LOGON-U
GREEN LOGISTICS

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Development and implementation of the master program ”Green logistics management”

Active, Experiential Learning

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Applied skills vs academic education

The challenge

- Working with logistics requires a lot of practical understanding
- The graduated students are supposed to be “employable”
- Classroom vs reality – how to make the education realistic?
- Most courses are rather short

  → internships; company-sponsored projects etc. not possible

Active Learning

Project-Based Learning

Experiential Learning

Inquiry-Based Learning

Case-Based Learning

Action Learning

Problem-Based Learning

Etc…

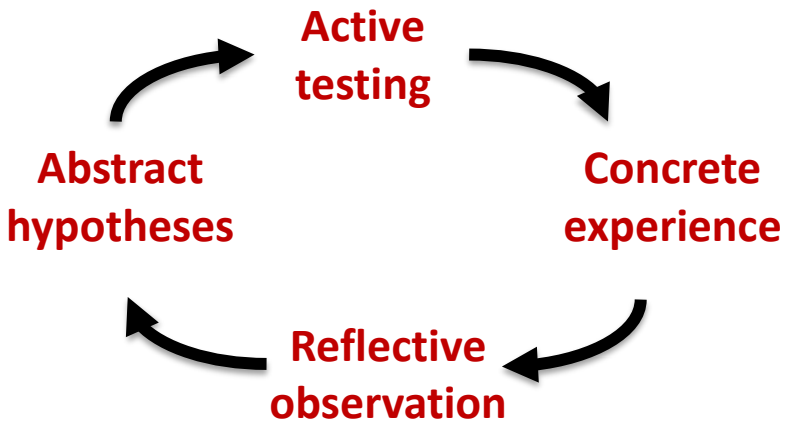
Active, experiential (or whatever we call it…) learning

The common theme in these theories is that the students should learn by:

- Being active
- Work with real/realistic tasks
- Being exposed to ’uncertainty’ which forces them to think and reflect

Example of a model:

- The Experiential Learning Cycle (see e.g. Kolb & Kolb 2005)



Examples of learning activities

- **Games**
  - Competition aspect; makes fun
- **”Traditional” cases**
  - Smaller case discussed at a seminar
- **Complex cases**
  - Containing much information, some of it redundant
  - Several assignments → could stretch over a whole course
- **Open-ended cases**
  - There is no ”one correct” solution
  - Important that the students can motivate *their* solution
- **Consultancy projects**
  - External stakeholders (companies etc.) provide real tasks for the students to solve

Engagement tend to enhance learning!

Complex cases

— example from one of our courses

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The Basic Logistics course

Some of the expected learning outcomes

- Describe and use basic concepts, models, and tools to observe, chart, and describe a logistics system.
- Describe and use basic principles and models of how a logistics system interacts with the profitability of the enterprise.
- Compare and evaluate proposed changes in a specific logistics system, recommend and justify one or several of these options, and clearly communicate the results of such an investigation.

The course

- Lectures
- A case running through the course
- Examination: Case reports (group) and written exam (individual)

The Basic Logistics course

The case

- Student work in groups of 4-5 students
- They prepare tasks and try to solve them
- Seminars, where teachers give support
- Written reports
- Presentations (slide shows)

The Basic Logistics course

The case, cont.

- A small bicycle manufacturer in a nearby town (a fictive company)
- A few pages with information, some of it important for the coming tasks, some of it redundant
- Tasks
  - Map the current state and calculate Key Performance Indicators (KPI)
  - Evaluate a proposed change of distribution structure
  - Calculate appropriate order quantities for the final assembly
  - Evaluate alternative suppliers for a specific part
  - Summarize all proposed changes and evaluate the effect on the KPI:s

Open-Ended cases

– examples from one of our courses

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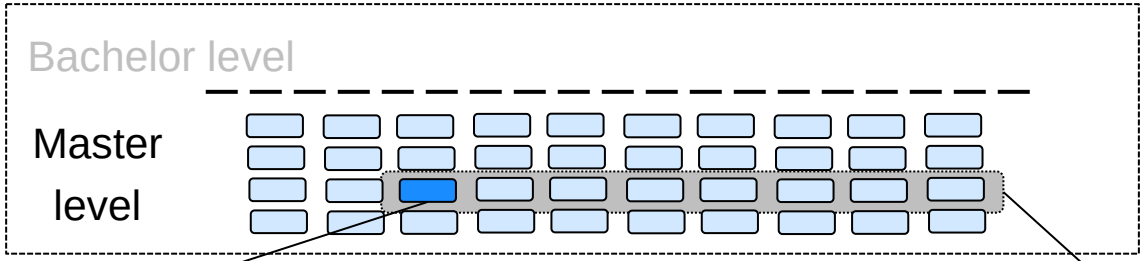
The Purchasing Course

Program and students



Purchasing

6 ECTS Credits
100+ stud./year

Students from two 5-year programs:

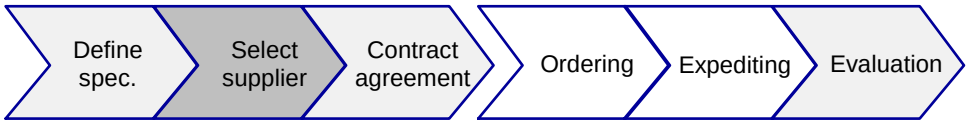
- Industrial Engineering
- Mechanical Engineering

The course is included in a ‘master track’ in Logistics management, but is also eligible for students following other master tracks.

Focus

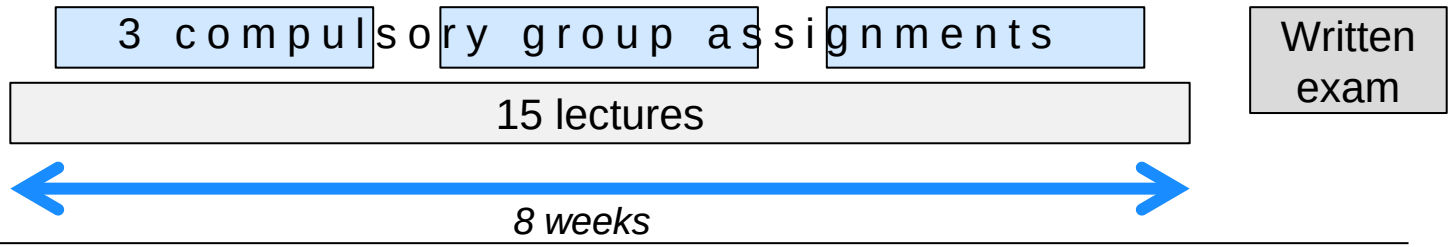
Purchasing’s contribution to profitability and competitiveness

The purchasing process



Strategies | Organisation | Supplier relations

Structure



Written exam

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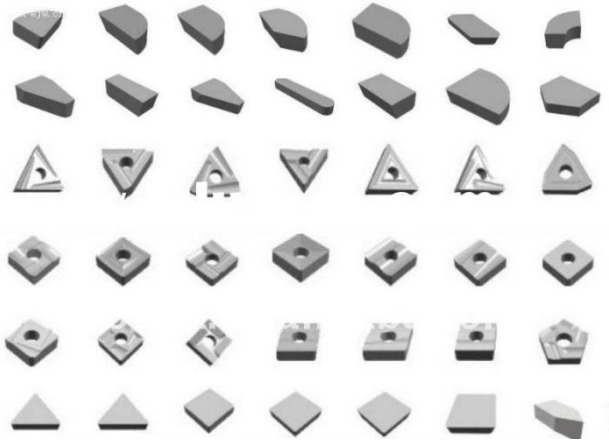
Assignment 1 – Total Cost Analysis

Swedish company buys tools for manufacturing operations

3 suppliers to choose from



Task: Suggest supplier based on a total cost analysis

Step 1

Decide which costs to include
(price; transport; inventory carrying; order adm.; supplier relation costs etc.)

Decide how these costs should be calculated / estimated → which additional data they would like to have.

Request for data

Assignment 1 – Total Cost Analysis

Request for data

additional data concerning…

…the buying company

…the products

…the suppliers

…miscellaneous

Data om Mulles Mekaniska

Lagerränta (%)	20
Kalkylränta (%)	10
Ordersärkostnad orderadm/-hantering. (SEK)	500

Artikelspecifik data	XA200	XB100	XC5
Vikt (g/st)	82	32	1
"Densitet" (st/m³)	12 700	35 400	6 4
Nuvarande säkerhetslager (st)	24	94	

Leverantörsspecifik data		Skär-specialisten	Firma Dvocic	Meyo Internatior
Pris (SEK/st) (valutasäkrat; inga mängdrabatter)	XA200	180	125	
	XB100	112	82	
	XC550	535	390	1
Transporttid (dörr till dörr) (dagar)		1	2	
Trp-kostnad dörr till dörr, fast (SEK/sändning) inkl försäkring		0	500	15 0
Trp-kostnad dörr till dörr, rörlig (SEK/kg) inkl försäkring		60	325	4
Andel kassation pga kvalitetsproblem (%)		0,0	2,5	3
Betalningsvillkor (dagar)		30	45	

Mulles uppskattning av ökade transaktionskostnader jämfört med nuläget	Skär-specialisten	Firma Dvocic	Meyo Internatior
Beordring/bevakning (tim/order)	0	0,5	

Övrigt

Säkerhetslager	Dimensioneras enligt SERV1 utifrån lagertillgänglighet på 98 %.
Leverantörernas finansiella ställning	Tillfredsställande
Begränsningar i kapacitet och utrymme i lagret	Finns ej
Tullavgift (% på tullvärdet, dvs varans pris + trp-kostnad)	1,7 % (Obs! tullfritt inom EU)

→ The groups have *different data sets* as input to their calculations, but most groups do not get everything they asked for.

Step 2

They perform their calculations → Written report

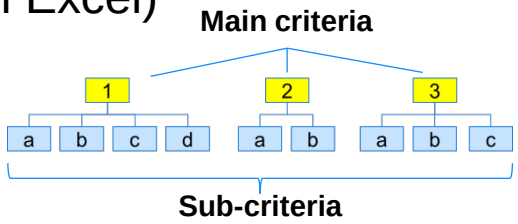
Assignment 2 – Supplier Evaluation

Company wants to engage a consultancy company to analyse their logistics operations and suggest improvements.

3 potential suppliers (consultancy companies) are identified

Task: Suggest supplier taking all aspects into consideration, i.e. quantitative as well as qualitative aspects.

The AHP model is to be used (available in Excel)



Step 1

Decide which aspects to evaluate
→ Main and sub criteria

Allocate weight factors to all criteria

Prepare for the 'hearing'

Step 2

Hearing with each supplier

- Presentations and questioning

Step 3

Compare the suppliers to each other and add 'scores' in the AHP model

Choose supplier

Written report

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Assignment 3 – Negotiation

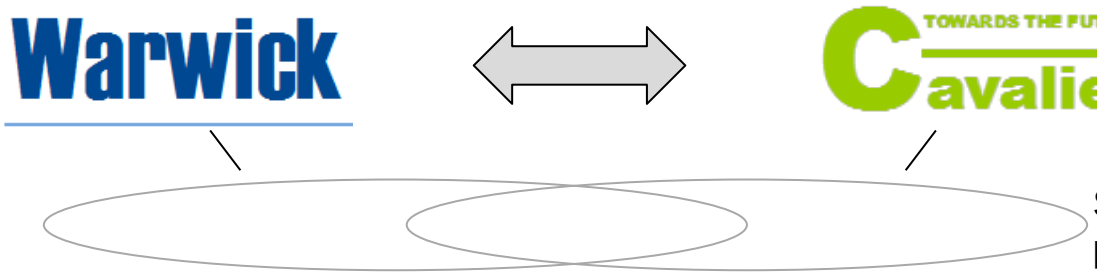
2 companies (buyer and supplier) are involved in a joint product development project.

When the product is ready for delivery, the customer must postpone some months due to production problems, but still wants to be first on the market. → *Disagreement*

Task:

Reach an agreement!

The student groups represent one of the parties



Some info is unique to each party, some is available to both.

Step 1

Plan and prepare
- Goals
- Strategy
- Tactics

→ Negotiation plan →

Step 2

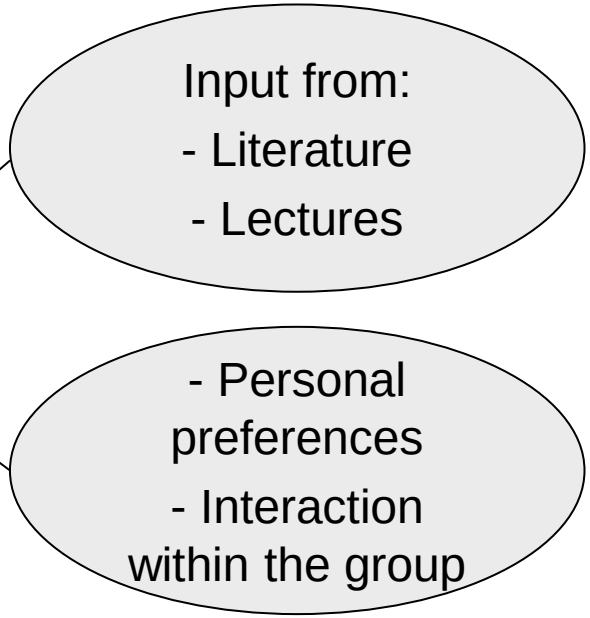
2 hour negotiation

→ Agreement (?)

Common theme – ‘open-endedness’

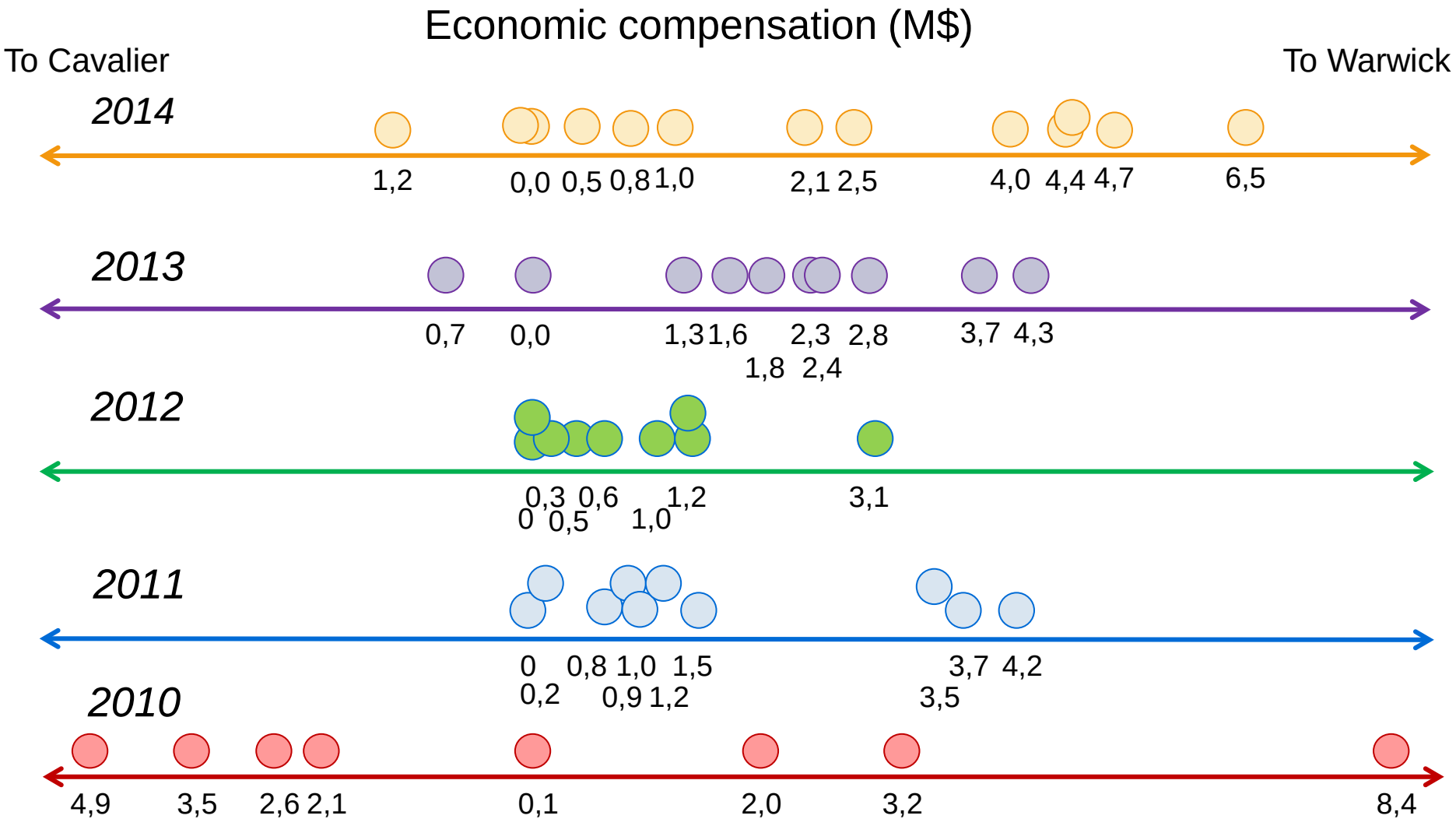
Open-ended assignments

- Basic facts and tasks are given
- Based on this, the students must make active choices:
  - Which costs
  - Which evaluation criteria
  - Negotiation goals
  - Etc…
- Therefore, they reach different conclusions



Effects of the ‘open-endedness’

Big spread in results – an example from assignment 3



Applied Skills – Connecting to the "Real World"

There is not one single correct outcome

- Assumptions and choices have to be done → important to:
  - Be clear about these
  - Reflect on what influence they have
  - Be able to give arguments for the suggested solution

Sensitivity analysis

- All desired data is hardly ever available
  - Must take decisions with limited information

All situations are unique

- The specific situation must guide the analysis

Contingency approach

You're never alone

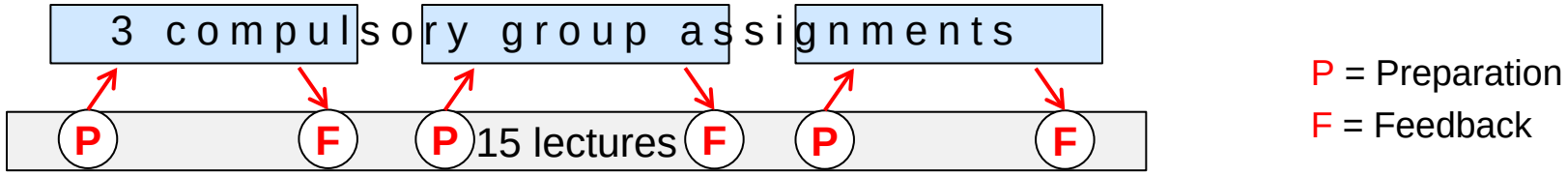
- There are always different stakeholders, often with different opinions
  - The 'objective truth' might not exist

The importance of feedback

The open-endedness is confusing to students

Feedback is given on the assignments

- To each group, concerning…
  - The assumptions they have made
  - The clarity of their argumentation
  - Their self-awareness (of weaknesses etc.)
- Collectively, during lectures, showing
  - Alternative solutions
  - How to get around certain difficulties
  - The relation between the assignment and the ‘real world’



Consultancy Project

– example from one of our courses

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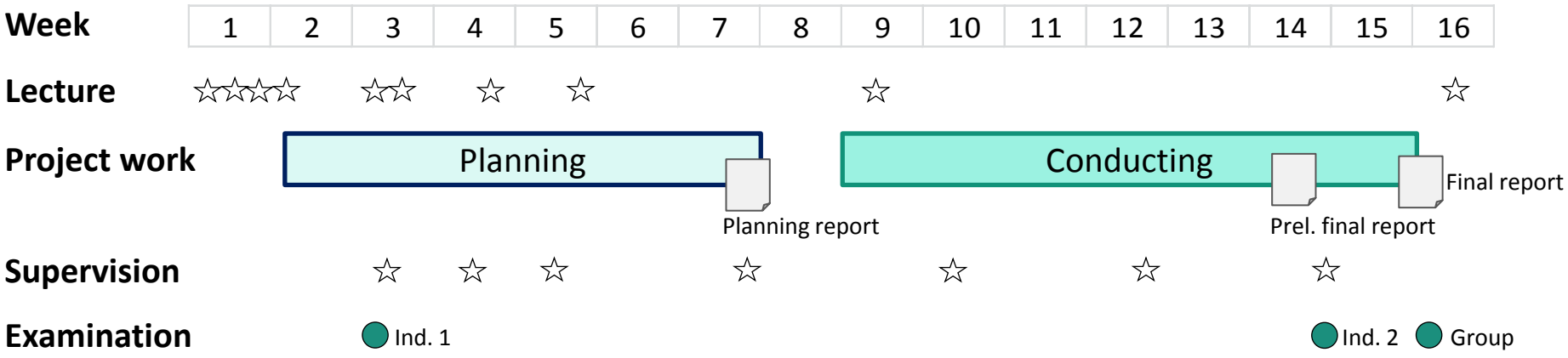
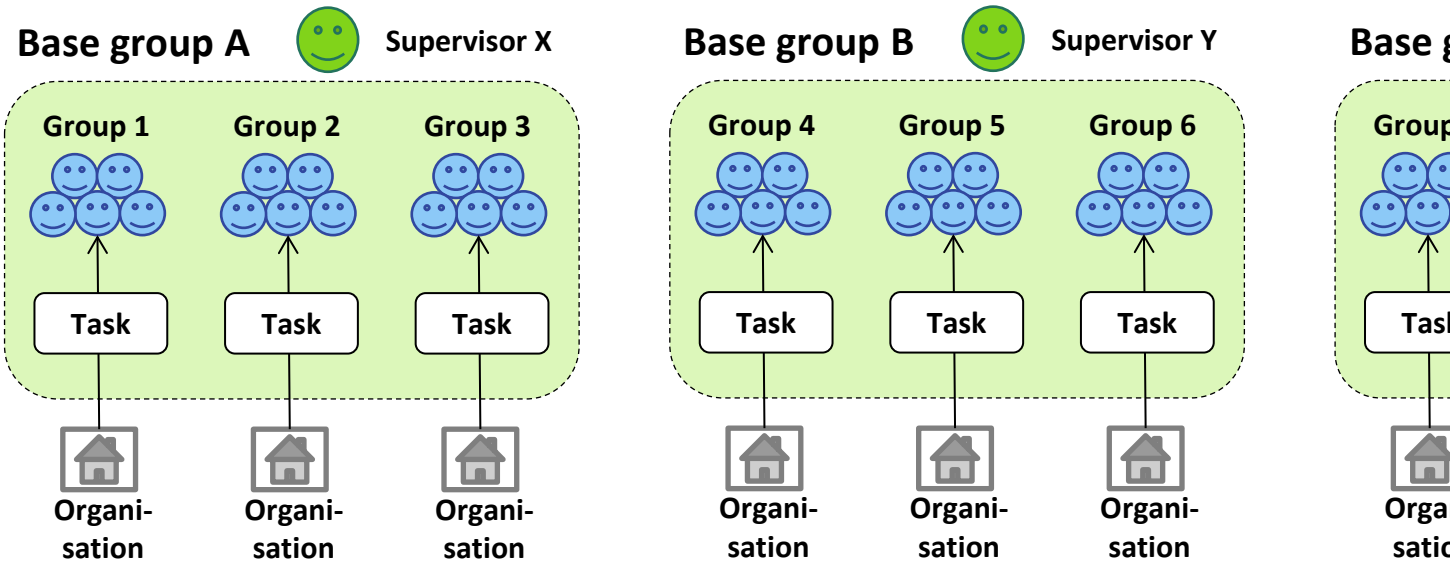
The Logistics Project Course

- 2nd year of Master level studies
- 12 ECTS credits, running over a complete semester
- 60-80 students
- Main component: A “consultancy project” with an external organization providing a task. The students are to plan and perform an investigation to come up with proposals.



The Logistics Project Course, cont.

- Supervision for each team, as well as in ”base groups”, where students also discusses each others work



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