Thesis Title	Optimization of building overhang design using Building Integrated Model-ling (BIM) and Life Cycle Assessment (LCA)
Programme of Studies	MSc in Energy Systems and the Built Environment
Course	MES 580 Master Thesis
Area of Study	Computational Building Physics – Building Integrated Modelling – Life Cycle Assessment
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Short Description	The development of computational tools and the ability to simulate a large amount of data in relation to a variety of climatic conditions has helped to make informed decisions about alternative design solutions for bioclimatic building elements. At the same time, the combination of advanced models and tools such as BIM and environmental assessment models such as LCA provide the opportunity for holistic technical, economic and environmental approaches for the environmental design of buildings. This study aspires to deliver a comprehensive model for the optimal computational design of building overhangs through the use of an integrated building information model. The analysis is implemented for different normalized shading projection geometries, different orientations and different climatic data, using the Solar Analysis module of a BIM software. In order to quantify the embodied energy and the environmental impact of the different geometries analysed in this study, Life Cycle Analysis (LCA) and the EcoHestia database of the Frederick University's Sustainable Energy Research Group were used. This study also presents the energy intensity indicators of the overhangs examined in relation to the energy savings achieved through their use as well as the calculation of the energy depreciation time of the alternative designs. The results of this work are expected to be a guide for a well-documented design of overhangs for bioclimatic buildings, as well as a benchmark for analysis in a corresponding combinational logic (BIM and LCA) building bioclimatic elements.