Aalto University

CIV-E1040 Construction Management

Introduction

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Position of the course in student path

- **The course is part of common studies in Building Technology Master's program, no previous knowledge required.**
- **The course provides preliminary knowledge for other construction management courses:**
  - CIV-E2050 Operations Management in Construction (Period III)
  - CIV-E2070 Strategic Management in Construction (V)
  - CIV-E2080 Design Process Management (II, 2nd year)
  - CIV-E5000 Special Assignment in Building Technology (any time)
- **Construction Management -study path: https://into.aalto.fi/display/enciv/Study+paths**

Learning outcomes

Principles of construction industry, processes and tasks from construction management and major stakeholders point of views:

1. **Recognize main phases of a construction project, stakeholders and their tasks**
2. **Identify different construction project delivery methods and their advantages and disadvantages**
3. **Recognize different design management practices and describe situations to apply them**
4. **Calculate cost estimation for a building based on a program and design**
5. **Describe role and tasks of procurement and contracts in construction**
6. **Describe Life Cycle Analysis (LCA) -methods and principles to apply them**
7. **Explain role of construction in society and economy**
8. **Identify construction management terminology**
9. **Work in teams and make collaborative decisions, and present justified selections**

CORE CONTENT ANALYSIS	**KNOWS BEFORE** Refers to previous knowledge that is assumed.	**MUST KNOW** Refers to knowledge and skills that are absolutely necessary in order to learn new knowledge and skills.	**SHOULD KNOW** Should know includes the details and extensions to core content theories, models and principles.	**NICE TO KNOW** Nice to know supplements the core content and should know with details.
Scientific competence; what does the student know about theory.	Identify construction management terminology	Identify **project delivery methods** and describe their advantages and disadvantages Recognize targets and methods of **design management** Recognize main phases of construction project, stakeholders and their tasks	Describe role and tasks of **procurement and contracts** in construction Explain role of construction in society and economy Describe **Life Cycle Analysis (LCA)** - methods and principles to apply them	
Professional competence and skills; what the student knows and can do in practice.		Calculate **cost estimation** for building based on a program (1) and design (2)	Select appropriate **delivery method** for a project **Work in teams** and make collaborative decisions, and **present justified selections**	

What is your background in Construction Management?

Go to Presemo: https://presemo.aalto.fi/cm2021

Select the most suitable description of your background in Construction Management

1. **No previous studies or work experience**
2. **Some studies on max 1-2 courses**
3. **Studies on several courses**
4. **Studies and some work experience**
5. **Studies and many years work experience**

Learning methods

- **Teaching sessions consist of five kind of sessions:**
  1. Course introduction session (Live Zoom, recorded)
  2. Weekly Video podcasts of the theoretical content of the course
  3. Weekly reflection and discussion sessions in hall R2 (Rakentajanaukio 4) on the content of the previous Video podcast (also Zoom live access)
  4. Company guest lectures on the weekly topics
     1. *Three Zoom Live sessions (9.11 11 am, 16.11 10.15 am, 23.11 11 am)*
     2. *One campus session in hall R2 (1.12 at 13) (Also Zoom live access)*
  5. Teamwork presentation sessions (Live Zoom, not recorded)
- **Students have to attend at least in <u>three</u> of the four guest lectures.**

Assessment methods and criteria

- **Weekly assignments 35 % (0-5)**
  - All assignments have to be passed
  - WA1-2: individual; WA3-5: pair (individual if cannot find pair)
- **Teamwork about project delivery methods 25 % (0-5)**
  - Should be passed
- **Exam 40 % (0-5)**
  - Should be passed. 40 % of points needed for accepted grade 1
  - Remote exam, materials can be used
- **In addition:**
  - Student needs to attend at least three of the four guest lectures
  - Course evaluation survey needs to be fulfilled

- **Final Scale 0-5**
  - Around 40 % of maximum points needed for grade 1

Schedule

Time	Topic	Teacher	Material
Tue 2.11 10.15-12.00 Lecture 1a	10.15-10.45: Introduction to the course (Zoom live, recorded) Content session (Video podcast; WA1): Role in society & sub-sectors, construction production system, project phases, stakeholders	Antti Peltokorpi	Slides
Wed 3.11 12.15-14.00 Lecture 1b	12.15-13.00: Reflection on Lecture 1a; Introduction to teamwork (Hall R2 & Zoom Live) Content session (Video podcast): Project delivery methods	Antti Peltokorpi	Slides
Tue 9.11 10.15-12.00 Lecture 2a	10.15-10.45: Reflection on Lecture 1b (Hall R2 & Zoom Live) 11.00-12.00: Company presentation: Project delivery methods, Juho-Kusti Kajander, Boost Brothers (Zoom live)	Antti Peltokorpi; Juho-Kusti Kajander, Boost Brothers	Slides
Wed 10.11 12.15-14.00 Lecture 2b	Content session (Video podcast; WA2): Design management	Antti Peltokorpi	Slides
Tue 16.11 10.15-12.00 Lecture 3a	10.15-12.00: Company presentation: Conceptual estimating and steering customer, Ari Pennanen, Haahtela (Zoom live)	Ari Pennanen, Haahtela	Slides
Wed 17.11 12.15-14.00 Lecture 3b	12.15-12.45: Reflection on lecture 2b (Hall R2 & Zoom Live) Content session (Video podcast): Cost estimating	Antti Peltokorpi	Slides
Tue 23.11 10.15-12.00 Lecture 4a	10.15-10.45: Reflection on Lecture 3b (Hall R2 & Zoom Live) 11.00-12.00: Company presentation: Cost estimating, Henrik Hassinen, Tocoman (Zoom live; WA3)	Antti Peltokorpi; Henrik Hassinen, Tocoman	Slides
Wed 24.11 12.15-14.00 Lecture 4b	Content session (Video podcast; WA4): Life-cycle analysis, Quality, Health & Safety	Antti Peltokorpi	Slides
Tue 30.11 10.15-12.00 Lecture 5a	10.15-10.45: Reflection of lecture 4b (Hall R2 & Zoom Live) Content session (Video podcast; WA5): Procurements & Contracts	Antti Peltokorpi	Slides
Wed 1.12 12.15-14.00 Lecture 5b	12.15-12.45: Reflection on Lecture 5a (Hall R2 & Zoom Live) 13.00-14.00: Company presentation: Procurements, Jussi Viita, T2H (Hall R2 & Zoom Live)	Antti Peltokorpi; Jussi Viita T2H	Slides
Tue 7.12 10.00-12.00	Team work presentation session A	Students present	
Wed 8.12 12.00-14.00	Team work presentation session B	Students present	
Mon 13.12 13.00-16	Remote exam I		
tbd	Remote exam II		

Material

- **Lecture presentations and reading materials**

- **If you are interested to read more:**
  - Frank Harris, Ronald McCaffer with Francis Edum-Fotwe. *Modern Construction Management*, 7th Edition, Wiley (Aalto E-book). Chapters:
    - *2 Quality management (22 p.)*
    - *8 Project procurement (33 p.)*
    - *9 Estimating and tendering (23 p.)*
    - *13 Economic assessments (22 p.)*

Other material (not needed in exam)

- **General conditions for building contracts (YSE 1998)**
- **Common BIM Requirements (2012): Series 7: Quantity take-off (https://buildingsmart.fi/en/common-bim-requirements-2012/)**

Finnish material:

- **Kankainen & Junnonen. Rakennuttaminen. Rakennustieto.**
- **Junnonen. Sopimusten hallinta. Suomen Rakennusmedia Oy.**
- **Talonrakennushankkeen kulku. RT-kortti. Rakennustietosäätiö.**
- **Hankkeen johtamisen ja rakennuttamisen tehtäväluettelo. Rakennustietosäätiö.**

Course workload

Workload in total 124 hours:

- **Lectures: 33 h (11 x 2 = 22 h contact time, 11 h study time)**
- **Teamwork: 18 h**
- **Weekly assignments: 25 h**
  - 5 h per each
- **Exam preparation: 45 h**
- **Exam: 3 h**

“Construction as a production system to transform many inputs into an integrated and unique output by managing and coordinating several production modes from processes to project”

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