



# Exchange programme Vrije Universiteit

Vrije Universiteit Amsterdam - Exchange programme Vrije Universiteit - 2022-2023

## Exchange

Vrije Universiteit Amsterdam offers many English-taught courses in a variety of subjects, ranging from arts & culture and social sciences, neurosciences and computer science, to economics and business administration.

The International Office is responsible for course approval and course registration for exchange students. For details about course registration, requirements, credits, semesters and so on, please [visit the exchange programmes webpages](#).

# Induced Pluripotent Stem Cells in Toxicology and Drug Discovery

Course Code	XB_0095
Credits	6.00
Period	P5
Course Level	300
Language Of Tuition	English
Faculty	Faculty of Science
Course Coordinator	dr. A. Wilmes
Examiner	dr. A. Wilmes
Teaching Staff	prof. dr. P. Jennings, dr. A. Wilmes
Teaching method(s)	Partial Exam, Lecture

## Course Objective

The course (formerly called "Current topics in Molecular and Cellular Toxicology") aims to give a general introduction to the use induced pluripotent stem cells (iPSC), and their application for toxicology and personalized medicine.

## Course Content

Studying the effects of pharmaceuticals in human cell culture systems, offers a number of advantages over animal experiments, including the use of human material and the possibility to use mechanistic approaches to understand the mechanism of action or mechanism of toxicity of a compound. In particular the use of iPSC opens exciting new avenues, as they provide unlimited material, are of non-cancerous origin, and can be collected/generated from individual living patients. iPSC can be generated from somatic cells, e.g. from skin fibroblast or blood cells, and in the last decade, many patient-specific iPSC have been made, including cells that carry SNPs or mutations in drug transporters or metabolizing enzymes. These cells can then be differentiated into target cells that are important in toxicology, including cells types of the liver, kidney, heart and intestine, and employed in toxicology studies. Topics addressed in this course include, basic cell culture techniques, iPSC reprogramming and differentiation strategies, and a basic understanding in developmental biology and physiology of the target organs known to be involved in toxicity. In addition, strengths and limitations of iPSC for their potential application of studying toxicity and personalized medicine will be discussed.

## Additional Information Teaching Methods

This course consists of a series of lectures as well as discussion sessions of recent literature. For this, the students are expected to do literature searches and to prepare short presentations on selected topics.

## Method of Assessment

Assignments on selected topics in form of a short presentations or reports will count for 70% of the mark. A test on the lectures will count for 30% of the mark. Both need to be passed to pass the course.

## Literature

Both, provided and self-search literature from Pubmed.

### Additional Information Target Audience

3rd year Bachelor students.

### Additional Information

The course, including the assignment and test will be held in English