

Course title/Course Neptun ID: The circular and green economy within the ESG framework	Credit value: 6
Professor in charge (name, position, academic degree): Dr. Anita Boros professor, (PhD.)	
Professor(s) involved in teaching, if any (name, position, academic degree): Dr. Anita Boros professor (PhD) Dr. habil. László Vértesy associate professor (PhD)	
Course category: optional	
Course type: lecture/seminar/practical course/consultation: 6/0/14/0, and total number of course sessions in the given semester: 21 course sessions	
Methods, (specific) tools, and characteristics applied to convey knowledge: Team tasks, analysis of case studies and best practices.	
Method of assessing knowledge (exam / practical course grade / other): practical course grade	
Grading method(s) applied for assessing knowledge: preparation of a (case)study	
The course's placement in the curriculum (in which semester the course is taken): autumn and spring semester	
Compulsory studies prior to the course (if any): -	
Course description:	
Recent decades have brought radical changes for nation-states. Global challenges have emerged in meeting the growing demand for basic commodities (e.g., food, water, and energy), finished goods (e.g., mobile phones, cars, and aircraft), and services (e.g., housing, healthcare, employment, etc.), all while - under the shadow of systemic crises - it is necessary to reduce and minimize the impact of human activities on the Earth's global environment and climate. To address these challenges, prominent figures in the field of economics and management sciences have developed numerous definitions, interpretations, and methods for assessment and certification. The trichotomy of sustainability, the circular economy, and the green economy has been at the forefront of research in recent years. Beyond the general disciplines of sustainability, the concept of the green economy has entered the mainstream of economic debate and begun to shape economic growth and development strategies worldwide. The primary objective of this course is to analyze and evaluate these processes from an economic perspective and to explore opportunities for their implementation in the domestic context. In 2011, the UN defined the green economy as one that improves "human well-being and social equity, while significantly reducing environmental risks and ecological scarcities." The green economy is an "umbrella" concept encompassing various implications regarding growth and well-being, as well as the efficiency of natural resource use and risk reduction. Authors addressing the subject often refer to the green economy as a means of alleviating pressure on resources, the climate, and emissions, while simultaneously	

supporting economic growth, green innovation, and the transition to a circular economy.

The concept of the circular economy dates back to 1966, when Boulding proposed organizing the economy into a circular system to ensure sustainable development. However, the framework was formalized a few decades later, in 1989, by Pearce and Turner, who introduced the 3R principle (reduce, reuse, recycle) aimed at minimizing inputs and production waste while enhancing synergies between sectors. Under this scheme, every by-product is to be transformed into a new resource for another production cycle. The 3R concept has continuously expanded over recent decades, while various crises have steered economies toward entirely new types of solutions. The development of alternative production and consumption patterns - aimed at reducing or eliminating harmful environmental impacts - has also begun at a scientific level. The circular economy concept supports an economic model that preserves the value of products, materials, and resources for as long as possible while minimizing waste generation. Furthermore, a fully implemented circular economy model can reduce geopolitical dependencies - such as those regarding rare earth metals - as well as our vulnerability to unexpected global supply chain disruptions. Therefore, promoting the transition from the current linear economic model to a circular economic model is crucial for sustainable development.

This process - spanning the micro level (products, companies, consumers), the meso level (eco-industrial parks, regional clusters), and the macro level (cities, regions, nations, and beyond) - presupposes a new, holistic mindset among value chain stakeholders. International organizations and domestic legislators alike have made significant efforts in this regard. We are witnessing the development of entirely new methods for manufacturing, product development, agricultural cultivation, and soil management. A prominent element of this shift is the EU's regulatory activity (including the Taxonomy Regulation, ESG frameworks, and regulatory packages for the circular economy covering waste, food, consumer protection, the construction sector, and the chemical industry).

The course also aims to familiarize students with current green economy trends and disciplines, the specific green economy challenges facing various sectors, international and domestic regulatory directions, and the latest research developments in the field.

Course topics/semester syllabus:

1. Conceptual framework and key elements of the green economy in regulations by international organizations.
2. The European Union's green economy regulatory system I – regulations arising from circular economy packages and the Green Deal (general circular economy regulations; green product design and manufacturing).
3. The European Union's green economy regulatory system II – green economy policy packages (sectoral green transition strategies).
4. The EU Taxonomy Regulation and ESG I.
5. The EU Taxonomy Regulation and ESG II.
6. Dimensions of measuring green economic growth (from an ESG perspective).
7. Green economy methods for measuring resource efficiency.
8. The impact of green innovations on the green economy (sectoral solutions, from an ESG perspective).
9. The relationship between digitalization solutions and the green economy.

10. Green rating and certification systems (sectoral solutions from an ESG perspective).
11. The role of the agricultural sector in the green economy (environmental, economic, and social aspects, and ESG).
12. Selected issues regarding the green transition in agriculture I (green soil cultivation and crop production technologies, and ESG).
13. Selected issues regarding the green economic transition of the agricultural sector II (food security and green supply chain management from an ESG perspective).
14. The European system of green investments and green finance (from an ESG perspective).

A list of the 2-5 most relevant compulsory literature (notes, textbooks) with bibliographic information (author, title, publication details, page numbers, ISBN):

Sah, M. K., Thakuri, B. S., Pant, J., Gardas, R. L., & Bhattarai, A. (2024). The Multifaceted Perspective on the Role of Green Synthesis of Nanoparticles in Promoting a Sustainable Green Economy. *Sustainable Chemistry*, 5(2), 40-59. <https://doi.org/10.3390/suschem5020004>

Julian Kirchherr, Nan-Hua Nadjia Yang, Frederik Schulze-Spüntrup, Maarten J. Heerink, Kris Hartley (2023): Conceptualizing the Circular Economy: An Analysis of 221 Definitions, Resources, Conservation and Recycling, Volume 194, 2023, 107001, ISSN 0921-3449, <https://doi.org/10.1016/j.resconrec.2023.107001>.

Anita, Boros; Eszter, Szólik; Goshu, Desalegn; Dávid, Tózsér (2025): A Systematic Review of Opportunities and Limitations of Innovative Practices in Sustainable Agriculture. *Agronomy* (Basel) vol. 15. no. 1. 76.

Boros, Anita; Gordos, Bianka; Tózsér, Dávid (2024): A bibliometric analysis-based literature review of the relationship between sustainable water management and green innovations in the agricultural sector. *Heliyon*, vol. 10. no. 12. pp. 1-12. Paper: e33364, 12 p.

Batlles-de-laFuente, A., Abad-Segura, E., González-Zamar, M.-D., & Cortés-García, F. J. (2022). An Evolutionary Approach on the Framework of Circular Economy Applied to Agriculture. *Agronomy*, 12(3), 620. <https://doi.org/10.3390/agronomy12030620>

A list of the 2-5 most relevant recommended literature (notes, textbooks) with bibliographic information (author, title, publication details, page numbers, ISBN):

Desalegn, Goshu; Tangl, Anita; Fekete-Farkas, Maria; Gudisa, Girma; Boros, Anita (2024): Linking policies and regulations to sustainable finance for the promotion of urban agriculture: Evidence from micro and small businesses. *Heliyon* vol. 10. no.11. Paper: e31938, 14 p.

Shyam, C. S., Shekhawat, K., Rathore, S. S., Babu, S., Singh, R. K., Upadhyay, P. K., Dass, A., Fatima, A., Kumar, S., Sanketh, G. D., & Singh, V. K. (2023). Development of Integrated Farming System Model—A Step towards Achieving Biodiverse, Resilient and Productive Green Economy in Agriculture for Small Holdings in India. *Agronomy*, 13(4), 955. <https://doi.org/10.3390/agronomy13040955>

Aashu Rajput, Shalini Roy, M. N. Waghmare, Swati Singh, Vineet Kumar Shukla, Vikash

Singh, Prachi Singh (2023). Exploring Sustainable Practices in Modern Agronomy and their Environmental Impact- A Review. International Journal of Environment and Climate Change. Volume 13, Issue 11, Page 3146-3161.

Ran, Qiying, Yang, Xiaodong, Yan, Hongchuan, Xu, Yang, Cao, Jianhong (2023): Natural resource consumption and industrial green transformation: Does the digital economy matter? In.: Resources Policy, VL – 81, <https://doi.org/10.1016/j.resourpol.2023.103396>

Muhammad Tayyab Sohail, Sana Ullah, Muhammad Tariq Majeed: Effect of policy uncertainty on green growth in high-polluting economies (2022): Journal of Cleaner Production, Volume 380, Part 2, 135043, ISSN 0959-6526, <https://doi.org/10.1016/j.jclepro.2022.135043>.

Professional competencies, elements of competence, and skills to which the course typically and substantially contributes (knowledge, ability, attitude, autonomy, and responsibility):

Possesses research-level knowledge of the directions, interdisciplinary boundaries, established and debated relationships, conceptual frameworks, and terminology within the fields of management and organizational science and regional science.

Is capable of planning, implementing, and independently conducting projects, as well as developing new techniques and approaches.

Possesses the interest and learning aptitude necessary to identify and resolve research problems within the broader scope of management and organizational science and regional science.

Performs work with persistence, a firm professional commitment, and a drive to explore new paths.

Establishes and initiates new fields of knowledge and practical solutions with creative independence.