



Course syllabus

Faculty of Technology

Department of Forestry and Wood Technology

4TS346 Lokal innovation – interdisciplinära innovationsprocesser i teori och praktik, 30 högskolepoäng

Local Innovation – Interdisciplinary Innovation Processes in Theory and Practice, 30 credits

Main field of study

Mechanical Engineering, Forest and Wood Engineering

Subject Group

Forest Science

Level of classification

Second Level

Progression

A1N

Date of Ratification

Approved by Faculty of Technology 2021-10-04

The course syllabus is valid from autumn semester 2022

Prerequisites

General entry requirements for second-cycle studies and specific entry requirements:

- Bachelor of Science in Technology or Engineering
- 15 credits in Mathematics; Calculus I, (7.5 credits), and Linear Algebra/Vector Geometry (7.5 credits) or the equivalent.
- English 6 or the equivalent.

Objectives

Module 1: Interdisciplinary Innovation Processes, 3.5 credits

After completing the module, the student should be able to

- plan, conduct and evaluate an interdisciplinary project on product development
- apply methods and tools used in the innovation process
- evaluate the concept of innovation and its process from a business administrative, technical or design perspective, as well as identify problems and possibilities from a sustainability perspective,
- analyse and evaluate a project on product development from a sustainability perspective,
- present an interdisciplinary project on product development orally, visually and in writing.

Module 2: Innovation Process I – Idea Generation, 5 credits

After completing the module, the student should be able to

- apply and justify their choice of method for identifying different needs
- apply and justify their choice of method for generating ideas
- identify and analyse different needs and, based on these needs, generate ideas in an interdisciplinary innovation process with a broad sustainability perspective.

Module 3: Innovation Process II – Realisation, 5 credits

After completing the module, the student should be able to

- develop ideas into concepts using different methods
- evaluate feasibility and justify their choice of methods from the point of view of a broad sustainability perspective
- develop material that can serve as a basis for communication and evaluation of concepts.

Module 4: Innovation Process III – Evaluation, 5 credits

After completing the module, the student should be able to

- analyse, evaluate and revise concepts using different methods
- analyse and evaluate methods for product development
- present an interdisciplinary innovation project orally, visually and in writing, looking at the full process, from idea to implementation, analysing and reflecting upon how the project relates to the sustainability goals.

Module 5: Professional Skills, 2 credits

After completing the module, the student should be able to

- analyse and reflect upon the expertise and skills involved in different professions
- discuss and evaluate the different ways in which different professions approach science and art
- analyse and reflect upon their own professional skills by means of critical reflection from a broad sustainability perspective.

Module 6: Interdisciplinary Work, 2 credits

After completing the module, the student should be able to

- analyse individual and group approaches in interdisciplinary work
- reflect upon their own approach in interdisciplinary work
- discuss and evaluate different strategies for efficient interdisciplinary work from a broad sustainability perspective.

Module 7: Innovation Methods and Tools, 7.5 credits

After completing the module, the student should be able to

- analyse and reflect upon different disciplines' approaches, methods and tools
- evaluate scientific and artistic methods that may be relevant in an innovation project
- argue for their choice of empirical material and relevant data collection methods
- analyse and evaluate research results based on scientific as well as artistic methods, including a broad sustainability perspective
- apply and evaluate different ways of communicating the processes and results of research work.

Content

Module 1: Interdisciplinary Innovation Processes, 3.5 credits

Module 1 introduces the different methods and tools used in the innovation process through a project on product development. The module includes the following components:

- interdisciplinary work
- innovation concepts and the innovation process
- concepts involved in product development
- sustainability concepts
- consumption patterns and sustainability
- visual and oral presentation techniques
- academic writing, focusing on reports.

Module 2: Innovation Process I – Idea Generation, 5 credits

Module 2 problematises the concept of need, and develops the ability to generate ideas through interdisciplinary work. The module includes the following components:

- theories of need and their applications in the innovation process
- methods and tools for creating ideas
- a sustainability perspective on needs and the development of ideas
- written, oral and visual presentation of the initiation of the innovation process.

Module 3: Innovation Process II – Realisation, 5 credits

Module 3 concerns the development of concepts, as well as analysis and evaluation of feasibility. The module includes the following components:

- analysis of feasibility
- the importance of innovation for sustainable development
- analysis and establishment of criteria for realisation of the innovation process
- creation of material that may serve as a basis for communication and evaluation of concepts
- written, oral and visual presentation of the realisation of the innovation process.

Module 4: Innovation Process III – Evaluation, 5 credits

Module 4 concerns the evaluation of the innovation process and its results. The module includes the following components:

- consumer behaviour and sustainable development
- behavioural transformation in theory and practice
- evaluation and impact analysis of innovation from a broad sustainability perspective
- analysis and evaluation of the methods used for product development in the innovation process
- written, oral and visual presentation of the innovation process.

Module 5: Professional Skills, 2 credits

Module 5 includes the following components:

- the concept of professional skill
- the different concepts used and approaches taken by different professions from a broad sustainability perspective
- dialogue seminars as a method.

Module 6: Interdisciplinary Work, 2 credits

Module 6 includes the following components:

- multi, inter and transdisciplinary processes
- individual and group strategies in interdisciplinary work
- understanding the perspective of sustainability through complex collaboration.

Module 7: Innovation Methods and Tools, 7.5 credits

Module 7 includes the following components:

Module 7 includes the following components:

- scientific and artistic approaches, methods and tools
- methods for collecting data
- methods for analysing and evaluating data
- methods for surveying, analysing and evaluating sustainability perspectives in the

innovation process.

Type of Instruction

The course consists of lectures, workshops and seminars based on the different competences and perspectives of the participating disciplines. The modules are partly based on projects, supported by supervisors from all the participating disciplines, as well as external stakeholders in collaboration with the programme. Teaching is primarily carried out on campus, although some parts may take place in venues determined by the external stakeholders. Practical work may be conducted within or outside the university.

Examination

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

Module 1: Interdisciplinary Innovation Processes, 3.5 credits

Handin assignments and a report.

Module 2: Innovation Process I – Idea Generation, 5 credits

Handin assignments and a report.

Module 3: Innovation Process II – Realisation, 5 credits

Handin assignments and a report.

Module 4: Innovation Process III – Evaluation, 5 credits

Handin assignments and a report.

Module 5: Professional Skills, 2 credits

Handin assignments and an essay on reflection.

Module 6: Interdisciplinary Work, 2 credits

Handin assignments and an essay on reflection.

Module 7: Innovation Methods and Tools, 7.5 credits

Handin assignments individually and in groups and an essay on reflection.

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. Assessment criteria for the A–F scale, along with information about how grades for individual assignments are weighted to calculate the final grades are communicated to the students in writing no later than at the start of the respective modules.

If the university has decided that a student has the right to special educational support due to a disability, the examiner may offer an adapted test or allow the student to conduct the test in an alternative form. For students who do not pass their first examinations, retake examinations are provided in accordance with Local regulations for courses and examinations at the first and second levels at Linnaeus University.

Course Evaluation

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

Credit Overlap

The course cannot be included in a degree along with the following courses of which the

The course cannot be included in a degree along with the following courses of which the content fully, or partly, corresponds to the content of this course: 4FE169 and 4DI712 with 30 credits each.

Modules 1–6: 4FE040, 4FE160, 4FE164, 4TS040, 4TS042, 4ST044, 4DI710 and 4DI714 with 22.5 credits each.

Module 7: 4FE041, 4FE161, 4FE165, 4MT042, 4TS045, 4DI711 and 4DI715 with 7.5 credits each.

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

Module 1

Atkinson, Anthony A. Management Accounting. Pearson Education. Latest edition, approx. 150 pages.

Bamossy, Gary, and Solomon, Michael (2016). Consumer Behaviour: A European Perspective. Pearson Education, approx. 180 pages.

Curedale, Robert. Design thinking –process and methods manual. Design Community College Inc. Latest edition, approx. 80 pages.

Kumar, Vijay. 101 Design Methods –A Structured Approach for Driving Innovation in Your Organization. John Wiley & Sons, Inc. Latest edition. 325 pages.

Thorpe, Ann. The Designer's Atlas of Sustainability. Island Press. Latest edition. 221 pages.

Trott, Paul. Innovation Management and New Product Development. Prentice Hall. Latest edition, approx. 150 pages

Reference Literature

Hannington, Bruce and Martin, Bella. Universal Methods of Design: 100 Ways to Research Complex Problems Develop Innovative Ideas, and Design Effective Solutions. Rockport Publishers Inc. Latest edition. 208 pages.

Lidwell, William, Holden, Kritina and Butler, Jill. Universal Principles of Design. Rockport Publishers Inc. Latest edition. 214 pages.

Module 2

Curedale, Robert. Design thinking –process and methods manual. Design Community College Inc. Latest edition, approx. 80 pages.

Puccio Gerard J. (2011) Creative Leadership Skills That Drive Change. 2nd edition Sage publications, approx. 150 pages.

Trott, Paul. Innovation Management and New Product Development. Prentice Hall. Latest edition, approx. 150 pages

Max-Neef, Manfred. (1991) Human Scale Development. The Apex Press, 115 pages.

Reference Literature

Weischenk, Susan (2011). 100 things every designer needs to know about people. New Riders, 241 pages

Mundford, Michael. Handbook of Organizational Creativity. AP Elsevier. Latest edition. 737 pages.

Schön, Donald Alan. The Reflective Practitioner. Ashgate Publishing Limited. Latest edition. 384 pages.

Module 3

Ashby, Michael F., Shercliff, Hugh and Cebon, David (2013). Materials: Engineering, Science, Processing and Design. Butterworth – Heinemann. Latest edition, 150 pages.

Ulrich, Karl T. and Eppinger, Steven D. Product Design and Development. McGraw Hill Higher Education. Latest edition. 358 pages.

Reference Literature

Harris, La Verne Abe. Idea Engineering –Creative Thinking and Innovation. Momentum press 2014, 197 pages.

Module 4

Atkinson, Anthony A. Management Accounting. Pearson Education. Latest edition, approx 50 pages.

Slack, Nigel, Brandon Jones, Alistar, Johnston, Robert and Betts, Allan. Operations and Process Management. Pearson. Latest edition, approx. 200 pages

Trott, Paul. Innovation Management and New Product Development. Prentice Hall. Latest edition, approx. 150 pages

Bamossy, Gary, and Solomon, Michael (2016). Consumer Behaviour: A European Perspective. Pearson Education, approx. 180 pages
Scientific articles, approx. 100 pages.

Module 5

Göranzon, Bo. (2009). The Practical Intellect. Santerus Academic Press, 160 pages.

Scientific articles, approx. 100 pages.

Module 6

Mintzberg, Henry, Ahlstrand Bruce and Lampel, Joseph B. (2009). Strategy Safari: Your Complete Guide Through the Wilds of Strategic Management. 2nd Edition, Pearson Ed. Ltd, approx. 150 pages

Weick, Karl E. (1995) Sensemaking in Organizations. Sage publications, Inc. approx. 100 pages.

Module 7

Curedale, Robert. Design thinking –process and methods manual. Design Community College Inc. Latest edition, approx 80 pages.

Barbour, Rosaline (2018). Doing focus groups. Sage. Latest edition. 177 pages.

Bryman, Alan and Bell, Emma. Business Research Methods. Oxford University Press. New York. Latest edition, approx. 250 pages.

Thiel, David V. (2014). Research Methods for Engineers. Cambridge University Press. Latest edition. 306 pages.
Scientific articles, approx. 150 pages.