

BUS3680J, Architecture, Sustainability and the City

Teaching Assistant in FA2023, Advisor: [Prof. Aline Chevalier](#)

1 Course overview

The aim of this course is to provide an overview of the complex and intricate mechanisms at work in building our cities. We will examine various forms of existing or envisioned urban settlements from different sizes, times, cultures, and locations. Doing so, we will gradually introduce fundamentals in history, theory and practice of architecture, urban design and urban planning. While exploring the different theoretical and conceptual frameworks in which cities are constructed, we will focus on the various forces that determine their sustainability.

2 Logistics

2.1 Teaching team

- Instructor: Aline Chevalier (aline@sjtu.edu.cn)
- Teacher Assistant: Jiayuan Rao (jy_rao@sjtu.edu.cn)

2.2 Schedule

- Tuesday: 12:00 - 13:40 (DZY4-204)
- Thursday: 12:00 - 13:40 (DZY4-204)
- Office hours: Tuesday, 10:00 - 12:00 (office 442)

3 Course content and objectives

3.1 Course objectives

Urban forms and transport are the objects of society's largest investments and represent the biggest sources of energy consumption. Therefore, this is vital for anyone involved in its technological design and infrastructural development to acquire a global understanding of the forces and agents at work in the physical evolution of our cities. To this end, attention will be drawn to various topics where outcomes are influencing the development of the built environment, these topics include: the relationship of land use and transportation planning, public investments, energy consumption, housing and employment patterns, mobility, public health and social equity. The course will cover specific sustainability topics, such as: energy and water consumption, waste management and recycling, as well as broad concepts such as liveability, walkability, bikeability, heritage conservation, commoning and smart city.

3.2 Detailed course content

In the light of contemporary problems and opportunities in sustainable design, students will develop a critical approach to the current state and the envisioned futures for our cities. More specifically, students will be asked to develop case studies on specific spaces, places, urban forms or modes of transport, and to assess the sustainability of their study object according to multiple standards presented in the lectures. By bringing those inputs into group discussions, they will actively contribute to a better understanding of the environmental, economical, sociocultural and aesthetic impacts of architecture and urbanism.

Students will leave the course with a greater awareness of the challenges posed by urban sustainability. The resulting global understanding of how urban forms correlate with social dilemmas and individual behaviours is vital to their future professional pursuits as it will provide them keys to develop effective design and conceptual solutions to human-centred problems without losing sight of environment, culture and society.

3.3 Course materials

The following references may be used by students to complete their assignments and find information relevant to the course.

- R.T. LeGates and F. Stout (2020) The City Reader - 7th edition. Routledge, ISBN: 9780367204792
- M. Miles, T. Hall and I. Boredn (2003) The City Cultures Reader - 2nd edition. Routledge, ISBN: 9780415302449
- S.M. Wheeler and T. Beatley (2014) The Sustainable Urban Development Reader - 3rd edition, Routledge, ISBN: 9780415707763
- R. Therivel and G. Wood (2018) Methods of Environmental and Social Impact Assessment, 4th Edition, Routledge, ISBN: 9781138647671
- H.M. Farley and Z.A. Smith (2020) Sustainability: If It's Everything, Is It Nothing?, 2nd Edition, Routledge, ISBN: 9780815357162
- R. Wright (2005) A Short History of Progress, Mass Market Paperback, ISBN: 10 192088579X
- D. Kelbaugh (2002) Repairing the American Metropolis, UW Press, ISBN: 9780295982045
- N. Taylor (1998) Urban Planning Theory Since 1945, Sage Publications
- P. Hall (2014) Cities of Tomorrow: An Intellectual History of Urban Planning and Design Since 1880, 4th Edition, Blackwell Publishing Ltd.
- A. Giddens (1991) The Consequences of Modernity, Polity Press
- F. Léautier (2006) Cities in a Globalizing World Governance, Performance, and Sustainability, The World Bank
- M. Douglass, K.C. Ho, and G.L. Ooi (2008) Globalization, the city, and civil society in Pacific Asia: the social production of civic spaces, Routledge
- R. Bruegmann (2005) Sprawl: A compact history, The University of Chicago Press
- D. Banister (2005) Unsustainable Transport: City Transport in the New Century, Routledge

4 Student evaluation

4.1 Grading policy

The final average will be composed of three “sub-grades”, apportioned as follows:

- Class attendance and participation to discussions: 20%
- Quizzes (based on weekly reading and videos) and exercises: 35%
- Project (Poster and Exhibition) - Sustainability assessment case study: 45%

4.2 Late Policy

For every assignments, a Late Policy will be applied as follows:

- Every submission exceeding the due time will receive a 25% penalty per day.
- Every submission of an essay must go through Turnitin.
- No submission accepted by email.
- Any submission not fully related to the topic of the week will be rejected.

4.3 Attendance Policy

Since the course is discussion-based, class attendance in person is mandatory.

- Online attendance will not count as actual class attendance unless instructors have been informed before hand and agreed that the student may be exempt from physical attendance due to special circumstances.
- Additionally, according to UM-SJTU JI regulations, class attendance is required. Attendance Policy will be applied as follow:
- To quote the JI policy on leave/missed classes: “An advance request for leave of absence is required if the student cannot attend the class due to illness or other reasons. Absence without approval will be regarded as skipping classes.”
- “A note that a student visited a medical facility is not a sufficient excuse for missing an assignment. The note must specifically indicate that the student was incapable of completing an assignment due to medical problems and that this condition was sudden enough that it was impractical to contact the instructor in advance.”
- Each student is responsible for all material covered in class, including lecture content, and schedule and policy changes.

4.4 Honor code

Each summary and case study must be a unique piece of work based on original research and personal understanding. The reuse of another student work or the reproduction of an existing investigation will automatically be sanctioned. When using parts of the course, textbooks or any other material,

sources must be clearly stated. Following the JI Honor Code Policy, any form of plagiarism will result in severe penalties.

5 General guidelines

To insure proper communication between the students and the teaching team, it is strongly recommended to observe the following guidelines:

- In the event of special circumstances that would greatly affect their work, students are expected to contact the teaching team as early as possible so that a solution could be found.
- For every email related to this course please include the course code in the subject.
- Any email addressed to a TA regarding major problems, such as a grade issue, should also be sent to the instructor as a carbon copy (Cc). In the absence of a written record, any later request will be automatically rejected.

6 Course schedule

(Note that topics and content of the class discussions are subject to changes) • Week 1: An Introduction to Sustainable Urban Development

- Lecture:
- What is Sustainability?
- The paradigm of sustainability (Introduction to course material)
- Measuring sustainability (Data collection, data processing) - Class discussion:
- Ecological footprint (See section 7)
- “What Is an Ecological Footprint?” (See section 7)
- Cognitive maps
- Week 2: Environmental paradox of cities
- Lecture:
- The city: A living thing (Cities as economic engines, organisms and ecosystems)
- The raise of criticisms (Jane Jacobs, the Life of the Street and the City)
- The cost of urban sprawl (the American Dream) - Class discussion:
- “Seeing Change” (See section 7)
- “The surprising math of cities and corporations” (See section 7)
- Discussion mostly based on weekly reading and individual research □ Cognitive maps • Week 3: Transport mode choice
- Lecture:
- Automobility (Car ownership)
- Public transport (Metro, bus, taxi, auto-rickshaws)
- Transportation norms and Route choice (Land-use and employment, connectivity) - Class discussion:
- “The 15-minutes city” (See section 7)
- “Why buses represent democracy in action” (See section 7)
- “The Town-Country Magnet” (See section 7)
- “A Contemporary City” (See section 7)
- Discussion mostly based on weekly reading and individual research
- Cognitive maps (Data analysis)
- Week 5 & 6: Active transportation
- Lecture:
- Walkability (Walkscore)
- Bikeability (Copenhagenize Index, Desire lines)
- Sharing the city (Complete street, Shared space, Traffic calming, SRTS) - Class discussion:
- “How public spaces make cities work?” (See section 7)
- “New York’s streets not so mean any more” (See section 7)
- Walkscore, Copenhagenize Index (See section 7)

- “Traffic Calming”
- “Cycling for Everyone: Lessons from Europe”
- Discussion based on weekly reading and videos
- Data collection survey (Car ownership) • Week 7: Sustainable cities: An environmental perspective
- Lecture:
 - Energy consumption and Climate change (Adaptation vs. Mitigation)
 - Energy solutions (Green Architecture)
 - Waste and recycling - Class discussion:
 - “It’s our city, let’s fix it!” (See section 7)
 - “Cities are driving climate change. Here’s how they can fix it” (See section 7)
 - “What I discovered in New York City trash” (See section 7)
- Discussion mostly based on videos and personal research
- Car ownership (Data analysis) • Week 8: Sustainable cities: A human perspective
- Lecture:
 - Livability (Tactical urbanism, Active transportation, Aesthetic sustainability)
 - Commoning (Social interactions, Daily routines, Friendly cities, Placemaking) □ Public health and Social equity (Restorative environment, Green cities, Social justice) - Class discussion:
 - “How to grow fresh air” (See section 7)
 - “The surprising science of happiness” (See section 7)
- Discussion mostly based on videos and personal research
- Week 9 & 10: Sustainable cities: A cultural perspective
- Lecture:
 - Spirit of the city (History, Politics, Language, Architecture, Local economies)
 - Modern cities and urban cultures (The meaning of Urban Culture, Storytelling)
 - Architectural heritage (Building regeneration, restoration and conservation) - Class discussion:
 - “Why great architecture should tell a story?” (See section 7)
- Discussion mostly based on videos and personal research
- Neighbourhood Planning Exercise
- Project workshop
- Week 11 & 12: Economical sustainability
- Lecture:
 - The cost of happiness (Health and social cost/benefits: Gentrification, Urban sprawl)
 - Planning urban development (Projecting outcomes: Transport patterns, Real estate) □ Performance management techniques (Value of comprehensive evaluations and testing) - Class discussion:

- “The happy secret to better work” (See section 7)
- “The happy planet index” (See section 7)
- “Money as debt” (See section 7)
- Discussion mostly based on videos and personal research
- Week 13: Modern cities of tomorrow
- Lecture:
- Modernism into question (Brief history of planning theories)
- Challenges (Urban futures: Utopia vs. Dystopia)
- Smart city (In search for new standards) - Class discussion:
- Theme 1: Health/Mobility (See section 7)

“How an obese town lost a million pounds”/“What a driverless world could look like”

- Theme 2: Livability/Society (See section 7)

“Building a park in the sky”/“Why we make bad decisions”

- Theme 3: Neighborhood/Culture (See section 7)

“How to revive a neighborhood with imagination beauty and art?”/“A guerrilla gardener in south central LA”

- Discussion mostly based on videos and personal research

7 Material for assignments and discussions

Some of the material must be carefully reviewed prior to class discussions.

- Week 1:
- Calculate your eco-footprint on this website and bring it to the first class discussion:

<http://www.footprintnetwork.org/en/index.php/GFN/page/calculators/>

- Read the following article:

“What Is an Ecological Footprint?”, by Mathis Wackernagel and William Rees, in: The Sustainable Urban Development Reader - 3rd edition (2014), edited by Stephen M. Wheeler and Timothy Beatley, Routledge, ISBN: 9780415707763 (pp. 592-602).

- Week 2:
- Watch the following video prior to class discussion:

http://www.ted.com/talks/geoffrey_west_the_surprising_math_of_cities_and_corporations.html

- Read the following article:

“Seeing Change”, by Allan Jacobs, from Looking at Cities (1985), in: The Sustainable Urban Development Reader - 3rd edition (2014), edited by Stephen M. Wheeler and Timothy Beatley, Routledge, ISBN: 9780415707763 (pp. 603-608).

- Week 3:
- Watch one of the following video prior to class discussion:

1 - https://www.ted.com/talks/carlos_moreno_the_15_minute_city#t-460763

(Video available on Canvas: VR368 >Files > Material for discussion >Videos)

2 - https://www.ted.com/talks/enrique_penalosa_why_buses_represent_democracy_in_action

- Read one of the following articles:

1 - "The Town-Country Magnet", by Ebenezer Howard, from Garden Cities of To-morrow (1898-1902), in: The City Reader - 7th edition (2020), edited by Richard T. LeGates and Frederic Stout, Routledge, ISBN: 9780367204792 (pp. 371-378).

2 - "A Contemporary City", by Le Corbusier, from The City of Tomorrow and its Planning (1929), in: The City Reader - 7th edition (2020), edited by Richard T. LeGates and Frederic Stout, Routledge, ISBN: 9780367204792 (pp. 379-387).

- Week 5:

- Watch one of the following videos prior to class discussion:

1 - https://www.ted.com/talks/amanda_burden_how_public_spaces_make_cities_work?referrer=playlist-how_to_revive_a_city

2 - https://www.ted.com/talks/janette_sadik_khan_new_york_s_streets_not_so_mean_any_more

- Visit the following websites prior to class discussion:

<https://www.walkscore.com/> <https://copenhagenizeindex.eu/>

<https://www.wired.com/story/most-bike-friendly-cities-2019-copenhagenize-design-index/>

- Week 6:

- Read one of the following articles:

1 - "Traffic Calming", by Peter Newman and Jeffrey Kenworthy, from Sustainability and Cities: Overcoming Automobile Dependence (1999), in: The Sustainable Urban Development Reader - 3rd edition (2014), edited by Stephen M. Wheeler and Timothy Beatley, Routledge, ISBN: 9780415707763 (pp. 263-373).

2 - "Cycling for Everyone: Lessons from Europe", by John Pucher and Ralph Buehler, from Transportation Research Record (2008), in: The Sustainable Urban Development Reader - 3rd edition (2014), edited by Stephen M. Wheeler and Timothy Beatley, Routledge, ISBN: 9780415707763 (pp. 274-291).

- Week 7:

- Watch one of the following videos prior to class discussion:

1 - https://www.ted.com/talks/alessandra_orofino_it_s_our_city_let_s_fix_it?referrer=playlist-how_to_revive_a_city

2 - https://www.ted.com/talks/angel_hsu_cities_are_driving_climate_change_here_s_how_they_can_fix_it#t-22203

3 - https://www.ted.com/talks/robin_nagle_what_i_discovered_in_new_york_city_trash

- Suggested reading:

1 - "Principles of Green Architecture", by Brenda Vale and Robert Vale, from Green Architecture (1991), in: The Sustainable Urban Development Reader - 3rd edition (2014), edited by Stephen M. Wheeler and Timothy

Beatley, Routledge, ISBN: 9780415707763 (pp. 498-508).

2 - "Sustainability and Building Codes", by David Eisenberg and Peter Yost, from Environmental Building News (2008), in: The Sustainable Urban Development Reader - 3rd edition (2014), edited by Stephen M. Wheeler and Timothy Beatley, Routledge, ISBN: 9780415707763 (pp. 509-518).

- Week 8:

- Watch the following videos prior to class discussion:

1 - https://www.ted.com/talks/kamal_meattle_how_to_grow_fresh_air

2 - https://www.ted.com/talks/shawn_achor_the_happy_secret_to_better_work

3 - https://www.ted.com/talks/dan_gilbert_the_surprising_science_of_happiness#t-1247472

- Suggested reading:

1 - "Landscape Ecological Urbanism", by Frederick Steiner, from Landscape and Urban Planning (2011), in: The Sustainable Urban Development Reader - 3rd edition (2014), edited by Stephen M. Wheeler and Timothy Beatley, Routledge, ISBN: 9780415707763 (pp. 309-314).

2 - "Biophilic Cities", by Timothy Beatley, from Biophilic Cities (2011), in: The Sustainable Urban Development Reader - 3rd edition (2014), edited by Stephen M. Wheeler and Timothy Beatley, Routledge, ISBN: 9780415707763 (pp. 293-296).

- Week 9:

Project workshop: Presentations (5 min.), Q & A

- Week 10:

- Watch the following video prior to class discussion:

https://www.ted.com/talks/ole_scheeren_why_great_architecture_should_tell_a_story?referrer=playlist-how_to_revive_a_city

(Videos available on Canvas: VR368 >Files >Material for discussion >Videos)

- Week 11:

- Watch one of the following videos prior to class discussion:

1 - https://www.ted.com/talks/shawn_achor_the_happy_secret_to_better_work 2 -

https://www.ted.com/talks/nic_marks_the_happy_planet_index

- Week 12:

- Watch the following video prior to class discussion:

- "Money as debt", directed by Paul Grignon (2006), 47 min.

(Video available on Canvas: VR368 >Files >Material for discussion >Videos)

- Week 13:

- Watch two of the following videos prior to class discussion:

1 - https://www.ted.com/talks/mick_cornett_how_an_obese_town_lost_a_million_pounds

2 - https://www.ted.com/talks/wanis_kabbaj_what_a_driverless_world_could_look_like

3 - https://www.ted.com/talks/robert_hammond_building_a_park_in_the_sky#t-19992

- 4 - https://www.ted.com/talks/dan_gilbert_why_we_make_bad_decisions#t-358847 5 - https://www.ted.com/talks/theaster_gates_how_to_revive_a_neighborhood_with_imagination_beauty_and_art?referrer=playlist-how_to_revive_a_city
- 6 - https://www.ted.com/talks/ron_finley_a_guerrilla_gardener_in_south_central_la?referrer=playlist-how_to_revive_a_city