Teaching and Learning Framework

September 2025

Queen's University

BDP. Quadrangle

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Territory Acknowledgement

Ne Queen’s University e’tho nón:we nikanónhsote tsi nón:we ne Haudenosaunee táhnon Anishinaabek tehatihsnonhsáhere ne onhwéntsya.

Gimaakwe Gchi-gkinoomaagegamig atemagad Naadowe miinwaa Anishinaabe aking.

Queen’s University is situated on traditional Anishinaabe and Haudenosaunee Territory.

More information can be found on our website about Indigenous Ways of Knowing.

Document Accessibilty

The Framework follows best practice in accessible print design as set out by the Council of Ontario Universities' Clear Print Guidelines. This includes text that is a minimum of 12 points in size, line-spacing of at least 1.25, high contrast, and the use of simple, sans-serif typefaces. Alt text is provided for all photos and supporting graphics. Text contrast meets the requirements of WCAG 2.1 Level AA. The document is laid out in Microsoft Word using standard typefaces (Arial and Open Sans) to enable easy updates and adaptation over time.

A. Introduction

1. Background Information

The Queen's University Teaching and Learning Space Framework (the Framework) is designed to shape the future design and renovations of centrally bookable teaching and learning environments. It also identifies methods for aligning class enrollment size and pedagogical approach with the most suitable learning space.

a) Intent

The Teaching and Learning Framework is the first of two outcomes from the Teaching and Learning Space Visioning and Utilization study. The Framework uses the university's strategic plan as a foundational element. The plan's strategic goals feed into, and are enabled by, the Framework and its objectives. The objectives were developed and validated through an engagement process and analysis of the existing facility utilization, spatial qualities and growth. The Framework's drivers and enabling measures inform the second document which is a phased Functional Plan that sets out priorities for the next 15 years.

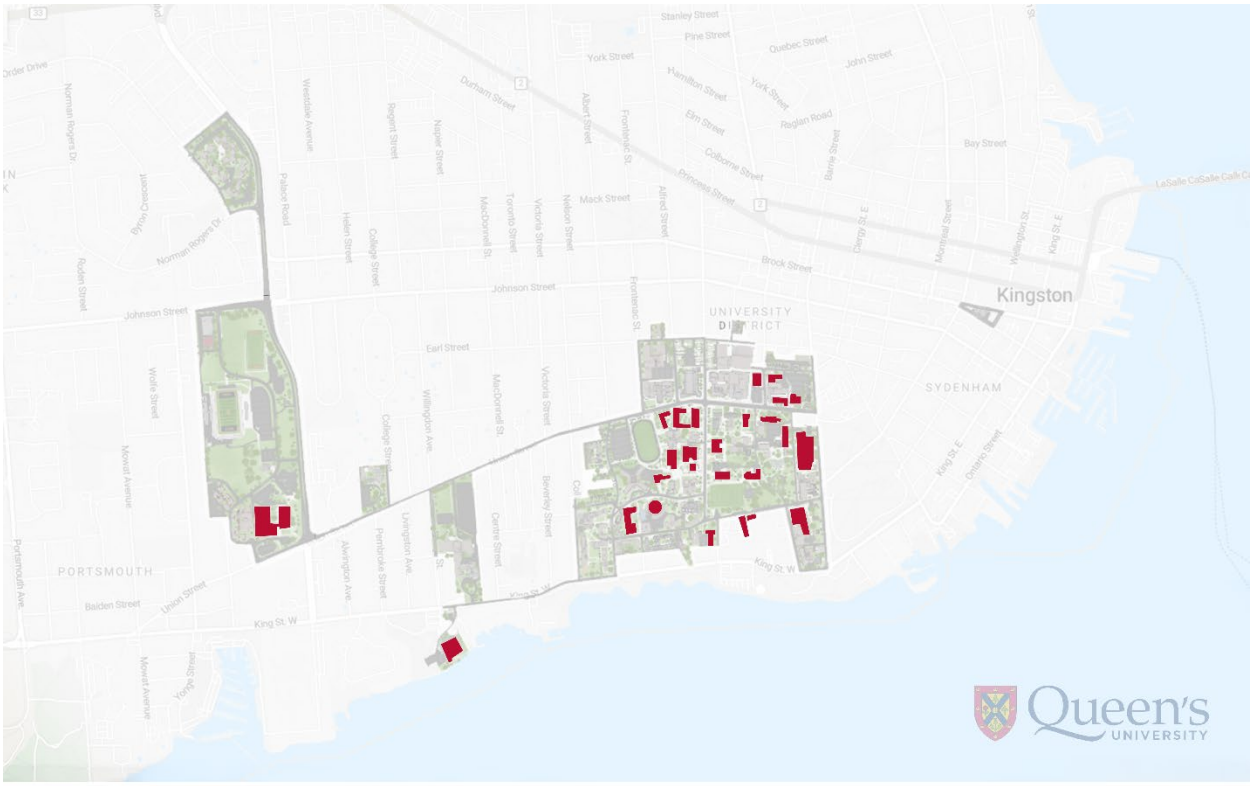

Figure 1 – Map of centrally bookable teaching and learning environments at Queen's

b) Framework Objectives

As a roadmap for future spaces, the Framework aligns with the university's strategic priorities focusing on research impact, student learning, research and teaching integration, global engagement, a contributing member of the community and organizational culture.

Strategic Goals

Research Impact	Shaping our future through research to advance social impact and sustainability.
Student Learning	Support critical and reflective thinking, leadership, engagement and co-curricular involvement.
Research and Teaching Integration	Embed research into all aspects of the student learning experience.
Global Engagement	Implement UN SD Goals. Teaching and learning oriented towards a pluralistic, culturally relevant global environment.
Queen's in the Community	Partnering with the community for change and mutually beneficial engagement.
Organizational Culture	An institute that values truth, responsibility, respect, freedom and well-being and aligns processes to its mission.

Figure 2 - Summary of Queen's University Strategic Priorities

The Framework's strategic goals will guide the design of new and renovations of existing learning spaces that:

- support excellence in teaching, research and collaboration,
- are inclusive of all faculty, staff, and students, acknowledging the intersectionality of diverse physical, sensory abilities and neurodiversity,
- are flexible and accommodate multiple ways of learning,
- are pedagogy-driven learning spaces,
- enable innovation,

- align with the United Nation's Sustainable Development Goals (UN SDG's), while supporting health and well-being, and a net zero carbon future; and
- create engaging 'in-between' learning spaces that support self-directed learning activities, and
- enable engagement and interaction within the Queen's community.

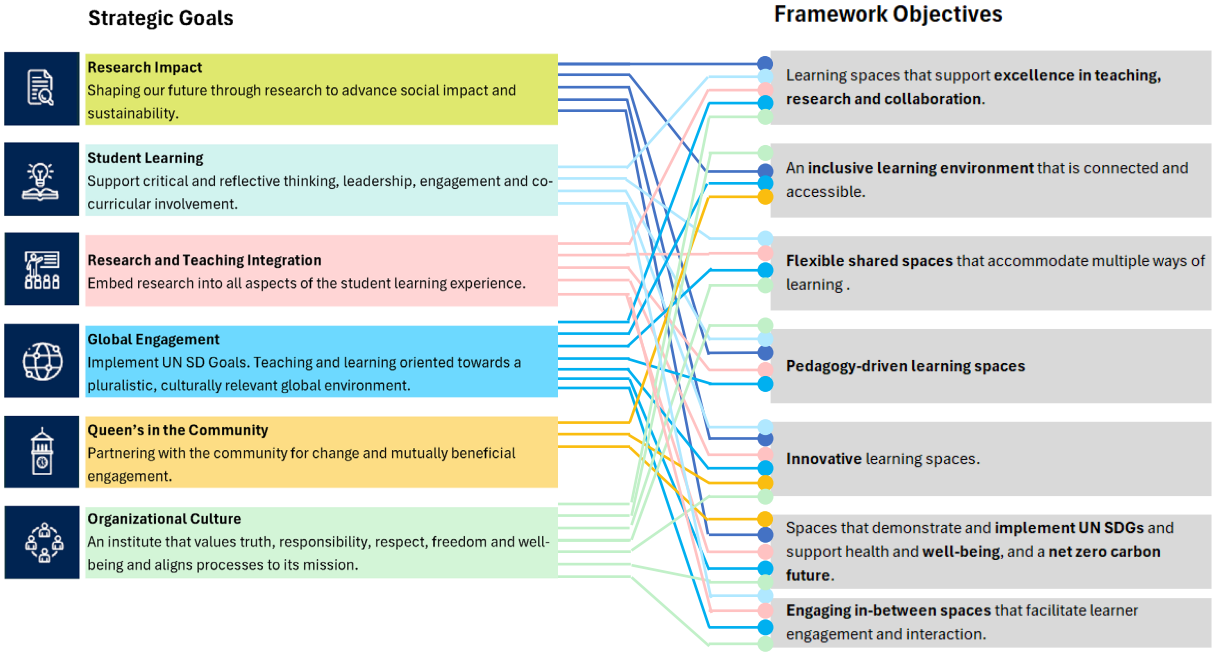

Figure 3 Alignment of Strategic Priorities and Teaching and Learning Space Framework Objectives. For a larger size of the image, Refer to Section 21 Strategic Goals.

c) Engagement Processes

The Teaching and Learning Spaces Framework was developed through a collaborative process between BDP Quadrangle and Queen's University. This section outlines the engagement activities completed to date and presents recommendations for continued engagement as teaching and learning spaces advance into the design and construction phases.

i. Engagement Sessions

The development of the framework involved a comprehensive review of current design strategies in post-secondary educational facilities, alongside active engagement with faculty, staff, and students. This engagement aimed to assess existing learning environments and identify opportunities to enhance learning outcomes and experiences for all stakeholders. Surveys and virtual focus group meetings were conducted from November 2024 to January 2025. The groups engaged included:

- Faculty and Staff
- Students
- Support of Learning Spaces
- Community (Outside of Queen's University)
- Accessible Learning Sessions

ii. Steering Committee

The authors would like to thank the following (in alphabetical order) for their contributions to the Framework's development:

- Barbara Kern – Associate University Librarian
- Brian Surgenor – Professor & Director (Mechatronics & Robotics Engineering Program), Smith Engineering
- Cathy Keates – Assistant Dean Student Affairs
- Chris Deluca – Associate Dean, School of Graduate Studies & Postdoctoral Affairs
- David Bath – Alma Mater Society
- Dreyden George – Commissioner of External Affairs, Alma Mater Society (AMS)

- Erin Webster – Adjunct Lecturer & Distinguished Teaching Fellow of Accounting, Smith School of Business
- Gavan Watson – Vice-Provost, Teaching and Learning
- Karalyn E McRae – Educational Developer, Graduate Students and Post-Doctoral Fellows, Centre for Teaching and Learning
- Karla McGrath – Assistant Dean, JD Program Queen's Law
- Kevin Banks – Associate Dean, Faculty, Faculty of Law
- Marianna Kontopoulou – Associate Dean (Academic) Smith Engineering
- Obie Udemezue – Manager, Education Technology
- Paul J Pearsall – Associate University Registrar (Student Information Systems)
- Richard van Wylick – Vice-Dean, Health Sciences Education, Queen's Health Sciences
- Society of Graduate and Professional Students (SGPS)
- Tiina Kukkonen – Assistant Professor of Visual Arts Education, Faculty of Education
- Tony Gkotsis – Director, Campus Planning and Real Estate
- William Nelson – Associate Dean, Teaching and Learning, Faculty of Arts and Science

d) How to Use the Framework

i. Formatting

Hyperlinks to resources are noted through the Framework in blue underline.

Where Sections are noted throughout the document, cross-references are provided to the corresponding section in the Framework.

ii. Content

The Framework is divided into four sections: A. Introduction; B. Guiding Principles; C. Ideal Room Mix; and D. Appendices.

Section A: Introduction identifies background information and development process of the Framework.

Section B: Guiding Principles establishes guiding principles for learning space design and a range of spaces that foster learning. Organized by number of learners and pedagogical approach, the Teaching and Learning Spaces Framework details both typical features across all learning spaces and unique features for certain types of spaces.

Note within Section B:

Section 3: Typical Features, builds upon the information shared on the Queen's Teaching and Learning Spaces website and lists all the considerations that should be provided within all learning spaces. Many new room characteristics are identified at a high level and prescriptive details can be further reviewed in Section 15 Related Policies, Standards and Guidelines.

Within Sections 4 through 8: Large Spaces the notes on typical features highlight specific modifications to the needs of that learning environment.

Where Model Room Schematics are provided, the diagrams illustrate key features; however, various configurations and layouts are possible.

Section C: Ideal Room Mix establishes guidance on the proportion of learning space types.

Section D: Appendices provide supporting materials—including terms, definitions, related policies, standards, guidelines, enlarged graphics and photograph references.

iii. Co-Design Rationale

As teaching and learning spaces advance into design and construction, co-design should be embedded as a strategic and continuous part of the process. This inclusive methodology integrates lived experiences, cultural values, and diverse perspectives—ensuring spaces are both functionally effective and culturally responsive to the Queen's University community. Integrated across all design phases, co-design creates a feedback loop that builds accountability and helps carry inclusive details through to project completion.

Efforts should be made to seek insight from diverse groups across campus. Considering the intersectional identities and potential uses of the spaces; at minimum feedback on the design of spaces should be sought from the various lens of:

- Age and a range of age groups;
- Cultures, race, ethnic origin;
- Disabilities;
- Family status (e.g./ students who are parents);
- Gender identity and expression;
- Indigenization and representation of First Nations, Inuit and Metis peoples;
- Creed or religion; and
- Sex and sexual orientation.

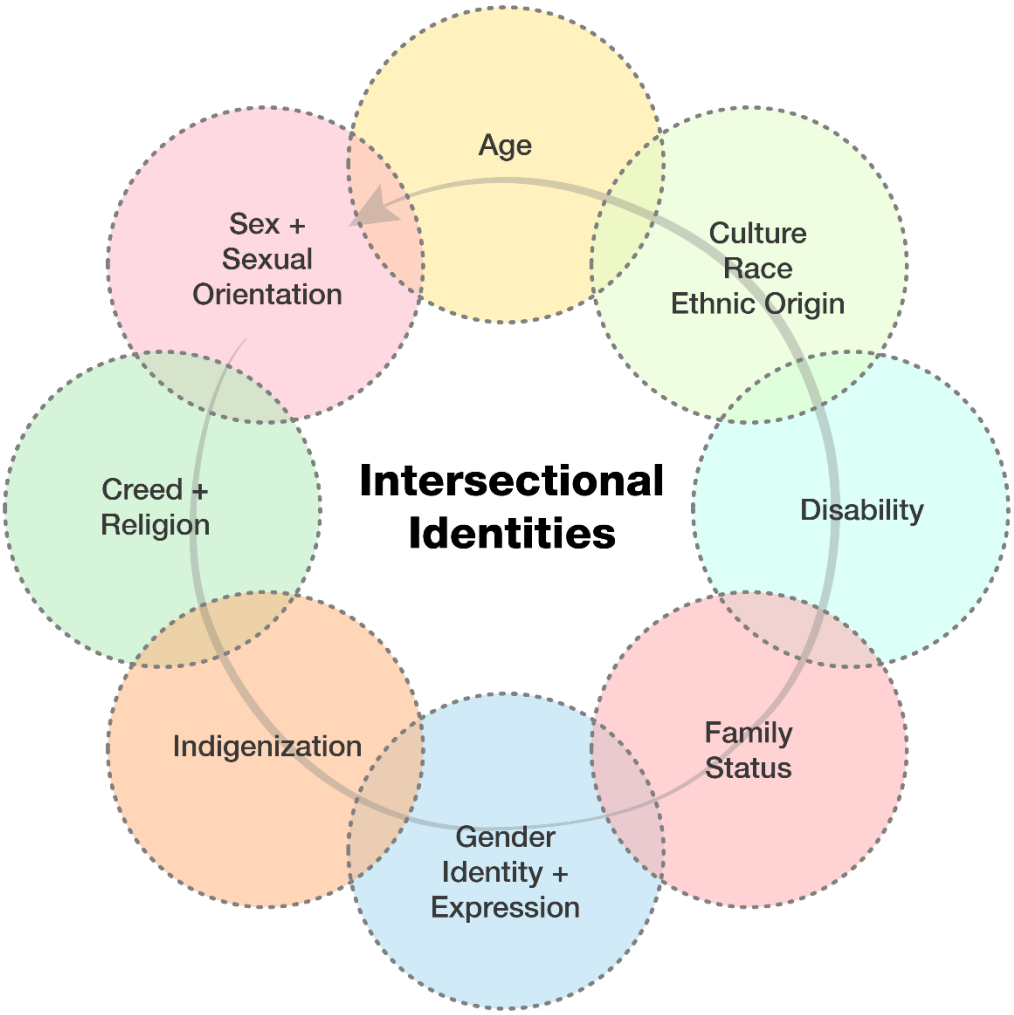

Figure 4 Intersectional identities represent a series of perspectives to consider in co-design sessions.

iv. Co-Design Process

A methodological approach to gathering collective perspectives through the co-design process includes key stages. These key stages work through an iterative process as new insights are collected. Below lists the key stages:

- **Engagement and Alignment:**
    a. Identify interested parties to confirm project scope, various roles and responsibilities and potential shared goals.
- **Exploration and Connection:**
    a. Understand the project context, potential opportunities and challenges.
    b. Gather and collate the range of perspectives shared.
- **Ideation**
    a. Based on the context of the project, work through various design and elements that address key findings from previous stages.
- **Creation and Testing**
    a. Work with identified interested parties throughout all stages of design to review drawings at schematic, design, and construction drawing development stages.
    b. Develop mockup of spaces from full to partial scale to evaluate how proposed ideas could be refined.
    c. Work with vendors to have testing periods by students, staff and faculty test various fixtures, furniture and equipment.
- **Implementation and Evaluation**
    a. Plan for post-occupancy review of the learning space. Timeframes may include Initial review (3 to 6 months); Comprehensive Review (12

months post-occupancy); and Continuous Review (two to three year post-occupancy).

- **Dissemination**

    a. Document findings of the co-design process and how it has shaped the development of the project.

    b. Identify innovations and considerations for future development.

Figure 5 Key stages in the iterative co-design process.

e) Framework Overview by Space Type

The Teaching and Learning Space Framework focuses on centrally bookable spaces, organized into Large Spaces, Smaller Spaces (60 or fewer), and Other Spaces such as Enclosed Open Spaces, Breakout Rooms, Maker Spaces, Immersive Learning Spaces, and Private Quiet Spaces. Ancillary and support spaces—typically non-bookable—include study nooks, pods, or clusters of desks. While these informal "in-between" spaces fall outside the scope of the framework, they play an important role in supporting teaching and learning for students, faculty, and staff. Additional information about these spaces is provided in the Appendices. Collectively, these environments reflect the diverse range of teaching and learning spaces across campus.

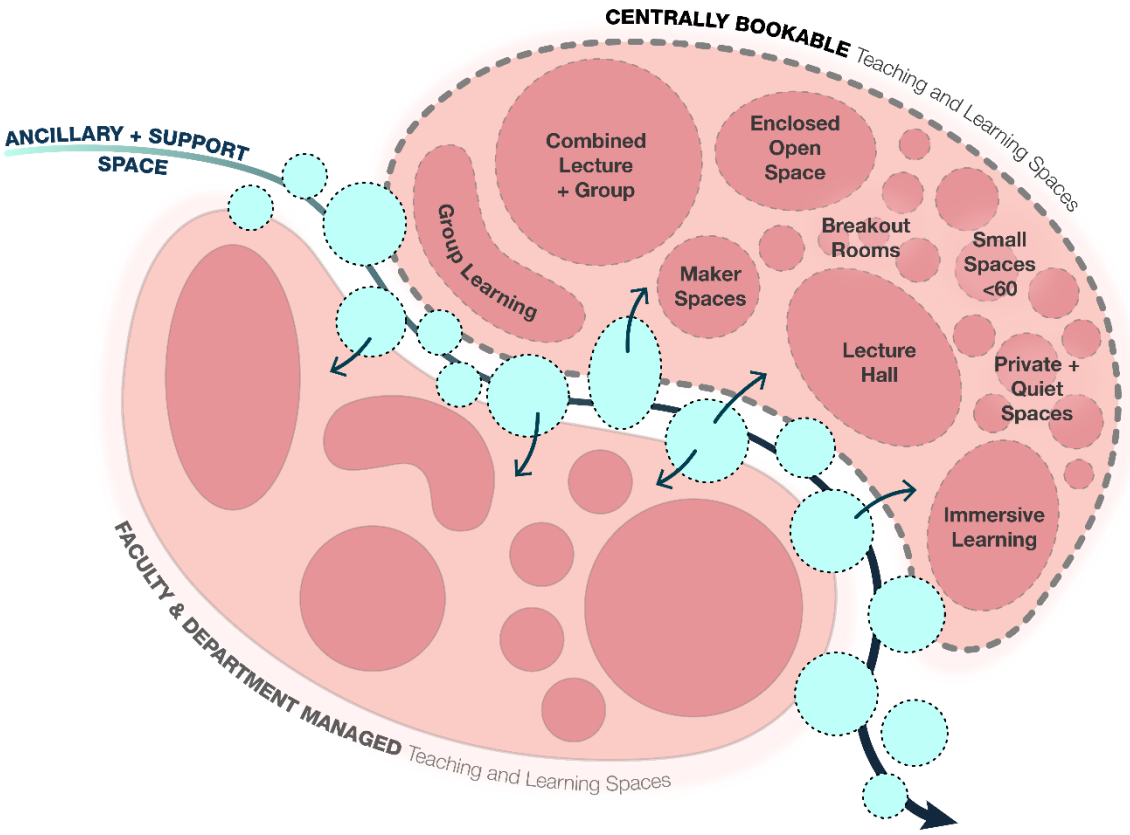

Figure 6 Overview of centrally bookable teaching and learning spaces

f) Other Uses of Shared Learning Space

During the engagement sessions, other uses of learning spaces were identified and organized as per below. The Teaching and Learning Spaces Framework also captures features for these spaces.

Academic Activities: Examinations and thesis defenses; student presentations including research showcases and poster sessions; teaching assistant (TA) and faculty training sessions.

Community Events: Conferences, workshops, and guest lecture series; Indigenous teachings, sharing circles, and ceremonies; art showcases, including artist and Elders in residence programs; social gatherings and volunteer meetings.

Internal Events: Competitions and testing of laboratory builds; orientation sessions and beyond-the-classroom support events; Club meetings.

Professional Development: Student and faculty networking receptions; professional development workshops and writing retreats; co-curricular and extracurricular programming; team development; laboratory and research meetings; teaching team and faculty meetings; group activities, plays, and team lunches.

Personal and Quiet Activities: Breastfeeding/pumping in adapted study spaces; quiet zones for silent work, personal time, or reading.

B. Guiding Principles

2. Size and Pedagogical Approach

The size and design of spaces are directly influenced by the number of occupants. Teaching and learning spaces need to be designed to suit the pedagogical approach. Both the number of learners and the pedagogical approach are key factors in defining the ideal learning environment.

a) The 60 Learner Threshold

Room configuration, size and pedagogical approach influence one another. For instance, it is difficult to effectively present to a large group of people in a large flat room with poor sightlines. Similarly, it can be challenging to engage students in group learning in a large space with fixed tiered seating. However, smaller groups can be engaged in active learning using either a lecture or interactive group approach in a well-designed small space. This raises a critical question: where is the threshold between small and large when defining optimal teaching and learning environments?

We have identified a capacity of 60 learners as the threshold between small and large teaching and learning spaces based on key functional and pedagogical considerations.

For groups of 60 or fewer, it is possible to design a highly flexible learning environment that accommodates a wide range of teaching methods. This flexibility is primarily due to the ability to maintain clear sightlines and optimal acoustics in a flat-floor setting, allowing for seamless transitions between lecture-style instruction, interactive discussions, and collaborative group work.

However, when designing for more than 60 learners, a more specialized approach is required to maintain engagement and effectiveness. Larger class sizes necessitate design interventions such as tiered seating to preserve instructor-to-learner visibility and acoustics in lecture-based settings or carefully planned spatial layouts to facilitate interactive learning. Additionally, classes of this size benefit from an integrated approach that combines well-designed physical space, supportive technology, and structured activities to ensure an effective and engaging learning experience.

In addition to sightlines and acoustics, Section 3: Typical Features further details other critical design considerations to enhance the teaching and learning experience.

b) Learning Space Size and Pedagocial Approach Categories

To streamline the classification of centrally booked classrooms, two high-level size categories have been established using the threshold proposed in the previous page:

1. **Large Spaces** – Designed for more than 60 learners.
2. **Small Spaces** – Designed for 60 or fewer learners.

Additionally, three broad pedagogical approach categories are used:

1. **Lecture** – Typically a single focal point/speaker addressing an audience of learners.
2. **Group Learning** – Interactive learning that involves learners working in small discussion groups.
3. **Combined Lecture and Group Learning** – A hybrid approach that integrates elements of both lecture and group learning, requiring complete flexibility.

The objective for **Small Spaces** (60 or fewer learners) is to ensure they are adaptable to all three pedagogical approaches and features described in Section 7 Typical Features.

For **Large Spaces** (more than 60 learners), the design should align with the intended pedagogical approach. As a result, they are further categorized as:

- **Lecture Halls** – Optimized for effective visibility and acoustics in lecture-based learning.
- **Group Learning Spaces** – Configured to support interactive, discussion and tasked-based learning.
- **Combined Lecture and Group Learning Spaces** – Designed for flexible use, accommodating a variety of teaching styles.

3. Typical Features

Application

This section identifies typical features that should be provided in learning spaces. Specifics of typical features are further modified for each type of learning space. In Section 12 Other Learning Spaces, application of features found in Teaching and

Learning portion of this section will vary. Additional related information and metrics can be found in Section 15 Related Policies, Standards and Guidelines.

a) Room Characteristics

1. Acoustics:
    - Learning spaces should be designed with appropriate acoustic ratings to support speech intelligibility, focus, and privacy. Uncontrolled ambient or adjacent noise disrupts learning, while poor reverberation and background sound levels strain communication. Effective acoustic design, including proper floor, wall, and ceiling materials, ensures sound privacy and clarity. Best practices for Sound Transmission Class (STC) ratings and reverberation times should be integrated based on space function, materials, and activity levels.
2. Indoor Air Quality:
    - Enhanced Indoor Air Quality (IAQ) supports health, comfort, and productivity. Poor ventilation can cause headaches, fatigue, respiratory issues, and reduced focus, often linked to Sick Building Syndrome (SBS). IAQ can be improved through effective ventilation design, adequate fresh air supply and performance monitoring.
3. Light sources and control:
    - A well-designed lighting environment enhances focus and visual comfort by ensuring appropriate illuminance, managing glare, and optimizing light quality by adjusting colour temperature and eliminating flicker.
    - Access to natural light has shown to improve mood, reduce stress and overall wellbeing and better health outcomes. Spaces with natural daylight should include roller shades or opaque coverings for adjustable control. Lighting should be adaptable to different tasks, from digital display use to group work, ensuring flexibility and comfort.
4. Power sources:
    - Electrical outlets and portable power banks ensure personal devices remain charged throughout the day, supporting continuous learning, especially for students in full-day classes without charging opportunities.

5. Seating:
    - Comfortable seating supports natural posture and reduces discomfort. Bariatric-rated and wider seats enhance inclusivity, while proper spacing ensures accessible movement without intruding on personal space. Selection of breathable/moisture wicking materials further improve comfort.
6. Thermal comfort:
    - Enhanced Heating, Ventilation, Air Conditioning (HVAC) design and controls optimize comfort, motivation, focus, and mood. Sensor-driven climate systems should adjust to ambient conditions while allowing user adjustments within wellness best-practice limits
7. Flexible Digital Infrastructure:
    - Adaptable, scalable, and interoperable systems that support evolving digital needs. Allowing spaces to respond quickly to changing technologies, user needs, and modes of engagement without requiring major physical upgrades. Some core components include:
        - Robust network connectivity and wired connections.
            - Scalable bandwidth to support increased device use.
            - Wi-Fi speed and bandwidth should be increased in high-occupancy spaces or in spaces offering video conferencing capabilities and proctored examination settings. Instructors should be trained to direct students to download materials ahead of time to avoid unnecessary peak loads in rooms such as auditoriums.
        - Power and Charging Access
            - Electrical outlets and portable power banks ensure personal devices remain charged throughout the day, supporting continuous learning, especially for students in full-day classes without charging opportunities.
        - Interoperability of systems that work across different devices and platforms.

b) Features for Teaching and Learning

Refer to Queen's Teaching and Learning Spaces glossary for additional information on the items below.

Note: any equipment provided should be accompanied by operational and maintenance plans to ensure staff, faculty and students are able to easily and confidently use the equipment provided.

8. AirMedia
9. Digital laptop connection
10. Digital projectors
11. Podiums:
    - Podiums should feature height-adjustability to enhance inclusivity for users of all heights and persons using mobility devices. Technology provided should remain consistent across all spaces.
12. Sound amplification technology: microphones or voice uplift technology and speakers should be used where amplification is required.
13. Cameras:
    - Tracking cameras, designed to automatically follow those with the prescribed frame, typically focus on the instructor who is speaking, using audio-base tracking or motion detection should be provided.
14. Wall-mounted writing and pin-up surfaces
    - Typically chalkboards or white boards. White boards and low odor dry erase markers are preferred as they produce less environmental dust and can also be used to display materials using magnets.

c) Accessibility

15. Path of travel
    - Accessible clear path widths, clear door widths with the required space for push and latch side clearance beside the door, and power door operators provide an equitable route into and throughout the building and into the learning space. Where tiered spaces are provided, accessible routes should lead to a range of spaces from the front,

middle and back of the space. The accessible path of travel should extend to the podium or any raised platforms.

- Planning of furniture should consider provision and maintenance of an accessible path of travel between rows of seats.

16. Furniture and Equipment:
    - In addition to the seating and podium elements noted above, a proportion of height adjustable desks or surfaces should be considered in fixed seating configurations.

4. Large Spaces: Lecture Halls

Application

This section presents the ideal conditions for providing lectures to a large audience of more than 60 learners. Discussion is limited to a focused question and answer format. This type of space is not best suited for group discussions and group work.

a) Room Type (Code)

- Auditorium (A)
- Tiered (DT)

b) Unique Features

- Tiered or raked floor configuration to provide a single focal point.
- Additional screens may be provided to improve sightlines to the focal point.
- Enhanced acoustic design and use of voice lift technology for the best speech intelligibility for the presenter and for audience.
- Accessible seating should be provided at various levels and viewing points. Accessible seating should be served by accessible table heights.

c) Notes on Typical Features

Items below expand on criteria listed in Section 3 Typical Features.

- Power sources:
    - Electrical outlets should be provided along the aisles or perimeter walls.
    - Power bank vending machines should be in the vicinity to the auditorium or lecture hall entrance.
- Sound Amplification as Voice Uplift Systems:
    - Voice lift technology enhances speech intelligibility to subtly amplify speaker's voice ensuring clarity in larger spaces. Voice lift utilizes ceiling-mounted beamforming microphones to detect and project speech evenly across the room via speakers.
- Wall mounted writing and pin-up surface – digital broadcast:
    - Location limited to the focal point area. Elements that are written or pinned/up should have the capability to be digitally broadcasted for improved visibility by the entire auditorium/lecture hall.

d) Optional Features: Enhancements

- Tracking cameras for presentation area and corresponding monitors in the seating area to improve connectivity between instructor and students during question-and-answer periods.

e) Adjacent Spaces

- Accessible and gender inclusive washrooms and facilities
- Breakout Rooms
- Private and Quiet Spaces

f) Operational Considerations

- Recommend students apply or activate laptop screen privacy filters to reduce visual distractions.

g) Existing Lecture Halls at Queen's University

Figure 7 Biosciences Room 1101 (450 Capacity)

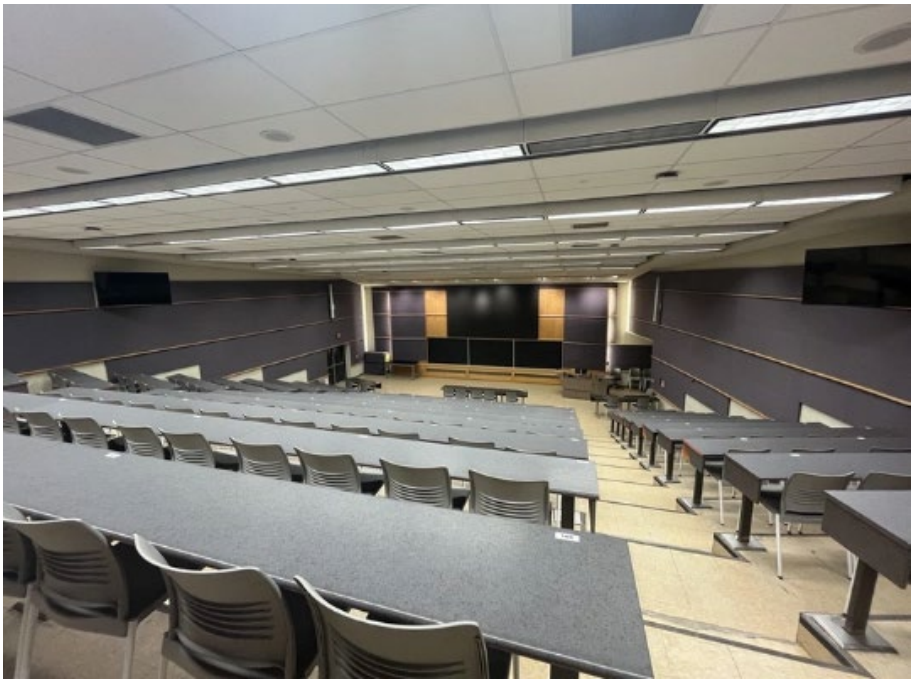

Figure 8 Chernoff Hall Auditorium (253 Capacity)

h) Model Room Schematics – Lecture Halls

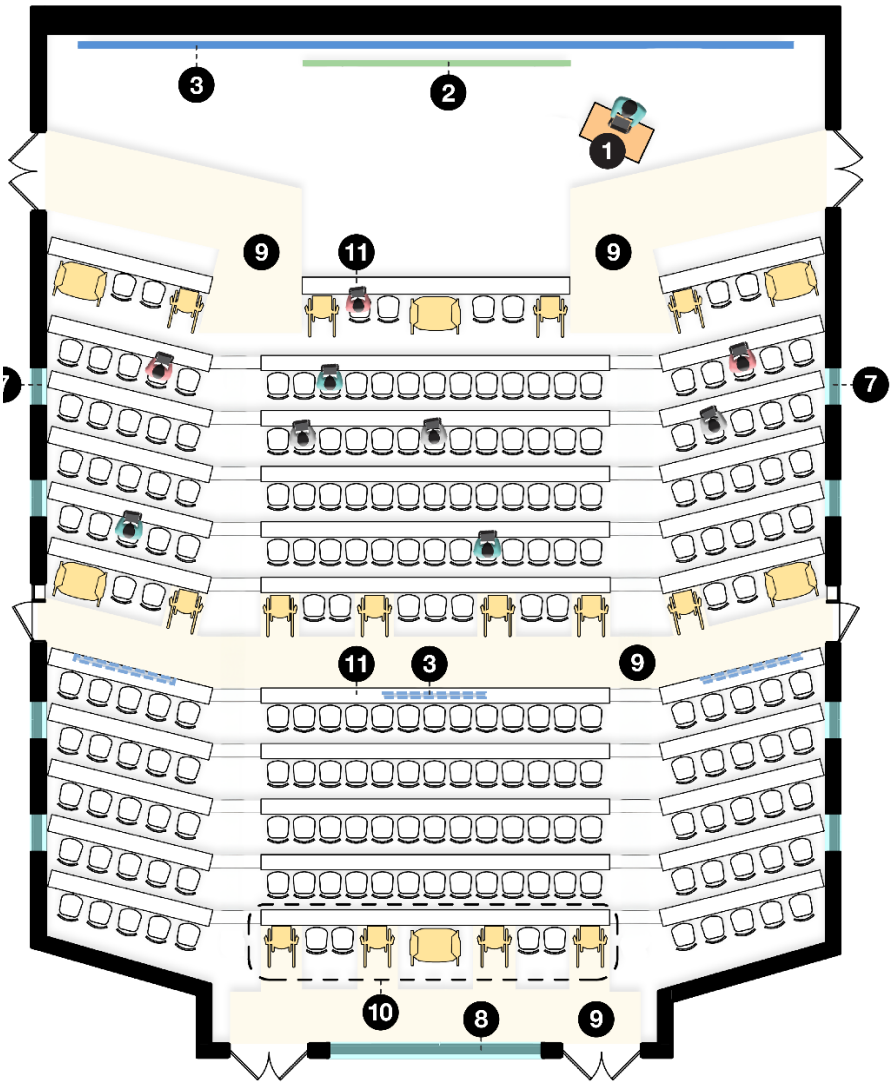

Figure 9 - Lecture Hall floor plan

LEGEND

1. Podium
2. Whiteboard
3. Video Screen / Video Wall
4. Flexible Furniture
5. Access Flooring with Power
6. Storage
7. Natural Light
8. Interior Window
9. Accessible Path
10. Barrier Free Seating Options
11. Fixed Tables with Power

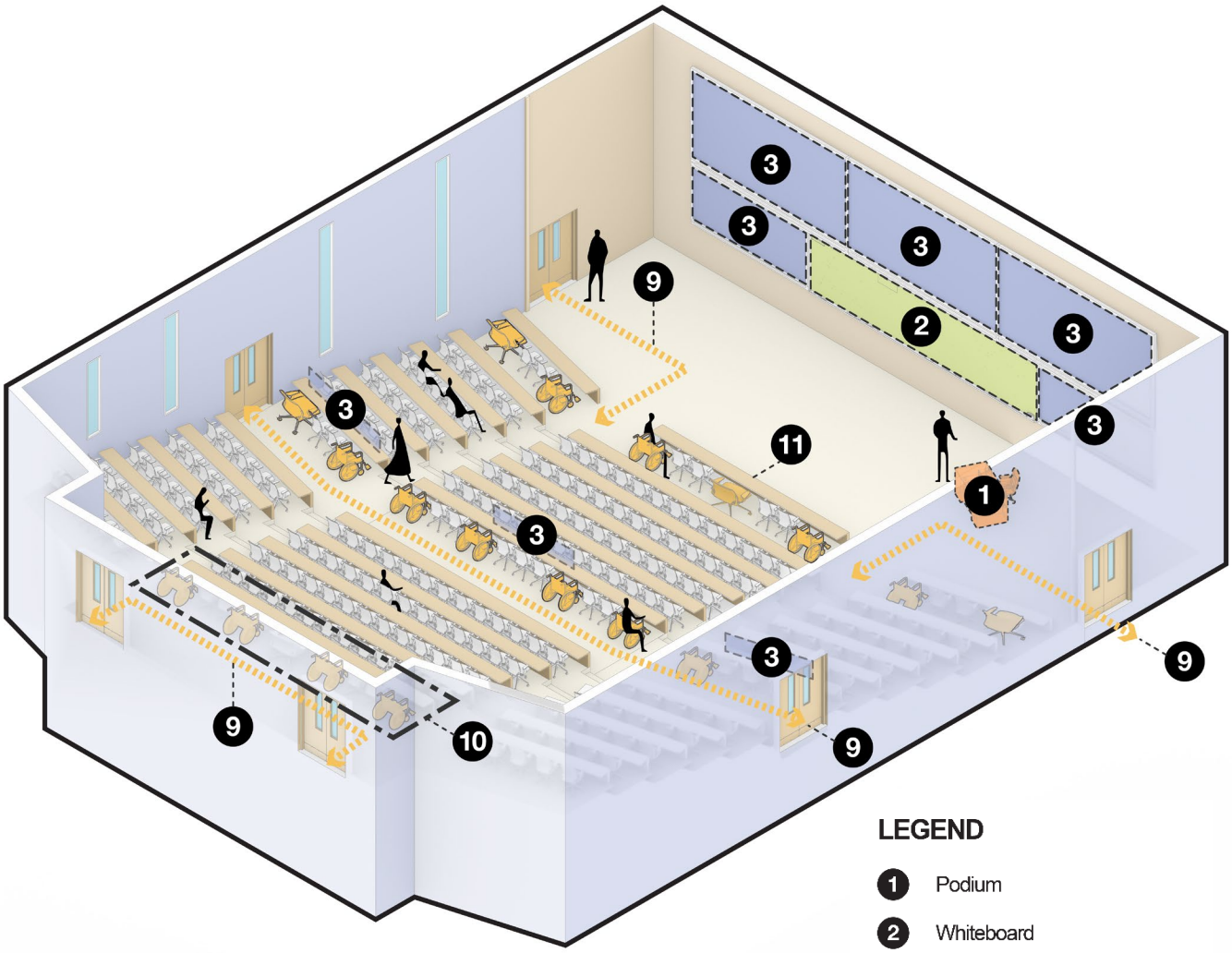

Figure 10 – Lecture Hall axonometric

5. Large Spaces: Group Learning Spaces

Application

This section presents the ideal conditions for supporting group work and discussion in spaces designed for more than 60 learners. These spaces are not generally effective for large group lectures.

a) Room Type (Code)

- Active learning classrooms (AL)

b) Unique Features

- Flat, single level spaces.
- Flexible furniture:
    - In low-tech classrooms both tables and chairs are easily movable.
    - In high-tech classrooms tables are fixed and only chairs are easily moveable.
- Access flooring:
    - For new construction, it is recommended to install access flooring to permit reconfiguration of high-tech spaces. Electrical, data and ventilation services run under the floor which consists of a grid of concrete access panels. This allows power and data connections to be easily moved.
- Operable partitions:
    - Where spaces can be divided into smaller rooms, accommodating 60 or fewer learners, ceiling mounted, full height operable partitions can be used. An operable partition can easily convert larger learning spaces to account for medium to smaller enrollment classes. It should be noted that careful design is needed to ensure the operable partition provides a good acoustic barrier and that it is safe and easy to use,
- Indigenous learning spaces:
    - Identify opportunities for cultural expression and identity through interior design planning highlighting opportunities to feature Indigenous narratives and craft.
    - Consider sensory connections to land and nature and how spaces can support access to sun, water and landforms. Provide access to natural light, ventilation and alignment with biophilic design principles. Spaces may have an interior and exterior component to the planning.

- Support community and gathering through circular or non-hierarchical layouts.
- Flexible furnishings to allow for intimate and large gatherings.
- Consider a kitchenette with a sink and space to allow for light food preparation and sharing.
- Enhanced ventilation design to allow for smudging practices without tripping fire and smoke alarm systems.
- Enhanced acoustics to provide acoustical comfort as well as acoustical buffering for adjacent spaces to support activities such as large group gatherings and cultural practices such as drumming.

c) Notes on Typical Features

Items below expand on criteria listed in Section 3 Typical Features.

- Enhanced acoustic design to buffer sound levels from simultaneous group discussions and ambient noise from laptop fans or other miscellaneous equipment.
- Enhanced thermal comfort to account for many people moving throughout the room and multiple laptops operating. The cooling system should be sized appropriately.

d) Optional Features: Enhancements

- No specific requirement at this time

e) Adjacent Spaces

- Accessible and gender inclusive washrooms and facilities
- Private and Quiet Spaces

f) Operational Considerations

- Reset floor plan:

- Establish a model room setup that should be reset at the end of each class. Time should be accounted within each period of class to reset furniture to the model room setup. This would support a certain degree of predictability for faculty, staff and students arriving to the space.

g) Existing Large Group Learning Spaces at Queen's Univeristy

Figure 11 Jeffery Hall Room 155 (152 Capacity)

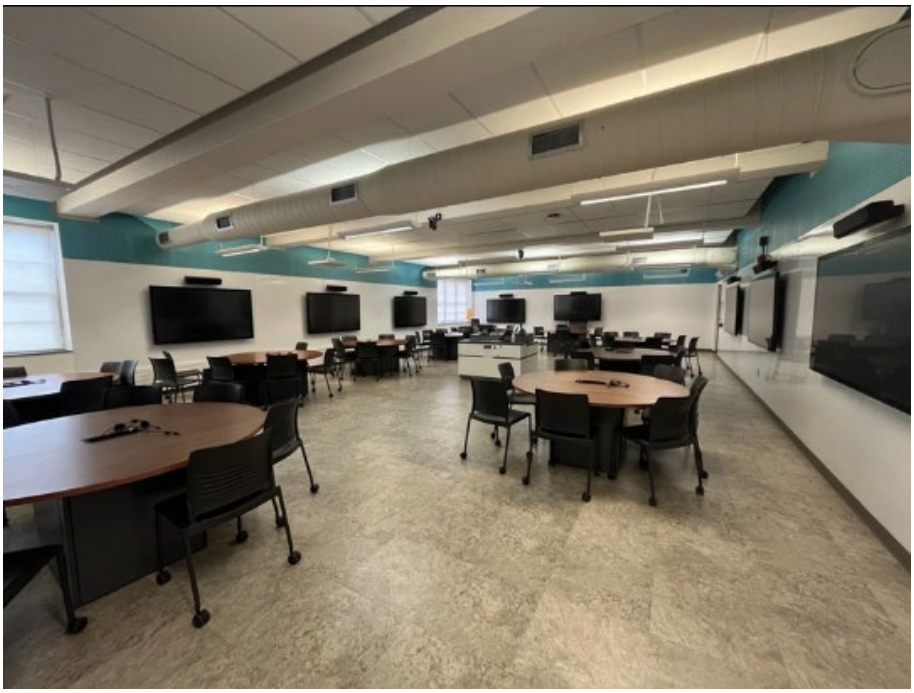

Figure 12 Ellis Hall Room 333 (70 Capacity)

h) Model Room Schematics – Large Group Learning

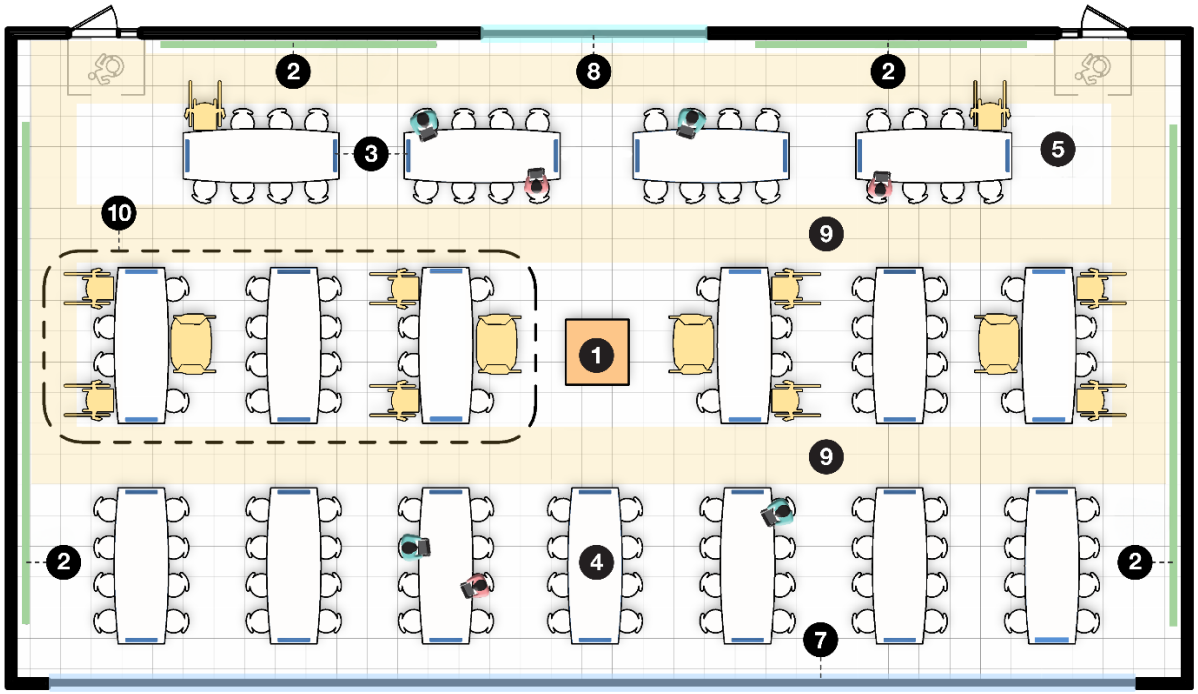

Figure 13 – Large Group Learning plan

LEGEND

1. Podium
2. Whiteboard
3. Video Screen / Video Wall
4. Flexible Furniture
5. Access Flooring with Power
6. Storage
7. Natural Light
8. Interior Window
9. Accessible Path
10. Barrier Free Seating Options
11. Fixed Tables with Power

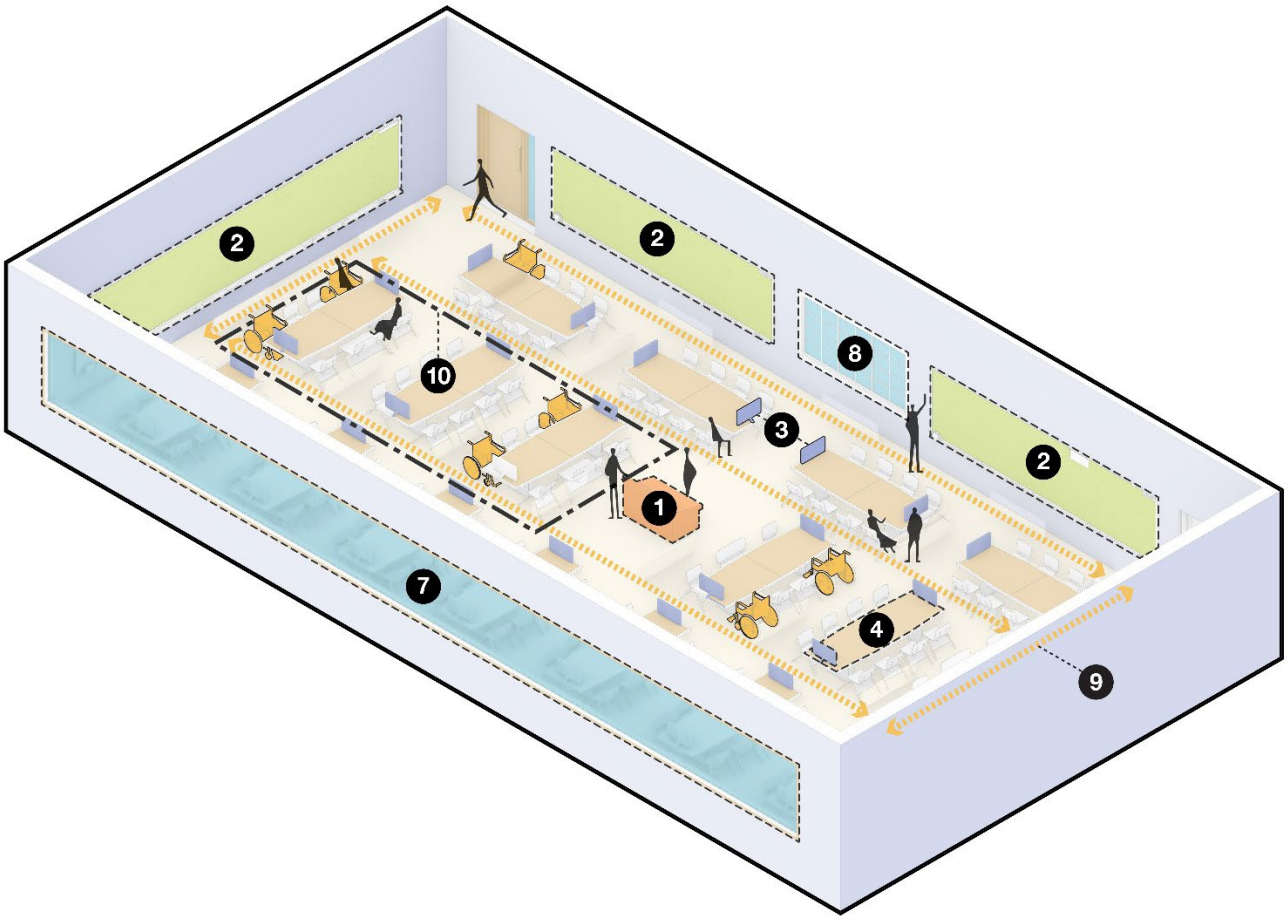

Figure 14 – Large Group Learning axonometric

LEGEND

1. Podium
2. Whiteboard
3. Video Screen / Video Wall
4. Flexible Furniture
5. Access Flooring with Power
6. Storage
7. Natural Light
8. Interior Window
9. Accessible Path
10. Barrier Free Seating Options
11. Fixed Tables with Power

6. Large Spaces: Combined Lecture and Group Learning

Application

This section presents the ideal conditions for supporting lectures to a large audience of more than 60 learners while also supporting group work and discussion.

a) Room Type (Code)

- Does not currently exist at Queen's University

b) Unique Features

- Accessible seating, single focal point, acoustic design and accessible seating as identified in Section 4 Large Spaces: Lecture Halls; and
- Terraced levels with furniture arrangement set up for at least groups of four learners.

c) Notes on Typical Features

Below further expands on criteria listed in Section 3 Typical Features.

- Power sources, voice uplift systems, and digital broadcast features as identified in Section 4 Large Spaces: Lecture Halls; and in Section 5 Large Spaces: Group Learning Spaces.

d) Optional Features: Enhancements

- No specific requirement at this time

e) Adjacent Spaces

- Accessible and gender inclusive washrooms and facilities
- Private and Quiet Spaces

f) Operational Considerations

- Consider pedagogical needs and support/availability of teaching assistants (TA) during class to facilitate group work.

g) Existing Spaces at Queen's University

- Does not currently exist at Queen's University

h) Model Room Schematics and Precedent Images

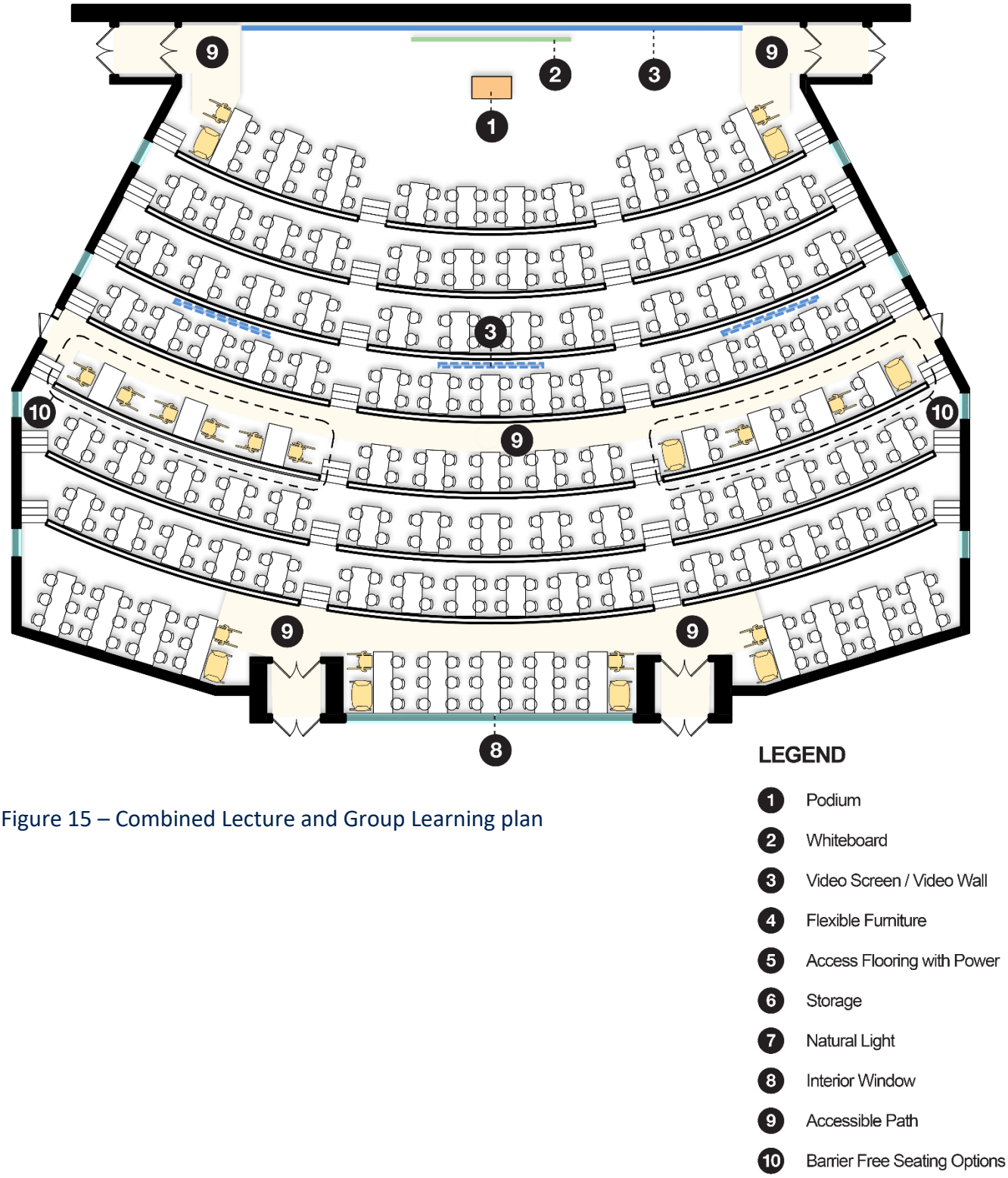

Figure 15 – Combined Lecture and Group Learning plan

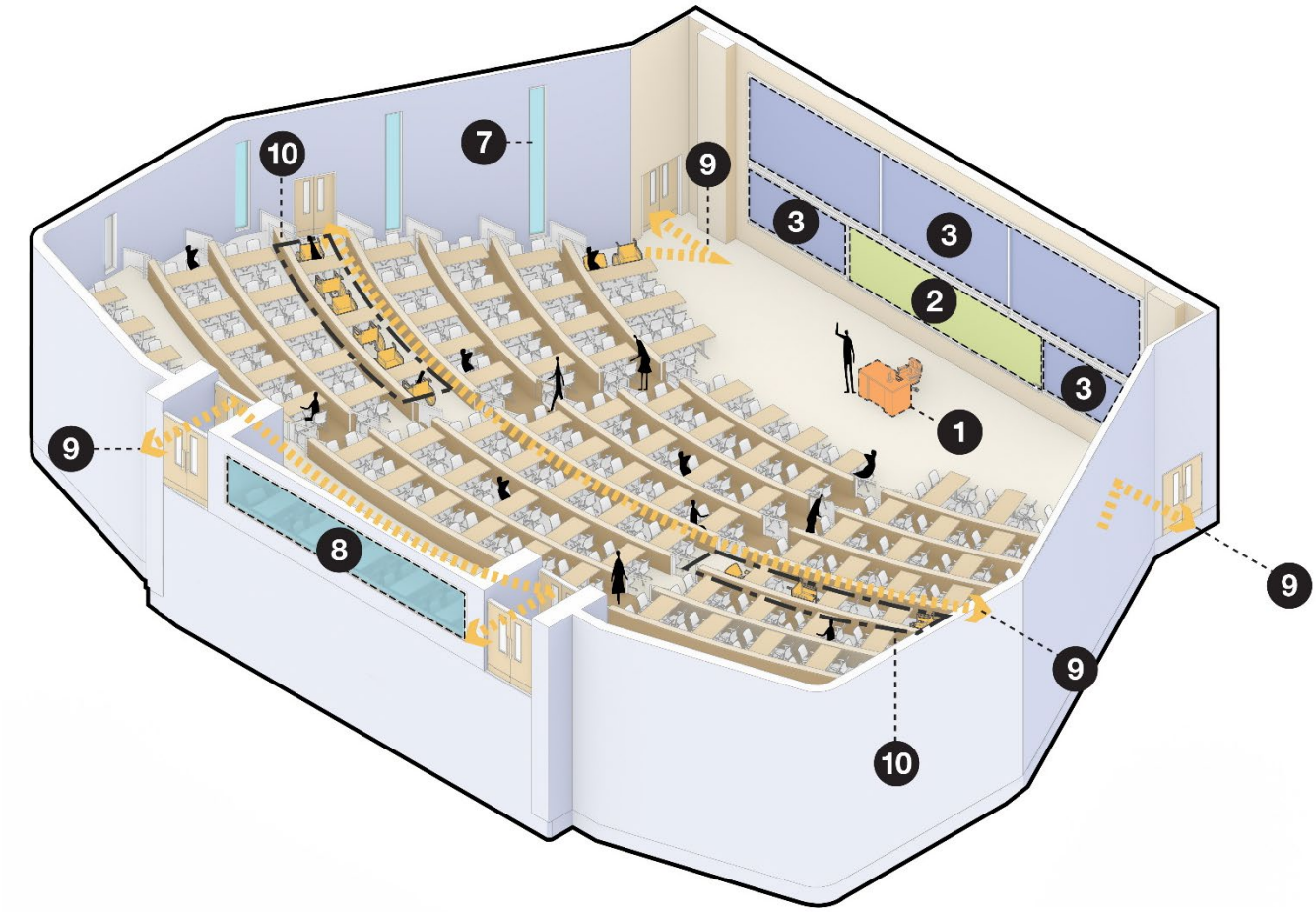

Figure 16 – Combined Lecture and Group Learning axonometric

LEGEND

1. Podium
2. Whiteboard
3. Video Screen / Video Wall
4. Flexible Furniture
5. Access Flooring with Power
6. Storage
7. Natural Light
8. Interior Window
9. Accessible Path
10. Barrier Free Seating Options

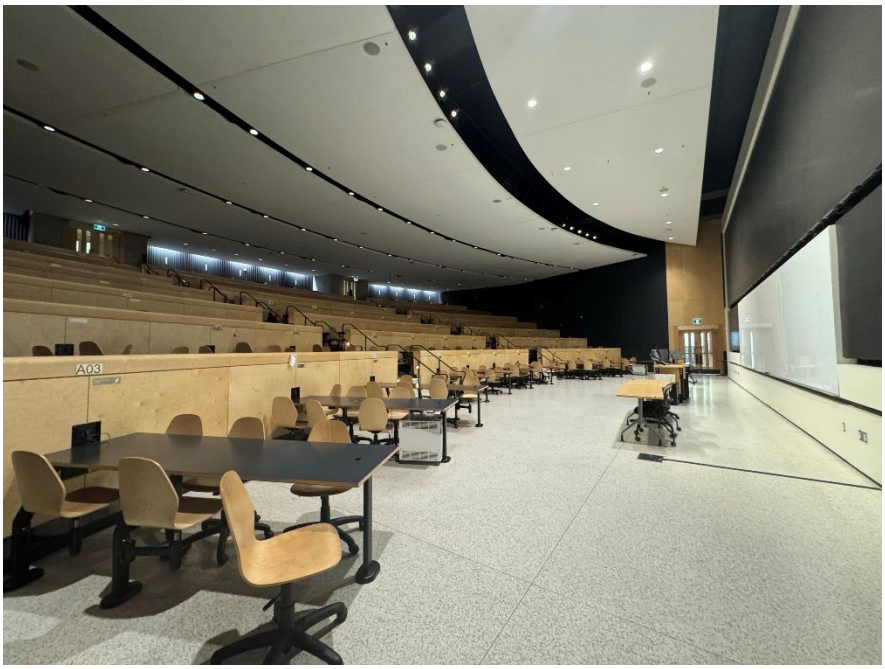

Figure 17 Ground Floor Margaret Lau Auditorium, University of Toronto

Figure 18 Tiered Portion Margaret Lau Auditorium, University of Toronto

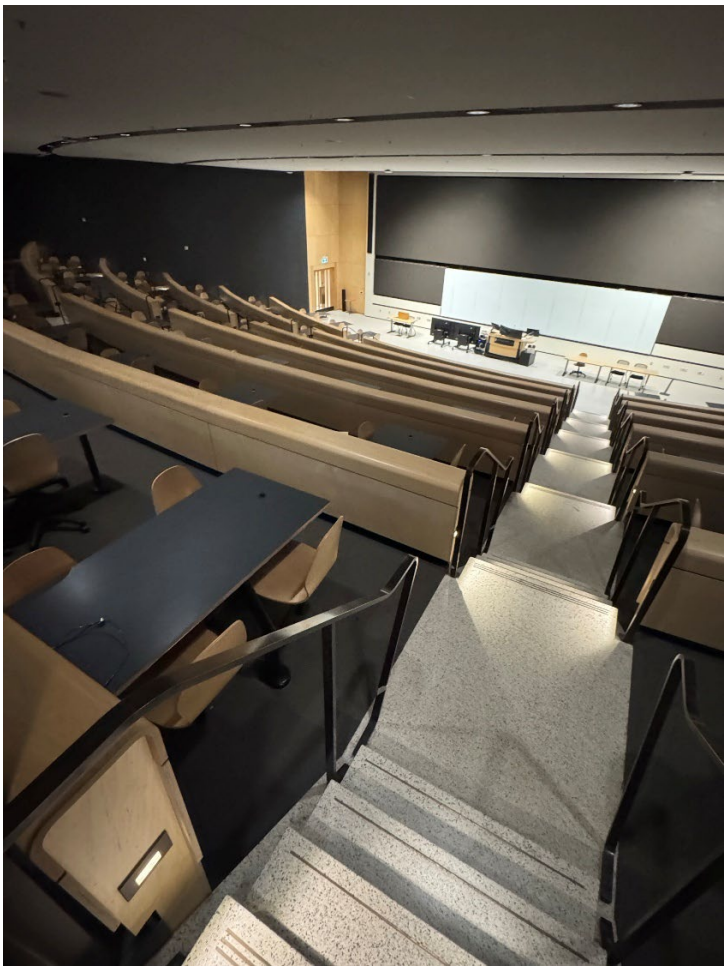

Figure 19 Top View Margaret Lau Auditorium, University of Toronto

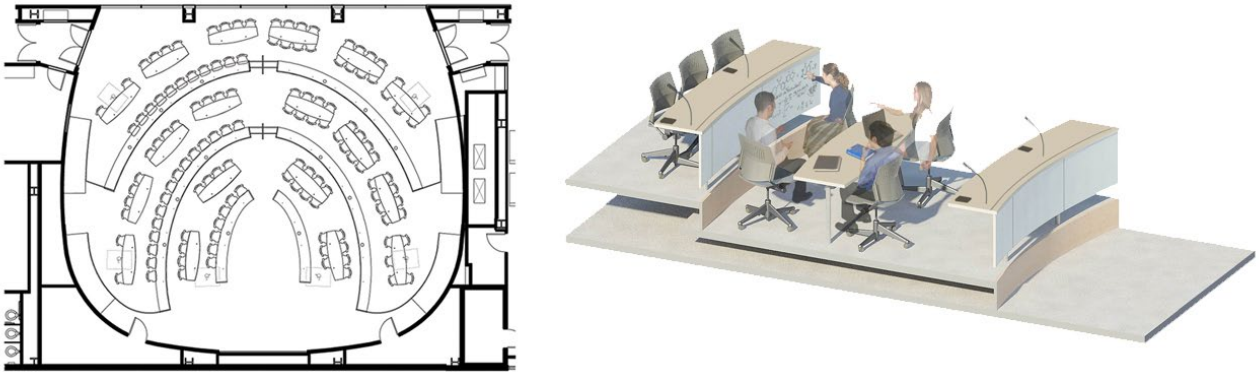

Figure 20 Combined Lecture and Group Learning Space, Duke School of Medicine

Figure 21 Combined Lecture and Group Learning Space, University of Texas, Dell Medical School

7. Small Spaces: 60 or fewer

Application

This section highlights the flexibility of small spaces for 60 or fewer learners to work well with all pedagogical approaches.

a) Room Type (Code)

- Active Learning (AL)
- Flat (DC)
- Flexible Seating (FS)
- Seminar (SD)

b) Unique Features

- Flat, single level spaces.
- Spaces are sized to accommodate 60 learners or fewer.
- Sightlines and acoustics support lecturing and group learning.
- Furniture:
    - Seating: A mix of easy to move chairs with wheels and chairs without wheels should be provided. Adjustable and easily moveable chairs can create another layer of distraction for some learners or be difficult for those of shorter stature to use.
    - Writing surfaces: Tables with lockable castors provide the greatest degree of flexibility within a learning space and should be provided.

c) Notes on Typical Features

- Reserved

d) Optional Features: Enhancements

- Sinks to allow for equipment, material clean up or handwashing.

e) Adjacent Spaces

- Accessible and gender inclusive washrooms and facilities
- Private and Quiet Spaces

f) Operational Considerations

- Reset floor plan:

- Establish a model room setup that should be reset at the end of each class. Time should be accounted within each period of class to reset furniture to model room setup. This would support a certain degree of predictability for faculty, staff and students arriving to the space.

g) Existing Small Spaces at Queen's University

Figure 22 Botterell Hall B148 (30 Capacity)

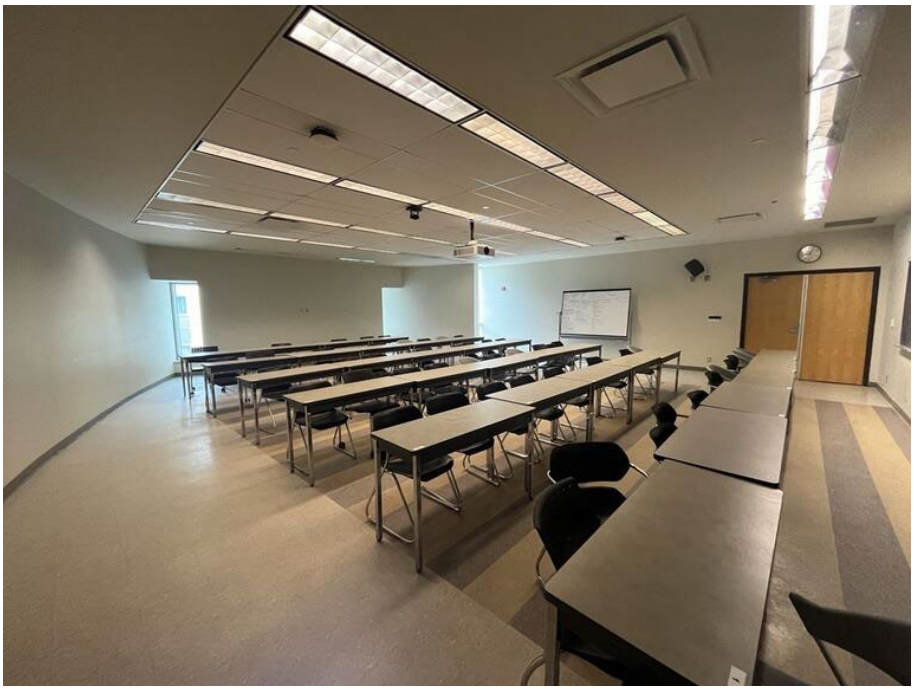

Figure 23 Chernoff Hall 213 (60 Capacity)

h) Model Room Schematics

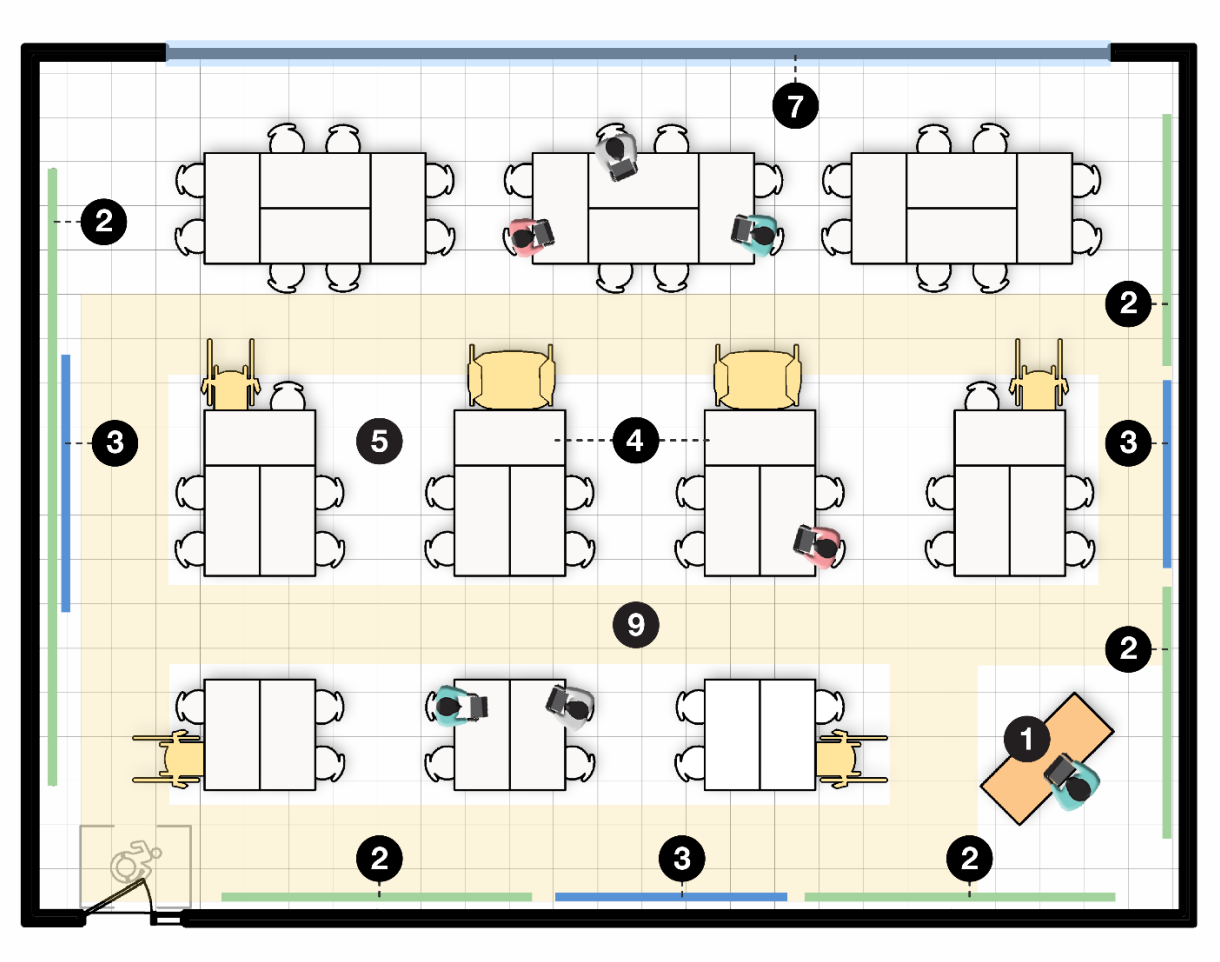

Figure 24 - Small Group Learning Active Learning plan

LEGEND

1. Podium
2. Whiteboard
3. Video Screen / Video Wall
4. Flexible Furniture
5. Access Flooring with Power
6. Storage
7. Natural Light
8. Interior Window
9. Accessible Path
10. Barrier Free Seating Options

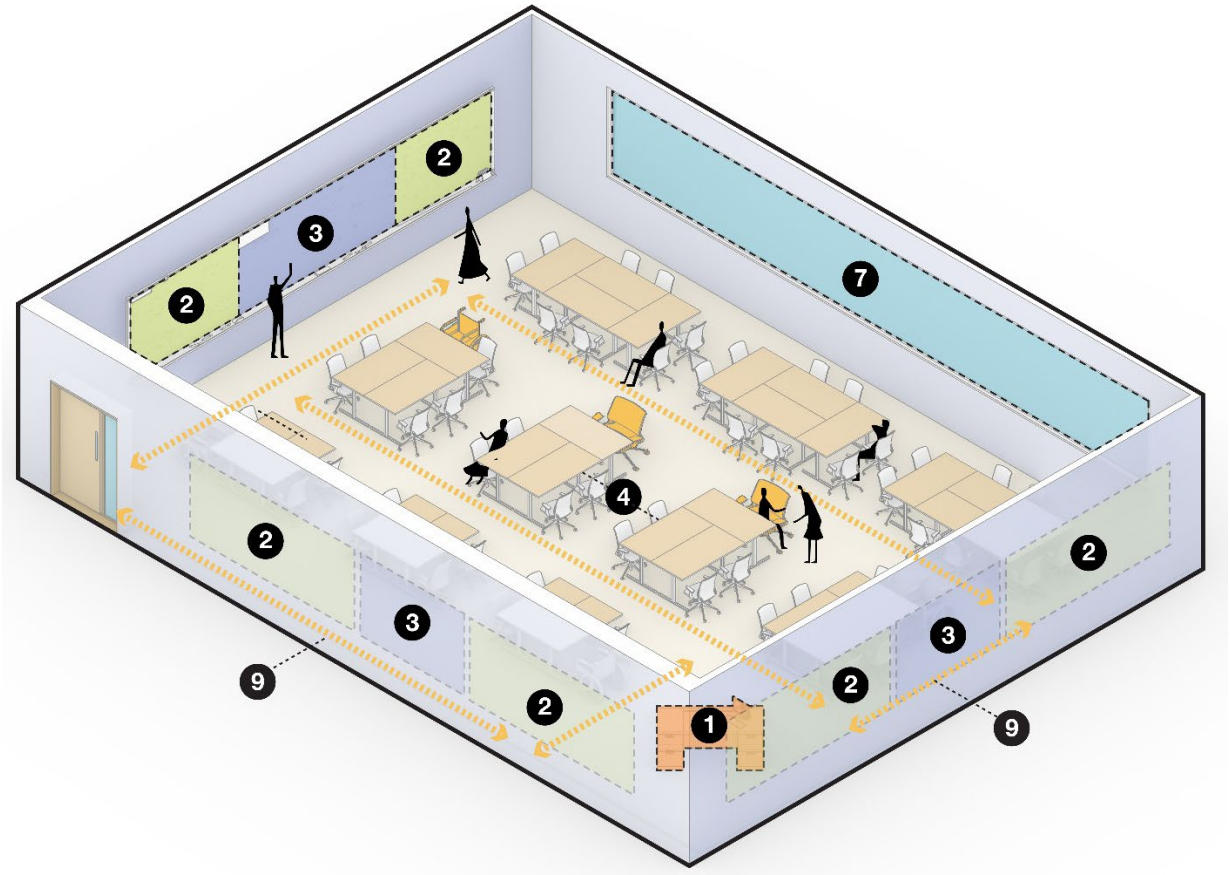

Figure 25 - Small Group Learning Active Learning axonometric

LEGEND

1. Podium
2. Whiteboard
3. Video Screen / Video Wall
4. Flexible Furniture
5. Access Flooring with Power
6. Storage
7. Natural Light
8. Interior Window
9. Accessible Path
10. Barrier Free Seating Options

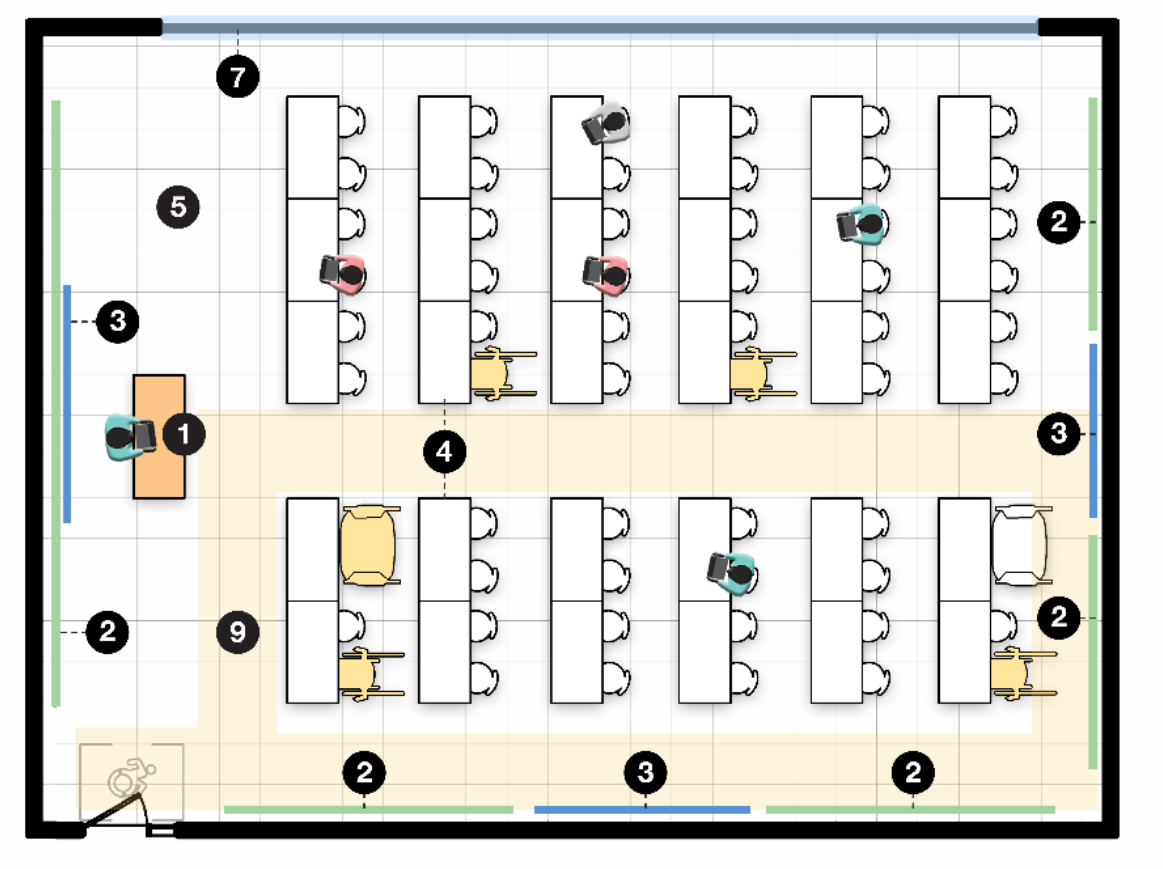

Figure 26 – Small Group Learning Lecture Format plan

LEGEND

1. Podium
2. Whiteboard
3. Video Screen / Video Wall
4. Flexible Furniture
5. Access Flooring with Power
6. Storage
7. Natural Light
8. Interior Window
9. Accessible Path
10. Barrier Free Seating Options

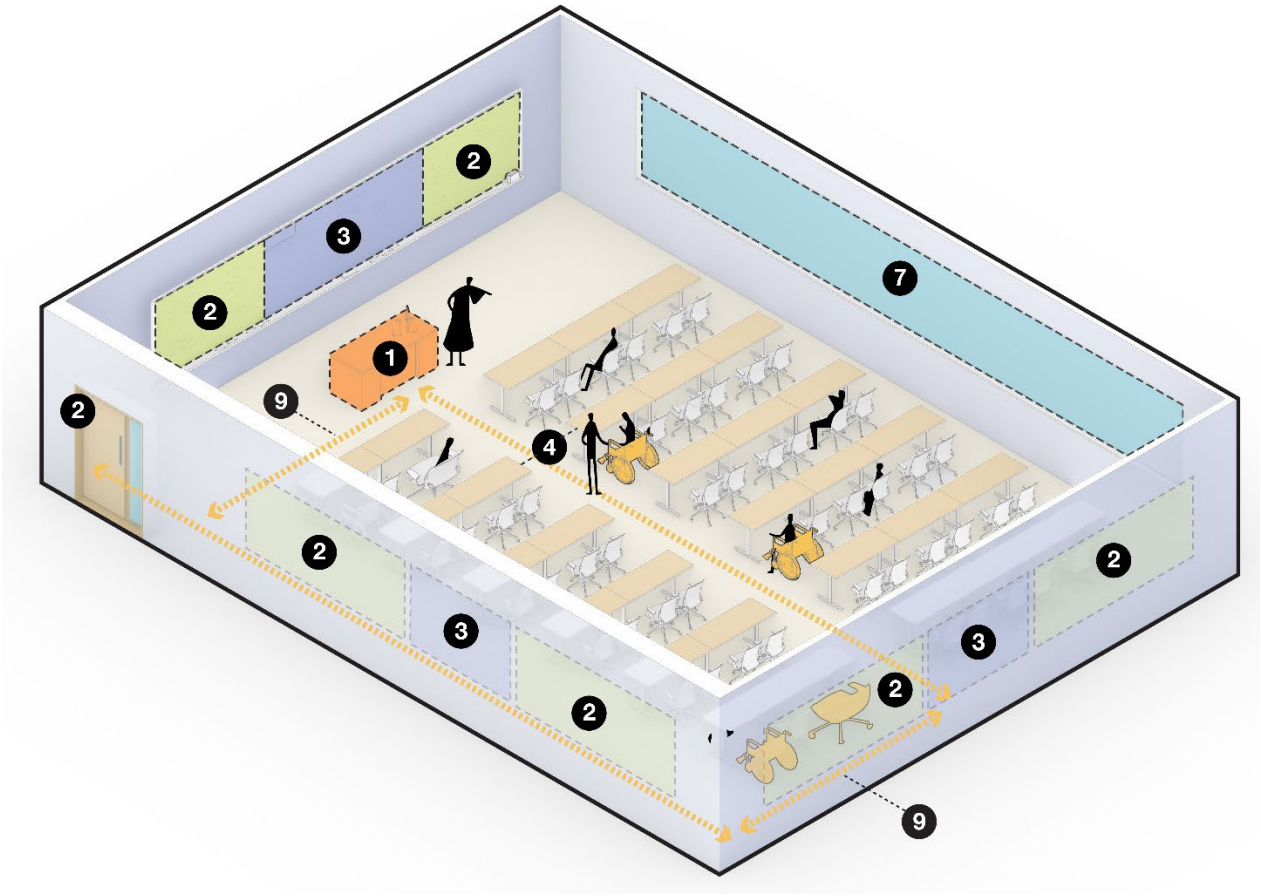

Figure 27 - Small Group Learning Lecture Format axonometric

LEGEND

1. Podium
2. Whiteboard
3. Video Screen / Video Wall
4. Flexible Furniture
5. Access Flooring with Power
6. Storage
7. Natural Light
8. Interior Window
9. Accessible Path
10. Barrier Free Seating Options

8. Other Learning Spaces

Application

This section applies to spaces that support the continuum of learning activities while supporting other uses of shared learning spaces as outlined in Section 1. All spaces should be bookable with a general and flexible design approach to support a range of faculty needs. These spaces would most likely not meet the specialized needs of various faculties.

a) Enclosed Open Space

i. Intended Uses

- Academic Activities: Research showcases and poster presentations
- Community Events: Social gatherings and cultural events
- Internal Events: Testing of laboratory builds, club meetings, dance/movement classes
- Professional Development: Student and faculty networking receptions
- Refer to Section 1 Other Uses of Shared Learning Spaces for a list of other activities.

ii. Unique Features

- Large open space that is physically and acoustically separated from other spaces.
- Has minimal furniture within the space; if furniture is provided it is easily moved and cleared.
- Storage space is provided within the room.
- A sink and counter space to allow for the flexibility of food catering services.
- A water bottle filling station.

iii. Notes on Typical Features

- Provide Room Characteristics and Accessibility features in Section 7 Typical Features.
- Wall mounted writing and pin ups surfaces should be provided.
- Enhanced acoustic design to buffer sound levels from simultaneous group discussions and ambient noise from laptop fans.
- Enhanced thermal comfort to account for many people moving throughout a room. Room temperature may be set to be cooler point to account for the multiple laptops operating.
- Plan HVAC systems be designed and signed to allow for Smudging Ceremonies.

iv. Operational Considerations

- Where Smudging Ceremonies are designed for, training should be provided to communicate how HVAC systems should be activated.

v. Model Room Precedents

Figure 28 Large enclosed spaces that can be used for a range of group activities.

Figure 29 Large enclosed spaces that have easy to move furniture to allow for different room uses and configurations.

b) Breakout Rooms

i. Intended Uses

- Smaller spaces co-located next to large learning spaces such as lecture halls or group learning spaces.
- Offers a quieter space when compared to the larger learning spaces.
- Refer to Section 1 Other Uses of Shared Learning Spaces for a list of other activities.

ii. Unique Features

- Table and chairs for a group of learners.

iii. Notes on Typical Features

- Provide Room Characteristics and Accessibility features in Section 7 Typical Features.
- Wall mounted writing and pin ups surfaces should be provided.
- Wi-Fi and audio-visual equipment to support video conferencing capabilities.

iv. Operational Considerations

- Ability to book the space, locally via a local terminal within the space. Availability of the space should coordinate with central booking systems to allow for improved utilization of the space.

v. Model Room Precendents

Figure 30 Enclosed room adjacent to an open work area

Figure 31 Smaller room with technology and tables to support group work

c) Maker Spaces (Low-Tech) (Laboratories)

i. Intended Uses

- A space that enables learners to observe, participate, experiment and practice concepts learned in class. Emphasizes hands-on learning, experimentation and interactive activities.
- Note these spaces would not provide the required ventilation for activities in more specialized laboratory activities.

ii. Unique Features

- Storage space is provided within the room for materials and a place to safely store student's work-in-progress.
- A sink to allow for cleaning up materials and handwashing.
- A mix of standing and sitting heights of worksurfaces, where adjustable height surfaces are not provided.

iii. Notes on Typical Features

- Provide Room Characteristics and Accessibility features in Section 7 Typical Features.
- Task lighting that is dimmable and offered at each workstation/area.

iv. Operational Considerations

- Develop clear maintenance procedures for cleanup, restocking materials and tools, and repairing the space as needed.
- Develop procedures for accessing storage and allocating designated space for student work-in-progress.
- Establish hours of operation for student drop-in access and designated class times.
- Sinks to allow for equipment, material clean up or handwashing.

v. Model Room Precedents

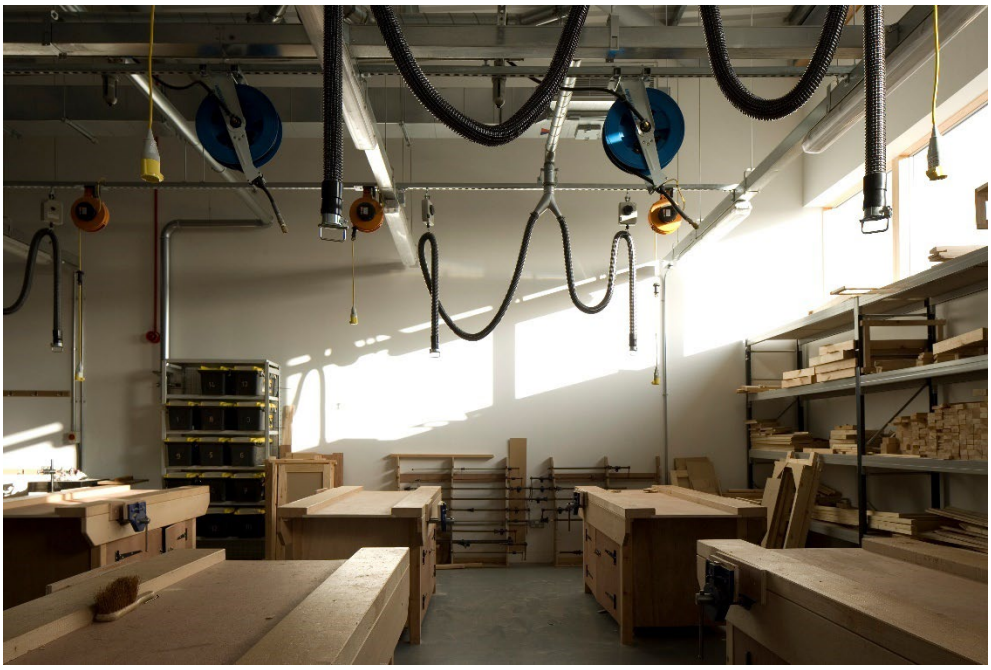

Figure 32 Maker lab

Figure 33 Learning lab

d) Immersive Learning Spaces

i. Intended Uses

- Physical space that allows engagement in a virtual space that creates multi-sensory, interactive experiences.
- Allows for simulation and scenario-based learning.
- Enables practice of complex tasks in low-risk settings.
- Examples include:
    - Health Sciences: VR-based surgery simulators or trauma response rooms
    - STEM Education: Virtual labs for chemistry or physics experiments
    - Cultural Studies: Immersive storytelling or virtual visits to historic sites
    - Language Learning: AR environments that mimic marketplaces or public transit scenarios
    - Libraries or Innovation Hubs: Immersive visualization rooms for data storytelling or digital humanities research.

ii. Unique Features

- Room signage to indicate immersive learning in session, “do not enter or proceed entry with caution”.
- Flexible open area, unobstructed floor space.
- Planning for a digital room that acts as a central point for facilitating session, managing VR content and/or monitoring safety of end users.
- Technology storage space to safely secure and charge any equipment.

iii. Notes on Typical Features

- Flexible digital infrastructure to adopt to technology selected.
- Technology may range from:
    - Virtual Reality (VR), Augmented Reality (AR), Mixed Reality (MR).
    - Interactive projection, 3D audio, AI-powered interfaces.
    - Identify and engage with potential vendors.

iv. Operational Considerations

- Ongoing training and maintenance of technology provided.
- Security of equipment and rooms when space not in use.

v. Model Room Precedents

Figure 34 Immersive learning lab – full digital room interface

Figure 35 Virtual reality googles used in an open space

Figure 36 Virtual reality googles used at a desk to simulate a learning experience

e) Private and Quiet Spaces

i. Intended Uses

- Personal care activities such as breastfeeding/pumping and wellness.
- Private space for a virtual interview, spiritual reflection or prayer.
- Quiet space for sensory reprieve.

ii. Unique Features

- Room signage to indicate room in use, “do not enter”.
- Space should be designed to be private without compromising safety and security. Where glazing is used, frosted privacy films should cover a significant portion of the glazing to prevent a direct sightline into space.
- Hand sanitizer dispenser should be provided.

iii. Notes on Typical Features

- Provide Room Characteristics and Accessibility features in Section 7 Typical Features.
- Lighting that is dimmable and design with compatible hardware to reduce humming sounds.
- Wi-Fi to support web conferencing on a personal laptop.
- A movable table surface and ergonomic seating that can be relocated in the room.
- Evaluate if HVAC systems should be designed to allow for Smudging Ceremonies.

iv. Operational Considerations

- Allow for an integrated booking system that allows students, staff or faculty to book the space as needed.

v. Model Room Precedents

Figure 37 Designated quiet space designed with comfortable furnishings and natural light with window coverings

C. Ideal Room Mix

9. Ideal Learning Space Mix

Application

This section presents the ideal mix of centrally booked learning spaces for the Main Campus based on the scheduled activity for the 2024-2025 academic year currently booked into centrally booked classrooms (activity currently booked in faculty-owned spaces is not included). The required number of rooms for each range of size can be determined by analyzing the existing timetable data.

a) Background Information on the Data

Timetable data was provided by the Student Information Systems department within the Office of the University Registrar. The data consisted of the number of course hours booked for each section size or number of learners in a class. Section hour data for a typical week was provided for both the Fall 2024 and Winter 2025 terms.

Two breakdowns were provided for the section size or number of learners in a class: Overview and Fine Grain. The Fall Term section hour data is shown in Figure 32 below with the Overview breakdown on the left and a Fine Grain breakdown on the right. The Fine Grain breakdown has smaller ranges for the number of learners.

2024 Fall Term (2249)

Section Size (No. of Learners)	Hours Booked/Week (from Timetable)
01 to 039	1157
040 to 059	404
060 to 079	446
080 to 139	579
140 to 199	284
200 to 450	297
Grand Total	**3166**

Section Size (No. of Learners)	Hours Booked/Week (from Timetable)
01 to 024	304
025 to 049	1129
050 to 074	532
075 to 099	242
100 to 124	280
125 to 149	137
150 to 174	164
175 to 199	82
200 to 224	59
225 to 249	96
250 to 274	57
275 to 299	5
300 to 324	26
325 to 349	6
350 to 374	3
375 to 399	7
400 to 424	24
425 to 450	16
Grand Total	**3166**

Figure 38 Fall 2024 and Winter 2025 hours booked organized by section size.

The number of hours booked for a typical week is shown for each section size. For example, on the top left for the Fall Term, there were 1,157 hours booked for class sizes of between 1 and 39 learners. This includes all courses across the university that use the pool of centrally booked classrooms.

Other activities that take place in the centrally booked classrooms, such as department meetings, were captured in a separate set of data.

Three guiding parameters are used in the analysis and determination of the ideal room mix and are as follows:

1. **Operating Hours:**
    - Classes are scheduled Monday through Friday, 8:30 AM – 5:30 PM.
2. **Scheduling Efficiency:**
    - The scheduling efficiency target is set at 80%; which allows for the optimal allocation of courses, instructors, students in the available spaces.
3. **Target Hours/Week:**
    - This is 80% of the 45 operating hours and is used as the maximum number of hours booked per week for a single room.

Figure 38 shows the Fine Grain Section Hour Analysis for Fall Term 2024. As an example, the first line for a classroom (section) size of 1 to 24 shows the total hours booked as 306. As shown under “No. of Rooms Needed”, 8 rooms are required at 80% scheduling efficiency (36 hours/week) to meet this demand (8 x 36 = 288) with 18 hours carried over to the next section size. This calculation is repeated for each section to determine the ideal number of classrooms needed for each size.

The ideal number of classrooms is compared to the existing pool and the surplus or deficit is noted in the columns to the right.

Classroom Size (No. of Learners)	Total Hours Booked / Week (timetable + meetings)	Carried Hours	Aggregate Hours (includes carried hrs)	Adjusted Hours Booked / Week	No. of Rooms Needed	Existing Pool	Room Surplus	Room Deficit
1 to 24	**306**	18		288	8	15	7	
25 to 49	**1136**	2	1154	1152	32	40	8	
50 to 74	**561**	23	563	540	15	27	12	
75 to 99	**262**	33	285	252	7	6		1
100 to 124	**288**	33	321	288	8	14	6	
125 to 149	**139**	28	172	144	4	3		1
150 to 174	**167**	15	195	180	5	9	4	
175 to 199	**82**	25	97	72	2	1		1
200 to 224	**59**	12	84	72	2	3	1	
225 to 249	**96**	0	108	108	3	2		1
250 to 274	**57**	21	57	36	1	1		
275 to 299	**17**	2	38	36	1	1		
300 to 324	**26**	28	28	0	0	1	1	
325 to 349	**6**	34	34	0	0	0		
350 to 374	**3**	1	37	36	1	0		1
375 to 399	**7**	8	8	0	0	0		
400 to 424	**24**	32	32	0	0	0		
425 to 450	**16**	-24	48	72	2	2		
Total	**3252**				**91**	**125**	**39**	**5**

Figure 39 Fine Grain Section Hour Analysis for Fall Term 2024

b) Ideal Room Mix

To finalize the ideal room mix, the Fine Grain section hour analysis for the Fall 2024 and Winter 2025 terms are compared. For each classroom (section) size, the larger number of rooms needed is selected from the Fall or Winter term requirement shown below in Figure 39.

Classroom Size (No. of Learners)	Fall 2024 Rooms Needed	Winter 2025 Rooms Needed	Existing Pool	2024-25 Rooms Needed	2024-25 Surplus	2024-25 Required Growth
1 to 24	8	6	15	8	7	
25 to 49	32	30	40	32	8	
50 to 74	15	15	27	15	12	
75 to 99	7	7	6	7		1
100 to 124	8	7	14	8	6	
125 to 149	4	4	3	4		1
150 to 174	5	4	9	5	4	
175 to 199	2	2	1	2		1
200 to 224	2	2	3	2	1	
225 to 249	3	3	2	3		1
250 to 274	1	0	1	1		
275 to 299	1	1	1	1		
300 to 324	0	1	1	1		
325 to 349	0	0	0	0		
350 to 374	1	0	0	1		1
375 to 399	0	1	0	1		1
400 to 424	0	0	0	0		
425 to 450	2	2	2	2		
Total	**91**	**85**	**125**	**93**	**38**	**6**

Figure 40 Ideal Room Mix

c) Findings of Room Mix Analysis

Surplus of Smaller Spaces, Need Larger Spaces

The data indicates a surplus of smaller classrooms. While the existing classroom pool meets current demand, adding larger classrooms would improve the mix and accommodate future growth.

Department meetings are included in the booking data, presenting an opportunity to relocate these meetings to alternative spaces.

The proposed classroom mix assumes full in-person attendance. If some participation shifts online, the overall surplus of classrooms would increase.

This surplus creates opportunities to repurpose or renovate select spaces for better utilization.

d) Tracking for the Future

It is recommended that pedagogical approach preferences be tracked as part of the room booking process. This will provide more detailed data when determining the types of teaching and learning spaces needed in the future.

When a space is requested, a selection would be made from the following three pedagogical approach options.

- Lecture
- Group Learning
- Combined Lecture and Group Learning

This is particularly important when booking large spaces for more than 60 learners since specialized spaces need to be assigned. If the demand for combined lecture and group learning is high enough for more than 60 learners, this would indicate that the type of space outlined in Section 10 Large Spaces: Combined Lecture and Group Learning should be added to the room mix.

D. Appendices

10. Terms and Definitions

Active Learning

Active learning is teaching approach focused on getting students more involved in their own learning. This might include visible activities like discussions, group work, and problem-solving, but it can also involve quieter, more reflective thinking to help students understand concepts deeply and develop critical thinking skills.

Learning Spaces

Spaces are designed to facilitate active learning. These spaces can range from traditional classrooms to more flexible and innovative environments. These include open areas for research showcases, poster presentations, and networking activities; breakout rooms connected to larger lecture halls; maker spaces that support hands-on experimentation and concept application; immersive learning environments; and private, quiet areas that support focused, individual work.

Biophilic Design/Biophilia

The practice of designing for connection between people and the natural environment. Biophilic design includes a range of practices, from providing direct, physical access to nature to making architectural reference to organic forms.

Built Environment

Includes the human-made space in which people live, work, and recreate on a routine basis. This includes the indoor and outdoor facets of sites/grounds, buildings, facilities, and paths of travel. The built environment also relates to the layout and design of their elements, including lighting, acoustics, temperature, and other environmental components, furniture, equipment, built-in counters, storage, and shelving, operable parts such as doorknobs and light switches, and greenery and plants.

11. Related Policies, Standards and Guidelines

The following are publications or documents that should also be considered in the development in learning spaces at Queen's University.

a) Strategy

- Queen's Teaching and Learning Spaces, 2025
- Queen's University Strategic Goals, 2025

b) Accessibility

- Accessibility for Ontarians with Disabilities Act (AODA) 2005, Proposed Postsecondary Education Standards, 2022
- Accessibility for Ontarians with Disabilities Act (AODA) 2005, O. Reg. 191/11 Integrated Accessibility Standards (IASR), PART IV.1, 413/12, s. 6., Design of Public Spaces Standards (DOPS)
- Building Code Act, 1992, S.O. 1992, c. 23, O. Reg. 163/24 Ontario Building Code (OBC), Section 3.8 Barrier-Free Design, with 2022 amendments
- OCAD University Facility Accessibility Design Standards, 2017 Appendix B Classroom Templates (Acoustics)
- PAS 6463:2022 Design for the Mind – Neurodiversity and the built environment, British Standards Institution (BSI)
- Queen's University Facilities Accessibility Design Standards (QFADS), 2019

c) Wellness

- ANSI/ASHRAE Standard 55, Thermal Environmental Conditions for Human Occupancy
- Core Recommendations for Safe Indoor Air, Ontario Society of Professional Engineers
- Indoor Air Quality Guide, American Society of Heating, Refrigerating and Air-Conditioning Engineers
- Illuminating Engineering Society. Lighting Handbook 10th Ed. Illuminating Engineering Society.
- The Well Building Standard, V2 International Well Building Institute (IWBI)

- Special Ventilation: Smudging (2019), Public Services and Procurement Canada

13. Ancilliary & Support Spaces (Non-Bookable)

Non-bookable ancillary spaces in a university refer to informal or secondary areas that support teaching, learning, research, or student life—but are not scheduled or reserved through a central booking system. These spaces are typically open access and serve as flexible, supportive environments. Examples include:

Academic Support Spaces

- Study nooks and open lounge areas
- Corridors with integrated seating or whiteboards
- Learning commons or open computer labs
- Informal collaboration zones near classrooms or labs

Student Life & Wellbeing

- Food court seating areas
- Student lounges and social hubs
- Wellness rooms (non-bookable in addition to some bookable)

Circulation and Transition Areas

- Hallways, lobbies, and atriums with seating or displays
- Elevator lobbies or stairwell landings that double as gathering points
- Outdoor courtyards or rooftop terraces

Supportive Learning Infrastructure

- Lockers, printing stations, or information kiosks
- Exhibition walls for student work

These spaces are often unstructured but intentionally designed to foster connection, reflection, collaboration, or casual study—contributing to a more holistic and accessible campus experience. Let me know if you'd like examples tailored to a specific type of campus or faculty.

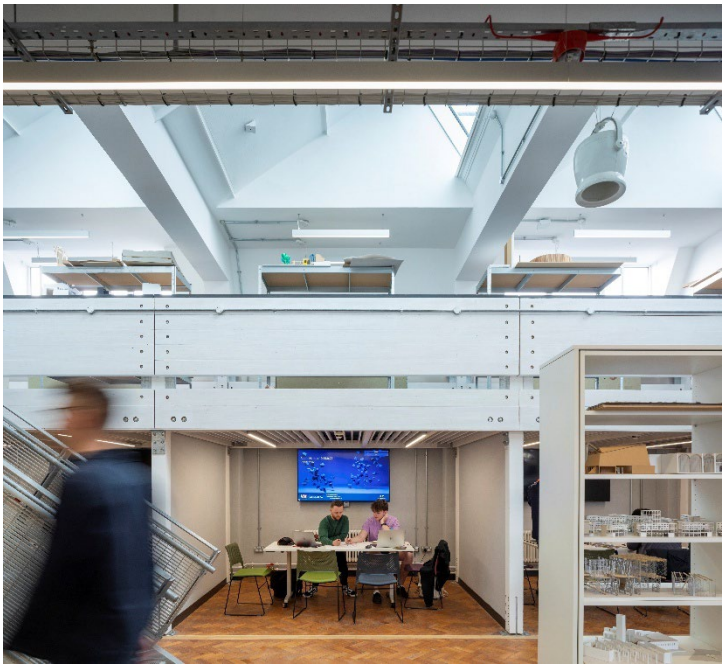

Figure 41 Study nook

Figure 42 Independent study space

Figure 43 Student Lounge

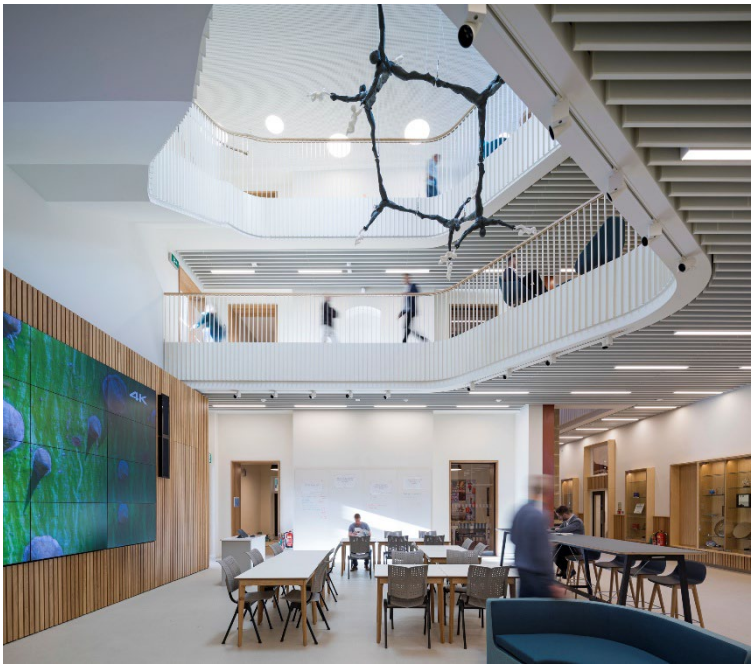

Figure 44 Atrium with seating and large display screen

Figure 45 Groups of tables and seats along in corridors

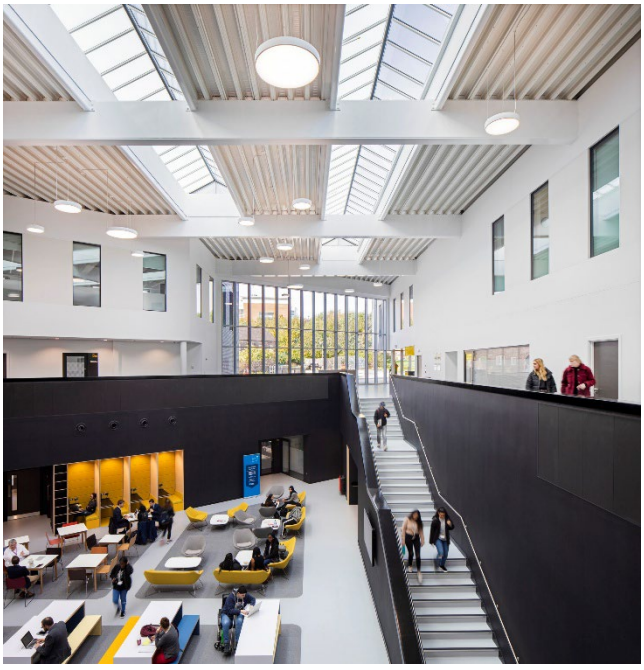

Figure 46 Large area for informal seating and study areas

15. Photo Credits

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7. OCADU Co., page 45
8. Welsh School of Architecture, page 53
9. Collège Boréal Toronto, page 68
10. Mattamy National Cycling Centre, page 76
11. Toronto Pan Am Sports Centre, page 79

16. Strategic Goals