HOW CAN YOU MAKE A SUPER LINK?

INSTRUCTOR
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DESCRIPTION

1: Super link

A super link is a structure that connects everything.

2: HongKong

Hong Kong is a city with extremely high density and highly mixed programs. Multi-dimensional connections between buildings, public space, transportation facilities, etc., are often seen in the city, facilitating people's travel and making urban space rich and exciting.

The Central Mid-Levels Escalator links the urban space from Queen's Road Central to Conduit Road. The extensive pedestrian bridge system " Central Elevated Walkway " spanning Admiralty, Central, and parts of Sheung Wan, built by the Hong Kong Government and various developers.

In the process of urban renewal, the existing urban complex is not easy to change. Adding multi-functional connection structures may be an effective way to improve the situation. This studio will focus on the connection space in Hong Kong and try to find new ways of intervention through cutting-edge design and research methods.

3: Design Method

Closely connected to the research of FUN Lab, the parametric design will be used as the core design method of this studio. Students will learn the rule-based design method and use the toolboxes to create their design prototypes based on mathematics, geometry, algorithms, structural principles, etc.

4: Connect Research to Design

The relationship between research and design has always been the focus. How to make the study become the driving force of the design is a key issue of this studio. Students will focus on how to transfer and quantify various aspects of research into specific mathematical parameters. Parameters are the key to connecting the research and the design prototype.

PROCESS

1: 6 Teams, 6 Territories, 12 Prototypes, 12 Individual Projects

> **6 Teams**
> In the first semester, 12 students will be divided into 6 groups.
>
> **6 Territories**
> Each group will choose a site from HK to analyze.
>
> **12 Prototypes**
> Every student will develop one prototype, 12 prototypes in total.
>
> **12 Individual Projects**
> In the Second semester, everyone will work individually.
> Students will choose one site from the six and apply their prototype to generate the design.

2: Research Tasks

Semester One

1. Prototype (4 weeks)

1: Structural System
2: Geometrical System
3: Material System
4: Construction System

2. History and Typology of linkage (2 weeks)

Conduct typological research and historical research on this topic.

3. Site Analysis (4 weeks)

1: Study existing site conditions,
including program distribution, traffic flow, activities throughout a day, a week, etc.
Find problems and potentials.
2: Give a strategic proposal about how you want to make it better.
No design is needed, only diagrams and reference images.
3: Make study models.

3: Design Tasks

3.1: Semester One

1. Prototype design (4 weeks)

2. Test the Prototype (4 weeks)

Test the prototype by applying it to different scales under different constraints.
Design siteless projects from furniture (or smaller) to the pavilion (or larger).
Make sure the prototype is flexible and open enough to accommodate the different situations.

3.2: Semester Two

1. **Concept Design Model (4 weeks)**
   Apply the prototype on site, generate the concept design model.
2. **Parameters (2 weeks)**
   Transform all the data and issues from the previous research into parameters,
   connect the research with the prototype.
3. **Final Design (8 weeks)**
   Generate design variations from the prototype
   and choose the final proposal according to specific standards.
4: **Final presentation (3 weeks)**
   Present your work in every possible way.
5: **Technical Report (3 weeks)**
   Develop a model of the construction system,
   and a comprehensive report regarding its technical issues.
6: **Process Portfolio**
   Evolution of the project

4: Some Aspects need to consider

1: **Connectivity**
2: **Program distribution**
3: **Green space**
4: **Ways of use at different times of the day, week, month, year**
5: **Construction system**
6: **Sustainability**
7: **Placemaking**

5: Tools

Some computer skills might be helpful.
Through the process, students will learn some of the following software.

Rhino
Grasshopper
Karamba3D
RhinoVAULT
Kangaroo
Ameba
ArchiCAD

6: Collaboration

This studio will collaborate with the studio lead by professor Jingxiang Zhu.

7: Some Online Resources:

Mathworld
https://mathworld.wolfram.com/

Zhun Zhang
https://www.bilibili.com/video/BV1ai4y1A7E9?from=search&seid=1896191370698660791

Klaus Bollinger
https://www.youtube.com/watch?v=PNVuR3jt4II
https://www.youtube.com/watch?v=pXIU570Nj-0

Gilles Retsin
https://www.youtube.com/watch?v=Jtvr3fQi7HQ
https://www.bilibili.com/video/BV1vy4y1S7hH?from=search&seid=3355642125940747695

Cecil Balmond
https://www.youtube.com/watch?v=Y8qJtamN7yM

Philip Block
https://www.youtube.com/watch?v=a4NJCuJ1geg
https://www.youtube.com/watch?v=1Lk8wihM22s
https://www.youtube.com/watch?v=1Lk8wihM22s&list=RDCMUCfE4Y-61_QO-JYg0WnT0n6Q&index=1

Form and Forces
https://www.youtube.com/watch?v=r-tG68WvNDM

Manuel Delanda
https://www.youtube.com/watch?v=5HSMTUZ64bY
https://www.youtube.com/watch?v=1xJwZcpDnoY
https://www.youtube.com/watch?v=u3aE3Z6llMc
https://www.youtube.com/watch?v=J-I5e7ixw78

Architecture and Complexity Conference
https://www.youtube.com/watch?v=TZ2Zv6lMcwQ&list=PLI1nDzeohfnk05dTBOxamSebSuZ3PCbl3&index=1
https://www.youtube.com/watch?v=MFWjfyNaYMY&list=PLI1nDzeohfnk05dTBOxamSebSuZ3PCbl3&index=2
https://www.youtube.com/watch?v=tOQrD0PCIFs&list=PLI1nDzeohfnk05dTBOxamSebSuZ3PCbl3&index=3
https://www.youtube.com/watch?v=inBZXevhEuY&list=PLI1nDzeohfnk05dTBOxamSebSuZ3PCbl3&index=4
https://www.youtube.com/watch?v=5KhO3UeXNj4&list=PLI1nDzeohfnk05dTBOxamSebSuZ3PCbl3&index=5
https://www.youtube.com/watch?v=Ex1Cl3k3do8&list=PLI1nDzeohfnk05dTBOxamSebSuZ3PCbl3&index=6
https://www.youtube.com/watch?v=tkdbWXmKPtY&list=PLI1nDzeohfnk05dTBOxamSebSuZ3PCbl3&index=7

Rob Tullis (Place Making)

https://www.youtube.com/watch?v=gJn8obSVJNk thought

https://www.youtube.com/watch?v=LN8eLZ4xno0 Form

https://www.youtube.com/watch?v=ws_MaSTOXs0 Activity

https://www.youtube.com/watch?v=VNX5uGU1T5k sense of place

DELIVERABLES

For the first semester,

Midterm Review 1

10 portrait A2 panels (per group),
One site model per group,
Several study models regarding the prototype (per student),
One PPT (per group)

Midterm Review 2

10 portrait A2 panels (per group),
One site model per group,
Several study models regarding the prototype (per student),
One large scale installation regarding the prototype (per student)
One PPT (per group)

For the second semester,

Midterm review 3

10 portrait A2 panels (per student) ,
One site model (per student),
Several study models regarding the variations of the concept design (per student),
One large scale model of the WIP final project (per student),
One PPT (per student)

Final Review

10 portrait A2 panels (per student) ,
One site model (per student),
Several study models regarding the variations of the concept design (per student),
One large scale model of the final project (per student),
One PPT (per student)

Technical Report

Technical report A3x 30 pages

Process Portfolio

Process Report A3x 30 pages
Evolution of the project

LEARNING OUTCOME

1. Ability to create architectural designs that satisfy both aesthetic and technical requirements.
2. Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences.
3. Knowledge of the fine arts as an influence on the quality of architectural design.
4. Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scal
5. Understanding of the methods of investigation and preparation of the brief for a design project.
6. Ability to generate complex design proposals showing understanding of current architectural issues, originality in the application of subject knowledge and, where appropriate, to test new hypotheses and speculations.
7. Ability to evaluate and apply a comprehensive range of visual, oral and written media to test, analyse, critically appraise and explain design proposals.
8. Awareness of the theories and methods of inquiry that seek to show the relationship between human behaviour and the physical environment.
9. Understanding of the basic principles of sustainable development and architects' responsibilities with respect to the social, economic and environmental sustainability in architecture and urban design.
10. Understanding of the principles of structural behaviour in withstanding gravity and lateral forces, and the range and appropriate applications of contemporary structural system.
11. Ability to assemble a comprehensive programme for an architecture project, including:
12. Ability to respond to natural and built site characteristics in the development of a programme and design of a project.
13. Ability to work cooperatively with others in a team setting. Ability to discuss architectural ideas with non-architects, to listen objectively to their opinions and to consider those opinions in designing.
14. Ability to speak and write effectively on subject matters contained in the professional curriculum in English.
15. Ability to use appropriate representational media, such as drawings, models, diagrams, charts, including computer technology, to convey essential design information at each stage of the programming and design process.

ARCH 5110_ADVANCED ARCHITECTURAL DESIGN STUDIO I

ASSESSMENT SCHEME

1_Midterm Reviews (30%)
1. Midterm Review 1, October (10%)
2. Midterm Review 2, December (10%)
3. Midterm Review 3, March (10%)

2_Final Review (50%)
1. Final Project Presentation, May (50%)

3_Project Book (20%)
1. Project Book to have three parts: Position/ Technology / Process
2. To be started at the beginning of the year and reviewed throughout.

COURSE FORMAT

1_Group Work
1. Students are allowed to work in groups only the first semester.
2. The second semester will be all individual projects.

2_Teaching Days
1. The Design Studio will be taught two days a week Monday and Thursday 13:30 to 18:00

3_Studio Spaces
1. Each studio will have their own space, accommodating a desk for each student
2. Layouts will be issued at the start of the academic year

FIELD TRIP

At present all foreign trips are suspended until further notice. If the COVID-19 situation improves, the school will inform the Design Studio tutors.

REQUIRED READINGS

On Growth and Form
D'Arcy Wentworth Thompson, 1992, Dover Publications

Origins of Form
Williams, Christopher, 1995,

Architectural Geometry
Helmut Pottmann / Andreas Asperl / Michael Hofer / Axel Kilian,   2007 , Bentley Institute Press

Tilings and Patterns
Branko Grunbaum / G. C. Shephard, 1989, W H Freeman & Co (Sd)

Informal
Cecil Balmond, 2002, Prestel

The Function of Form
Farshid Moussavi, 2009, ACTAR, Harvard Graduate School of Design

Digital Culture in Architecture: An Introduction for the Design Professions
Antoine Picon, 2010, Birkhäuser Architecture

Ornament: The Politics of Architecture and Subjectivity (Architectural Design Primer)
Antoine Picon, 2014, Wiley

Form and Forces__ Designing Efficient, Expressive Structures
Edward Allen / Wacław Zalewski / Nicole Michel / Boston Structures Group, 2009, John Wiley and Sons Ltd

The Art of Structures
Aurelio Muttoni, 2011, EPFL Press

Architectures of time__ Toward a Theory of the Event in Modernist Culture
Sanford Kwinter, 2002, MIT Press

A thousand years of nonlinear history
Manuel De Landa, 2000, Zone Books

IMPORTANT NOTE TO STUDENTS

Attendance
Class attendance is required in all courses. For an excused absence, the instructor must be notified and presented with documentation of illness or personal matter. Please note: **Three (3)** or more unexcused absences may result in a failing grade for the course.

Academic Honesty
Attention is drawn to University policy and regulations on honesty in academic work, and the disciplinary guidelines and procedures applicable to breaches of such policy and regulations. Details may be found at: http://www.cuhk.edu.hk/policy/academichonesty/. With each assignment, students may be required to submit a statement that they are aware of these policies, regulations, guidelines, and procedures.

Student Work
Submission of studio documentation must be complete and correctly formatted. Missing or incomplete submission of the documentation folder will result in the grade for the course being withheld. This will prevent registration for the following term or delay graduation. In addition, a grade deduction of *one letter grade* will be made.

SCHEDULE

Important Dates

SEMESTER 1
1_Midterm Reviews (30%)
Midterm Review 1, 25-29 October 2021 (10%)
Midterm Review 2, 06-10 December 2021(10%)

SEMESTER 2
Midterm Review 3, 01-04 March 2022 (10%)

2_Final Review (50%)
Final Project Presentation, 03-06 May 2022 (50%)

3_Project Book (20%)
Project Book to have three parts: Position/ Technology / Process, 13 May 2022 (20%)

ARCH 5110_ADVANCED ARCHITECTURAL DESIGN STUDIO I

<u>**Term 1: 6 September 2021 (Mon) – 4 December 2021 (Sat)**</u>

	WEEK 01	
06.09	**INTRODUCTION**	**STUDIO SELECTION**
09.09		Results Announced

	WEEK 02	
13.09		
16.09		

	WEEK 03	
20.09		
23.09		

	WEEK 04	
27.09		
30.09		

	WEEK 05	
04.10		
07.10		

	WEEK 06	
11.10		
14.10		Chung Yeung Festival

	WEEK 07	
18.10		
21.10		

	WEEK 08	
25.10 – 29. 10		**MIDTERM REVIEW 1 (10%)**

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WEEK 09		
01.11		
04.11		

WEEK 10		
08.11		
11.11		

WEEK 11		
15.11		
18.11		

WEEK 12		
22.11		
25.11		

WEEK 13		
29.11		
02.12		

WEEK 14		
06.12 – 10.12		**MIDTERM REVIEW 2 (10%)**

Term 2: 10 January 2022 (Mon) – 23 April 2022 (Sat)

WEEK 15 (2022)		
10.01		
13.01		

WEEK 16		
17.01		
20.01		

WEEK 17		
24.01		
27.01		

WEEK 18		
31.01 – 05.02		**Lunar New Year Vacation**

WEEK 19		
07.02		
10.02		

WEEK 20		
14.02		
17.02		

WEEK 21		
21.02		
24.02		

WEEK 22		
01.03 – 04.03		**MIDTERM REVIEW 3 (10%)**

WEEK 23		
07.03		
10.03		

WEEK 24		
14.03		
17.03		

WEEK 25		
21.03		
24.03		

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	WEEK 26	
28.03		
31.03		

	WEEK 27	
04.04		
07.04		

	WEEK 28	
11.04		
14.04		

	WEEK 29	
18.04		**Easter Monday**

	WEEK 30	
25.04		
28.04		

	WEEK 31	
02.05		**The day following Labour Day**
03.05-06.05		**FINAL REVIEW (50%)**

	WEEK 32	
09.05		
13.05		**PROJECT BOOK (20%)**
		Project Book to have three parts: Position/ Technology / Process