

IØ8909 – Advancing Research-based Innovation: Pathways to Impact (5 ECTS)

Course content

This is an advanced course on research-based innovation aimed at PhD candidates and other academic researchers who would like to learn about implementing their research-based innovation ideas in society to create impact.

As per the national qualifications framework (NQF) of Norway, a PhD qualification, in addition to subject expertise that expands the research frontier by developing new knowledge, also requires competence in assessing the need for, initiating and practicing innovation. This competence of putting knowledge in use for the betterment of society is also important for qualifying for the highest academic positions at academic institutions. In addition, communicating the impact potential of research is increasingly important, for example in project applications.

The course will build knowledge on different pathways for deploying research-based innovation. It will introduce participants to different tools to evaluate their current stage in, needs for, and the feasibility of alternative pathways for bringing the innovation into use in society. In addition, it will give participants insight into the need for effective communication, and the skills to communicate their needs to stakeholders to raise the required resources for creating impact with their innovation.

The course is based on research at SFU [Engage](#): Centre for Engaged Education through Entrepreneurship, a world leading centre of excellence in education. The course offers the opportunity to interact with experts from NTNU's Innovation Ecosystem including the Technology Transfer Office.

Learning outcome

The key goal of this course is to increase the competence of doctoral students and academic researchers to evaluate academic research for its innovation potential and develop the skills to evaluate alternative pathways to realize this innovation potential.

By taking this course, participants will become familiar with the concepts and tools used to evaluate research-based innovation ideas. Through the work in the course, participants will have the opportunity to apply these concepts and tools to develop their competence to initiate and practice innovation activity in different contexts.

On completion of the module, candidates will possess the following:

Knowledge:

- Understanding innovation from the value perspective.
- Identifying value in relation to user/ customer/societal needs.
- Evaluation of the feasibility of alternative pathways to realize innovation.
 - Possibilities and boundaries related to intellectual property (IP).
 - Ethical considerations in evaluating alternative pathways
- Resource needs and resource acquisition
- Innovation ecosystems and support available
- Effective communication

Skills:

- Analysing the value of their research across personal, societal, and commercial dimensions
- Evaluating alternative pathways to create impact from research-based innovation
- Understanding innovation readiness level
- Business modelling
- Ability to effectively communicate the innovation potential to different stakeholders.

General Competence:

- Ability to assess potential for, initiate, and lead process to implement innovation in society.

Learning methods and activities

The course will consist of **four days** of lectures, interactive group work and student presentations. The **four days** are **split into two sessions of two simultaneous class days**, followed by a **break** of a few weeks, **followed by two simultaneous class days**.

In addition, **students are required to work on pre, interim and post course assignments**. The course will use workshops, class discussions and presentations to give students insight into different aspects of the research-based innovation journey. This will be complemented by self-study of recommended literature.

The learning of the course will arise from students *working with a concrete innovation idea*, using concepts and tools provided in the course, as well as through *reflection* on the students' work tasks related to generating and evaluating the innovation idea as part of the course. The students will be challenged to come up with an innovation idea within their own research. The students will work to evaluate the feasibility of the innovation idea, communicating their idea, getting feedback, and reflecting on this as a way of active learning from the course. The student is expected to take an active role in developing their own and others knowledge in the course.

The final delivery of the course will be a report on the innovation idea, and a reflection note.

Compulsory activities:

Owing to the pedagogy of the course, where a substantial part of the learning in the course arises from classroom interactions with the lecturers and fellow students, **physical attendance is mandatory** for this course.

Pre-work: Students will be asked to prepare a description of their innovation idea in a prescribed format to be submitted before the start of the course. They will also prepare a short presentation of this innovation idea based on a set of guidelines for Day 1 of the course.

Interim work: between Day 2 and Day 3 of the course, the students will be required to gather and process information related to evaluation of their innovation idea they are working with.

Post - work: Students will prepare a report on their innovation idea and a reflection note which will be evaluated.

Guidelines for all the exercises and submissions will be provided during the course.

Further on evaluation

Assessment will be based on the term paper to be graded Pass/Fail

Specific conditions

The course is primarily oriented towards PhD candidates at NTNU. PhD candidates at other Norwegian institutions, are welcome to participate in the course, however, enrollment is subject to places being available after students from NTNU are accommodated.

Course costs: Free in 2026. The normal course fee of NOK 5,000 and is waived off due to financial contribution from NTNU and Innovation Norway's national ecosystem funds.

As such, admission to a PhD programme of study at NTNU or another Norwegian institute is required.

Required previous knowledge

Prior knowledge is not a necessity, however, participants may benefit from having taken the basic courses on research-based innovation IØ8906 or IØ8908