



DEPARTMENT OF MEDICINE, SOLNA

K2F3238, Thrombosis and Hemostasis, from Mechanisms to Therapies, 3 credits (hec)

Trombos och hemostas, från mekanismer till terapier, 3 högskolepoäng

Third-cycle level / Forskarnivå

Approval

This syllabus was approved by the The Committee for Doctoral Education on 2023-12-01, and was last revised on 2024-04-29. The revised course syllabus is valid from autumn semester 2024.

Responsible department

Department of Medicine, Solna, Faculty of Medicine

Prerequisite courses, or equivalent

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

Purpose & Intended learning outcomes

Purpose

The course aims to bring doctoral students in-depth knowledge of thrombosis and hemostasis, to elucidate the links between molecular mechanisms and clinical disorders, to introduce current advances and future directions of thrombosis research, as well as to enhance the abilities for research question identifying and research design. The course is designed for the students who work with basic and clinical aspects of hemostasis, thrombosis and cardiovascular research.

Intended learning outcomes

The concept from bench to bed side and back will be reinforced at all levels. Therefore, at the end of the course the students should be able to:

1. Describe the molecular and cellular mechanisms of hemostasis and thrombosis, as well as the dynamic processes of primary hemostasis, secondary hemostasis, and thrombosis.
2. Explain the mechanisms underlying bleeding and thrombotic disorders.
3. Have a good understanding of current anticoagulant and antiplatelet therapies, and obtain a clear view of the challenges of future anticoagulant and antiplatelet drug developments.

4. Apply current knowledge of thrombosis and hemostasis into future research design and to formulate new treatment strategies.
5. Sharpen the sense of critical appreciation of research literature, and strengthen their ability to develop new research concepts through critical reading and reflecting.

Course content

The following aspects of hemostasis and thrombosis will be discussed:

biochemistry of the blood clotting system; cell-cell and cell-protein interactions in the cardiovascular

system in relation to thrombosis and bleeding disorders; cross-talks of the clotting system with inflammation, host defense and complement systems; diagnosis of bleeding and thrombotic disorders;

therapeutic strategies to fight thrombosis and bleeding with the emphasis placed on new pharmacological

concepts. In light of the new knowledge conveyed in the course, the emphasis will be laid on critical review of the literature, research question identification, and independent research design.

Forms of teaching and learning

Seminars

Group work

Online learning and group work on research design

Presentation of papers related to the key lectures

Language of instruction

The course is given in English

Grading scale

Pass (G) /Fail (U)

Compulsory components & forms of assessment

Compulsory components

To participate in the lectures, group work and presentation of the group work is compulsory.

The students

who have missed the group work sessions can book extra session time within 4 weeks to compensate the

absence. Absence in lectures should be compensated for in accordance with the course director.

Forms of assessment

Presentation of a paper related to key lectures

Research project design and reciprocal review between the work groups.

Multiple-choice test.

Course literature

The course will provide organised handouts from all lectures.

Recommended textbook for reference: Marder VJ, Aird WC, Bennett JS, Schulman S, White GC. Hemostasis and Thrombosis: basic principles and clinical practice. Philadelphia, Lippincott Williams & Wilkins; 6th edition.