UNIVERSITY OF CALGARY
SCHOOL OF ARCHITECTURE, PLANNING AND LANDSCAPE

ARCH 672: NEURODIVERSITY AND DESIGN[1] **Winter 2023**
PF_2165 **Block Week_March 13-17 9am to 1pm**

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So...how do we go about making sensitive, thoughtful environments
for a population who might see colours as muted, vibrating, and neon,
who might not be able to sense time chronologically
or know whether the feelings th ey are experiencing
are current or from a memory from two years ago,
who might not be able to read your body language
or even your facial expression,
and worst of all,
~~who likely isn't able to tell you any of this~~

COURSE DESCRIPTION

While the neurodiversity movement emerged during the 1990s, aiming to increase acceptance and inclusion of all people regardless of neurological differences, it is not till now, facilitated through self-advocacy and supported by innovations in neuroscience, that neuro-inclusion and its understanding have risen as a cultural wave demanding presence. Building on work in feminist studies, queer studies, and critical race and disability theories, the new critical paradigm of neurodiversity studies challenges the universality of propositions about 'typical' and 'divergent' human neurology. Recent scientific, social, and cultural developments problematize the binary pathological construction of neurotypicality and increasingly evidence a spectrum of diverse biopsychosocial configurations of rationality and sensory processing (Rosqvist, Stenning, and Chown 2020).

Architecture and its practice deal with ever-complex design requirements, whilst progressively assimilating changing processes, contexts, and lenses of production. As a service industry, it is thus a vessel for knowledge transfer as much as it is for knowledge production. Despite increasing awareness of the need to design spaces that accommodate neurological differences, a critical knowledge gap persists in foundational knowledge on how humans neurologically perceive the built environment, let alone how differences in neurology, or neurodiversity, impact this perception. Steadily gaining social and ecological impetus as foundational to ethical world-building and sense-making, neurodiversity studies and its relation to the built environment remain absent discourses within modern architectural knowledge production, design, and practice.

This block-week course is a preliminary examination of this nexus between neurodiversity, design, and the built environment. Disseminated through the lens of neurodiversity studies, students will critically engage theoretical and mythological assumptions that label human cognition as fixed and universal – or *neurotypical* – and thereby also label an atypical – or *neurodivergent* – a systematically oppressive consequence of the societal disposition towards binary structures. The course will progressively bridge the existing knowledge gap, providing a foundational understanding of [1] neuroscience and human neurology; [2] environmental psychology and human-environment interaction, and culminating at [3] neuroarchitecture and neural-human-environment interaction. Guided by sensory design principles, the objective is for students to practice integrating the lens of neuro-accessibility as critical to holistic design thinking. The format of the course encourages a systems-thinking approach supported by empirically grounded design research – to begin conceptualizing purpose, problems, and solutions beyond the realm of the fixed and physical, towards the creation of fluid spaces that remain agile to the diverse needs of not one, but the diverse neuro-types that have the equal right to #TakingUpSpace.

Keywords: Neurodiversity, Neuroscience, Neuro-/Architecture, Environmental Psychology, Sensory Design

COURSE OBJECTIVES

1. *To understand the neural basis of the human brain, and its perception of and interaction with the surrounding environment*
2. *To understand the psychological bases of neurodiversity across a spectrum of ability and scales, and its implications on design theory and architectural practice.*
3. *To critically assess the current status quo of architectural production, and synthesize the underlying cognitive impacts across diverse neuro-types*
4. *To evaluate ways to support the inclusion of neurodivergent perspectives in architectural knowledge production, design, and practice*
5. *To enable an evidence-based practice of design thinking informed by applied research methodologies (e.g. systems thinking, data visualization, etc.).*

TEACHING APPROACH

Students will be exposed to themes, precedents, and skill developments to envision a potential alternative to diversify neuro-architectural experience and possible ways to implement it through Thematic Directions, Skills Development and Applied Evaluations.

There will be lectures, panel discussions with invited guests, and question-and-answer sessions that build on a theoretical understanding of the subject matter. Team-based learning sessions will be facilitated in which students in groups discuss and/or present course themes applied to specific content. Concurrently, a series of developmental assignments will be produced to apply the knowledge, culminating in the student's final assignment. Students are required to come prepared for class sessions.

Content: Topic Areas

Session 1	*Mar 13*	*Neurodiversity Studies: A New Critical Paradigm*
Session 2	*Mar 14*	*Thinking Inside the Box: Understanding Neurodiversity in the Built Environment, The Architecture of Neuroscience: The Human Brain*
Session 3	*Mar 15*	*The Neuroscience of Architecture: The Built Environment*
Session 4	*Mar 16*	*The Mind-Brain Connection: Why Doesn't the Shoe Fit?*
Session 5	*Mar 17*	*A Fresh Set of Frames: Weaving Neuro-Accessibility Within the WWW*

TECHNOLOGY REQUIREMENTS

To successfully engage in their learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

1. A computer with a supported operating system, as well as the latest security, and malware updates
2. A current and updated web browser
3. Webcam (built-in or external)
4. Microphone and speaker (built-in or external), or headset with microphone
5. Current antivirus and/or firewall software enabled
6. Broadband internet connection

Most current laptops will have a built-in webcam, speaker, and microphone.

[WIP] SUGGESTED READINGS

Additional resources will be provided with assignments and lectures.

- Rosqvist, Hanna Bertilsdotter, Nick Chown, and Anna Stenning. *Neurodiversity Studies: A New Critical Paradigm*. Vol. 285. Milton: Taylor and Francis, 2020. doi:10.4324/9780429322297. [Open Online Access through UofC Library]
    - Introduction, 11 pages. *20 mins read.*
    - Chapter 4. Neurodiversity, Disability, Wellbeing, 16 pages. *27 mins read.*
    - Chapter 10. Designing an Autistic Space for Research: Exploring the Impact of Context, Space, and Sociality in Autistic Writing Processes. 16 pages. *27 mins read.*
    - Chapter 13. Neuronormativity in Theorizing Agency: An Argument for a Critical Neurodiversity Approach, 5 pages. *9 mins read.*
    - Chapter 14. Defining Neurodiversity for Research and Practice. 3 pages. *5 mins read.*
    - Chapter 16. Neurodiversity Studies: Proposing a New Field of Inquiry, 4 pages. *7 mins read.*
- The Changing Shape of Practice: Further Cases of Integrating Research and Design in Practice.
    - Introduction. Current Changes in Conditions and Contexts for Architectural Research and Practice: A Brief Introduction, by Michael U. Hensel and Fredrik Nilsson. 13 pages. *22 mins read.*
    - Chapter 3. Prototyping Practice, by Anthony Burke. 8 pages. *14 mins read.*
- Chulpongsatorn, Neil, Jackie Yu, and *Søren Knudsen.* "Exploring Design Opportunities for Visually Congruent Proxemics in Information Visualization: A Design Space." *In EuroVis 2020 - Short Papers* (2020)
- Hendren, Sara. What Can A Body Do?: How We Meet the Built World. Riverhead Books, 2020.
    - Young, Forest. What Can a Body Do? How We Meet the Built World. Other. *YouTube*. New America, August 20, 2020. https://www.youtube.com/watch?v=oWRbx_NWVxk&ab_channel=NewAmerica.
- Goldhagen, Sarah Williams. Welcome To Your World: How the Built Environment Shapes Our Lives. New York, NY: HarperCollins Publishers, 2019.
    - Goldhagen, Sarah Williams. “Welcome To Your World: The Mind, The Body, and The Built Environment.” Youtube. Lecture presented at the Sarah Williams Goldhagen - Welcome To Your World: The Mind, The Body, and The Built Environment. https://www.youtube.com/watch?v=4k0JhRI8CrI&ab_channel=UVASchoolofArchitecture.

[WIP] MEANS OF EVALUATION

Course evaluation will be based on assignments completed during the week, which include written assignments, presentation of work, and facilitating discussions through questions. Students are expected to participate in class discussions.

The response to exercises and lectures will demonstrate an understanding of course material and engagement. Value is given to the ability to articulate ideas with a focused and clear position and communicate it with conviction, clarity, and intent. Assignments should exhibit appropriate written and visual communication skills. There will be no final examination.

Class Participation	20%	In-class exercises, Q&A sessions, etc.	*Objective 1*
Assignment 1	15%	*[WIP] Mind-Space Mapping*	*Objectives 2 + 5*
Assignment 2	25%	*[WIP] Diversity Profile*	*Objectives 1 + 3*
Assignment 3	35%	*[WIP] Design Charette Presentation*	*Objective 4*
Documentation	5%	Cumulative Portfolio of Work + Reflection	*Objective 5*

GRADE SCALE

Final grades shall be reported as letter grades, correlating to the grade point value as per column 2 below. Final grades shall be calculated according to the 4-point range as noted in column 3. Assignments calculated by percentage grades will use the equivalent values shown in column 4.

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*	

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.

CACB STUDENT PERFORMANCE CRITERIA

The following CACB Student Performance Criteria will be covered in this course at a primary level:

A. DESIGN

A1. Design Theories, Precedents, and Methods.

- *Ability to articulate a design process grounded in theory and practice*
- *Understanding of design principles and methods*
- *Critical Analysis of architectural precedents*

A2. Design Skills.

- *Conceptual Design – Ability to apply design theories, methods, and precedents to the conception and design of spaces*

B. CULTURE, COMMUNICATIONS, AND CRITICAL THINKING

B1. Critical Thinking and Communication.

- *Critical Thinking Skills – Ability to raise clear and precise questions; Reach well-supported conclusions related to a specific project or assignment*
- *Verbal and Written Skills – Record, Assess, and Comparatively Evaluate information*
- *Research Skills – Synthesize research findings and test potential alternative outcomes against relevant criteria and standards*
- *Collaborative Skills – Write, Speak, and Use visual media effectively to appropriately communicate on subject matter related to the architectural discipline within the profession and with the public*

B4. Cultural Diversity and Global Perspectives.

- *Understanding of the diverse needs, values, behavioural norms, and social/spatial patterns that characterize different global cultures and individuals*
- *Understanding of the implications of diversity on the societal roles and responsibilities of architects*

Other criteria will be covered at a secondary level:

C. TECHNICAL KNOWLEDGE

C1. Regulatory Systems.

- *Understanding of the applicable building codes, regulations and standards for a given building and site, including universal design standards and the principles that inform the design and selection of life-safety systems*

E. PROFESSIONAL PRACTICE

E2. Ethical and Legal Responsibilities.

- *Ethics and Professional Judgement – Understanding of the ethical issues involved in the formation of professional judgement*
- *Leadership and Advocacy – Understanding of the role of advocacy in relation to environmental, social, and cultural issues*
- *Legal Responsibility – Understanding of the architect's legal responsibility under the laws, codes, regulations, and contracts common to the practice of architecture*

E3. Modes of Practice.

- *Understanding of trends that affect the practice*

UNIVERSITY OF CALGARY POLICIES AND SUPPORTS

COVID-19 PROCEDURE FOR SICK STUDENTS:
https://ucalgary.ca/risk/sites/default/files/Covid- 19%20Folder/COVID-19-Procedure-for-Sick-Students.pdf

ACADEMIC ACCOMMODATION
It is the student's responsibility to request academic accommodations according to the University policies and procedures listed below. The Student Accommodations policy is available at *https://ucalgary.ca/student-services/access/prospective-students/academic-accommodations*.

Students needing an accommodation based on disability or medical concerns should contact Student Accessibility Services (SAS) in accordance with the Procedure for Accommodations for Students with Disabilities (*https://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with- disabilities.pdf*). Students who require an accommodation in relation to their coursework based on a protected ground other than Disability should communicate this need in writing to their instructor. SAS will process the request and issue letters of accommodation to instructors. For additional information on support services and accommodations for students with disabilities, visit *www.ucalgary.ca/access/* .

ACADEMIC MISCONDUCT
Academic Misconduct refers to student behaviour which compromises proper assessment of a student's academic activities and includes: cheating; fabrication; falsification; plagiarism; unauthorized assistance; failure to comply with an instructor's expectations regarding conduct required of students completing academic assessments in their courses; and failure to comply with exam regulations applied by the Registrar.

For information on the Student Academic Misconduct Policy and Procedure, please visit:
https://ucalgary.ca/policies/files/policies/student-academic-misconduct-policy.pdf
https://ucalgary.ca/policies/files/policies/student-academic-misconduct-procedure.pdf
Additional information is available on the Academic Integrity Website at *https://ucalgary.ca/student- services/student-success/learning/academic-integrity.*

GUIDELINES FOR ZOOM SESSIONS IN ONLINE CLASSES
Students are expected to participate actively in all Zoom sessions and to turn on their webcam. Please join our class in a quiet space that will allow you to be fully present and engaged in the Zoom sessions. Students must behave professionally during the session, including paying attention to their Zoom background [whether real or virtual]. Students, employees, and academic staff are also expected to demonstrate behaviour in class that promotes and maintains a positive and productive learning environment.

To help ensure Zoom sessions are private, do not share the Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed or published without the instructor's permission.

Zoom is a video conferencing program that will allow us to meet at specific times for a "live" video conference so that we can have the opportunity to meet each other virtually and discuss relevant course topics as a learning community.

The use of video conferencing programs relies on participants to act ethically, honestly and with integrity; and in accordance with the principles of fairness, good faith, and respect (as per the Code of Conduct). When entering Zoom or other video conferencing sessions (such as MS Teams), you play a role in helping create an effective, safe and respectful learning environment. Please be mindful of how your behaviour in these sessions may affect others. Participants must

use names officially associated with their UCID (legal or preferred names listed in the Student Centre) when engaging in these activities. Instructors/moderators can remove those whose names do not appear on class rosters. Non-compliance may be investigated under the relevant University of Calgary conduct policies (e.g Student Non-Academic Misconduct Policy). If participants have difficulties complying with this requirement, they should email the instructor of the class explaining why, so the instructor may consider whether to grant an exception, and on what terms. For more information on how to get the most out of your zoom sessions visit: *https://elearn.ucalgary.ca/guidelines-for-zoom/*

If you are unable to attend a Zoom session, please contact your instructor in advance to arrange an alternative activity for the missed session (e.g., to review the recorded session). Please be prepared, as best as you are able, to join class in a quiet space that will allow you to be fully present and engaged in Zoom sessions. Students will be advised by their instructor when they are expected to turn on their webcam (for group work, presentations, etc.).

The instructor may record online Zoom class sessions for the purposes of supporting student learning in this class – such as making the recording available for review of the session or for students who miss a session. Students will be advised before the instructor initiates a recording of a Zoom session. These recordings will be used to support student learning only and will not be shared or used for any other purpose.

COPYRIGHT LEGISLATION:

All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright (*www.ucalgary.ca/policies/files/policies/acceptable-use-of-material-protected-by-copyright.pdf*) and requirements of the copyright act (*https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html*) to ensure they are aware of the consequences of unauthorised sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy (*https://www.ucalgary.ca/pubs/calendar/current/k.html).*

INSTRUCTOR INTELLECTUAL PROPERTY

Course materials created by instructors (including presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the instructor. These materials may NOT be reproduced, redistributed or copied without the explicit consent of the instructor. Posting course materials to third-party websites, such as note-sharing sites, without permission is prohibited. Sharing extracts of these course materials with other students enrolled in the course at the same time may be allowed under fair dealing.

MEDIA AND RECORDING IN LEARNING ENVIRONMENTS

Part 1

Recording of lectures (other than audio recordings that are pre-arranged as part of an authorized accommodation) is not permitted. Students may not record any portion of a lecture, class discussion or course-related learning activity without the prior and explicit written permission of the course instructor or authorization from Student Accessibility Services. For any other use, whether by duplication, transcription, publication, sale or transfer of recordings, written approval must be obtained from the instructor for the specific use proposed. Any use other than that described above constitutes academic misconduct and may result in suspension or expulsion.

Part 2

The instructor may use media recordings to capture the delivery of a lecture. The instructor will notify all students and guests in the class that the event is being recorded. If a student or guest wants to take steps to protect privacy, and does not want to be recorded, the instructor will provide the individual (s) with an alternative means of participating and asking questions (e.g., passing written notes with questions). Students cannot be penalized for choosing not to be recorded in situations where participation is part of the course. Students must be offered other ways of earning participation credit

that do not involve recording. Any video recording would be intended to only capture the instructor and the front of the classroom. Students/other participants would not necessarily be visible on video recording.

FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY

Student information will be collected in accordance with typical (or usual) classroom practice. Students' assignments will be accessible only by the authorized course faculty. Private information about the individual student is treated with the utmost regard by the faculty at the University of Calgary.

UNIVERSITY STUDENT APPEALS OFFICE

If a student has a concern about the course, academic matter, or a grade that they have been assigned, they must first communicate this concern with the instructor. If the concern cannot be resolved with the instructor, the student can proceed with an academic appeal, which normally begins with the Faculty. *https://www.ucalgary.ca/secretariat/student-appeals*

SEXUAL VIOLENCE POLICY

The University recognizes that all members of the University Community should be able to learn, work, teach and live in an environment where they are free from harassment, discrimination, and violence. The University of Calgary's sexual violence policy guides us in how we respond to incidents of sexual violence, including supports available to those who have experienced or witnessed sexual violence, or those who are alleged to have committed sexual violence. It provides clear response procedures and timelines, defines complex concepts, and addresses incidents that occur off-campus in certain circumstances. Please see the policy available at *https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf*

OTHER IMPORTANT INFORMATION

Please visit the Registrar's website at: *https://www.ucalgary.ca/registrar/registration/course-outlines* for additional important information on the following:

1. Wellness and Mental Health Resources
2. Student Success
3. Student Ombuds Office
4. Student Union (SU) Information
5. Graduate Students' Association (GSA) Information
6. Emergency Evacuation/Assembly Points
7. Safewalk

More student support and resources (e.g. safety and wellness) can be found here: *https://www.ucalgary.ca/registrar/registration/course-outlines*