



ID	2995
Curricular Unit	Design of Complex Systems
Regent	José Domingos de Jesus Carvalhais
Learning Outcomes	<ul> <li>To understand the components of a complex sociotechnical system.</li> <li>To understand the need of interaction and integration of sociotechnical system components.</li> <li>To understand ergonomics/human factors role in the design of complex sociotechnical systems.</li> </ul>
Syllabus	<ol> <li>Ergonomics and systems. Human-Machine systems.</li> <li>System design process - Traditional model and alternative approaches.</li> <li>Incorporating Ergonomics in the design of complex systems.</li> <li>Dimensions of complex systems - Safety, efficiency and comfort.</li> <li>Comparison of complex systems - Recommendations.</li> <li>High Reliability Organizations.</li> <li>Safety models.</li> <li>Safety culture in complex systems.</li> <li>Control and deviance theory.</li> <li>Fatigue and complex systems.</li> </ol>
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.