UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL

PROGRAMA DE PÓS-GRADUAÇÃO EM ENGENHARIA CIVIL:

CONSTRUÇÃO E INFRAESTRUTURA

Code:	PCI0023
Title:	Introduction to Life Cycle Assessment application to the construction sector
Credits/number of hours:	3 (45 hours)
Level:	**(x) Master (x) Doctorate**

Summary:

General concepts of environmental impact and their relationship with civil construction. Tools for calculating buildings environmental impacts. Life cycle assessment (LCA) and its applications to civil construction. Case studies development.

Contents:

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Buildings environmental impacts, Life Cycle Thinking	2
Life Cycle Assessment (LCA)	3
Circular Economy	4
Aim and scope definition	5
Life Cycle Inventory – Part 1	6
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Life Cycle Impact Assessment	8
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Evaluation	10
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Objectives:

This course aims to introduce the Life Cycle Assessment (LCA) technique and its application in the environmental impact assessment of civil construction, with special emphasis on construction materials, residues application in civil construction, and buildings life cycle impacts.

Activities:

Lectures, with the adoption of innovative pedagogical practices, as well as reading articles, debates and exposition of concepts. Application to a case study with a focus on content practical experimentation.

Evaluation:

The evaluation consists of three parts: project development (70%), individual activities (20%) and participation in class (10%).

The final grades will be assigned based on the following criteria related to the student's final average:

Grade C – 6,0 a 7,4

Grade B – 7,5 a 8,9

Grade A – 9,0 a 10

References:

CHERUBINI, E. Diálogos Setoriais Brasil e União Europeia: desafios e soluções para o fortalecimento da ACV no Brasil. Brasília: Ibict, 2015.

CURRAN, M. A. Life Cycle Assessment Student Handbook. New Jersey: John Wiley and Sons, 2015.

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FRISCHKNECHT et al 2019. Comparison of the environmental assessment of an identical office building with national methods. IOP Conf. Ser.: Earth Environ. Sci. 323 012037.

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RODRIGUES, C.; FREIRE, F. Integrated Life-Cycle Assessment and Thermal Dynamic Simulation of Alternative Scenarios for the Roof Retrofit of a House. Building and Environment, v. 81, n. 8, p. 204–215, 2014.

SONNEMANN, G.; CASTELLS, F.; SCHUHMACHER, M. Integrated Life-Cycle and Risk Assessment for Industrial Processes. Boca Raton: CRC Press, 2003.