ID	3814
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	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	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.