

Ecologies of Technologies: **Centre for Urban + Architectural Studies**



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*"In design sometimes one plus one equals three."
Josef Albers (in Bergson's The Creative Mind)*

Instructors:

Dr. Brian R. Sinclair (Course Manager) (B01)
Professor Marc Boutin (B02)
Keir Stuhlmiller (B03)
Alan Collyer (B04)

Teaching Assistants: Cornelia Turney + Mehdi Einifar

Monday, Tuesday, Wednesday & Friday | 2-6 pm

Preamble

DESIGN:

*To create, fashion, execute, or construct according to a plan.
To conceive and plan out in the mind; to have as a purpose; to devise for a specific function or end.
To indicate with a distinctive mark, sign or name.
To make a drawing, pattern or sketch.
Merriam-Webster's Collegiate Dictionary (10th Edition)*

"Many design problems are so ill-defined that they can only be called wicked problems." Peter G. Rowe (Design Thinking)

Design is a powerful and limitless vehicle for realizing positive change in our world. Canadians spent upwards of 90% of their time indoors, working, playing and dwelling in the buildings we conceive, craft and construct. Many fields outside of the conventionally understood disciplines of Environmental Design (e.g., Architecture, Landscape Architecture, City Planning, Urban Design, Interior Design, Industrial Design, etc.) have recently focused attention on the capacity and capability of design. Without question design is a potent force that needs to be understood, developed and deployed in our communities.

The world is now more urban than rural, with significant implications for the design disciplines. Coupled to growing urban realms is our increasing awareness of climate change and its many implications. Cities and buildings stand as major contributors to such phenomenon. However, they also loom as tremendous instruments to change directions. Urban and Architectural design hold fundamental places in our society. Architects and Urbanists have real obligations and opportunities at the present juncture. The "Centre for Urban + Architectural Studies" presents us with a project through which pressing dilemmas can be critically considered and

meaningfully explored. A major objective of the present studio is to develop designs that, while proving technically competent and viable, also push our understanding concerning the potential of design to make a difference to a world in need.

Modern society is rich in data, information and knowledge, with volumes of content arriving to our lives on a daily basis. Technology propels the system and proves perplexing – is it part of the problem and part of the solution. Social media stretches traditional boundaries and pushes conventional understanding. Past. Present. Future. Digital. Analog. Urban. Rural. Rich. Poor. Historic. Contemporary. Old. New. Creating and crafting an Architectural home for examining such crucial issues is the thrust of Comprehensive Studio this semester.

Humans employ a wide range of technologies and systems in their creation and modification of environments; included in this are the many technologies involved in the design, construction, and inhabitation of buildings and their related environments. In this studio, the design of a building and its systems, including interrelationships with context (site, climate, regulatory structures, customs, etc.), are explored through the comprehensive development of spatial, structural, enclosure, and environmental systems.

Providing for the Centre for Urban + Architectural Studies

“Details, when they are successful, are not mere decoration.

They do not distract or entertain.

They lead to an understanding of the whole of which they are an inherent part.”

Peter Zumthor (Thinking Architecture)

The Comprehensive Studio in Winter 2016 considers the design of an innovative ‘think tank’ & ‘design-focused’ building that embodies and celebrates a “Centre for Urban + Architectural Studies”. The facility will be a 2000 m² education, research, administration & cooperation|collaboration|conversation oriented architectural complex that brings together key players in a spirit of talking, learning, sharing, demonstrating and understanding. The non-profit centre will include a rich mix of uses, users, places and spaces, with key components including education, research, interpretation, exchange, socialization and the promotion of discourse & mutuality. Located in Calgary, Alberta, Canada, a city characterized by its youthfulness, enthusiasm and innovation, the facility will prove a meeting place for collision, confrontation, cooperation and collaboration. The architecture & design of the building must facilitate and promote the purposes and aspirations of the initiative while concurrently serving as a model of creativity, originality, integration and sustainability. Inciting provocation should be coupled with instilling concurrence. Challenging conventions should find balance with celebrating traditions.

Site & Program

The Centre, an approximately 2000 m² (gross area +/- 10%) education, research, administration & think-tank facility, will be located near Calgary’s downtown area. This site was carefully determined to provide strong access to transit and the core, to afford rich opportunities for design exploration, and to offer possibilities for identity, branding and high exposure. The architectural programme for the facility acknowledges the importance of innovation, the potential of design + space to influence behaviour (e.g., catalyzing conversation), and the value of a diversity of both uses & users. This site, being intensely urban and undeniably connected to the heart of the city, demands resourcefulness, sensitivity and skill in order to achieve an ethos conducive to the “Centre for Urban + Architectural Studies”. Detailed site information and programmatic requirements for the facility will be distributed separately.

Objectives

The emphasis of the Comprehensive Studio is especially on the cultural and environmental (i.e. sustainability) potential of novel design and building technologies. The studio will explore the relationships between architectural form, its tectonic and material articulation, its cultural resonance and its environmental impacts. The basic curricular objective is the overall formal, spatial, and tectonic resolution of a moderately complex building (i.e., “Centre for Urban + Architectural Studies”) of approximately 2000 m², situated in an urban context, including appropriate allocation of the program, resolution of circulation and proper means of egress, as well as a basic articulation of building structure, environmental systems, assembly, and envelope, and adherence to the building

codes. Equal consideration will be given to user needs and human dimensions, including environmental perception, symbolism and meaning, ergonomics and adaptability, cultural sensitivity and place-making.

This studio will operate in parallel and will be closely coordinated with the building technology courses (EVDA 619 Structures; EVDA 615 Environmental Systems; EVDA 611 Building Science). Beyond designing and representing a building, students are expected to develop fully integrated building systems and learn the basics of technical documentation. Building structures, construction assemblies, environmental systems, and energy and resource use will be an important part of research and experimentation in the studio. It is expected that some form of performance feedback will be part of the design explorations.

Requirements

In addition to normative drawings (plans, sections, elevations) and digital 3D models and renderings, various physical scale models may, at the instructor's discretion, be expected at specific stages. In addition to a developed design of the project's spaces and areas, its structural and environmental systems will have to be sufficiently articulated and adequately documented. A selected segment of the building's envelope will be developed and modeled in greater detail.

Grading

Reviews will occur at the end of each assignment and grades will be given at each of those points. Grades will be cumulative through the semester, and will count according to time allotment for each assignment. Students are expected to meet all requirements for each assignment to receive a passing grade. In general grades will be based on the following (depending on the topic and the assignment): development (process) 30%, conclusion (product) 30%, presentation 30%, attendance and participation 10%.

Grading Scale

Final grades will be reported as letter grades, with the final grade calculated according to the 4-point range.

Grade	Grade Point Value	4-Point Range	Percent	Description
A+	4.00	4.00	95-100	Outstanding - evaluated by instructor
A	4.00	3.85-4.00	90-94.99	Excellent - superior performance showing comprehensive understanding of the subject matter
A-	3.70	3.50-3.84	85-89.99	Very good performance
B+	3.30	3.15-3.49	80-84.99	Good performance
B	3.00	2.85-3.14	75-79.99	Satisfactory performance
B-	2.70	2.50-2.84	70-74.99	Minimum pass for students in the Faculty of Graduate Studies
C+	2.30	2.15-2.49	65-69.99	All final grades below B- are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements.
C	2.00	1.85-2.14	60-64.99	
C-	1.70	1.50-1.84	55-59.99	
D+	1.30	1.15-1.49	50-54.99	
D	1.00	0.50-1.14	45-49.99	
F	0.00	0-0.49	0-44.99	

Notes:

Passing grades must be achieved on all assignments weighted over 30% of the total course assessment. A student who receives a "C+" or lower in any one course will be required to withdraw regardless of their grade point average (GPA) unless the program recommends otherwise. If the program permits the student to retake a failed course, the second grade will replace the initial grade in the calculation of the GPA, and both grades will appear on the transcript.

Schedule W.2016

Weeks 1 – 3 Conceptual Design (including site analysis, interpretation & planning | plus programming)

February 02 (T) Review (10% of the final grade)

Weeks 4 – 7 Design Development & Integration

February 15-19 Family Day and Block Week (no studio)

March 04 (F) Mid-term Review (25% of the final grade)

Weeks 8-11 Building Systems Advanced Integration

April 01 (F) ¼ Review (25% of the final grade)

Weeks 12-14 Technical Documentation (Final Documentation)

April TBD Final Review (40% of the final grade)

*Notes: *The schedule is subject to change. All review dates are tentative. Various phases of the project will be completed according to a closely coordinated schedule with building technology classes.*

** Although students will be working in pairs for the duration of the term, grades will be awarded individually. Each student must demonstrate competency in all course requirements. Instructors will monitor individual student progress throughout the term, with inclusion of one or more formal reviews with each student team to consider both team and individual progress. An individual sketchbook/journal is required as part of the process & deliverables, and will be a comprehensive document of each student's work throughout the term and will be graded accordingly.*

An **INDIVIDUAL physical sketchbook/journal is a mandatory component of Comprehensive Studio. This deliverable will be a vehicle for exploring, testing, recording, revising and shaping ideas, content and directions of your design and its various dimensions (e.g., formal, philosophical, structural, systems, science, etc.). It will illustrate individual efforts & qualities while also speaking to collaborative & team-based decisions. More details will be provided.*

Recommended Textbooks:

Juhani Pallasmaa. *The Thinking Hand: Existential and Embodied Wisdom in Architecture*. (AD Primers Series). John Wiley & Sons: West Sussex, UK. 2009;
Edward Allen and Joseph Iano. *The Architect's Studio Companion: Rules of Thumb for Preliminary Design* (Fifth Edition). New York: Wiley, 2011.

Recommended Reading:

The City:

Gary Bridge and Sophie Watson (Editors). *The Blackwell City Reader (2nd Edition)*. Wiley-Blackwell Publishing: West Sussex, UK. 2010

Nic Clear (Editor). "Architectures of the Near Future". *Architectural Design*. September/October 2009. Profile No. 2010. John Wiley & Sons: West Sussex, UK.

Adrian Lahoud, Charles Rice, and Anthony Burke (Editors). "Post-Traumatic Urbanism". *Architectural Design*. September/October 2010. Profile No. 207. John Wiley & Sons: West Sussex, UK.

Paul L. Knox. *Cities and Design: Critical Introductions to Urbanism and the City*. Routledge: New York, 2011.

Moshen Mostafavi and Gareth Doherty Editors | Harvard University Graduate School of Design). *Ecological Urbanism*. Lars Muller Publishing: Baden Switzerland. 2010.

Metropolis Now! Urban Cultures in Global Cities. Edited by Ramesh Kumar Biswas. SpringerWein: New York, 2000.

"Metropolis Now". *Foreign Policy: Global Politics, Economics & Ideas*. September/October 2010. Especially article: "Beyond City Limits" by Parag Khanna. Pp 120-128.

Theory, Practice & Process:

- Jesse Reiser and Nanako Umemoto. *Atlas of Novel Tectonics*. New York: Princeton Architectural Press, 2006.
- Tomoko Sakamoto, Albert Ferre and Michael Kubo (Editors). *The Yokohama Project*. Barcelona: Acta, 2003.
- Brian R. Sinclair. Culture, Context, and the Pursuit of Sustainability: Contemplating Problems, Parameters, and Possibilities in an Increasingly Complex World. In: *Planning for Higher Education*, Ann Arbor: Oct.-Dec. 2009. 38-1, pp. 6-22.
- Brian R. Sinclair. Devising Design: Agility, Aptness, Equilibrium, Imperfection". Pp 41-58. In: *Building Dynamics: Exploring Architecture of Change* (Editors: B. Kolarevic + V. Parlac). Routledge: London, 2015.
- Brian R. Sinclair. "Integration | Innovation | Inclusion: Values, Variables and the Design of Human Environments". *Cybernetics and Systems: An International Journal*, 46:6-7, pp 554-579, 2015.

Design | Construction Methods, Delineation & Communication:

- AIA, *Architectural Graphic Standards* (11th edition). New York: Wiley, 2007.
- Edward Allen & Joseph Iano. *Fundamentals of Building Construction: Material and Methods* (5 Edition). New York: Wiley, 2009.
- Linda Brock. *Designing the Exterior Wall: An Architectural Guide to the Vertical Envelope*. New York: Wiley, 2005.
- Alan Brookes and Chris Grech. *The Building Envelope and Connections*. Butterworth, 1996.
- Francis DK Ching. *Architectural Graphics* (5th edition). John Wiley: New York 2009.
- Francis DK Ching. *Architecture: Form, Space & Order*. (3rd edition). John Wiley: New York 2007.
- Francis DK Ching and Steven Winkel. *Building Codes Illustrated: A Guide to Understanding the 2006 International Building Code* (2nd edition). New York: Wiley, 2006.
- Francis DK Ching and Cassandra Adams. *Building Construction Illustrated* (3rd edition). New York: Wiley, 2003.
- Manfred Hegger et al. *Construction Materials Manual*. Basel: Birkhauser, 2006.
- Manfred Hegger et al. *Energy Manual: Sustainable Architecture*, Basel: Birkhauser, 2008.
- Thomas Herzog, *Façade Construction Manual*. Basel: Birkhauser, 2005.
- Frank Kaltenbach. *Detail Practice: Translucent Material: Glass, Synthetic Materials, Metal*, Birkhauser, 2004.
- Ulrich Knack et al, *Facades: Principles of Construction*. Basel: Birkhauser, 2007.
- Norbert Lechner. *Heating, Cooling, Lighting: Sustainable Design Methods for Architects*. New York: Wiley, 2008.
- Eberhard Oesterle. *Double-Skin Facades: Integrated Planning*. 2001.
- Christian Schittich. *Glass Construction Manual*. Basel: Birkhäuser, 1999.
- Christian Schittich. *Steel Construction Manual*. Basel: Birkhäuser, 2000.
- Christian Schittich. *Building Skins: Concepts, Layers, Materials*. Basel: Birkhäuser, 2001.
- Bernhard Weller et al. *Glass in Building: Principles, Applications, Examples*. Basel: Birkhauser, 2009.
- Michael Wiggington. *Intelligent Skins*. Architectural Press, 2002.
- Tgroup and Bill G. Reed. *The Integrative Design Guide to Green Building: Redefining the Practice of Sustainability*. New York: Wiley, 2009.

Important Notes

1. Written work, term assignments and other course related work may only be submitted by e-mail if prior permission to do so has been obtained from the course instructor.
2. It is the student's responsibility to request academic accommodations. If you are a student with a documented disability who may require academic accommodation and have not registered with the Disability Resource Centre, please contact their office at 220-8237. (<http://www.ucalgary.ca/drc/node/46>) Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the start of this course.
3. Plagiarism - Plagiarism involves submitting or presenting work in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Most commonly plagiarism exists when:(a) the work submitted or presented was done, in whole or in part, by an individual other than the one submitting or presenting the work (this includes having another impersonate the student or otherwise substituting the work of another for one's own in an examination or test),(b) parts of the work are taken from another source without reference to the original author,(c) the whole work (e.g., an essay) is copied from another source, and/or,(d) a student submits or presents work in one course which has also been submitted in another course(although it may be completely original with that student) without the knowledge of or prior agreement of the instructor involved. While it is recognized that scholarly work often involves reference to the ideas, data and conclusions of other scholars, intellectual honesty requires that such references be explicitly and clearly noted. Plagiarism is an extremely serious academic offence. It is recognized that clause (d) does not prevent a graduate student incorporating work previously done by him or her in a thesis. Any suspicion of plagiarism will be reported to the Dean, and dealt with as per the regulations in the University of Calgary Graduate Calendar.
4. Information regarding the Freedom of Information and Protection of Privacy Act (<http://www.ucalgary.ca/secretariat/privacy>) and how this impacts the receipt and delivery of course material
5. Emergency Evacuation/Assembly Points (<http://www.ucalgary.ca/emergencyplan/assemblypoints>)
6. Safewalk information (<http://www.ucalgary.ca/security/safewalk>)
7. Contact Info for: Student Union (<http://www.su.ucalgary.ca/page/affordability-accessibility/su-structure/contact-info>); Graduate Student representative(<http://www.ucalgary.ca/gsa/>) and Student Ombudsman's Office (<http://www.su.ucalgary.ca/page/quality-education/academic-services/student-rights>).

Special Budgetary Requirements – please include these in the course outline.

Special budgetary requirements are limited to the optional purchase of course readings and, in specific courses, mandatory supplementary fees to cover certain expenditures, such as field trips. Mandatory supplementary fees must be approved by the University prior to implementation.

Optional:

For certain courses students may be given the option of purchasing course readings. In these cases the cost of the reading package should be stated in the course outline. When course readings are available for purchase, a minimum of two copies of the readings must be made available at the EVDS Reception.

Mandatory:

The University has approved supplemental fees for the following courses:

2015/2016 SUPPLEMENTARY COURSE FEES

ARST 484/EVDA 580 - Studio I Design Thinking	\$100.00
ARST 444/EVDA 582 - Studio II in Architecture	\$100.00
EVDA 682.02 – Intermediate Studio	\$100.00
EVDA 682.04 - Comprehensive Arch. Studio	\$100.00
EVDA 782 - Senior Arch. Studio (all sections)	\$100.00
EVDS 623 – Regional Planning Studio	\$90.00
EVDS 626 – Landscape Planning and Ecological Design	\$100.00

CACB Student Performance Criteria:

The following CACB Student Performance Criteria will be covered in this course at a primary level (other criteria will be covered at a secondary level): A5: Collaborative Skills; B1: Design Skills; B2: Program Preparation; B3: Site Design; B4. Sustainable Design; B5. Accessibility; B6. Life Safety; B7: Structural Systems; B8. Environmental Systems; B9. Building Envelope; B10. Building Services; B11. Building Materials; C1: Detailed Design Development; C2. Building Systems Integration; C3. Technical Documentation; C4. Comprehensive Design.". (see CACB SPC matrix for further details)

Contact & Office Information

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Please contact instructors and teaching assistants with any questions or concerns. Meetings by appointment.



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