

## Capstone projects at NTU-CE



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Chair and Vice-chair

Dept of Civil Engineering

National Taiwan University



### Five capstone projects at NTU-CE since 2010

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Semester	Project topic	Site	Number of students
Fall 2010	Mountain cableway	Sitou Forest	16
	Reservoir sedimentation countermeasures	Wushe Reservoir	14
Spring 2011	New Humanities Building	NTU Campus	6
Spring 2012	Flood monitoring bridges	Laonong River	16 (+7 MSc students)
	Student space	NTU-CE Dept building	14

Optional capstone courses attract approx. 30 students per year (about 30 % of graduating class)



Design sedimentation countermeasures  
for Wushe Reservoir





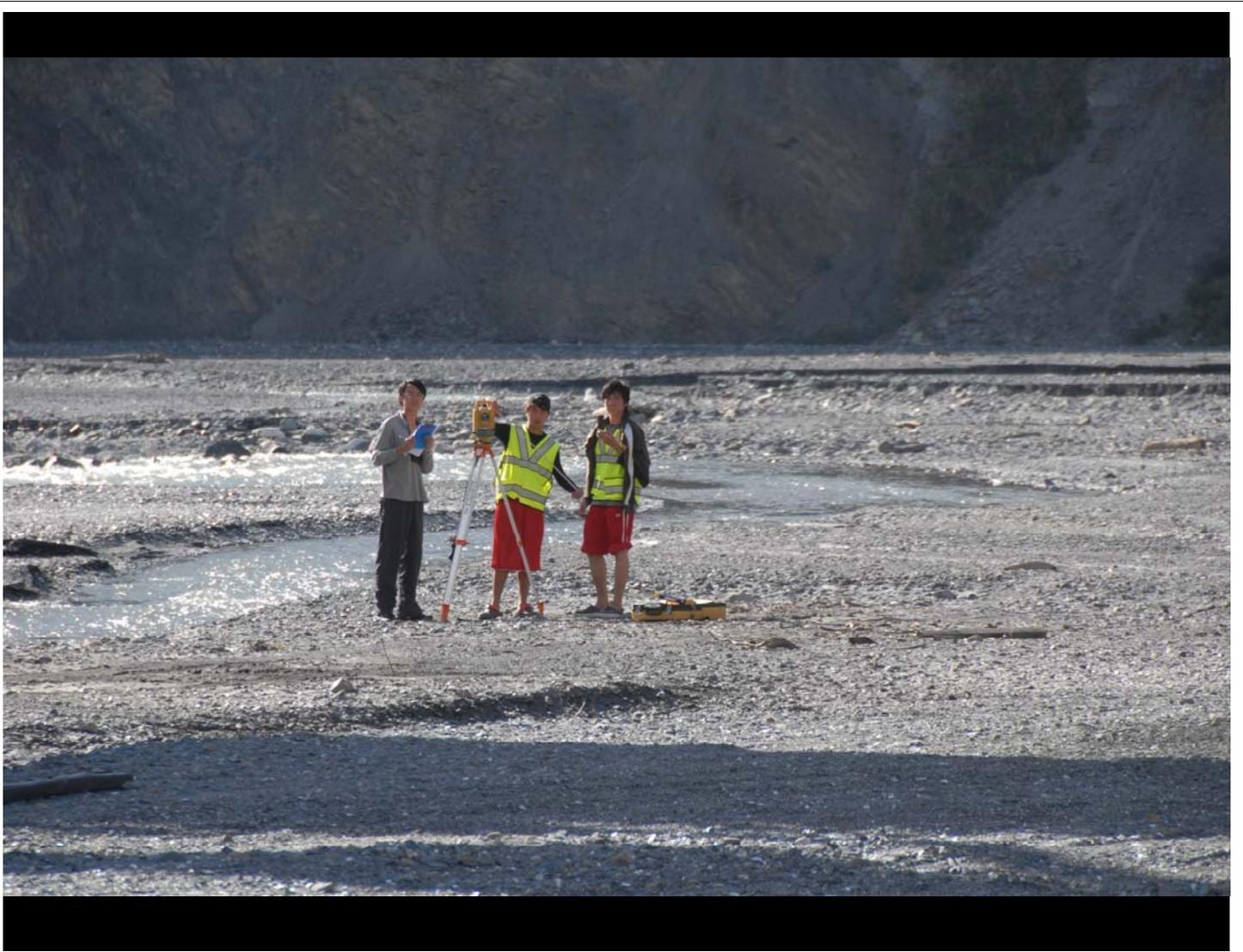
## Task 1. Alternative Strategies

代號	方法	Slowing	Halting	Reverse Sediment
A	增建上游攔砂壩	0	X	X
B	後方清淤	X	X	0
C	排砂道(水庫改建)	X	X	0
D	集水區水土保持	0	X	X
E	增建排洪排砂隧道	0	X	0

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## Fall 2010: Cableway

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Design a cableway system for  
Sitou Forest









## Two models for the involvement of professional experts

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	Cableway	Reservoir
Expert guidance	Maximal (Step by step)	Minimal (Final jury)
Professional consulting engineers	Involved (mentors)	Not involved (competitors!)
Foreign experience	UCLouvain, Belgium	MIT, USA

## Poster announcements for Spring 2012 capstone projects



國立交通大學 100 週年紀念 慶祝系列  
土木工程設計實務  
CIVIL ENGINEERING CAPSTONE CHALLENGE  
2012.2-2012.5

**課程說明**  
1. 本課程係由土木系各系所師生共同設計，旨在提供學生一個展示其專業技能、團隊合作及解決實際工程問題的機會。課程內容包括：工程設計、施工管理、團隊合作、溝通技巧、報告撰寫等。學生將以小組形式，針對一個實際工程問題進行設計、施工及評估。課程將由資深工程師及教授指導，並提供必要的資源及設備。課程將於 2012 年 2 月開始，為期 10 週。歡迎有興趣之學生踴躍報名參加。

**土木系專業技能競賽改善計畫**  
Improving professional skills competition for civil engineering students

**草蓆溪洪水監測與警覺橋樑之結構設計**  
Structural Design of Flood Monitoring and Warning Bridges for Caotex River

**報名方式**  
1. 報名日期：2012 年 1 月 10 日至 1 月 20 日  
2. 報名地點：土木系辦公室 (100 號)  
3. 報名資格：土木系各系所學生  
4. 報名費用：無  
5. 報名電話：(02) 2790 6111 轉 2111  
6. 報名網址：http://www.civil.ntu.edu.tw

## Spring 2012: Bridges



Design flood monitoring bridges  
for Laonong River

## Capstone 1: Laonong River bridge design

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## Capstone 1: Laonong River bridge design

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## Capstone 1: Laonong River bridge design

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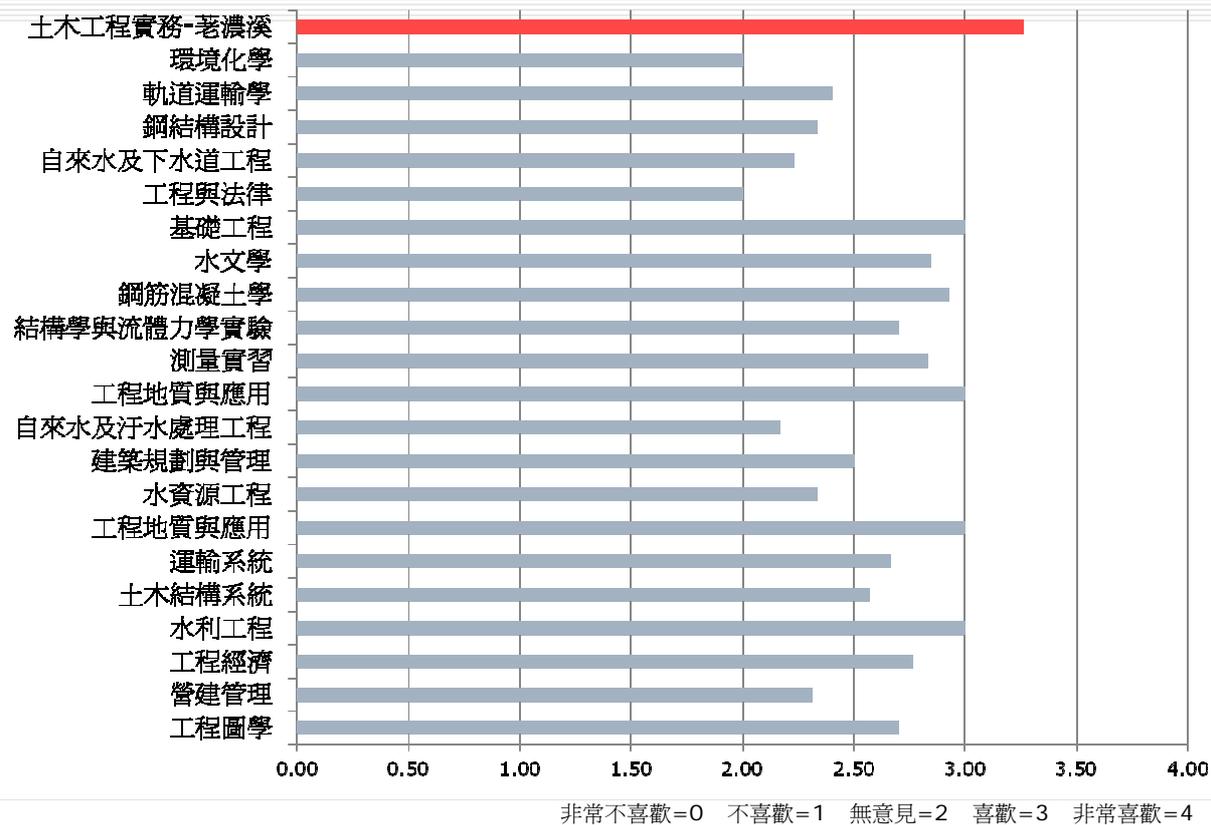


## Capstone 1: Laonong River bridge design

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## Student evaluations



## Spring 2012: Student space



Redesign three laboratories into a great space for student activities

## Capstone 2: Student space redesign

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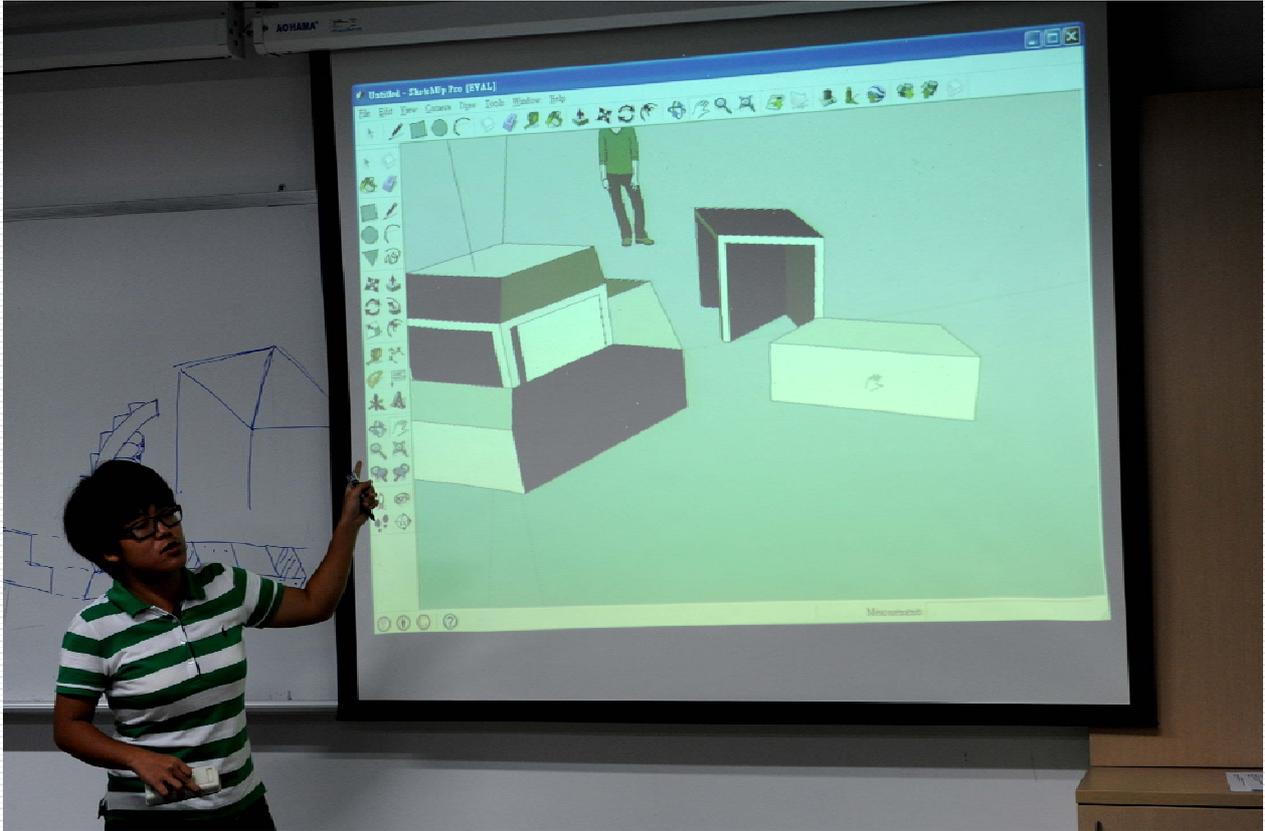
## Capstone 2: Student space redesign

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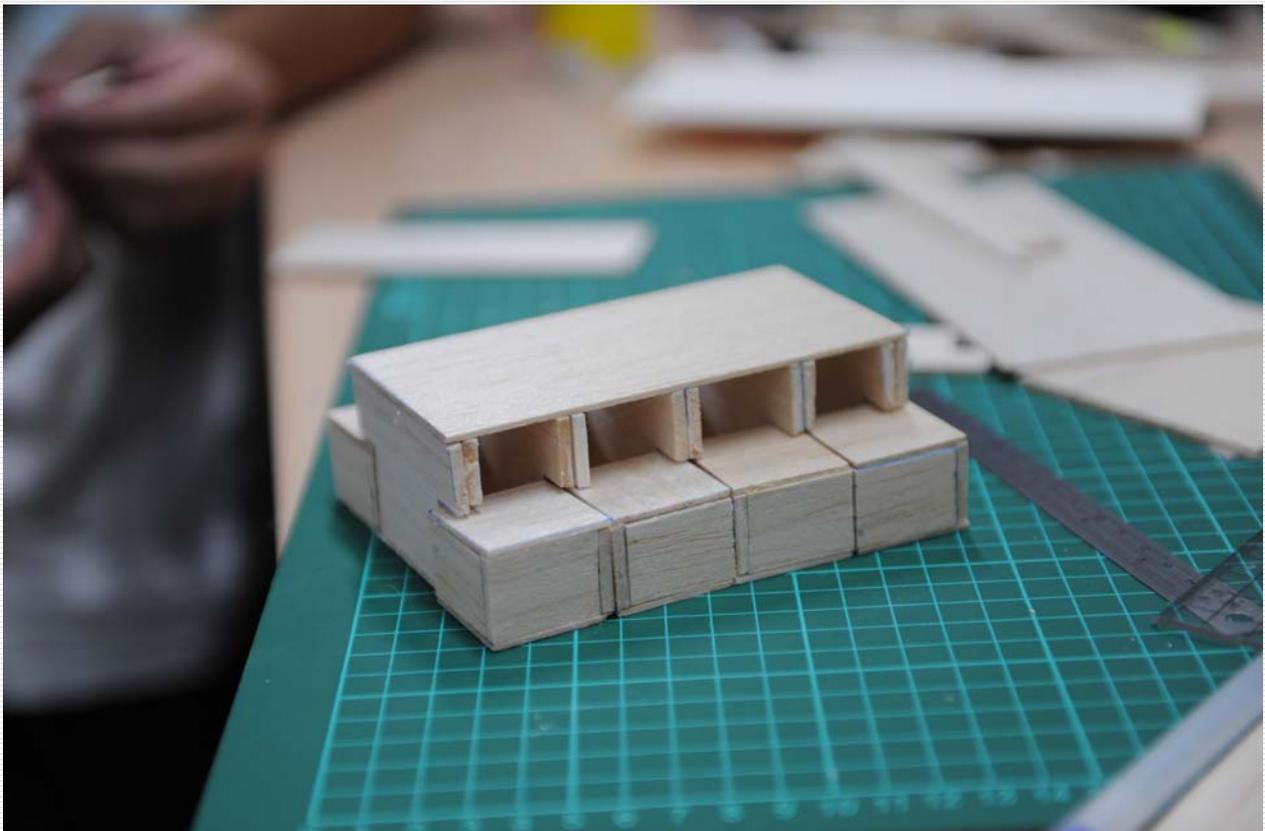
## Capstone 2: Student space redesign

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## Capstone 2: Student space redesign

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## Capstone 2: Student space redesign

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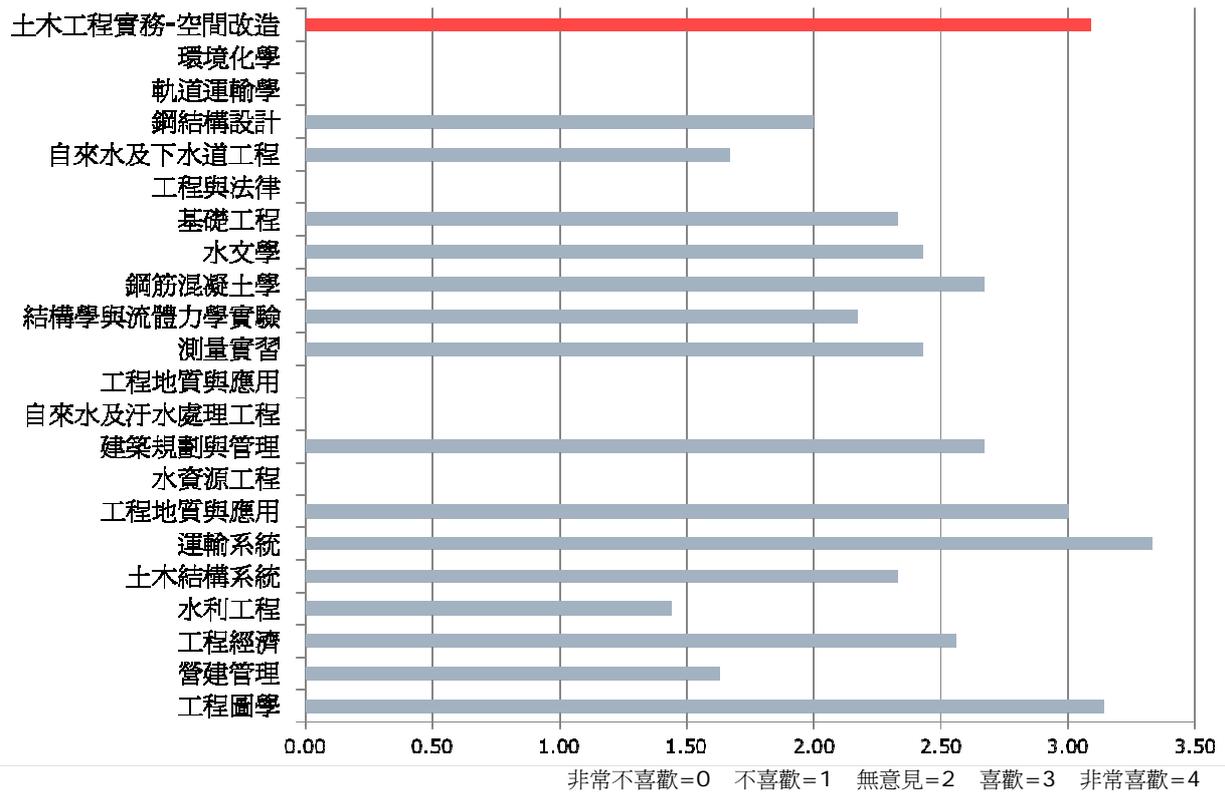


## Capstone 2: Student space redesign

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## Student evaluations



## Capstone project aim

### Original version (course planning, Spring 2010):

Give last year students a realistic engineering design experience, producing a report that integrates their accumulated knowledge.

### Revised version (Spring 2012):

Give 3rd and 4th year students a challenging design-build experience, transforming their knowledge into working prototypes.

## How did you like/dislike the content of the capstone project?

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Project	Like / like very much	Neither like nor dislike	Dislike
Cableway	12	3	1
Reservoir	14	0	0
Bridge	23	0	0
Student space	12	2	0

## How did you like/dislike the teaching approach of the course?

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Project	Like / like very much	Neither like nor dislike	Dislike
Cableway	8	5	3
Reservoir	14	0	0
Bridge	17	6	0
Student space	6	8	0

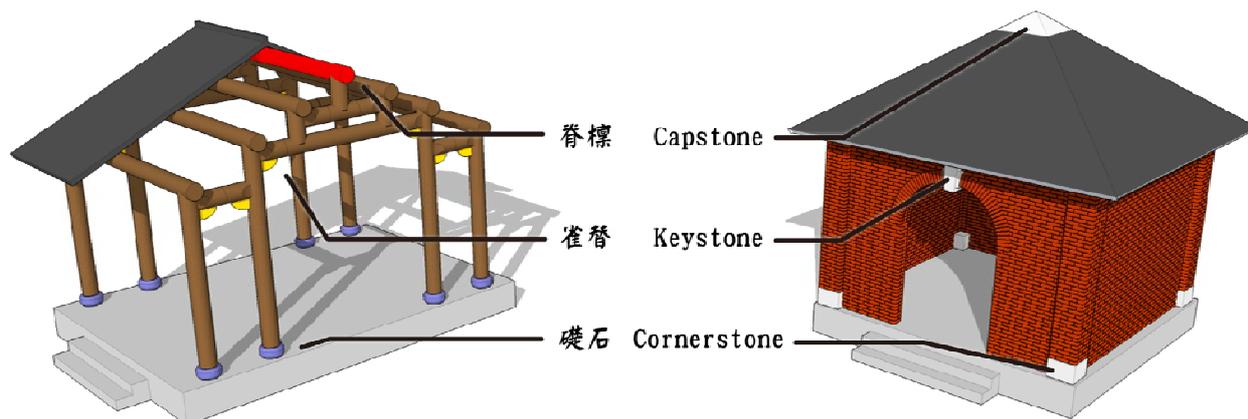
## Foreign capstone experience (Technical University of Denmark)

Students' ability and motivation to pursue capstone projects are limited if they encounter such projects for the first time in their final year.

Ability and motivation for hands-on design and teamwork needs to be cultivated earlier via cornerstone and keystone projects.



## Sequence of design projects at NTU-CE



Design project	Targeted students	Relation to disciplinary courses
Cornerstone	First year	Before
Keystone	Second year	During
Capstone	Third/Fourth year	After