



## DEPARTMENT OF MEDICINE, SOLNA

### **K2F3113, Endothelial Cell Function and its Relevance in Cardiovascular Disease, 1.5 credits (hec)**

Endotelets funktion och dess relevans för kardiovaskulär sjukdom, 1,5

högskolepoäng

*Third-cycle level / Forskarnivå*

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#### **Approval**

This syllabus was approved by The Committee for Doctoral Education on 2023-11-27, and was last revised on 2026-01-21. The revised course syllabus is valid from autumn semester 2026.

#### *Responsible department*

Department of Medicine, Solna, Faculty of Medicine

#### *Contributing department/s*

Department of Molecular Medicine and Surgery

#### **Prerequisite courses, or equivalent**

No prerequisite courses, or equivalent, demanded for this course.

#### **Purpose & Intended learning outcomes**

##### **Purpose**

This course is specially planned to give the participants in the area of cardiovascular research a global perspective on endothelium pathophysiology as well as advanced cutting-edge approaches used by researchers.

This course will enable the participants to obtain the required knowledge to understand and study endothelial cell function in cardiovascular disease.

##### **Intended learning outcomes**

Upon completion of the course, the students should be able to:

1. show an in depth knowledge of endothelial cell function and related molecular basis;
2. evaluate endothelial cell dysfunction and its relevance to cardiovascular disease (e.g.

atherosclerotic lesion, diabetes, ischemia and infection);

3. show an insight into the application of state of the art models and technologies (in vitro, in vivo, from animal model to clinic study) for studying endothelial cell function in cardiovascular disease.

## Course content

Endothelial cells and endothelial cell function under various physiological and pathological conditions will be discussed from molecular, cellular, organ and clinical perspectives. Topics to be covered include the roles of endothelial cells in atherosclerosis, ischemic heart disease, inflammation, hypertension and diabetes/insulin resistance, and in mechanisms of current and future treatment. The course will include examples of in vitro and animal models for evaluation of endothelial cell function as well as examples of clinical studies.

## Forms of teaching and learning

The course activities include daily interactive lectures and seminars given by invited scholars in the respective fields, lab demonstrations, group learning (literature review and research planning), and a group project presentation and review on the last day of the course.

### *Language of instruction*

The course is given in English

## Grading scale

Pass (G) /Fail (U)

## Compulsory components & forms of assessment

### Compulsory components

Students need to participate in all learning activities and to complete self learning assignments. Absence maybe compensated for by an extra task in agreement with the course organizer. The final examination must be passed in order to pass the course.

### Forms of assessment

The final assessment will be held in two parts:

- 1) a literature review and discussion in groups;
- 2) an oral presentation of a research project in the field of endothelial cell function, which should be designed at least partially using the knowledge from the course lectures and experimental methods from the lab demonstration.

In order to pass the course, each student needs to show that he or she reached all the learning outcomes of the course.

## Course literature

Recommended literature will be available on the course Canvas before the course starts.