

ID	2995
Curricular Unit	Design of Complex Systems
Regent	José Domingos de Jesus Carvalhais
Learning Outcomes	<ul style="list-style-type: none"> - To understand the components of a complex sociotechnical system. - To understand the need of interaction and integration of sociotechnical system components. - To understand ergonomics/human factors role in the design of complex sociotechnical systems.
Syllabus	<ol style="list-style-type: none"> 1. Ergonomics and systems. Human-Machine systems. 2. System design process - Traditional model and alternative approaches. 3. Incorporating Ergonomics in the design of complex systems. 4. Dimensions of complex systems - Safety, efficiency and comfort. 5. Comparison of complex systems - Recommendations. 6. High Reliability Organizations. 7. Safety models. 8. Safety culture in complex systems. 9. Control and deviance theory. 10. Fatigue and complex systems. 11. Case studies.
Evaluation	<p>There are two options:</p> <ul style="list-style-type: none"> - Continuous evaluation - Written test. - Final evaluation - Final exam.
Bibliography	<p>Main Bibliography:</p> <p>Boy, G. (2013) Orchestrating Human-Centered Design. Springer.</p> <p>Carayon, P. (2006) Human factors of complex sociotechnical systems. Applied Ergonomics, 37, 525-535.</p> <p>Czaja, S.; Nair, S. (2006) Human factors engineering and systems design. In Handbook of Human Factors and Ergonomics, G. Salvendy editor, Wiley & Sons.</p> <p>Hendrick, H.; Kleiner, B. (2002) Macroergonomics - Theory, Methods and Applications. Lawrence Erlbaum Associates.</p> <p>Wezel, Jorna & Meystel, editors (2006) Planning in Intelligent Systems Willey and Sons.</p>