

Course: Quantification of Glucose-insulin Homeostasis in Metabolic Research

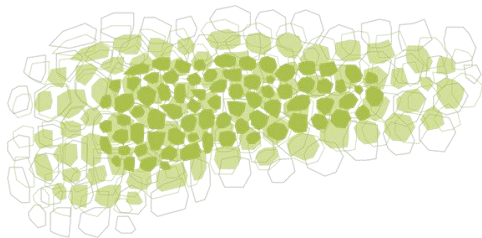
Date: 24th January 2024

Location: Department of Diabetes, Endocrinology, Nutritional Medicine and Metabolism, University Hospital and University of Bern, Berne Switzerland (Possibility for Online Attendance)

Course content

This course offers knowledge transfer in the field of glucose-insulin regulation, covering both physiological principles and techniques for its evaluation in metabolic studies. The one-day course is divided into six modules focusing on topics such as insulin sensitivity, beta cell function, and various quantification methods. Participants will gain theoretical background as well as hands-on experience using data from oral glucose tolerance tests (OGTTs). After completion of the course, participants will be able to understand and apply various methodological approaches to investigate glucose-insulin homeostasis in vivo.

The hybrid course format allows attendance either in-person (University Hospital Bern, Switzerland) or online via Zoom. However, we strongly encourage participants to join us on-site whenever possible, in order to take full advantage of the hands-on workshop of the course.



Target audience:	Researchers in the field of life science, clinical researchers
Pre-requisites:	Basic understanding of physiology
Costs:	PhD Students: CHF 200.- Academic researchers and others: CHF 400.-
Organizing institutions:	Department of Diabetes, Endocrinology, Nutritional Medicine and Metabolism (UDEM). University of Bern, Switzerland
Time and place:	From 9am to 6pm, Department of Diabetes, Endocrinology, Nutritional Medicine and Metabolism (UDEM), Inselspital Bern. Online attendance possible. Further details follow upon registration
Lecturers:	Prof. Lia Bally, Prof. Thomas Lutz, Prof. Michele Schiavon, Dr. David Herzig
Registration:	Until 31.12.2023 via registration link: https://de.surveymonkey.com/r/TBJ6J6M
Contact:	research.udem@insel.ch
Credits	ECTS will be provided for student of UniBe upon successful completion of additional learning activities (please contact the course organizers for more details)



Course Modules

Module 1: Physiological Background

In this module, the basic principles of glucose-insulin homeostasis and how glucose and insulin function in the body will be presented. The content will include an introduction to the concepts and physiology of insulin sensitivity and beta cell function.

Module 2: Clinical Relevance

This module addresses the clinical importance of accurate measurement of glucose-insulin homeostasis and presents its relevance to the diagnosis and treatment of multiple diseases. Participants will also learn about the various research applications where understanding glucose-insulin regulation is key.

Module 3: Pre-clinical models

In this module, participants will learn about various preclinical models used to study glucose-insulin regulation, such as animal models and in vitro experiments. The course will discuss the advantages and limitations of these models.

Module 4: Overview of quantification methods

In this module, several techniques for the study of glucose-insulin regulation in vivo, such as the hyperinsulinemic-euglycemic clamp or the iv/oral glucose tolerance tests will be presented. Participants will learn about metrics for evaluating insulin secretion, beta-cell function, or insulin sensitivity. The course will also contrast the use of mathematical models with empirical indices for quantifying glucose-insulin regulation.

Module 5: Mathematical modelling of glucose-insulin regulation

In this module, participants will learn about mathematical modeling of glucose-insulin regulation. The course covers the fundamentals of how to use and interpret the results of mathematical models to analyze glucose-insulin dynamics.

Module 6: Hands-on workshop

This hands-on workshop is designed to provide participants with practical experience in data analysis and interpretation of OGTT results, particularly with the use of SAAMII software for modeling (www.nanomath.us/saam2). Participants will learn how to input data, run the analysis, and interpret the results using SAAMII. The software (including a temporary test license for the duration of the course) will be provided to the participants.



nanomath.us

