# *21E16100 Energy Business and Innovation (6cr)*

# SYLLABUS

Version 4, 30.4.2022

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| Instructors’ contact information | Course information |
| **Name**: Samuli Patala **E-mail:** samuli.patala@aalto.fi**Office Hours**: Via Zoom by appointment **Name**: Heli Nissilä**E-mail:** heli.nissila@aalto.fi**Office Hours**: Via Zoom by appointment  | **Status of the course:** M.Sc. degree, an elective course at Aalto University.**Academic Year, Period:** period V, 2022**Location:** Online course **Language of Instruction:** English**Course Website:** https://mycourses.aalto.fi/course/view.php?id=31089 |

1. OVERVIEW

The objective of the course is to develop students’ abilities to understand distributed energy production and consumption from social sciences perspective. The course develops students’ knowledge on sustainability transitions and familiarizes students with contemporary concepts driving energy transition. Furthermore, it addresses renewable and energy efficient business models, different types of innovation systems, innovation dynamics and diffusion.

1. PREREQUISITES

This course is part of the advanced studies (master level).

1. LEARNING OUTCOMES

*After completion of the course the student should be able to:*

1. Describe the current energy market and its challenges.
2. View energy production and consumption as a socio-technical system. Develop an understanding of the complexity of sustainability transitions and how it is influenced by energy policy. Critically analyze systemic change with the help of transition and innovation theories (multi-level perspective, strategic niche management, technological innovation systems.)
3. Recognizing how energy industry actors can collaborate in order to innovate more sustainable and more inclusive businesses.
4. Understand relations, processes, organizations and dynamics of ‘co-provision’.
5. Recognize and develop various business and financing models that can be used in energy business.
6. ASSESSMENT AND GRADING

Group work final report and presentation and peer evaluation (Max 50 points, compulsory)

Group assessment. max 40

Individual evaluation based on peer feedback from group members, max 10 points

Personal assignments 4 pcs (Max 50 points, compulsory)

3 x writing assignment, max 30 points

2 x literature quiz assignment, max 20 points

Course Grading is according to the scale from 0-5.

1. ASSIGNMENTS, GROUP WORKS AND EXAMS

Personal assignment 1 is due: 10.5.2022 23:59 (Letter to editor)

Personal assignment 2 is held 12.05.2022 13:15-14:15 (Literature quiz 1)

Personal assignment 3 is due: 17.5.2022 23:59 (Consumption)

Personal assignment 4 is due: 24.5.2022 23:59 (Business models)

Personal assignment 5 is due 3.6.2022 13:00-14:00 (Literature quiz 2)

Group work priority topic vote is due: 19.04.2022 23:59

Group work project plan is due: 28.04.2022 23:59

Group work draft report for commenting is due: 19.05.2022 23:59

Group work comments for peer group to be given: 23.05.2022 23:59

Group work presentation upload to Panopto: 30.05.2022 **12:00**

Group work presentation session: 31.05.2022

Group work final report and peer evaluation is due: 31.05.2022 23:59

1. READINGS

Selection of academic articles. Required pre-readings for each lecture (1-2 articles per lecture) unless otherwise stated.

1. TECHNOLOGY IN USE
* Oodi
	+ Registration to the course
* MyCourses
	+ <https://mycourses.aalto.fi/course/view.php?id=27482>
	+ Central access point for the key information
	+ Up to date syllabus
	+ Reading materials
	+ Links to video materials
	+ Lecture slides after lectures
	+ Assignments (description and submission)
	+ Peer assessment of assignments
	+ Grading information
* Zoom
	+ All real time session take place in Zoom.
	+ Passcode for all sessions:
* Flinga
	+ Collaboration on real-time sessions
* Panopto
	+ Group work video uploads
1. PRELIMINARY SCHEDULE

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| **Date** | **Topic** | **Notes and readings** |
| Tue 19.04 13.15-16.00 | Intro + PracticalitiesShort introductions on group assignmentsGrouping + topic voting |  |
| Thu 21.04 13.15-16.00 | Meeting the clients day | Meetings with the client organizations for the course group work |
| Tue 26.04 13.15-16.00 | Sustainability transition approaches | **Live session in-class!** (Flipped classroom)Readings #1 and #2 due |
| Thu 28.04 13.15-16.00 | Energy’s role in societyGuest: Ines PeixotoGuest: Tapio Tuomi |  Reading #3 due |
| Tue 03.05 13.15-16.00 | Incumbents in energy transitions | Readings #4 and #5 due |
| Thu 05.05 13.15-16.00 | Climate & Energy Negotiation Game (or other simulation) | **Live session in-class!**(Simulation)Reading #6 due |
| Tue 10.05 13.15-16.00 | Public policy and energy transitionsGuest: Paula Kivimaa | Readings #7 and #8 duePersonal Assignment #1 due  |
| Thu 12.05 13.15-16.00 | Quiz 1 (Readings #1-#6) 13:15-14:15Citizen’s energy literacy enabling and challenging energy businessGuest: Sini Numminen (15-16) | Personal Assignment #2 (Quiz 1) is on Mycourses at 13:15-14:15 |
| Tue 17.05 13.15-16.00 | Business models  | Reading #9 duePersonal Assignment #3  |
| Thu 19.05 13.15-16.00 | Perspectives on energy investing and financeGuest: Aleksi Lumijärvi | Reading #10 due |
| Tue 24.05 13.15-16.00 | Myths of innovation – what we can learn from innovationGuest: Janne M Korhonen | Readings #11 and #12 duePersonal Assignment #4 due |
| Tue 31.05 13.15-16.00 | Final Presentations | Final presentations of the group assignments |
| Fri 03.06 13:15-14:15 | 2nd literature quiz | Personal Assignment #5 (2nd quiz) is on Mycourses at 13:15-14:15 |

1. COURSE WORKLOAD

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| Classroom hours | 70 % common real time session attendance obligatory. Details released in the beginning of the course.  |
| Group work | 40h |
| Pre-readings and individual home exercises | 80h |
| Total | 160h (6 ECTS) |

1. ETHICAL RULES

Aalto University Code of Academic Integrity and Handling Thereof>

 https://into.aalto.fi/pages/viewpage.action?pageId=3772443

**Policy on freeriding**

Our principle is that each group makes sure that all group members contribute to the group work process and outcomes. If there is a problem with lack of contribution, please consult Samuli Patala. In case all other group members agree, it is possible for us to give a particular group member a lower grade than the others, or fail him/her altogether. Please make use of this possibility, it has been done before.

**Peer Evaluation Form for Group Work**

Your name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Write the name of each of your group members including you in a separate column. For each person, indicate the extent to which you agree with the statement on the left, using a scale of 1-4 (1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree). Total the numbers in each column.

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| Evaluation Criteria | Group member: | Group member: | Group member: | Group member: | Group member |
| Attends group meetings regularly and arrives on time. |  |  |  |  |  |
| Contributes meaningfully to group discussions. |  |  |  |  |  |
| Completes group assignments on time. |  |  |  |  |  |
| Prepares work in a quality manner. |  |  |  |  |  |
| Demonstrates a cooperative and supportive attitude. |  |  |  |  |  |
| Contributes significantly to the success of the project. |  |  |  |  |  |
| TOTALS |  |  |  |  |  |

Feedback on team dynamics:

1. How effectively did your group work?
2. Were the behaviors of any of your team members particularly valuable or detrimental to the team? Explain.
3. What did you learn about working in a group from this project that you will carry into your next group experience and to working life?

*Adapted from a peer evaluation form developed at Johns Hopkins University (October, 2006)*

1. OTHER ISSUES
* Registration to course: via Weboodi, closes one week before the start of the course.

Reading list:

1. Markard J, Raven R, Truffer B. 2012. Sustainability transitions: an emerging field of research and its prospects. Research Policy 41: 955–967.
2. Choose the reading based on your group (skim through all before the session):

*Multilevel perspective group*

Geels, F., W. 2002. Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. Research Policy, 31(8/9): 1257–1274.

*Strategic niche management group*

*Schot, J., & Geels, F. W. 2011. Strategic niche management and sustainable innovation journeys: theory, findings, research agenda, and policy. In F. W. Geels, M. P. Hekkert, & S. Jacobsson (Eds.), The Dynamics of Sustainable Innovation Journeys: 17–34. London: Routledge.*

*Technological Innovation Systems*

Bergek, A., Jacobsson, S., Carlsson, B., Lindmark, S., & Rickne, A. 2008. Analyzing the functional dynamics of technological innovation systems: A scheme of analysis. Research Policy, 37(3): 407–429.

*Transition Management*

Kemp, R., & Loorbach, D. 2006. Transition Management: A Reflexive Governance Approach. Reflexive Governance for Sustainable Development: 103–130. http://www.elgaronline.com/view/9781845425821.00015.xml, April 6, 2020, Edward Elgar Publishing.

1. Beamish, T. D., & Biggart, N. W. (2017). Capital and Carbon: The Shifting Common Good Justification of Energy Regimes. In C. Cloutier, J.-P. Gond, & B. Leca (Eds.), Research in the Sociology of Organizations (Vol. 52, pp. 173–205). Emerald Publishing Limited.
2. Patala, S., Juntunen, J.K., Lundan, S. et al. Multinational energy utilities in the energy transition: A configurational study of the drivers of FDI in renewables. J Int Bus Stud 52, 930–950 (2021). <https://doi.org/10.1057/s41267-020-00387-x>
3. Zietsma, C., Ruebottom, T. and Slade Shantz, A., 2018. Unobtrusive maintenance: Temporal complexity, latent category control and the stalled emergence of the cleantech sector. Journal of Management Studies, 55(7), pp.1242-1277.
4. York, R. 2018. Energy Consumption Trends Acroos the Globe. In D. J. Davidson & M. Gross (Eds.), The Oxford handbook of handbook of energy and society: 165–178. New York: Oxford University Press.
5. Kivimaa, P; Kern, F (2016). Creative destruction or mere niche support? Innovation policy mixes for sustainability transitions. Research Policy, 45(1) pp. 205-217.
6. Kivimaa, P., Sivonen, M.H. (2021). Interplay between low-carbon energy transitions and national security: An analysis of policy integration and coherence in Estonia, Finland and Scotland. Energy Research and Social Science 75: 102024
7. Richter, M. 2012. Utilities’ Business Models for Renewable Energy: A Review. Renewable and Sustainable Energy Reviews 16 (5): 2483–93.
8. Ghosh, Shikar & Nanda, Ramana. Venture Capital Investment in the Clean Energy Sector. HBR, Aug 2010
9. Lemley, M. A. (2012). The Myth of the Sole Inventor. Michigan Law Review, 110(5), 709–760. h
10. Edgerton, D. (1999). From Innovation to Use: ten (eclectic) theses on the historiography of technology. History and Technology, 16, 1–26.