



ID	3408
Curricular Unit	Design of Complex Systems
Regent	José Domingos de Jesus Carvalhais
Learning Outcomes	 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	 Ergonomics and systems. Human-Machine systems. System design process - Traditional model and alternative approaches. Incorporating Ergonomics in the design of complex systems. Dimensions of complex systems - Safety, efficiency and comfort. Comparison of complex systems - Recommendations. High Reliability Organizations. Safety models. Safety culture in complex systems. Control and deviance theory. Fatigue and complex systems. Case studies.
Evaluation	There are two options: - Continuous evaluation – Written test Final evaluation – Final exam.
Bibliography	Main Bibliography: Boy, G. (2013) Orchestrating Human-Centered Design. Springer. Carayon, P. (2006) Human factors of complex sociotechnical systems. Applied Ergonomics, 37, 525-535. Czaja, S.; Nair, S. (2006) Human factors engineering and systems design. In Handbook of Human Factors and Ergonomics, G. Salvendy editor, Wiley & Sons. Hendrick, H.; Kleiner, B. (2002) Macroergonomics – Theory, Methods and Applications. Lawrence Erlbaum Associates. Wezel, Jorna & Meystel, editors (2006) Planning in Intelligent Systems Willey and Sons.