Course syllabus

Människors beteende vid brand
Human Behaviour in Fire

VBRN75, 7,5 credits, A (Second Cycle)

Valid for: 2023/24
Faculty: Faculty of Engineering, LTH
Decided by: PLED BI/RH
Date of Decision: 2023-04-12

General Information

Compulsory for: BI3
Language of instruction: The course will be given in English

Aim

The aim is that students should be able to understand and apply theories of human behaviour in fire, both fire setting and evacuation behaviour, after completion of the course. Students should furthermore recognize the importance of the key factors affecting evacuation. The aim of the course is also that students are able to understand different egress modelling approaches and their limitations. In addition, students should understand and be able to apply relevant guidelines and regulations.

Learning outcomes

Knowledge and understanding
For a passing grade the student must

- be able to explain the various factors (psychological and environmental) that influence fire setting behaviour.
- be able to explain RSET-models that are commonly user in guidelines and regulations.
- be able to describe different theories of human behaviour in fire in building and wildfire scenarios.
- be able to state typical walking speeds for evacuation and explain how movement of people is influenced by demographic factors (e.g. age and mobility).
- be able to understand and apply the main evacuation calculations methods.
- be able to describe how people are affected by fire/smoke products.

- be able to explain the main assumptions behind egress models (network, grid and continuous models).

Competences and skills
For a passing grade the student must

- apply RSET-models to estimate the required safe escape time.
- analyse a fire accident and relate the behaviour of occupants to theories of human behaviour in fire.
- apply 2D and 3D design tools for evacuation design.
- apply egress models to simulate movement of people during evacuation.
- analyse results from simulations with egress models and relate the results to the assumptions of the model.
- select appropriate occupant behaviour scenarios for fire safety engineering design.
- communicate theories of human behaviour in fire to laymen and experts.
- communicate results from simulations with egress models to laymen and experts (oral, written and graphic representation).
- independently seek information (articles, reports, manuals, etc.) about human behaviour in fire.

Judgement and approach
For a passing grade the student must

- adequately consider relevant scientific and ethical aspects of experiments with human participants (evacuation experiments).
- adequately consider relevant ethical and scientific aspects relating to analysis of evacuation with egress models.

Contents

The course provides students with insight into theories of human behaviour in fires, both fire setting and evacuation behaviour, and computer modelling of evacuation. During the course focus is placed on lectures, a compulsory evacuation calculation exercise, compulsory computer laboratory exercises and compulsory seminars. During the course the students also focus on their group assignments, with one assignment being presented to fellow students and teachers at a final seminar. An exam will be held at the end of the course.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)
Assessment: The final certificate is based on an examination, attendance at compulsory activities (including seminars, laboratories and exercises), reports/presentations, and laboratory exercise reports.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

The number of participants is limited to: No
The course overlaps following course/s: VBRN10

Reading list

- The literature consists of scientific papers within the area "Human behaviour in fire" are included.

Contact and other information

Course coordinator: Enrico Ronchi, enrico.ronchi@brand.lth.se
Further information: Active participation in group work is required. Each group member must be able to report and be responsible for the content individually. If a group member does not fulfill the requirements for active participation, or disregards his/her commitments, she/he can be reassigned by the examiner to another group or get a fail result.