13.45 Break	13.30-13.45 Break	12.15-13.15 Lunch	12.15-13.15 Lunch	
13.45-14.45 Introduction to endocrinology (JZ)	13.45-14.45 In vivo mammalian tests to identify EATS-mediated adversity (AH)	13.15-14.00 Individual learning	13.15-13.45 Regulatory aspects of endocrine disruptors-EFSA examples (SB)	
14.45-15.00 Break	14.45-15.00 Break	14.00-15.00 In vivo non-mammalian tests to identify endocrine disruptors (LB)	13.45-14.00 Break	
15.00-16.00 Identification of endocrine disruptors based on EU	15.00-15.45 Introduction to group assignment 1	15.00-15.45 Introduction to group assignment 2	14.00-14.30 Regulatory aspects of endocrine disruptors (TBD)	

scientific criteria and guidance for identification of endocrine disruptors (AB)	Individual learning	Individual learning		
16.00-16.15 Reflection on today's learning	15.45-16.45 Group assignment 1	15.45-16.45 Group assignment 2	14.30-15.15 Introduction to group assignment 3 Individual learning	
16.15-17.00 Individual learning Preparation for next day	16.45-17.00 Reflection on today's learning	16.45-17.00 Reflection on today's learning	15.15-16.45 Group assignment 3	
			16.45-17.00 Reflection on today's learning	

Teachers:
AB – Anna Beronius, IMM, KI
AH – Annika Hanberg, IMM, KI
JZ – Johanna Zilliacus, IMM, KI
LB– Lisa Baumann, Vrije Universiteit Amsterdam, Netherlands
PD– Pauliina Damdimopoulou, KBH, KI
SB – Sofia Batista Leite, EFSA
TS– Terje Svingen, DTU, Denmark

Course information

Purpose of the course:
The purpose of the course is to give the participant knowledge and understanding of molecular mechanisms and adverse effects of endocrine disruptors as well as of methodologies to study and identify such substances and assess effects on human health.

Learning outcomes:
After the end of the course the participant should be able to:
- Describe molecular mechanisms and potential adverse effects of endocrine disruptors
- Explain methodologies to study endocrine disruptors
- Apply methodology for identification of endocrine disruptors according to EU scientific criteria and guidance
- Identify and discuss challenges in identification and assessment of endocrine disruptors

Content of the course:
Endocrine disruptors are defined as an exogenous substance or mixture that alters function(s) of the endocrine system and consequently causes adverse health effects in an intact organism, or its progeny, or (sub)populations. Endocrine disruptors act via hormone receptors and by altering hormone levels and have been implicated in several endocrine-related diseases. The course will include molecular mechanisms of endocrine disruptors, from molecular initiating events to adverse effects. Methodologies for identification and analysis of the endocrine disruptors will be addressed. Identification of endocrine disruptors based on EU scientific criteria and guidance will be addressed. Attention will be given to future challenges in identification and assessment of endocrine disruptors.

Content of teaching and learning activities:
Welcome and introduction to the course
- Introducing course directors
- Presenting Karolinska Institutet and Institute of Environmental Medicine
- Presenting course (learning outcomes, programme and exam)
- Explaining practical aspects of on-line course, including Zoom and Canvas

Introduction of participants
- Participants introduce themselves using 1-2 PowerPoint slide provided in advance
- Participants get to know each other in group discussions

Lecctures
- Lectures on the different topics by teachers from Karolinska Institutet and other organisations

Group assignments
- Work on group assignment in small groups

Reflection on today's learning
- Individual reflection on What was the most important I learnt today? Are there any open/unclear issues from today?

Wrap-up from previous day
- Discussion based on reflections of learning and open/unclear issues

Presentation and discussion of group assignments
- Each group presents their group assignments
- Other groups ask questions and discuss

Take home exam
- Short answer questions on factual knowledge
- Reflection question on challenges in identification and assessment of endocrine disruptors