GUÍA DOCENTE ABREVIADA DE LA ASIGNATURA

G799 - Life Cycle Assessment

Grado en Ingeniería Química

Curso Académico 2026-2027

1. DATOS IDENTIFICATIVOS					
Título/s	Grado en Ingeniería Química			Tipología y Curso	Optativa. Curso 4
Centro	Escuela Técnica Superior de Ingenieros Industriales y de Telecomunicación				
Módulo / materia	MATERIA OPCIÓN B: GESTIÓN DEL MEDIO AMBIENTE INDUSTRIAL MATERIA OPCIÓN D: EUROPEAN PROJECT SEMESTER MÓDULO OPTATIVO				
Código y denominación	G799 - Life Cycle Assessment				
Créditos ECTS	6	Cuatrimestre		Cuatrimestral (2)	
Web					
Idioma de impartición	Inglés	English friendly	No	Forma de impartición	Presencial

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Número despacho	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 4. SEMINARIO (S4059)
Otros profesores	ANTONIO DOMINGUEZ RAMOS MARTA RUMAYOR VILLAMIL SELENE COBO GUTIERREZ

3.1 RESULTADOS DE APRENDIZAJE
- Understanding the concept of Life Cycle Thinking
- Learning the fundamentals about how to perform a Life Cycle Assessment study
- How to use an open-source and free Life Cycle Assessment software (group project)

4. OBJETIVOS

Life Cycle Assessment (LCA) is a well-known methodology applied to products, processes and services which considers their full life cycle: from the cradle (as natural resources) to the grave (as air emissions, liquid effluents and solid wastes).
The course covers all aspects about how to perform an LCA study: definition of the goal and scope as well as the target audience, gathering data on resource consumption and emissions, burdens to the environment, checking the robustness and significance of results and conclusions, and reporting and reviewing to ensure transparency and quality.
This LCA course includes LCA fundamentals as well as practical activities based on group projects. For project development, the students learn how to use openLCA, which is an open-source and free software for Sustainability and Life Cycle Assessment.

6. ORGANIZACIÓN DOCENTE

CONTENIDOS	
1	Lecture 1. Life Cycle Assessment fundamentals 1.1 Sustainable Development 1.2 Development of the LCA concept 1.3 Life Cycle Sustainability Assessment 1.4 Life Cycle Thinking
2	Lecture 2. Life Cycle Assessment methodology 2.1 Goal and Scope definition 2.2 Life Cycle Inventory 2.3 Life Cycle Impact Assessment 2.4 Interpretation
3	Practical activities. Group projects using LCA software

7. MÉTODOS DE LA EVALUACIÓN

Descripción	Tipología	Eval. Final	Recuper.	%
Exam corresponding to the lectures	Examen escrito	No	Sí	40,00
Final report of the group project	Trabajo	No	Sí	20,00
Final oral defense of the group project	Examen oral	No	Sí	25,00
Intermediate oral defense of the group project	Examen oral	No	Sí	5,00
Exercises of Life Cycle Assessment	Trabajo	No	Sí	10,00
TOTAL				100,00

Observaciones

Attendance is strongly recommended. The individual contribution of each student to the group project will be checked in the oral defense of the project during the practical activities.
If the final mark from the test and the group project is below the minimum mark (5.00), the student may take a retake exam in the ordinary call (date determined by the ETSIIyT board). An additional retake exam is possible in the extraordinary call (date determined by the ETSIIyT board).

Criterios de evaluación para estudiantes a tiempo parcial

Partial time students can pass the course thanks to the exam corresponding to the lectures that will be taken place before the start of the group projects. A retake exam is possible in the ordinary and extraordinary calls on a date to be determined by the ETSIIyT board.

8. BIBLIOGRAFÍA Y MATERIALES DIDÁCTICOS

BÁSICA

Horne, R.; Grant, T.; Verghese, K. 2009. Life Cycle Assessment: Principles, Practice and Prospects. Ed. CSIRO Publishing. ISBN: 978-0643094529.

Azapagic, A.; Clift, R.; Perdan, S. 2004. Sustainable Development in Practice: Case Studies for Engineers and Scientists. Ed. John Wiley and Sons. ISBN: 978-0470856086.

Baumann, H.; Tillman, A. M. 2004. The Hitch Hiker's Guide to LCA, Ed. Studentlitteratur. ISBN: 978-9144023649.

Curran, M. A. 2012. Life Cycle Assessment Handbook: A Guide for Environmentally Sustainable Products. Ed. Wiley-Scrivener. ISBN: 978-1118099728.

Hesser, F., Kral, I., Obersteiner, G., Hörtenhuber, S., Kühmaier, M., Zeller, V. y Schebek, L. (eds.). 2023. Progress in Life Cycle Assessment 2021. Ed. Springer Cham. ISBN: 978-3-031-29294-1.

Muthu, S. S. (ed.). 2021. Life Cycle Sustainability Assessment. Ed. Springer Singapore. ISBN: 978-981-16-4561-7

Esta es la Guía Docente abreviada de la asignatura. Tienes también publicada en la Web la información más detallada de la asignatura en la Guía Docente Completa.