



Course syllabus

Faculty of Technology

Department of Forestry and Wood Technology

4TS347 Global innovation - transdisciplinära systemperspektiv för hållbar förändring, 30 credits

Global Innovation - Transdisciplinary System Perspectives for Sustainable Change

Main field of study

Mechanical Engineering, Forest and Wood Engineering

Subject Group

Forest Science

Level of classification

Second Level

Progression

A1F

Date of Ratification

Approved by Faculty of Technology 2022-04-18

The course syllabus is valid from spring semester 2023

Prerequisites

General entry requirements for studies at the second-cycle level and specific entry requirements:

- Local Innovation – Interdisciplinary Innovation Processes in Theory and Practice or the equivalent
- English 6 or the equivalent.

Objectives

Module 1: Transdisciplinary system perspectives for sustainable change, 7.5 credits

After completing the module, the student should be able to

- critically review organisations and businesses from a system perspective, based on different competencies in the fields of economics, technology, and design
- identify, analyse, and evaluate different stakeholders and their needs and relations, in local as well as global contexts
- analyse and critically review theories on system change for sustainable development

- relate to theories of sustainable change in local and global perspective based on competences within business, engineering and design
- assess system changes from the perspectives of ethics and sustainability.

Module 2: Development of innovative concepts, 7.5 credits

After completing the module, the student should be able to

- plan, implement, and critically review an innovation process, from problematisation to end result
- conduct an innovation project together with representatives from different companies and organisations
- apply theories on system change for sustainable development, based on different competencies in the fields of economics, technology, and design
- present and explain the innovation process and its result to representatives from different companies and organisations
- argue the development of innovative concepts, orally, visually and in writing, to representatives from different companies and organisations.

Module 3: Implementation of innovations, 5.5 credits

After completing the module, the student should be able to

- formulate, present, and reflect upon the consequences of innovations in societal, economical, and cultural contexts
- analyse and evaluate implementation of innovations for sustainable change from a local as well as a global perspective, based on different competencies in the fields of economics, technology, and design
- visualise, present, and explain strategies for implementation of innovations to representatives from different companies and organisations.

Module 4: Professional skill, 2 credits

After completing the module, the student should be able to

- analyse and evaluate different concepts relating to professional skill in theory and practice
- explain and discuss the importance of practical examples in development work
- discuss in what ways formal systems may create opportunities and/or curb creativity in the application of professional skill.

Module 5: The innovation process and research methods, 7.5 credits

After completing the module, the student should be able to

- analyse and strategically evaluate different research methods as applied in an innovation process
- reflect upon and evaluate the significance, application, and consequences of different methods in the implementation of a transdisciplinary innovation project
- reflect upon and evaluate different methods' potential and limitations, as well as their roles, in the implementation of an innovation process
- identify and analyse what further knowledge is needed in the theory and practice of research, based on different competencies in the fields of economics, technology, and design
- assess different research methods from the points of view of ethics and sustainability.

Content

Module 1: Transdisciplinary system perspectives for sustainable change, 7.5 credits

In this module the students conduct projects in collaboration with companies and organisations. The module aims to problematise the need of sustainable change that the companies and organisations are facing, based on different competencies in the fields of economics, technology, and design.

The module comprises the following parts:

- systems theory and systems analysis
- systemic thinking for organisational change
- Systems Engineering – concepts and different stakeholders' needs analyses
- transdisciplinary project work in theory and practice
- analysis of the UN's global goals for sustainable development
- critical perspectives on societies' values, norms, and practices.

Module 2: Development of innovative concepts, 7.5 credits

This module continues the preceding project-based module and is carried out in collaboration with companies and organisations. It comprises an innovation process, the aim of which is to create possible solutions to the problems that were identified in Module 1.

The module comprises the following parts:

- the innovation process in theory and practice
- transdisciplinary project work
- sustainable development and systems change.

Module 3: Implementation of innovations, 5.5 credits

This module continues the second project-based module and is carried out in collaboration with companies and organisations. In this module, students plan, implement, and evaluate innovations that aim to solve different sustainability problems that the companies and organisations are facing.

The module comprises the following parts:

- implementation of innovations
- sustainable development and strategies for systems change
- application of Business Model Canvas
- sustainable marketing strategies.

Module 4: Professional skill, 2 credits

This module consists of a series of seminars that support the other modules through reflection on the culture and values of different disciplines, and on how professional roles affect transdisciplinary innovation processes.

The module comprises the following parts:

- professional skill and professional roles
- the importance of practical examples in development work from the point of view of different professions in the fields of economics, technology, and design
- the potential and limitations of formal systems.

Module 5: The innovation process and research methods, 7.5 credits

This module consists of a series of lectures and seminars that support the transdisciplinary innovation projects through reflection on the different disciplines' approaches to research and research methods.

The module comprises the following parts:

- philosophy of science and its basic concepts
- introduction to different academic traditions, their methods, and their application
- ethical and sustainability aspects in research linked to transdisciplinary innovation projects.

Type of Instruction

Teaching is delivered in the form of lectures, workshops, seminars, and presentations based on the different competencies and perspectives of the participant disciplines. The modules are partly project based and are supported by supervisors from all the relevant disciplines, as well as by external stakeholders collaborating with the programme.

Instruction is in English and takes place on campus. Some parts of the course may, however, be conducted at the participant companies and organisations, wherefore practical work may be carried out within as well as outside the university.

Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

Module 1: Transdisciplinary system perspectives for sustainable change, 7.5 credits

- Hand-in assignments (1.5 credits) and a report (6 credits)

Module 2: Development of innovative concepts, 7.5 credits

- Hand-in assignments (2.5 credits) and a report (5 credits)

Module 3: Implementation of innovations, 5.5 credits

- Hand-in assignments (1.5 credits), a reflection paper (2 credits) and a report (2 credits).

Module 4: Professional skill, 2 credits

- A reflection paper (2 credits).

Module 5 The innovation process and research methods, 7.5 credits

- Hand-in assignments (3 credits) and a reflection paper (4.5 credits).

The following applies to all modules:

The grade A is the highest grade, and the grade E is the lowest grade for passing the course. The grade F means that the student's performance is assessed as failed. Grading criteria for the A–F scale are communicated in writing no later than when the course starts. The individual grades for the different modules are weighed to calculate the overall course grade. The weighing is based on the grade and number of credits of each module, so that the more credits a certain module comprises, the more weight its grade carries. Grades for examination elements assessed with the grades Pass or Fail are not included in the weighing. In order to receive a final course grade, the student must,

however, have passed all such examination elements.

If the university has decided that a student is entitled to special pedagogical support due to a disability, the examiner has the right to adapt the exam or to let the student conduct the exam in an alternative way. Resit examination is offered in accordance with Local regulations for courses and examination at the first and second-cycle level at Linnaeus University.

Course Evaluation

During or shortly after the course, a course evaluation should be conducted. The result and analysis of the course evaluation should be promptly communicated to the students who have taken the course. Students who are taking the course when it is offered the next time should be informed of the result at the course introduction. The course evaluation is anonymous.

Credit Overlap

The course cannot be included in a degree along with the following course/courses of which the content fully, or partly, corresponds to the content of this course: Modules 1–4, 22.5 credits:

4FE162/4TS341/4DI722 and 4FE042/4TS041/4DI720. Module 5, 7.5 credits: 4FE043/4TS043/4DI721 and 4FE163/4TS343/4DI723. 4FE168/4ST347/4DI713 30 credits. 4FE166/4TS046/4DI716 22.5 credits. 4FE167/4TS047/4DI717 7.5 credits.

Other

The course includes study visits, laboratory sessions and field work. This may entail certain costs for the student.

Required Reading and Additional Study Material

Delkurs 1

Chick, Anne. & Micklethwaite, Paul. Design for Sustainable Change - How Design and Designers Can Drive the Sustainability Agenda. AVA Publishing SA. Senaste upplagan. 184 sidor.

Mick, David Glen, Pettigrew, Simone, Pechmann, Cornelia & Ozanne, Julie L. Transformative Consumer Research for Personal and Collective Well-Being. Routledge. Senaste upplagan. 766 sidor.

Motoyama, Yasuyuki. Global Companies, Local Innovations: Why the Engineering Aspects of Innovation Making Require Co-location. Ashgate Economic Geography, Ashgate Pub Co. Senaste upplagan. 163 sidor

Trott, Paul. Innovation Management and New Product Development. Prentice Hall. Senaste upplagan. 648 sidor.

von Hippel, Eric. The sources of innovation. Oxford University Press. E-bok. senaste upplagan. 232 sidor.

Referenslitteratur

Burns, Paul. Corporate Entrepreneurship. Palgrave Macmillan. Senaste upplagan. 528 sidor.

Moulaert, Frank., MacCallum, Diana., Mehmood, Abid. & Hamdouch, Abdelillah. The International Handbook on Social Innovation -Collective Action, Social Learning and

Transdisciplinary Research. Elgar online. E-bok. Senaste upplagan. 528 sidor.

Porter, Michael. Competitor and Industry analysis. Harvard Business Review. E-bok. Senaste upplagan. 432 sidor

Delkurs 2

Braungart, Michael. & McDonough, William. Cradle to Cradle; Remaking the way we make things. Random House UK. Senaste upplagan. 192 sidor.

Chesbrough, Henry W., Vanhaverbeke, Wim. & West, Joel. Open Innovation Researching aNew Paradigm. Oxford. Senaste upplagan. 400 sidor.

Keeley, Larry, Pikkell, Ryan, Quinn, Brian and Walters, Helen. Ten Types of Innovations -the Discipline of Building Breakthroughs. Wiley. Senaste upplagan, 257 sidor

Referenslitteratur

Antvik, Sven and Sjöholm Håkan. Project Management and Methods. Studentlitteratur. Senaste upplagan, 166 sidor

Hayes, John. The Theory and Practice of Change Management. Palgrave Macmillan. Senaste upplagan. 521 sidor.

Kumar, Vijay. 101 Design methods -a Structured Approach for Driving Innovation in your Organization. Wiley. Senaste upplagan. 325 sidor

Motoyama, Yasuyuki. Global Companies, Local Innovations: Why the Engineering Aspects of Innovation Making Require Co-location. Ashgate Economic Geography, Ashgate Pub Co. Senaste upplagan. 163 sidor.

Delkurs 3

Radjou, Navi., Prabhu, Jaideep. & Ahuja, Simone. Jugaad Innovation: Think Frugal, Be Flexible, Generate Breakthrough Growth. Jossey-Bass. Senaste upplagan. 288 sidor.

Referenslitteratur

Normann, Richard. Reframing Business: When the Map Changes the Landscape. Wiley. Senaste upplagan. 356 sidor.

Polaine, Andy., Lavrans, Lovlie. & Reason, Ben. Service Design - From Insight to Implementation. Rosenfeld Media. Senaste upplagan. 216 sidor.

Delkurs 4

Göranzon, Bo. (2009). The Practical Intellect. Santerus Academic Press. ISBN: 9789173350068. 160 sidor.

Delkurs 5

van Aken, Joan, Berends, Hans, and van der Bij, Hans. Problem Solving in Organizations. New York: Cambridge university press. Senaste upplagan. 245 sidor.

Referenslitteratur

Björk, Lennart, Björk Maj & Räisänen, Christine. Academic Writing: a University Writing Course. Lund: Studentlitteratur. Senaste upplagan. 399 sidor.

Scientific Articles 500 pages.