Overview

Preparing for a new classroom or major renovation of an existing classroom is an exciting process and enables your unit and the University to provide high-quality, state-of-the-art teaching and learning spaces for students, faculty, and instructors. As you plan for this type of space, however, you will find that there are many key details to consider that will affect the overall use of the space long after the space is constructed, including location, layout, furniture, technology and more.

This document is designed to:

- Provide over-arching principles and considerations to assist in classroom planning and design.
- Ensure that new classrooms meet the needs of your unit and the institution.
- Share best practices (and a few lessons learned) from recently constructed classrooms on the Ann Arbor campus.

This document applies to general purpose classrooms (room type 110) only, such as traditional classrooms, lecture halls and auditoriums, and seminar rooms. It does not apply to computer labs or highly specialized class labs.

Contents

Guiding Principles for Planning & Design

High-quality instructional space supports the University of Michigan's core academic mission and ensures that, as an institution, we are providing our faculty and students the proper resources to meet continually changing teaching and learning needs. When designing classrooms spaces for the future, units should take into consideration the following guiding principles.

All new University classrooms should:

- Enrich the student's learning experience and faculty/instructor teaching experience.
- Have room layouts, furniture, and equipment that satisfy current and future pedagogical needs of the primary unit planning the space, but not inhibit use of the classroom for instruction by other U-M units.
- Provide a flexible configuration, when feasible, to enable students and instructors to change room layout to meet individual class needs.
- Be placed in building locations that are easy to locate and in close proximity to formal or informal gathering spaces to promote student and faculty interaction.
- Be located adjacent to one another when multiple classrooms are being planned, if possible. Co-location of classrooms creates a sense of vibrancy and community, allows for easier maintenance and access to the spaces, and provides more flexibility in the future when the space may need to be renovated or reconfigured.
- Be available for use by other campus units when not scheduled for classes.
- Comply with all applicable accessibility, building and fire safety regulations, and master design specifications and guidelines.

NOTE: University classrooms can be only added in buildings or fire compartments of buildings that are currently designated as classroom buildings, under the jurisdiction of the State of Michigan Bureau of Fire Services. For additional information on this designation, contact Architecture, Engineering and Construction (AEC). See *"Resources for Additional Information"* later in this document.

Common Classroom Configurations

There are a wide variety of classrooms sizes, layouts, and furniture types. The following section outlines the most common types of general purpose classrooms at the University of Michigan and other institutions.

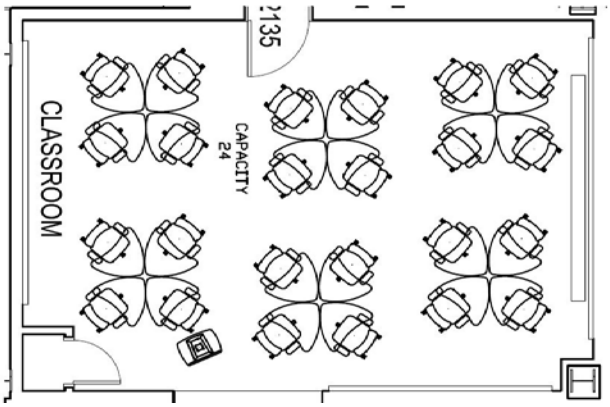
Discussion and Lecture Classroom

Discussion or lecture classrooms are the most common type of room on campus, offering greatest amount of flexibility in furniture choices and layouts.

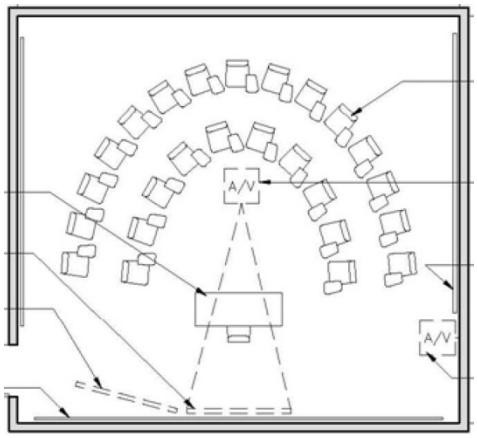
Seating Capacity	15 to 99
Furniture Options	Moveable tablet armchairs Moveable tables and moveable chairs Fixed tables and moveable chairs
Assignable Sq. Feet Per Person (recommended)	20-25 asf for smaller tablet 25-30 asf for larger tablet or tables & chairs (fixed or moveable)
Floor Type	Flat or Tiered
Considerations	**Moveable Tablet Chairs** • Allows for highest number of seats compared to other furniture styles in the same room. • Allows for easy transition between lecture and smaller group discussion. • Newer tablet designs offer more mobility (on casters/wheels), as well as larger seats and writing surfaces, allowing for use of personal computers. • Rooms with flexible furniture are difficult to keep in a specific arrangement, which may require time to reset the rooms to a preferred configuration (applies to style below, too). **Fixed Tables and Moveable Chairs** • Fixed tables are better suited for larger capacity classrooms, since resetting moveable furniture in these rooms would be very difficult to do from class to class. • Breaking into small groups can be more difficult because of lack of ability to shift tables. • Tables bolted to the floor or powered/wired tend to only be changed in a significant renovation. **Moveable Tables and Moveable Chairs** • Tables can be configured into a number of room styles: rows, boardroom style, and seminar-style table. • Room dimensions should provide breathing room to allow for easy rearrangement of tables. Small rooms or rooms without enough space to make moving practical will generally stay in the same configuration, even if moveable tables are present. • New table designs offer a wide variety of shapes and sizes, such as individual student desks/tables that can be combined into circular or semi-circular tables. • Tables cannot be wired for power because of the desire to move tables. Power can be provided in floor outlets, if required. • Tables can be on casters/wheels to make moving more manageable: - Flip-top tables can be nested, wheeled away, and stored, requiring less lifting. - May require additional user training to understand locking mechanisms. - Can be noisy and may move around too easily on hard floor surfaces. They are therefore better suited for carpeted floors.

Possible Layouts for Discussion and Lecture Classrooms:

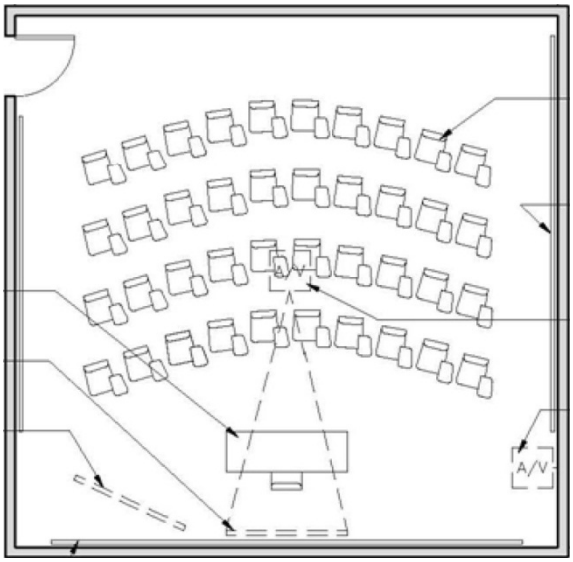
Moveable Tablet Chairs



Capacity: 24

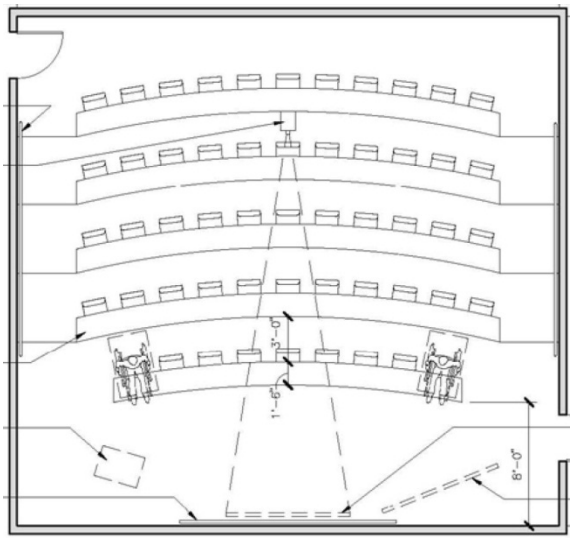


Capacity: 28

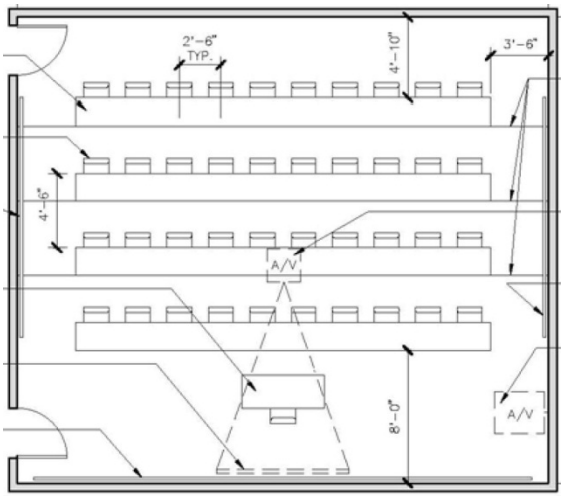


Capacity: 40

Fixed Tables and Moveable Chairs with Tiered Floor

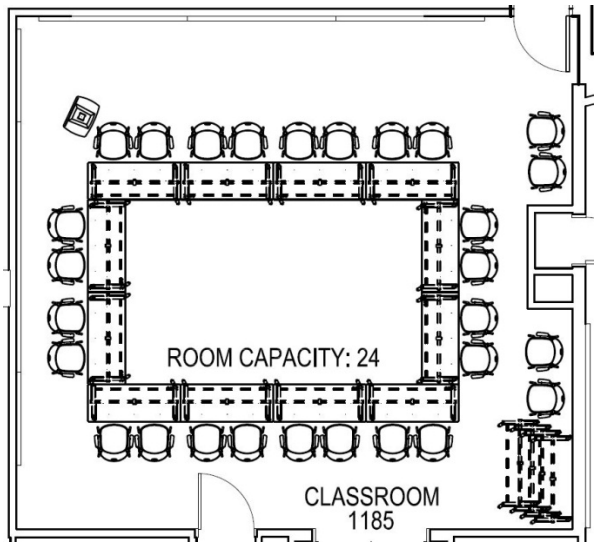


Capacity: 53

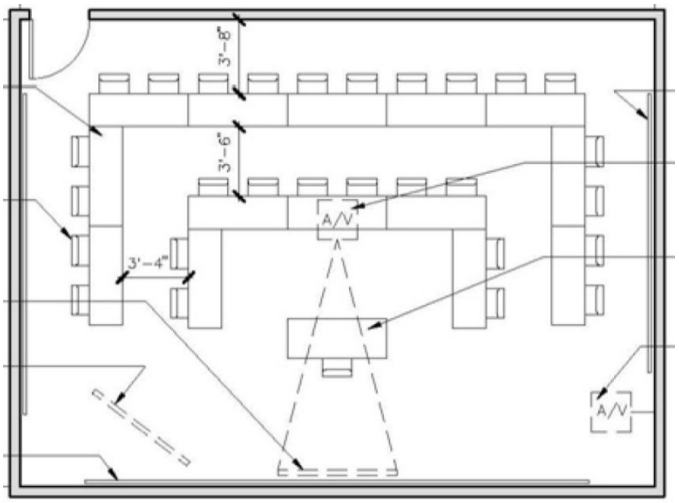


Capacity: 40

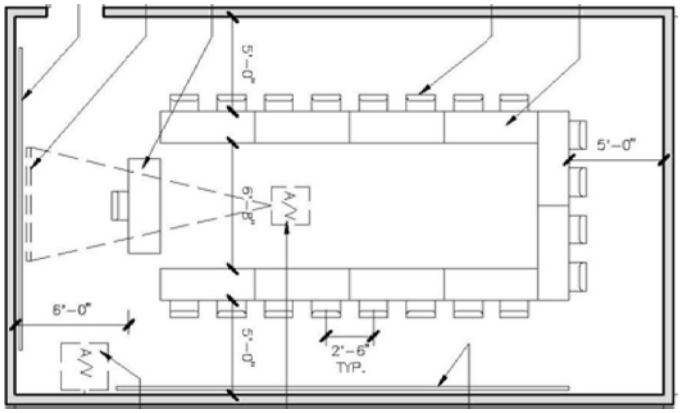
Moveable Tables and Moveable Chairs with Flat Floor



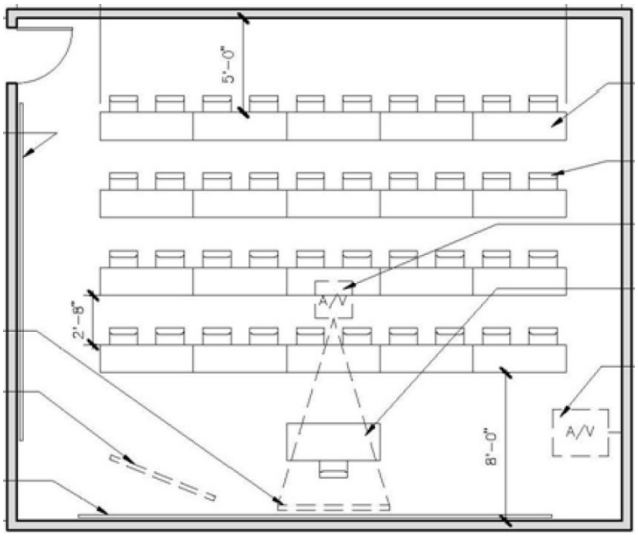
Capacity: 24



Capacity: 28



Capacity: 20



Capacity: 40

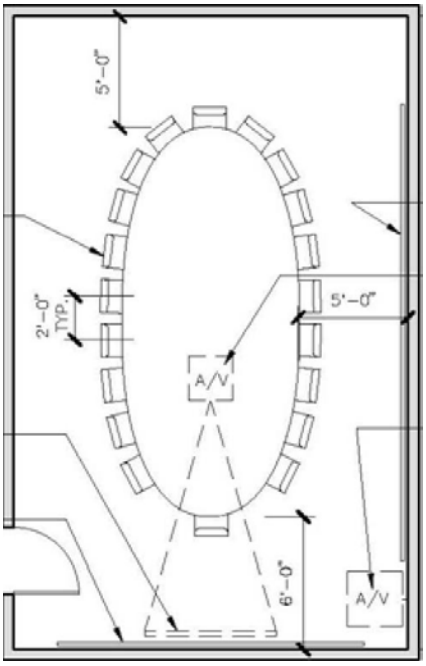
Seminar Classroom

Seminar rooms are smaller rooms that are purposely designed to promote small group discussions around a common table. The instructor is typically seated at the table with students.

Seating Capacity	Up to 24
Furniture Options	Single conference style table and moveable chairs Moveable tables and moveable chairs
Assignable Sq. Feet Per Person (recommended)	25 to 40 asf
Floor Type	Flat
Considerations	• A common table promotes central focus and purpose in room, making active participation and discussion more natural. • A large unifying table constrains ability to break into smaller groups. • Chairs with casters and the ability to swivel are recommended to allow students to shift viewing orientation easily. • Room might require multiple projectors or screens, particularly in larger rooms, to provide easy viewing for all students.

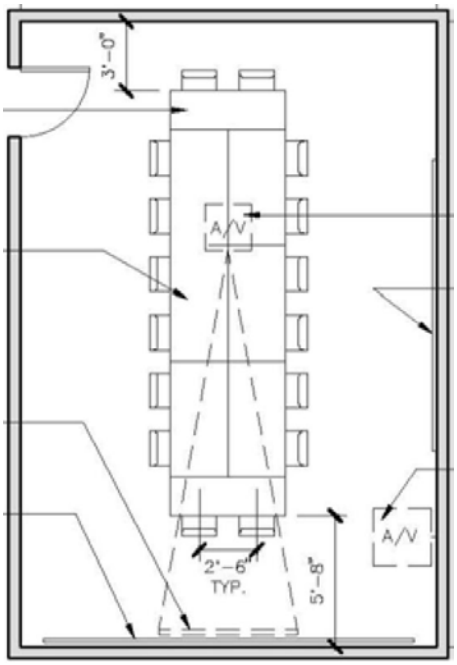
Possible Layouts for Seminar Classroom:

Single Conference Style Table



Capacity: 20

Moveable Tables and Moveable Chairs



Capacity: 16

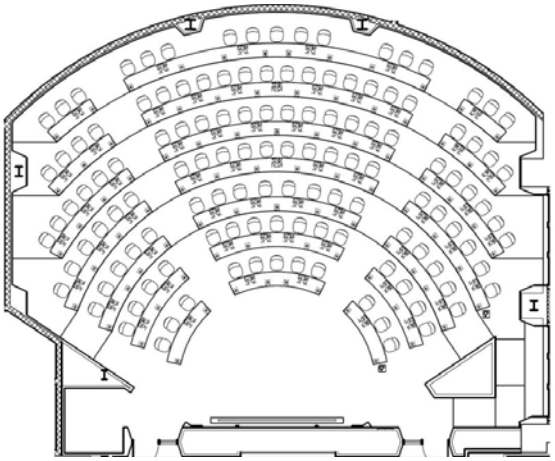
Lecture Hall or Auditorium

Lecture halls are designed to accommodate classes of 85 or more in traditional auditorium-like setting. The instructor is positioned at front of the room with all seats facing in this general direction.

Seating Capacity	85+
Furniture Options	Fixed strip tables and moveable chairs Fixed strip tables and attached swing-arm chairs Fixed auditorium seats with retractable tablet arm Fixed table with jury-based seating (swivel chair on fixed base)
Assignable Sq. Feet Per Person (recommended)	20 to 25 asf
Floor Type	Tiered
Considerations	• Large lecture halls generally only allow for one-way instruction (instructor lectures to students). Technological advancements, such as interactive polling devices, can help to connect the audience to the instructor. • Breaking into smaller groups is difficult because of fixed furniture. • If designing a lecture hall with tables, consider placing two rows of tables per tier to allow students to turn their chairs around and gather in groups for discussion. • A stage-like platform at front of room might be desired to provide more versatility to the space. If stage-like platforms are needed, consider design of platforms such that they can be removed and stored to increase flexibility of space. • Tablet arm chairs and jury-based chairs at strip tables may not be adequate to accommodate all sizes of people comfortably. Alternative accommodations should be provided. • Consider having two locations or moveable podiums for increased flexibility. • If installing fixed seating in a lecture hall, stagger seats from row-to-row to allow for better sightlines. • Because of high ceilings that are typical in lecture halls, special attention is needed when planning lighting (and lighting strength) and sound distribution. • Acoustical treatments are required to reduce sound reverberations and echoes.

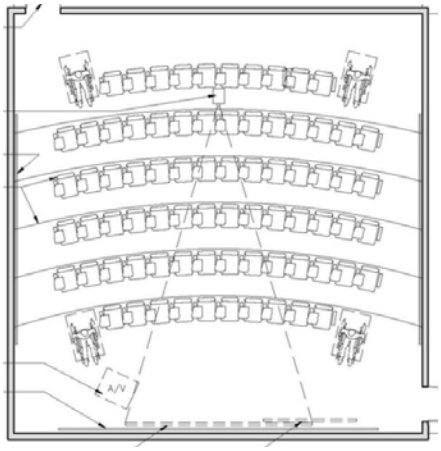
Possible Layouts for Lecture Halls and Auditoriums:

Fixed Tables and Movable Chairs



Capacity: 130

Fixed Auditorium Seats with Retractable Tablet



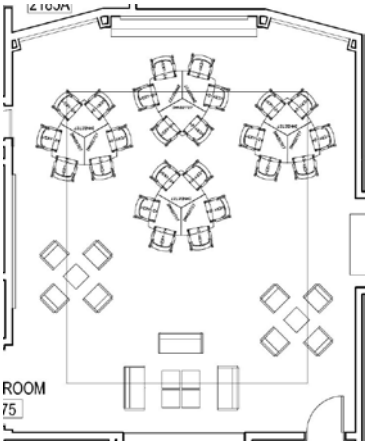
Capacity: 80

Active Learning Classroom (or Learning Lab)

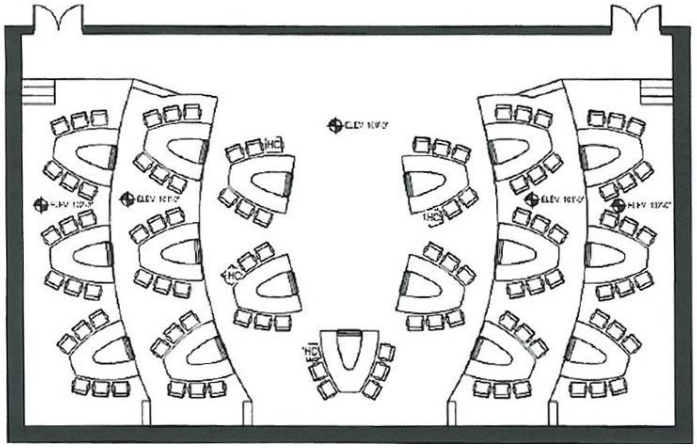
The active learning classroom is a variation of the discussion or lecture classroom but is designed to allow for mix between lecture and small group work/discussion at tables. The room often does not typically have a front and may contain multiple projectors or digital displays on various walls, being controlled by both the instructor and students. The room layout places emphasis on a multi-focal learning and teaching style, with a mix of small group discussion, reporting out, and lecture.

Seating Capacity	30 to 100
Furniture Options	Moveable tables and chairs Fixed tables and moveable chairs
Assignable Sq. Feet Per Person (recommended)	25 to 40 asf
Floor Type	Flat or Tiered
Considerations	• Since the layout varies from the more traditional classroom styles, the curriculum needs to be planned and matched to the room style. Instructors willing to experiment with teaching and learning styles should be sought out for such rooms. • If equipped with multiple projectors or digital displays, technology controls can often be more complex than in a traditional classroom of the same size. Additional training and support may be required for both students and instructors.

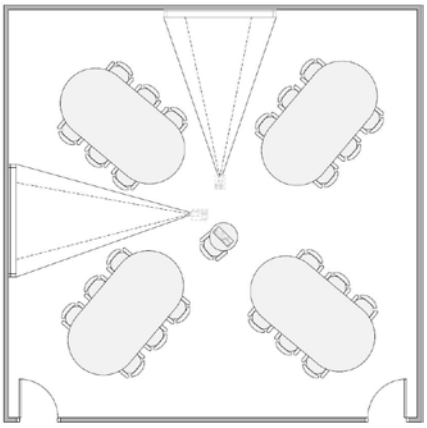
Possible Layouts for Active Learning Classrooms (or Learning Labs):



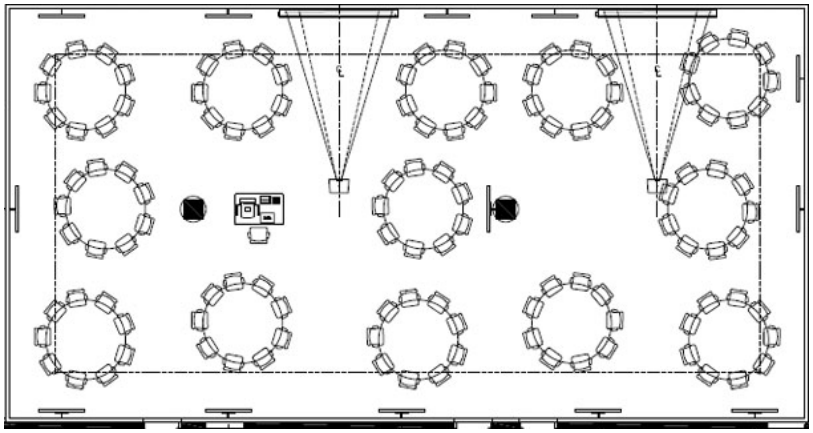
Capacity: 24



Capacity: 102



Capacity: 24



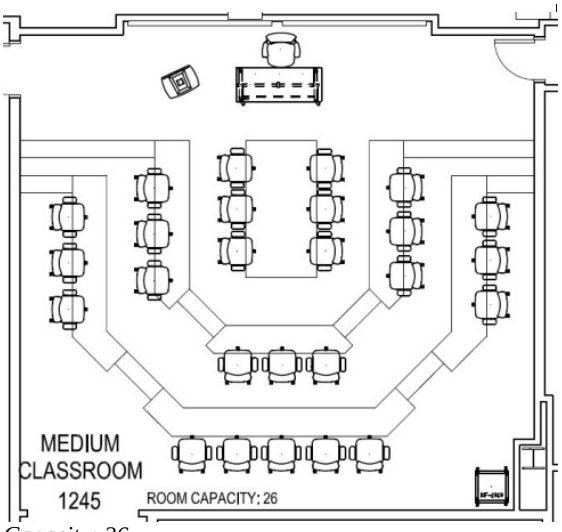
Capacity: 117

Case Study Room

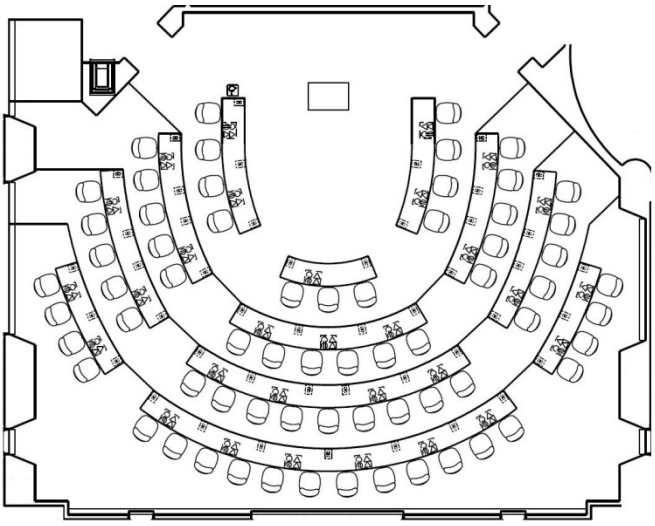
The case study room is a variation of a fixed table classroom but is specifically designed for more formal, face-to-face interaction between students and/or instructors. Seats are arranged in a C- or U-shape around the instructor podium/station allowing for all parties in the room to see each other and promoting a multi-focal discussion.

Seating Capacity	25 to 90
Furniture Options	Fixed tables and moveable chairs
Assignable Sq. Feet Per Person (recommended)	25-30 asf
Floor Type	Tiered
Considerations	• Room is best suited for disciplines requiring discussion and interaction between students and/or instructor in a more formal setting. • Consider providing wide enough aisles to allow to instructor to move around the room among the students. • Fixed layout and tiers can be difficult to reconfigure if curriculum changes in the future. • Breaking into smaller groups is difficult because of fixed furniture. • Consider placing two rows of tables per tier to allow students to turn their chairs around and gather in groups for discussion, if possible.

Possible Layouts for Case Study Rooms:



Capacity: 26



Capacity: 66

Getting Started on a Classroom Project

While each classroom renovation/construction project is unique, there are some considerations that should be discussed and planned early on in the process.

Provost's Office Role and Approval

Classrooms are a critical institutional resource needed to meet the academic mission, and therefore, must be planned for thoughtfully and strategically. Adding or removing a classroom in any area of campus impacts not only the unit that manages the space, but also the Registrar's Office and nearby units relying on these classrooms. As a result, all major changes to classrooms must be approved by the Provost's Office.

The Provost's Office monitors the inventory of classrooms campus-wide to ensure that the overall pool of classrooms continues to meet campus demands, paying particular attention to the number and sizes of classrooms available campus-wide and by geographic area.

For these reasons, your unit must receive approval from the Provost's Office before pursuing a classroom project in the following situations:

- Constructing a new classroom.
- Removing and repurposing an existing classroom.
- Changing the seating capacity of an existing classroom significantly (e.g., +/- 20%).
- Designing a new classroom when central resources are used to fund the project.

Identifying Faculty and Student Classroom Needs

Feedback from faculty, staff, and students can be tremendously helpful in planning and designing a new classroom, particularly by assessing the effectiveness of existing classrooms. Whether obtained through formal surveys or focus groups, this feedback can help you determine what types of room configurations, furniture, technology, and amenities work well for current and pedagogical needs. It also helps you identify technologies or room configurations that are no longer needed or that prevent instruction from being successful.

Students offer a completely different perspective from faculty or staff when planning classrooms. They are able to identify things that only those who spend several hours a week in the space can identify, such as the lack of a clock, obstructions in the view to the instructor, or acoustical or lighting issues. You may even decide to include students in your ongoing working group, described below.

For sample surveys used to collect faculty and student feedback on classrooms managed by the College of Literature, Science, and the Arts, please see:

- Faculty survey: provost.umich.edu/space/instruct/SampleFacultySurvey.pdf
- Student survey: provost.umich.edu/space/instruct/SampleStudentSurvey.pdf

Visit Other Campus Classrooms

By touring or even teaching classes in neighboring units' classrooms, particularly newer campus classrooms, you will gain a better sense of the types of spaces that may work for your unit going forward. Hearing firsthand other units' lessons learned (some outlined later in this document) prior to beginning your own design process also provides helpful information that can be applied to your new spaces.

If you have a unique instructional need or have faculty who would like to experiment with new teaching methods that cannot be accommodated in your rooms, consult a neighboring unit, the Office of the Registrar, or the Office of the Provost to identify other campus spaces that may meet your needs.

For assistance in identifying these spaces, please email space.utilization@umich.edu.

Classroom Design Working Groups and Defining Needs

Once your unit has received approval to pursue a classroom construction project, your unit may want to form a dedicated working group to define classroom requirements to share with senior administrators in your unit and with designers or architects. It is important that both faculty and staff take part in the planning and design process. Refer to *"Appendix"* for sample brainstorming questions to help define your needs.

Whether or not your group contains members from each of the following groups, it is vital to consult with each as they will provide a unique perspective in your planning process:

Faculty & Instructors	Faculty, both junior and senior, should be involved as early as possible in the classroom design process. Instructional needs change from class to class from faculty member to faculty member, and trends within disciplines may have significant implications on class size, room configurations, and furniture in the future. When new rooms are being planned, faculty should also have a parallel discussion about what they envision the curriculum to be in the coming years. The University's Center for Research on Learning and Teaching (CRLT) is able to assist in identifying these needs (www.crlt.umich.edu) and to help think about ways to plan for changing teaching and learning styles related to future curriculum.
Curriculum Staff	Curriculum staff, such as room schedulers, unit registrars, and departmental administrative staff, interact directly with faculty and students and hear first-hand the needs for specific room sizes, technologies, and layouts and the limitations of existing classrooms.
Facilities Staff	Facilities staff witness the successes and failures of specific building elements, including those within classrooms. Because of their detailed knowledge of physical attributes of the space, including infrastructure, facilities staff can offer insight as to what needs improvement and what is possible within a building.
Information Technology Staff	Information technology staff directly support the people and technologies in classrooms and are often aware of emerging technologies that can be used to enhance the teaching and learning experience. Since technology has implications on planning and design, particularly related to infrastructure, their expertise and support is needed.
Office of the Provost	The Office of the Provost has extensive knowledge of recent classroom projects on campus and can provide information on or refer your unit to other similar projects on campus or beyond. The Office of the Provost is also responsible for ensuring that classrooms will meet broader institutional needs, where appropriate. Contact space.utilization@umich.edu as early as possible in the process to make sure the Provost's Office is aware of your plans. See *"Provost's Office Role and Approval"* above for additional information.

Best Practices & Lessons Learned

While each classroom project is different, there are a number of lessons learned from recent campus classroom construction projects. Please take the following into consideration when planning your classroom projects:

Initial Research & Information Gathering	• If your unit has a pressing classroom need, contact the Registrar's Office or the Provost's Office for assistance. The Provost's Office can assist in finding short-term solutions until a long-term project is possible. • Benchmark with your peers at other institutions or with other units on campus to learn of various classroom styles and emerging technologies used in programs similar to those offered by your unit. • Become familiar with current research and articles related to classroom design and technology trends. Refer to the *"Resources"* later in this document for additional information.
Technology & Infrastructure	• Allow infrastructure of classrooms to be flexible enough to accommodate changes in technology in the future, when feasible. While we can never predict the future of instructional technologies, a room's technology infrastructure should be considered scalable and agile. For example, a classroom built with a raised floor to provide power outlets should be constructed in a way to allow for other technology infrastructure to be added in the future. • Use technology control panels to simplify use of IT and AV equipment in classrooms and to reduce requests for assistance. Contact the Office of the Provost to ask about common devices used on campus today. • Ensure that the classroom includes a digital projector/display that enables instructors to display content from their personal computers or devices. Because it is difficult to configure every classroom computer to meet various instructor needs (and a financial commitment to replace computers every few years), a growing trend on the Ann Arbor campus is for instructors to bring their own technology to the classroom and connect to the room's display system rather than have a dedicated desktop computer available. • Place power outlets in strategic locations to enable students to charge laptops and other personal electronic devices. For flat-floor classrooms, use flush-floor power outlets to enable furniture to be moved into various configurations. • Explore ways to power portions of the classroom, rather than providing one power outlet per student seat. While currently the need to provide power outlets is relatively high, it is also very expensive to construct, and battery technology for personal electronics will always improve. Many large lecture halls on campus provide power to one-third to one-half of the seats. • If designing a room with restricted access (e.g., locks or key cards) provide a clear process for all University-community members to gain access to the space, not just the members of your unit. • Ensure wireless networking is available within classrooms as well as surrounding areas and provides enough bandwidth to accommodate simultaneous use by a majority of the students in the room. • Ensure that wireless networks allow access for the broader U-M community. • If a wired data connection for students is needed, consider only providing ports in a few locations throughout the room. Since most students rely on wireless networking, a room with one data port per student is more costly to construct without much added benefit.

Sound & Acoustics	• Rooms, particularly those seating 40 or more, should have a sound system that amplifies the program sound (A/V and computer) as well as the instructor voice. The program sound amplification/speakers should be distributed throughout the room, while the instructor voice should come from the front of the room. • Ensure there is enough soundproofing between classrooms and their adjacent spaces to provide a comfortable learning and teaching experience with minimum sound distractions. • Be aware of the acoustics within the room, especially in larger spaces. Slight changes or enhancements to furniture and finishes can reduce echoes and reverberations.
Lighting	• Rooms with windows should have solar shades, blackout shades, or blinds to reduce or cut out daylight to make digital displays more visible. • Interior lighting should allow for variety of lighting scenes from full illumination to subdued lighting for projection. • Banks of lighting near the digital display should be able to be switched separately from the remainder of the lights.
Seating & Tables	• Furniture styles and sizes today are often larger than what was used years ago, and provisions for accessibility require wheelchair accommodations through a room. As a result of these two space needs, the seating capacity in a renovated classroom may decrease. In recent classroom renovations on campus, seating capacity has been reduced by about 20% or more. Refer to the *"Resources"* section later in this document for accessibility resources. • Moveable chairs should be light-weight and/or on wheels or casters to allow for rearrangement and grouping. • When feasible, allow for variety of seating or writing surface styles within a room to accommodate different student preferences. *NOTE: See section "Common Room Configurations" above for more information about furniture in specific room types.*
Tiered vs. Flat Floors	• Flat floor rooms offer the most flexibility in day-to-day use and are more cost-effective to renovate or reconfigure. • Tiered floors should typically be constructed in larger capacity rooms. • It is generally cost-prohibitive to change a currently tiered/sloped classroom into a flat floor classroom and vice versa. • It is possible to create a tiered effect in a flat floor classroom by providing high tables and chairs at the rear and sides of a room. • Addressing accessibility requirements is more challenging in tiered rooms and typically requires additional space (e.g., for compliant ramps).
Paint & Aesthetics	• Recent student satisfaction surveys of rooms that have undergone renovations on the Ann Arbor campus indicate that simple and relatively less expensive cosmetic upgrades, such as painting previously white walls or carpeting previously tiled floors, can significantly increase satisfaction with rooms and provide a more comfortable learning experience.
Flooring	• Carpeted flooring can provide better acoustics in classrooms but a replacement cycle and budget should be planned. • In larger classrooms, oftentimes only the circulation areas/aisles are carpeted and the student stations are tiled, for easier cleaning and replacement. • Wood or other non-tile flooring options have different maintenance and upkeep requirements. There may be cost implications to choosing non-traditional flooring options.

Accessibility & Code Compliance	• Compliance with all local, state, or federal accessibility, fire safety, and building code regulations is required. Things to be aware of include the number of doors/exits required for various capacity classrooms, wheelchair accommodations, requirements for assisted listening devices, etc. It is also important to consider occupant loads, as new classrooms with increased occupant loads may also trigger code compliance issues elsewhere on the same floor, may impact egress stairwells, etc. • The State of Michigan Bureau of Fire Services has jurisdiction over classroom spaces and all new classrooms must go through the State's plan review process. • U-M's Architecture, Engineering and Construction (AEC) department can assist with providing a code review based on your current situation and proposed project. For additional information, please refer to www.umaec.umich.edu/desguide/sid/sid_f.pdf or contact AEC directly.
University Design Guidelines & Master Specifications	• All classroom modifications must comply with University Design Guidelines and Master Specifications, including sustainability requirements and technical specifications for ventilation systems, sound insulation, lighting, security access, etc. • Please refer www.umaec.umich.edu/desguide/index.html for additional information or contact AEC directly.

Resources for Additional Information

Name	*Description*	*Contact*
Office of the Provost	The Office of the Provost is the steward of all academic space on campus, is involved recent classrooms projects, and monitors current room inventory and technology trends in campus classrooms. The Provost's Office can assist in identifying short-term and long-term solutions to satisfy your classroom needs and can assist in the planning process, at a unit's request.	Web: provost.umich.edu/space Email: space.utilization@umich.edu
Architecture, Engineering and Construction (AEC)	U-M's AEC office provides all accessibility, life safety, and building code compliance requirements based on current codes. Your unit may also use AEC's interior design service to plan and design your new classroom.	Web: umaec.umich.edu
Center for Research on Learning and Teaching (CRLT)	CRLT provides a wide number of educational services and resources to faculty, graduate instructors, and unit staff, including very detailed information around instructional space design. CRLT is willing to consult and facilitate discussions with faculty and instructors to help fine-tune curricular needs.	Web: crlt.umich.edu Email: crlt@umich.edu
Office of the Registrar (RO)	The Office of the Registrar can assist in locating rooms on campus that may meet your instructional needs.	Email: ro.curriculum@umich.edu
LSA Instructional Support Services (LSA-ISS)	LSA-ISS supports and maintains several hundred of the University's classrooms. The LSA-ISS website has a tremendous amount of knowledge and a helpful database of classrooms to browse on their website. LSA-ISS is also willing to consult with other units on campus by request.	Web: lsa.umich.edu/iss Email: iss-help@umich.edu.
Educause Learning Initiative	Educause Learning Initiative website contains a wealth of information not only on classroom design but on a wide variety of other resources on technology in higher ed.	Web: educause.edu/eli *(Look for Learning Space Design for specific articles on classrooms)*

Appendix – Defining Classroom Needs

See "Classroom Design Working Groups and Defining Needs" above for information on forming a working group.

Once you have your classroom design working group(s) in place, articulating your instructional needs to architects, designers, and your unit or University administration is the next step. Use the following questions as a starting point for defining and documenting your needs:

Questions about Current Classrooms and Curricular Demands

1. How many classrooms do you currently have?
   - What is the instructional seating capacity of each room?
   - What types of furniture do you currently have in your rooms (e.g., conference table, strip table, individual tablet chair, fixed or moveable)?
2. What are the classrooms you are most happy with? Least happy with?
   - Why (e.g., aesthetics, technology, furniture, size)?
3. What is the number of classes/sections currently offered and the sizes for these classes/sections?
   - Do your current rooms meet these capacity needs?
   - What size rooms get overused/underused?
   - How do the rooms get used for other non-class events?
4. What plans do you have for changing your curriculum in the coming years?
   - How will this impact the number and size of rooms needed?
   - How have your current rooms not allowed for changes to your curriculum?
5. Have you taught classes in another unit's classrooms?
   - Why or why not?
   - What did you like/dislike about these rooms?
6. How are classrooms at your peer institutions configured?
   - Does their curriculum vary differently from your unit's?
7. Do any of your classrooms contain equipment or other elements that cannot be used by another unit?
   - How is this currently secured?
   - How can they be secured in the future to allow for other units to use the classroom?
8. Are any of your current rooms tiered or sloped?
   - Do you desire tiered/sloped rooms in the future?
9. Are there spaces near your classrooms where students and faculty can congregate before and after class?
   - If yes, will similar space be retained after renovation/construction?
   - If no, are there plans to have such space after renovation/construction?
10. Could your current or future classes be held in any other classrooms styles outlined above in this document?
    - Why or why not?

Questions Specifically for Faculty and Instructors

Provided by College of LSA Instructional Support Services

About Faculty Teaching Methods and Technology

1. How you teach?
   - Lecture, discussion, demonstration?
   - Do you sit, stand, and/or walk around the room? How often do you change?
2. What materials do you bring in and use to teach?
   - PPT, books that you pass around, slides, DVD/VHS, CDs or cassettes, acetate overhead sheets, examples/objects that you pass around?
   - How often do you bring them in?
3. Do you just focus on one thing at a time or do you often need multiple foci for student attention (projection and blackboard and overhead projector, multiple projectors)?
   - Do you do that every day or do you switch over the semester?
4. Do you bring in guest speakers with different teaching needs?
5. Do you need to connect to people outside of the classroom during class?
   - Video conference, students abroad, distance students?
6. Do you need to record the audio or video of your class?
7. Do you ever (or want to) connect your mobile device or your students' devices to the classroom systems?
8. Do you use any special software in your lectures or elsewhere in your teaching?
9. What type of exams and quizzes do you give in the room?
10. What special needs/unique features of your field?
    - HD quality video, special sound systems, room blackening vs. normal shades

About Student Learning Styles

11. What do your students do in class?
    - Take notes, participate in large group/whole class discussions, participate in small group discussions, participate in partner work, give presentations?
12. Do you students need/want to use laptops?
13. Do you have the students move around a lot?
    - Rearrange furniture, get up and move about the classrooms for interviews/surveys?
14. How often do you change teaching and learning modes?
    - How many times per class, times per week, times per semester?
15. Do you ever need additional space for breakout groups?
    - Computer classrooms for single sessions/workshops during class?
16. Are there special needs that students in your field have that we should be aware of?
17. What sort of assignments do students do outside of class?
    - Field work, video production, modeling and forecasting, information sharing, social network activities?
18. Are there things that you currently do in class that you wish you could have students do outside of class?