

ES/EC/IB 343 – THE CIRCULAR ECONOMY

IES Abroad Berlin

DESCRIPTION:

An innovative circular economy where nothing is wasted, where natural resources are managed sustainably, and biodiversity is protected, valued, and restored in ways that enhance our society's resilience is essential for our future prosperity, a healthy environment, and a livable planet. Growth must be decoupled from resource use, setting the pace for a safe and sustainable global society. This unique course is centered around the concept of a circular economy that seeks to rebuild capital – whether this is financial, manufactured, human, social, or natural – and fully respects the resources and ecological limits of our planet. To ensure sustainable growth, resources must be used in a smarter, more sustainable and innovative way. Many natural resources are finite, an environmentally and economically sustainable way of using them must be found. No longer can we build our future on the linear “take-make-dispose” model. Underpinned by a transition to renewable energy sources, the circular economy model builds economic, natural, and social capital on three principles: design out waste and pollution, keep products and materials in the circle, and regenerate natural systems. Further, it represents a systemic shift that builds long-term resilience, generates business and economic opportunities, and provides environmental and societal benefits. This course will have a special focus on developments within the European Union, namely the 2018 Circular Economy Package and its underlying strategy and legislations. Moreover, we will elaborate on the interrelation between Sustainability, Innovation and Entrepreneurship to discuss how creativity and innovation, applied on a personal as well as an organizational level, can contribute to building a sustainable circular economy.

CREDITS: 3

CONTACT HOURS: 45

LANGUAGE OF INSTRUCTION: English

PREREQUISITES: None

ADDITIONAL COST: None

METHOD OF PRESENTATION:

- Lectures,
- Class discussion of the required readings,
- Student presentation of selected case studies,
- Field trip(s),
- And guest speakers.

REQUIRED WORK AND FORM OF ASSESSMENT:

- Course participation – 10%
- Midterm exam – 30%
- Research paper – 40%
- Final Presentation – 20%

Course Participation

Students must complete the assigned readings and assignments, participate actively in class discussions, and attend all planned field trips. The IES grading rubric for participation is available on Moodle.

Midterm Exam

Using a common household good, the student will demonstrate its optimum design with regard to disassembly, repair, closing the materials loops, etc. The first part of the midterm exam is a written take-home paper of a minimum 1,500 words and must include at least 3 citation sources. The second part is a short presentation (visual/oral or only oral) of the findings (i.e., the outcome of the written take-home paper, presented in class).

Research Paper

Topics and research questions will be proposed by the instructor in session 9. Based on sessions 1 to 8, students will create their own circular economy business model for a chosen product, initiative, or service. They will create a business model canvas for this chosen product, initiative, or service based on the “cradle-to-cradle” concept, a sustainable business strategy that mimics the regenerative cycle of nature, in which waste is reused. The research paper with the business model canvas shall have 3,500-4,500 words. The paper is due midnight before session 19.

Final Presentation

Students will present the results of their circular economy business model canvas research paper in class during the finals week. The presentation (approx. 10 minutes), including visualization (e.g., PowerPoint or Prezi).

LEARNING OUTCOMES:

Upon completion of this course, the student will be able to:

- Explain the difference between a linear and circular economy as well as infinite resources and planetary boundaries;
- Understand the concept of a circular economy in general and in the European Union in particular;
- Gain detailed knowledge of a circular economy and its building blocks and context (e.g., “cradle-to-cradle”);
- Describe the European Union’s Circular Economy Package and the concept of a shared/collaborative economy;
- Design her/his own product, supported by experts and the business model canvas;
- Demonstrate a deep knowledge of the circular economy in areas of plastics and modern agriculture, renewable energies and cities;
- Acquire background and context knowledge about sustainable development and systems thinking, including a System Dynamic activity;
- Discuss packaging design, German specifics (e.g., plastics, bio and packaging guidelines) and policymaking with guest speakers;
- Develop competencies in using methods and tools regarding Entrepreneurial Design and Managing Innovation (Forecast Techniques, Business Model Canvas, Design Thinking-methods etc.);
- And improve academic research, writing and oral presentation skills.

ATTENDANCE POLICY:

Please refer to IES Abroad Berlin's "Attendance and Exam Policy" on Moodle:

<https://moodle.iesabroad.org/mod/page/view.php?id=1004317>

ACADEMIC INTEGRITY:

Students are expected to abide by the IES Abroad Academic Integrity Code. Assignments need to be properly and amply footnoted where appropriate, with all sources attributed, including images. This not only applies to written assignments but also presentations by means of PowerPoint, Prezi or posters. Contributions may be checked with plagiarism-detecting software.

CONTENT:

Sessions	Content	Readings
Session 1:	Introduction to the course: concepts and definitions, expectations, learning objectives	• No readings for first session
Session 2:	The Circular economy	• Stahel, W.R. (2016). The circular economy. Nature 531, p. 435–438. Available: https://www.nature.com/news/the-circular-economy1.19594 • Ellen MacArthur Foundation. “Ellen MacArthur on the basics of the circular economy” Available: https://www.youtube.com/watch?v=NBvJwTxs4w • Ellen MacArthur Foundation. “The Butterfly Diagram” Available: https://www.youtube.com/watch?v=Lc-FQvPO89Y
Session 3:	European Union • The EU • European agenda for collaborative economy • Circular Economy Package (CEP)	• Ellen MacArthur Foundation (2020). “The EU’s Circular Economy Action Plan: Setting the world’s largest single market on a transition towards a circular economy”. Available: https://www.ellenmacarthurfoundation.org/assets/downloads/EU-Case-Study-june2020-EN.pdf • European Commission (2016). “A European agenda for collaborative economy”. Available: http://ec.europa.eu/DocsRoom/documents/16881/attachments/2/translations

		- Tucker, Flora. "New Year, New Ban: France Tackles Disposable Packaging" Available: https://impakter.com/new-year-new-ban-france-tackles-disposable-packaging/ - European Commission (2015). "Circular Economy Package: Questions & Answers". Available: http://europa.eu/rapid/press-release MEMO-15-6204_en.htm - Rodriguez et al. (2021) From the circular economy to the sustainable development goals in the European Union_ - An empirical comparison
Session 4:	Challenging common conceptions - Links between environmental and economic issues - An alternative way of approaching environmental, social and economic issues	Ellen MacArthur Foundation. "Seeing the bigger picture" (videos). Available: https://www.youtube.com/playlist?list=PLD2C43638C526D33F <u>Each video ends with a question; students should prepare answers in advance for discussion in class.</u>
Session 5:	Exploring the circular economy - Comparing living and manmade systems - Linear/materials economy	Raworth K., (2017). "Doughnut Economics – Seven Ways to Think Like a 21st-Century Economist". p. 111-138.
Session 6:	Understanding the challenge of "finite" resources - Economic history since industrial revolution - Our current consumption and production systems	The Ellen MacArthur Foundation (2013). "Towards the Circular Economy Vol. 1: an economic and business rationale for an accelerated transition". p. 13-62. Available: https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf
Session 7:	Designing for a circular economy Introduction of companies that have adopted the circular economy	- adidas x Parley. "A Mission For Our Oceans" Available: https://www.youtube.com/watch?v=ogNWB0XIOo8 - Ellen MacArthur Foundation. "Moving Businesses to a Circular Economy: Nike Case Study" Available: https://www.youtube.com/watch?v=hDOHExtc7WY&t
Session 8:	The circular economy & modern agriculture - The challenges around conventional monocultures and soil quality - Challenges in modern agriculture and securing the food supply for the future	Ellen MacArthur Foundation. "Lesson 5: The Circular Economy and Modern Agriculture". Available: https://www.ellenmacarthurfoundation.org/assets/downloads/schools-colleges/Schools-Colleges-WLL-Lesson-Plan-5-F.pdf
Session 9:	Redesigning plastics - What happens to our waste plastic? - Is recycling plastics really that effective? - Plastic pollution in our oceans	- Ellen MacArthur Foundation (2016). "The New Plastics Economy: Rethinking the Future of Plastics". p. 22-42, 44-72 & 86-96. Available: https://www.newplasticseconomy.org/assets/doc/EllenMacArthurFoundationTheNewPlasticsEconomyPages.pdf - A Plastic Ocean (2016). Video available: https://www.youtube.com/watch?v=yog7qmGZIIQ <u>Faculty presents topics for research paper (circular economy business canvas)</u>

Session 10:	Circular economy and cities Major innovations and trends associated with modern cities	Ellen MacArthur Foundation. "The Future of Cities". Available: https://www.ellenmacarthurfoundation.org/assets/downloads/future-of-cities.pdf
Midterm Exam		
Session 11:	The Business Model Canvas – Creating the Invincible Company	- Strategyzer. "Business Model Canvas Explained" (video). Available: https://vimeo.com/78350794 - Strategyzer. "Business Model Canvas". Available: https://www.strategyzer.com/canvas/business-model-canvas - Osterwalder, A., Pigneur, Y., Smith A., Etienne, F. (2020). The Invincible Company – Business Model Strategies From the World's Best Products, Services, and Organizations. NJ: Wiley (pp. 1-368). - Bonazzi, F. L. Z., & Zilber, M. A. (2014). Innovation and Business Model: a case study about integration of Innovation Funnel and Business Model Canvas. Revista Brasileira de Gestão de Negócios-RBGN, 16(53), pp. 616-637. - Geissdoerfer M. et al., (2020), Circular business models. A review, in: Journal of Cleaner Production, 277:123741 (August)
Session 12	Business Model Canvas in Practice: How to create a Business Model for Berlin-based Startups focusing on sustainable products and services in the FoodTech sector?	<u>Methods in practice workshop (Part I) – The Business Model Canvas:</u> <i>External Expert Presentations: for example</i> - Infarm - We're the infarmers and your neighbourhood is our farm. https://www.infarm.com/ - ECF Farm - Urban Farming & Aquaponics. https://www.ecf-farm.de/ - YMBE – How to eat bees? http://ymbe.de/ <i>Literature:</i> Semrau, T., Ambos, T., & Kraus, S. (2016). Entrepreneurial orientation and SME performance across societal cultures: An international study. Journal of Business Research, 69(5), pp. 1928-1932. <i>Optional:</i> Ireland, R. D., & Webb, J. W. (2007). Strategic entrepreneurship: Creating competitive advantage through streams of innovation. Business horizons, 50(1), pp. 49-59.
Session 13	Identifying Trends – Futures Studies and Foresight Techniques	- Mietzner, D., and G. Reger (2005). "Advantages and Disadvantages of Scenario Approaches for Strategic Foresight." International Journal of Technology Intelligence and Planning 1 (2), pp. 220–239. - Gausemeier J, Echterhoff N, Wall M (2012). Thinking ahead the Future of Additive Manufacturing – Scenario-based Matching of Technology Push and Market Pull. RTEjournal - Forum für Rapid Technologie, Vol. 2012, pp. 1-6, available at: https://www.rtejournal.de/ausgabe9/3355 (accessed 23 January 2020). - Brewer, G. (2007) 'Inventing the future: scenarios, imagination, mastery and control', Sustainability Science, Vol. 2, No. 2, pp.159–177.
Session 14	Future Fashion Foresight – How Sustainability and Digitalization is changing the Berlin clothing industry	<u>External Expert Presentations: for example</u> Prof. Elisabeth Eppinger (HTW Berlin – University of Applied Sciences): Introduction R&D Capacities and Projects in Smart

		Textiles, https://www.htw-berlin.de/hochschule/personen/person/?eid=12045 - Anne-Kristin Schnarrer (ABOUT YOU GmbH): Creative Buyer Idol collections, www.aboutyou.de - Ghost – feel it. Berlin Startup doing business around Haptic User Interfaces, Human Machine Interaction and Sensors: https://www.ghost-feel.it/ <i>Literature:</i> Schwarz, Jan Oliver. (2019). Strategy orientation in the fashion industry: Short-or long-term? Journal of Futures Studies, 24(1), pp. 77-90. <i>Optional:</i> Garb, Y., Pulver, S., VanDeveer, S. (2008). Scenarios in society, society in scenarios: toward a social scientific analysis of storyline-driven environmental modeling. <i>Environmental Research Letters</i>, 3 (2008) 045015, pp. 1-9.
Session 15:	Environmental Ethics	Brennan, Andrew and Norva Y. S. Lo, "Environmental Ethics", The Stanford Encyclopedia of Philosophy (Summer 2022 Edition), Edward N. Zalta (ed.). Available: https://plato.stanford.edu/entries/ethics-environmental/
Session 16:	Circular economy solutions – Part 1 Circular Retail Tour in Mitte	Topical readings will be provided on Moodle
Session 17:	Circular economy solutions – Part 2 Excursion to Patagonia or Deutsche Umwelthilfe	Topical readings will be provided on Moodle
Session 18:	Circular economy solutions – Part 3 Circular architecture excursion	Omrana. "Stitching Past and Present: The Neues Museum, Berlin". (2017) Available: https://omrania.com/inspiration/stitching-past-present-neues-museum-berlin/
Session 19:	Renewable energies & energy efficiency Circular economy as a substantial shift to renewables and energy efficiency	Olabi, Abdul Ghani (2019). "Circular economy and renewable energy". <i>Energy</i>. 181: p. 450-454. Available: https://doi.org/10.1016/j.energy.2019.05.196 <u>Research paper due (midnight) before session 20</u>
Session 20:	Agenda 2030 and its Sustainable Development Goals (SDGs) The link between UN's SDGs and the circular economy	- United Nations. "The 17 Goals". Available: https://sdgs.un.org/goals - United Nations. "12: Ensure sustainable consumption and production patterns". Available: https://sdgs.un.org/goals/goal12 - EU-LAC Foundation. Kowszyk, Yanina Maher, Rajiv. "Case studies on Circular Economy models and integration of Sustainable Development Goals in business strategies in the EU and LAC". Available: https://eulacfoundation.org/en/system/files/case_studies_circular_economy_eu_lac.pdf
Session 21:	Sustainable Entrepreneurship I Die Teekampagne – A Berlin role model on how to beat the Big Players with means of Transparency and Sustainability	Faltin, G., Fleischmann, F.: Teekampagne: "Citizen Entrepreneurship" for a Meaningful Life, available at https://www.entrepreneurship.de/wp-content/uploads/2019/06/Teekampagne.pdf (accessed 20 January 2020), pp. 1-18

		Expert Presentation: for example Simon Jochim, European Manager <i>Foundation for Entrepreneurship – Faltin Stiftung</i>: https://www.entrepreneurship-campus.org/ Optional: Faltin, G. (2018): Brains versus Capital – Entrepreneurship for Everyone: Lean, Smart, Simple. https://doi.org/10.1142/10836, pp. 1-216
Session 22:	Sustainable Entrepreneurship II Excursion to Freie Universität Berlin Startup Villa	Topical readings will be provided on Moodle
Final presentations		

REQUIRED READINGS:

- Stahel, W.R. (2016). The circular economy. *Nature* 531, p. 435–438. Available: <https://www.nature.com/news/the-circular-economy1.19594>
- Rodriguez, J. M. (2021), From the circular economy to the sustainable development goals in the European Union: An empirical comparison
- Geissdoerfer M. (2020), Circular business models: A review, in: *Journal of Cleaner Production*, 277:123741 (August)
- Ellen MacArthur Foundation. “Ellen MacArthur on the basics of the circular economy” Available: <https://www.youtube.com/watch?v=NBvJwTs4w>
- Ellen MacArthur Foundation. “The Butterfly Diagram” Available: <https://www.youtube.com/watch?v=Lc-FQvPO89Y>
- Ellen MacArthur Foundation (2020). “The EU’s Circular Economy Action Plan: Setting the world’s largest single market on a transition towards a circular economy”. Available: <https://www.ellenmacarthurfoundation.org/assets/downloads/EU-Case-Study-june2020-EN.pdf>
- European Commission (2016). “A European agenda for collaborative economy”. Available: <http://ec.europa.eu/DocsRoom/documents/16881/attachments/2/translations>
- Tucker, Flora. “New Year, New Ban: France Tackles Disposable Packaging” Available: <https://impakter.com/new-year-new-ban-france-tackles-disposable-packaging/>
- European Commission (2015). “Circular Economy Package: Questions
- Ellen MacArthur Foundation. “Seeing the bigger picture” (videos). Available: <https://www.youtube.com/playlist?list=PLD2C43638C526D33F>
- Raworth K., (2017). “Doughnut Economics – Seven Ways to Think Like a 21st-Century Economist”. p. 111-138.
- The Ellen MacArthur Foundation (2013). “Towards the Circular Economy Vol. 1: an economic and business rationale for an accelerated transition”. p. 13-62. Available: <https://www.ellenmacarthurfoundation.org/assets/downloads/publications/Ellen-MacArthur-Foundation-Towards-the-Circular-Economy-vol.1.pdf>
- adidas x Parley. “A Mission For Our Oceans” Available: <https://www.youtube.com/watch?v=ogNWB0XIOo8>
- Ellen MacArthur Foundation. “Moving Businesses to a Circular Economy: Nike Case Study” Available: <https://www.youtube.com/watch?v=hDOHExtc7WY&t>
- Ellen MacArthur Foundation. “Lesson 5: The Circular Economy and Modern Agriculture”. Available: <https://www.ellenmacarthurfoundation.org/assets/downloads/schools-colleges/Schools-Colleges-WLL-Lesson-Plan-5-F.pdf>
- Ellen MacArthur Foundation (2016). “The New Plastics Economy: Rethinking the Future of Plastics”. p. 22-42, 44-72 & 86-96. Available: https://www.newplasticseconomy.org/assets/doc/EllenMacArthurFoundation_TheNewPlasticsEconomy_Pages.pdf
- A Plastic Ocean (2016). Video available: <https://www.youtube.com/watch?v=yog7qmGZIIQ>
- Ellen MacArthur Foundation. “The Future of Cities”. Available: <https://www.ellenmacarthurfoundation.org/assets/downloads/future-of-cities.pdf>
- Strategyzer. “Business Model Canvas Explained” (video). Available: <https://vimeo.com/78350794>
- Strategyzer. “Business Model Canvas”. Available: <https://www.strategyzer.com/canvas/business-model-canvas>
- Brennan, Andrew and Norva Y. S. Lo, “Environmental Ethics”, *The Stanford Encyclopedia of Philosophy* (Summer 2022 Edition), Edward N. Zalta (ed.). Available: <https://plato.stanford.edu/entries/ethics-environmental/>

- Omrania. "Stitching Past and Present: The Neues Museum, Berlin". (2017) Available: <https://omrania.com/inspiration/stitching-past-present-neues-museum-berlin/>
- Olabi, Abdul Ghani (2019). "Circular economy and renewable energy". Energy. 181: p. 450-454. Available: <https://doi.org/10.1016/j.energy.2019.05.196>
- United Nations. "The 17 Goals". Available: <https://sdgs.un.org/goals>
- United Nations. "12: Ensure sustainable consumption and production patterns". Available: <https://sdgs.un.org/goals/goal12>
- EU-LAC Foundation. Kowszyk, Yanina Maher, Rajiv. "Case studies on Circular Economy models and integration of Sustainable Development Goals in business strategies in the EU and LAC". Available: https://eulacfoundation.org/en/system/files/case_studies_circular_economy_eu_lac.pdf

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