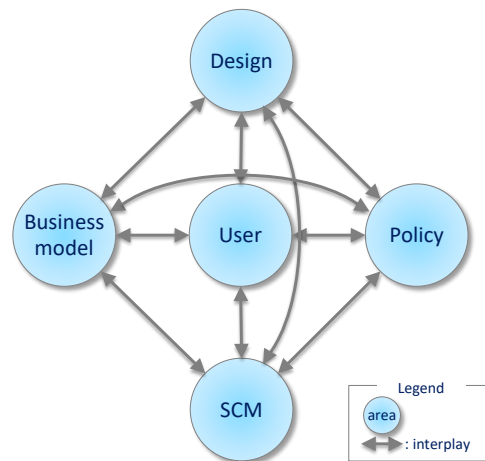


Course syllabus for

P51: Transdisciplinary Approach to Circular Economy Research

Syllabus adopted 2020-04-02 by Professor Bengt-Göran Rosén, Produktion2030 Head of Education



Credits	1.5 hec
Grading scale	Satisfactory/not satisfactory
Education cycle	Third-cycle
Examiner	Tomohiko Sakao, Linköping University
Eligibility	A Master's degree in production engineering or equivalent. Knowledge on Circular Economy is required. Experience of research related to Circular Economy at least in one area as a PhD student for a period of more than one year is required. Scientific papers published and submitted (e.g. a journal or conference paper) by a course applicant will be evaluated for course admission.
Aim	The course aims at facilitating the participant to learn the interplays between different areas relevant to Circular Economy. The areas are: business model, governmental policy, product/service design, user behaviour, and supply chain management (see the Figure above). The course also aims at

supporting the participant to carry out or reflect upon his/her research with a transdisciplinary approach.

Intended learning outcomes	<p>After completion of the course the course participant should be able to demonstrate advanced knowledge of various disciplines of Circular Economy through ability</p> <ul style="list-style-type: none">• to refer to existing knowledge in different disciplines,• to relate the existing knowledge above to a context of the PhD candidate's research (i.e. with a transdisciplinary approach), and• to reflect on the applicability of the knowledge learnt for her or his research.
Course content	<p>This intensive course gives opportunities to discuss and reflect upon different disciplines relevant to Circular Economy research with peer PhD students working in different countries, and to discuss with leading researchers and experts in Circular Economy. It will consist mainly of group works (in about 2-3 members according to the applicant's research experience). All in all, this course will be unique in its focus and interactions with peer PhD students and internationally leading researchers. There will be three groups works and homework (to be prepared before course start).</p>
Course organisation	<p>Three days course based on the following activities:</p> <p>Group work 1: Each group aims to derive needs on the other four areas in order for more efficient transition to a Circular Economy to be realized. E.g., a group on business model will derive needs on governmental policy (e.g. repeal a specific regulation hindering a "circular" business model), product/service design (e.g. design more durable products enabling a long-term service level agreement model), user behaviour (e.g. stopping vandalism on a shared product facilitating product sharing), and supply chain management.</p> <p>Group work 2: Each group aims to find how to address the needs given from the other four areas in order for more efficient transition to a Circular Economy to be realized. E.g., a group on business model will find how to address the needs given from governmental policy, product/service design, user behaviour, and supply chain management.</p> <p>Group work 3: Each group will present the results to experts in different disciplines. Who will be the experts giving feedbacks needs to be confirmed.</p>

Homework (before course start):

- Record a two-minute pitch on the current state of his/her own research. This should be an update useful for all the participants to know each other's work.
- Watch the video clips submitted from the other students.
- Create a list of needs of your category area to the other four areas. To be used in Group work 1.

Examination

A successful completion of this course will be judged on the following:

- Active participation and contribution to the group work.
- A follow-up report focused on the participant's own research context. This report should be between 500 and 1000 words. Typically, this should be able to be used for a part of a scientific paper by the Ph.D. student in the future.

Literature

To be used in the lectures:

- Sakao, T. and Brambila-Macias, S. A. (2018). "Do we share an understanding of transdisciplinarity in environmental sustainability research?" *Journal of Cleaner Production* 170: 1399-1403. <https://doi.org/10.1016/j.jclepro.2017.09.226>
- Helkkula, A., Kowalkowski, C., and Tronvoll, B. (2018), "Archetypes of service innovation: Implications for value cocreation," *Journal of Service Research*. <https://doi.org/10.1177/1094670517746776>

On design

- Sundin, E., & Bras, B. (2005). Making functional sales environmentally and economically beneficial through product remanufacturing. *Journal of Cleaner Production*, 13(9), 913-925. <https://doi.org/10.1016/j.jclepro.2004.04.006>

On business models

- Kindstrom, D., & Kowalkowski, C. (2014). Service innovation in product-centric firms: a multidimensional business model perspective. *Journal of Business & Industrial Marketing*, 29(2), 96-111. <https://doi.org/10.1108/Jbim-08-2013-0165>

On user acceptance

- Pettersen, I. N., Boks, C., & Tukker, A. (2013). Framing the role of design in transformation of consumption practices: beyond the designer-product-user triad. *International Journal of Technology Management*, 63(1-2), 70-103. <https://doi.org/10.1504/ijtm.2013.055580>

On supply chain

- Genovese, A., Acquaye, A. A., Figueroa, A., & Koh, S. C. L. (2017). Sustainable supply chain management and the transition towards a circular economy: Evidence and some applications. *Omega-International Journal of Management Science*, 66, 344-357.
<https://doi.org/10.1016/j.omega.2015.05.015>

For further references

1. Ceschin, F., & Gaziulusoy, I. (2016) Evolution of design for sustainability: From product design to design for system innovations and transitions. *Design Studies*, 47, 118-163. <https://doi.org/10.1016/j.destud.2016.09.002>
2. Prendeville, S., & Bocken, N. (2017). Design for remanufacturing and circular business models. In *Sustainability Through Innovation in Product Life Cycle Design* (pp. 269-283): Springer.
https://doi.org/10.1007/978-981-10-0471-1_18
3. Smith, D. J. (2013). Power-by-the-hour: the role of technology in reshaping business strategy at Rolls-Royce. *Technology Analysis & Strategic Management*, 25(8), 987-1007.
<https://doi.org/10.1080/09537325.2013.823147>
4. Mylan, J. (2015). Understanding the diffusion of Sustainable Product-Service Systems: Insights from the sociology of consumption and practice theory. *Journal of Cleaner Production*, 97, 13-20.
<https://doi.org/10.1016/j.jclepro.2014.01.065>
5. Lieder, M., & Rashid, A. (2016). Towards circular economy implementation: a comprehensive review in context of manufacturing industry. *Journal of Cleaner Production*, 115, 36-51.
<https://doi.org/10.1016/j.jclepro.2015.12.042>