

WINTER SCHOOL

HUMAN FACTORS FOR NAVAL ARCHITECTURE

DESIGN FOR SAFETY – 2ND EDITION



5 – 9 February 2024

PROGRAMME

Venue:

Instituto Superior Técnico, Alameda Campus

Objective: This 5-day course focuses on the intersection of Ergonomics/Human Factors and Human-Centered Design in the maritime domain. It emphasizes the importance of designing for human needs in order to achieve safety, performance and well-being at sea. With a blend of lectures, discussions, hands-on exercises, and guest lectures, you will gain invaluable insights into theoretical knowledge, real-world insights from maritime environments, as well as with practical application of methods for Human-Centered Design. It takes students through the entire Human-Centered Design cycle, from planning and understanding the context of use, to designing, evaluating and refining solutions that meet user requirements.

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PROGRAMME

Day 1 – 5th February 2024

Location: Room VA5 | Time: 9:00h to 13:30h (4h)

Onsite Registration (from 8:45h until 9:30h)

FIELD STUDY

LECTURE: Understanding context of use: summary of the day's visit

Day 2 – 6th February 2024

Location: Room VA5 | Time: 9:30h to 13:30h (4h)

LECTURE (2 hours)

- Human Factors in ship design
- Crew functions in different ship types
- Barriers to adoption of human-centered design in the maritime industry
- Existing IMO Guidelines oriented for HCD
- Existing Classification Societies rules for HCD

EXERCISE (2 hours): Crew roles

Day 3 – 7th February 2024

Location: Room VA5 | Time: 9:30h to 13:30h (4h)

LECTURE (2h)

- Physical ergonomics.
- Definition and dimensions of usability
- Human factors issues with physical workstations and human-machine interfaces inside bridges
- Ship accidents due to issues with human-machine interfaces

EXERCISE (2h including discussion): Exercise on how to avoid sea sickness through better ship designs. Three cases: bridges, engine control rooms, galleys

Day 4 – 8th February 2024

Location: Room VA5 | Time: 9:30h to 13:30h (4h)

LECTURE (2h)

- Introduction to Risk Analysis and Management
- Qualitative aspects of risk analysis.

EXERCISE (2 h including discussion): Link analysis

Day 5 – 9th February 2024

Location: Room VA5 | Time: 9:30h to 13:30h (4h)

LECTURE (1h)

- Quantitative risk assessment
- Human factors in risk analysis. Human Reliability Analysis.

EXERCISE: Understanding the context of use: insight into the seafarers' world through research, then creating low-fidelity prototypes of maritime workspaces. The exercise includes playing out scenarios within the prototypes, and engaging in reflective discussions to analyze ergonomics, work flows, and potential improvements.

Funding programme:



Operational Programme Entities:



Biography notes of the Lecturers:

Professor Ângelo Teixeira is Associate Professor at Instituto Superior Técnico (IST), University of Lisbon. His main areas of research are risk assessment and management, maritime safety, maritime traffic safety, structural design and reliability and maintenance of systems.

Professor Tiago Santos is Associate Professor at Instituto Superior Técnico (IST), University of Lisbon. He is a senior researcher in the field of Maritime Transportation, Ports and Logistics in CENTEC.

Doctor Hedvig Aminoff is a postdoctoral researcher at NTNU, with a background in Human-Machine Interaction. She is part of the Shore Control Lab and currently focusing on design for fire safety on Roro-ships within the Lash Fire project.

Doctor Taufik Akbar Sitompul is a postdoctoral researcher and a member of the Shore Control Lab at NTNU, Norway. His current research focuses on designing intuitive human-machine interfaces for remotely operated port cranes.

Doctor Manuel Ventura is a naval architect, researcher of CENTEC and lecturer of ship and small craft design topics at Técnico. His research topics include optimization methods applied to ship concept design, energy efficiency assessment and marine transport.

Doctor José Gaspar is a researcher at CENTEC, he holds BSc and Degree diplomas in Mechanical Engineering and MSc and PhD diplomas in Engineering Design. His research area is on the design of Human-Machine Interfaces.

Language

The course will run entirely in English.

Location of the Event

Courses will take place at the Room VA5, located at the Civil Engineering Building, Alameda Campus of Instituto Superior Técnico, Lisbon.



Organized by



Universidade de Lisboa
Centre for Marine Technology and Ocean Engineering

In collaboration with:



Western Norway University of Applied Science (HVL)



Norwegian University of Science and Technology (NTNU)

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