



NTNU

Norwegian University of Science and Technology

Specialization in Project Management and Construction Engineering

Start-up meeting 2019

Agenda

- Specialization in PMCE
- Specialization Project
- Special topic
- Project Management Advanced Course
- Construction Engineering Advanced Course
- Questions etc.

Specialization in PMCE

Courses

- TBA4128
- TBA4151
- TBA4530
- TBA4531
- TBA4570

Term design of PMCE

- Specialization Project of 7,5 ECTS is “specialization light” (in the view of PMCE)
- PMCE utilizes the exercise/work part of the specialization courses in relation to the project work
- Hence, 50 % of TBA4128 and TBA4151 is a “Special Topic”
 - Literature search and evaluation
 - Method chapter writing



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Specialization Project in Project Management and Construction Engineering

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About the project work

- Two parts:
 - Pre-study report (20 %) – deadline 13.09.2019
 - Specialization project report (80 %) – deadline 20.12.2019
- Intended to prepare for and support the Master thesis
- Collecting information and data will greatly help you in further planning and executing the work in the Master thesis
- **Use your supervisor!**

The pre-study report

- In the start-up phase of the specialization project, you are required to prepare a pre-study report.
- The pre-study report represents a preliminary plan for your Specialization project (and Master thesis). It is a tool to get you started and is **meant to be a living document**.
- Write scientific where applicable, but keep it brief.
- Max length: 4 pages
- Deadline: 13.09.2019

Important elements in the pre-study

- Introduction:
 - Present your topic (as you see it now).
 - Are there any stated needs in the industry?
 - What is the knowledge gap?
 - Define the central problem and research questions?
- Method:
 - How would you go about addressing these topics?
- Timeline and planning:
 - Preliminary table of contents for the specialization project
 - Provided a deadline of December 2019 (June 2020), give an estimated timeline for the Specialization project (and Master thesis), including report writing, literature search, data acquisition etc.
- Challenges and uncertainties
 - Short discussion of uncertainties related to the project work and Master thesis
- Conclusion

Suggested project work progress

Start working now!

- Decide/clarify the topic (with supervisor!)
- Limit/define the topic, argue your limitations
- Make a report outline
- Gather information (background, «state of the art», ...)
- Gather data, preferably your own (i.e. new data)
 - Trial and error in the Specialization project will help you in the Master thesis.
- Write the report
- Submit the report

- Remember: You have a supervisor/teacher!

Submission of Specialization Project

- To be submitted in INSPERA
- Must follow scientific/professional report formalities:
<https://www.ntnu.edu/sekom/structuring-an-assignment>
- [Råd og retningslinjer for rapportskrivning](#) ved IBM (pdf in Norwegian, see bottom of webpage)
- Deadline: **December 20, 2019 (preliminary date)**

Project work topics

- Tema for prosjekt-/masteroppgaver finnes på <https://www.ntnu.no/wiki/display/ibm/IBM+-+Prosjekt-+og+masteroppgave%2C+hovedprofilvalg>
- Oppgaver fra Senter for idrettsanlegg og teknologi SIAT (som er en del av Faggruppe for prosjektledelse og anleggsteknikk)
- Prosjektmodellen - Gjennomføringsmodell for bygging av idrettsanlegg
 - 1. Teoretisk utvikling av eksisterende modell med fokus på tidligfase.
 - 2. Analysere modellens brukervennlighet
 - 3. Behovsanalyse for idrettsanlegg, evt. et spesifikt anlegg
- Kunstgressprosjektet KG2021 - Innkjøp og innkjøpsstrategier
- Oppgaver foreslått for Anleggsteknikk og Prosjektledelse kan kobles mot idrettsanlegg som objekt (f.eks. digitalisering, IPD, gjennomføringsmodeller, kostnadsutvikling,.....)



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TBA4128 Project Management (Advanced Course) **TBA4151 Construction Engineering (Advanced Course)**

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Introduction

- Supporting theory and preparation for the scientific methods expected of a Master's degree.
- 4-6 seminars on course theory
- 50 % of grade – Two individual assignments (Special topic)
- 50 % of grade:
 - Construction Engineering: Oral exam
 - Project Management: Group Assignment

Important dates

- 23.08.2019 – Introductory lecture – today

Special topic (50 %):

- 06.09.2019 – Submit choice of topic for Scoping Literature Review
- 11.10.2019 – Part 1: Submit report on Scoping Literature Review
- 25.10.2019 – Part 2: Submit draft of Method and research design chapter

Course specific (50 %):

- Construction Engineering: Oral Exam – Primo/Medio November 2019
- Project Management: Submission of group assignment – 20.12.2019

Special topic

- Intended to introduce students to scientific work and practices prior to the Master thesis.
- 2 (3) assignments:
 - Part 0: Choice of topic (approved/not approved)
 - Part 1: Scoping literature review (70 %)
 - Part 2: Research methods chapter (30 %)
- Results rely on your efforts, i.e. you should work continuously

Part 0: Choice of topic

- Choose a topic you are interested in. If it finally becomes the topic for your thesis, it will have almost a year of maturing.
- Consult with your supervisor, this will help you narrow or extend the topic and translate it into relevant themes.
- Nothing is final before hand-in of the Master thesis in June 2020.

Part 1: Scoping literature review

Based on your selected topic:

- Find/identify central/important literature relevant to your topic
- Present how you found the literature (method)
- Evaluate your method and your findings/literature

Estimated length:

- 10 pages (20 if following both CE and PM) – excluding Cover, Table of contents, References and Appendices.
- Number of “sources”: 8-10 (16-20 if following both CE and PM) for final evaluation

Part 1: Layout of the Scoping Literature Review Report

- Cover - front and back ([template](#))
- Preface
- Summary
- Table of contents
- Ch. 1: Introduction
- **Ch. 2: Methodology (e.g. how did you obtain the literature, search history, ..)**
- **Ch. 3: Description of the literature**
- **Ch. 4: Evaluation of literature (quality, relevance, ...)**
- **(Ch. 3 and 4 can merge)**
- Ch. 5: Conclusion
- References
- (Appendices)

i.e., you should select and evaluate literature to be cited in your Project report and/or Master thesis.

Part 2: Method chapter

- Based on your selected topic and pre-study report, the method assignment should cover:
 - 0: Present what you want to research? (Research questions)
 - 1: How would you go about to answer these questions? (Method)
 - 3: Why do you want to do it this way? (Motivation/Needs).
 - 4: Evaluate strengths and weaknesses of your selected research methods
 - 5: Revise your timeline of the pre-study report in regard to your findings in this assignment
- Use references to argument your choice of method.
- Max length: 4 pages

Special topic - general information

- The work done in the Special topic is intended for use in your Specialization project and Master thesis, but should be revised alongside the rest of your work.
- Grading will be done at the end of the term, but feel free to consult your supervisor on your assignments.
- Atle Engebø, PhD candidate, will give a lecture on research methods and method chapter writing. **Date TBA**
- Jardar Lohne, Researcher, will give a lecture on literature search. **Date TBA**
- More information on structure and contents of research papers: <https://www.ntnu.edu/sekom/structuring-an-assignment>



TBA4128 Project Management AC

– Group project

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Learning outcome

- **Knowledge:**
The aim of the course is to provide knowledge of choosing the right project model, governance structure, contract strategy, the right analytical tools and the right planning and control tools in front end of building projects.
- **Skills:**
The candidate can use methods within project planning and control, tools for analyzing projects in front end to be able to choose the right project and as basis for project control.
- **General knowledge:**
The candidate can understand and use terms and understand when and where different methods are suitable and understand limitations in use of different methods.

The project

- You are contracted by the board of NTNU to analyze the potential use of a NTNU-owned building site.
- The use should be in line with NTNUs strategy:
«Knowledge for a better world»
- Your assessment shall cover the following parts:
 - How NTNU should use the site, based on an evaluation of at least 3 alternative uses
 - An outline of how the building process should be organized

Part 1 – Alternative uses

- Present alternative uses for the site
- Evaluate (and rank) the alternatives:
 - Use at least 4 methods in the evaluation (see next slide)
 - Two of the methods are mandatory
- Conclude with a recommendation of *one* alternative only

Methods for evaluating alternatives

Mandatory

- Cost estimate with uncertainty analysis
- Profitability analysis – at least calculations of Net Present Value
 - Cost/benefit analysis
 - Sensitivity analyses

Optional (at least 2 of the bullet points below)

- Goal hierarchy
- Logical Framework Analysis
- Strategic Analysis
- Stakeholder Analysis
- MCDA (multi criteria decision analysis)
- SWOT (strengths, weaknesses, opportunities, threats)
- Qualitative uncertainty analysis / uncertainty matrix
- Choosing by Advantages

Feel free to use other methods if you find them helpful. You are making a case for your alternatives, not answering questions in a group project.

Part 2 – Project organization

Based on the recommendation (or highest scoring alternative if the 0-alternative was recommended), describe the project organization:

Mandatory:

- Describe the Owner's organization, both for the design phase and the production phase.
- The interests of the different stakeholders in the project.
- Contract strategies, both for the design phase and the production phase

Optional:

- What kind of power/influence the stakeholders in the project have.
- What kind of potential conflicts the project manager should focus on, and suggest how these conflicts can be solved?

The site: Klæbuveien 65, also known as Hesthagen



Tips

- There are no totally correct answers, the work will be evaluated on:
 - Part 1: 40 %
 - Part 2: 40 %
 - Overall impression: 20 % (Thorough discussion and sound reasoning, presentation etc.)
- **NB! Part 2 is just as important as Part 1**
- Use illustrations, numbers and literature references to present your points.
- Feel free to make assumptions, but document and reason them accordingly
- The group project should demonstrate knowledge of Project Management, feel free to refresh your knowledge from previous courses, see next slide.

Previous courses of high relevance

- TBA4135: Organization and Economy in Building and Construction Projects
- TBA4155 / TBA5200: Project Planning and Analysis
- TPK4115 / TPK5100: Project Planning and Control
- TBA4127: Building Design Management
- TPK5115: Risk Management in Projects

Practical info

- Groups should be established as soon as possible
 - Group size: 3 to 5.
 - Send an e-mail with group members to atle.engebo@ntnu.no
- Reference group?
- Final deadline: 20.12.2019

Seminars related to the group project (changes can occur)

- Choosing by advantage
- Cost estimation under uncertainty – Associate professor Olav Torp
- Necessity of teams to performance
- Alliances and Integrated Project Delivery
- Project Governance – Professor Ole Jonny Klakegg

Guidance

- Atle Engebø – atle.engebo@ntnu.no
- Ola Lædre – ola.laendre@ntnu.no
- Frode Drevland – frode.drevland@ntnu.no
- Olav Torp – olav.torp@ntnu.no



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TBA4151 Construction Engineering (Advanced Course)

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Organisering og gjennomføring

- Deles i to fagområder:
 - Anleggsteknikk/tunneldrift
 - Produksjonsledelse/produktivitet i BA
- Den enkelte velger hvilket fagområde hun/han vil følge og ta muntlig eksamen i.
- Undervises i 6 seminarer for hvert av områdene
- Studieplan: muntlig eksamen 29.11.2019.
- **Flyttes til oktober/november 2019?**

Karaktersetting

Sluttkarakter: Arbeider 50 % og eksamen 50 %

- Muntlig eksamen i pensumstoffet 50 %
- 2 skriftlige rapporter i spesialtema 50 %

Pensum/seminarer

Anleggsteknikk

- Tunneldrift ventilasjon
- Haller i fjell
- Underwater tunnel piercing
- Subsea tunnels
- Rock support in Norwegian tunnelling
- Rock mass grouting
- (endringer kan komme)

Produksjonsledelse

- Selecting the right manufacturing improvement tools
- Construction Site Productivity Measurements
- SNØHVIT LANDANLEGG
Utførelse av betongkonstruksjoner
- Labor Productivity
- Effektivitetsanalyse av byggeprosjekter
- 31 recommendations for increased profit – Reducing waste
- (endringer kan komme)