Mt. San Jacinto College
Menifee Valley Campus

Math and Science Building

A4LE2020-CON-MSJC

Executive Summary

Concept:

Create an interconnected math and science building where flexibility and collaboration are key to propelling students and faculty into the future.

Goals:

Create a 21st century learning environment rich in technology and hands-on learning.

Enhance the sense of community for all students, faculty and staff on campus.

Cultivate a sense of place unique to the Menifee Valley Campus; reflective of local culture, natural materials, and vegetation.

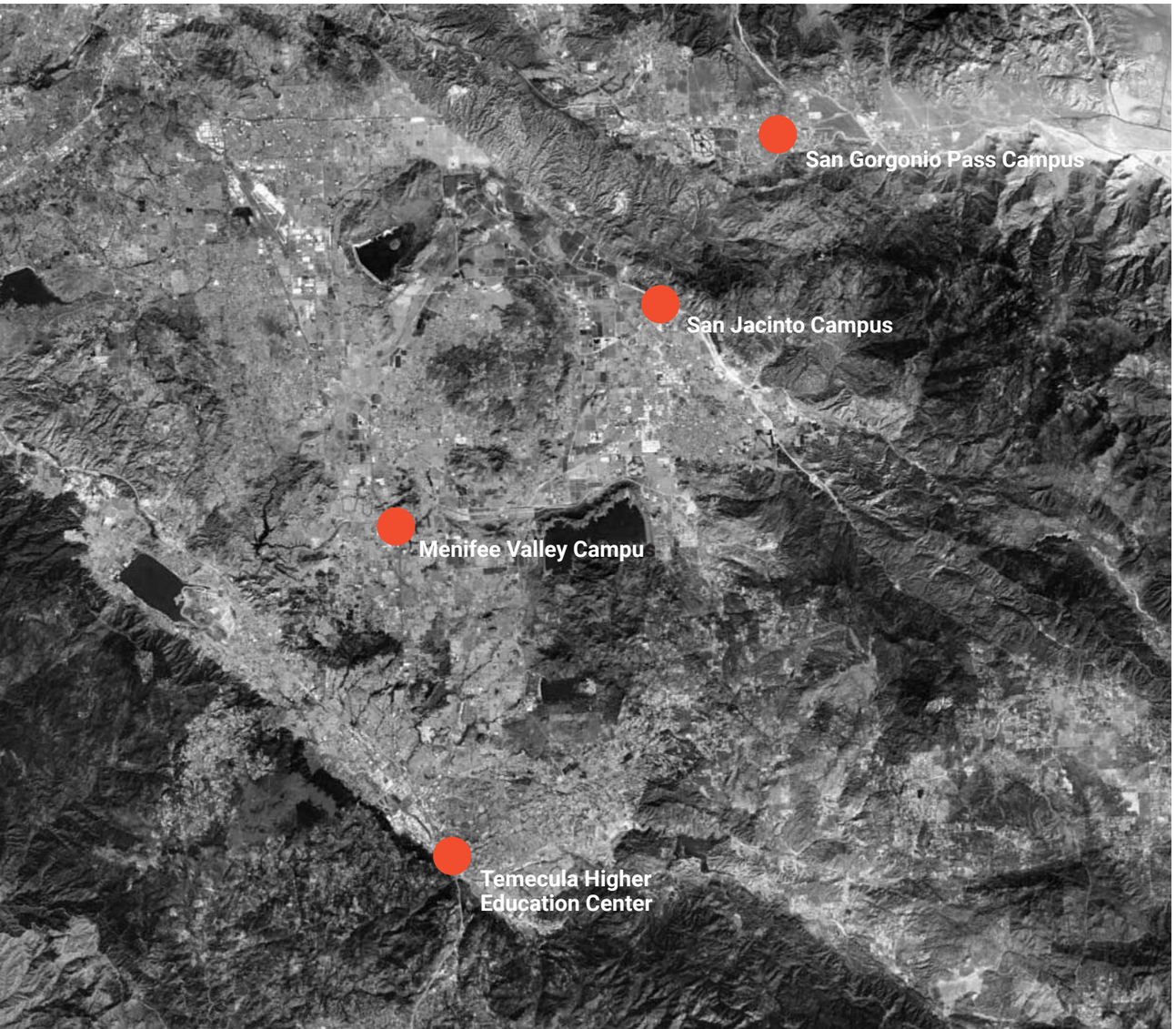
Outcomes:

Through the design team's holistic engagement with the stakeholders, students, and community members, the budget, the priorities of the math and science programs, and the overall campus goals have been achieved in a rich indoor-outdoor, warm and welcoming STEM facility at the heart of the MSJC Menifee Valley Campus.

Scope of Work and Budget:

Client Mt. San Jacinto College, Menifee Valley Campus
Location Menifee, CA
Approved Budget ~$36.5M Construction
Approved GSF 57,130
Category Design Concept

School & Community Engagement



Located on the Menifee Valley Campus of the Mount San Jacinto College, the MSJC Math and Science Building will act as a new center for collaboration and student engagement. During user group meetings, designers met with the faculty and staff of MSJC and drew out four key design principles which lay the foundation for the building: community, learning on display, focus on student success, and flexible and adaptable design.

In the last period of enrollment, MSJC had 26,544 students, where one out of three of those students were first-generation college students. Many students use MSJC as a stepping stone to move on to 4-year universities. In conversations with the college and attending college events, it is apparent that the college strives to provide their students with a quality education that prepares them for their next steps in their education and careers.

The MSJC Math and Science building aligns with the college's vision for its students by designing to the principles that the team identified early on in the design process.

MSJC Fast Facts

26,544
students in the 2018-2019 school year

1 in 3
were first-generation college students in the last period of enrollment

1,723
individuals graduated in 2019

49.8%
of students identified as Hispanic in 2017-2018

User Engagement

The project began as a project proposal for state funding in 2010. Nearly ten years later, when the college procured the necessary funds and approvals, MSJC asked to proceed with design. However, due to state funding regulations, the project had to maintain the same square footage and building footprint as the original proposal, within 1%. The design team was challenged with using the originally programmed spaces to design classrooms, labs, and faculty space that adapts to changing curriculum, ideologies, and college programming.

Early in the design process, the design team visited the site and toured the existing math and science classrooms and labs, taking note of what the users already liked and the areas that needed to be improved. The team then planned multiple **user group meetings** where the end **users participated** in the programming and design of their space. The user group meetings focused on elements from the tiniest of details to the overall building including:

Individual lab layouts and functional design

Adjacency and functional relationships between inter-departmental rooms and spaces and relationships between departments

Aesthetic components of building interior and exterior

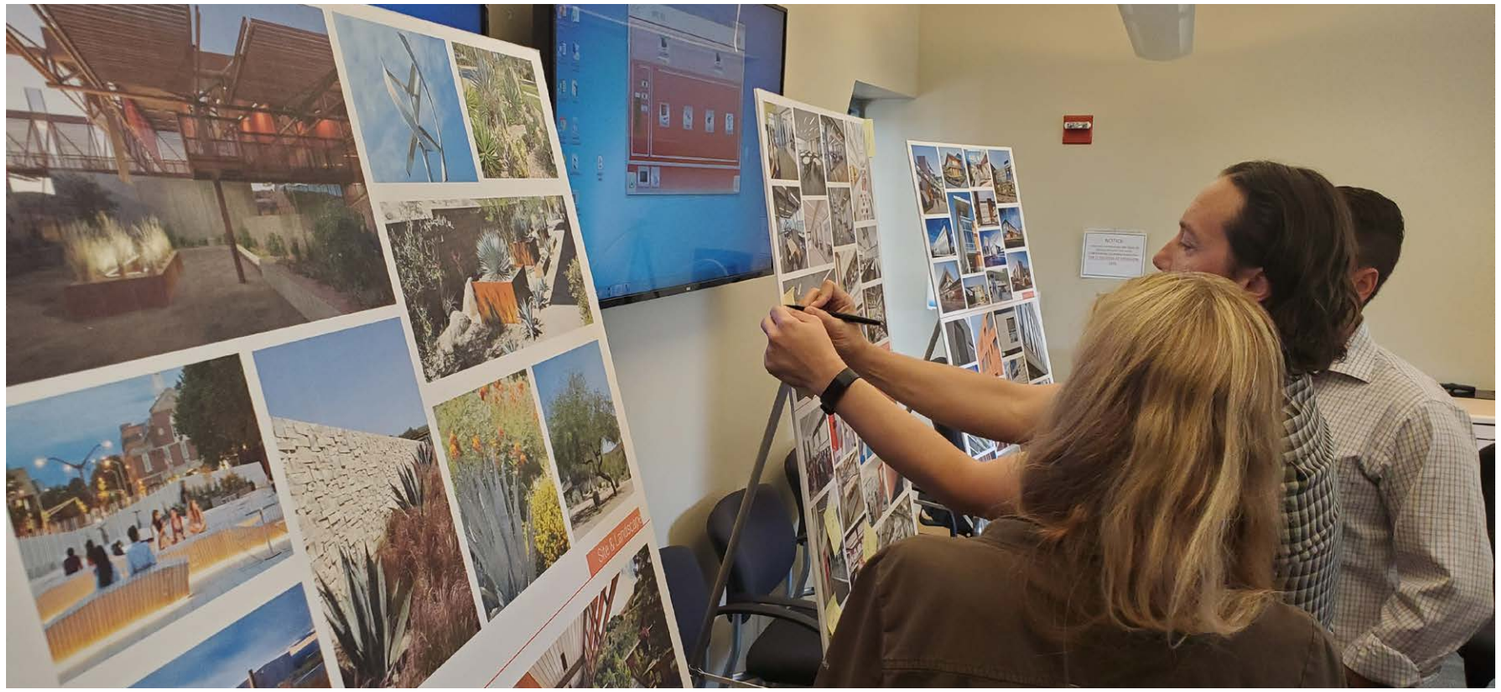
Coordination with consultants to plan for the necessary services in the labs

Programming Adjacency Process Diagrams

(Top left)
By moving around “paper doll” classroom spaces, the design team and MSJC faculty formed a collaborative program adjacency diagram.

(Top right)
Open and honest dialog was necessary to both present design intent and receive feedback.

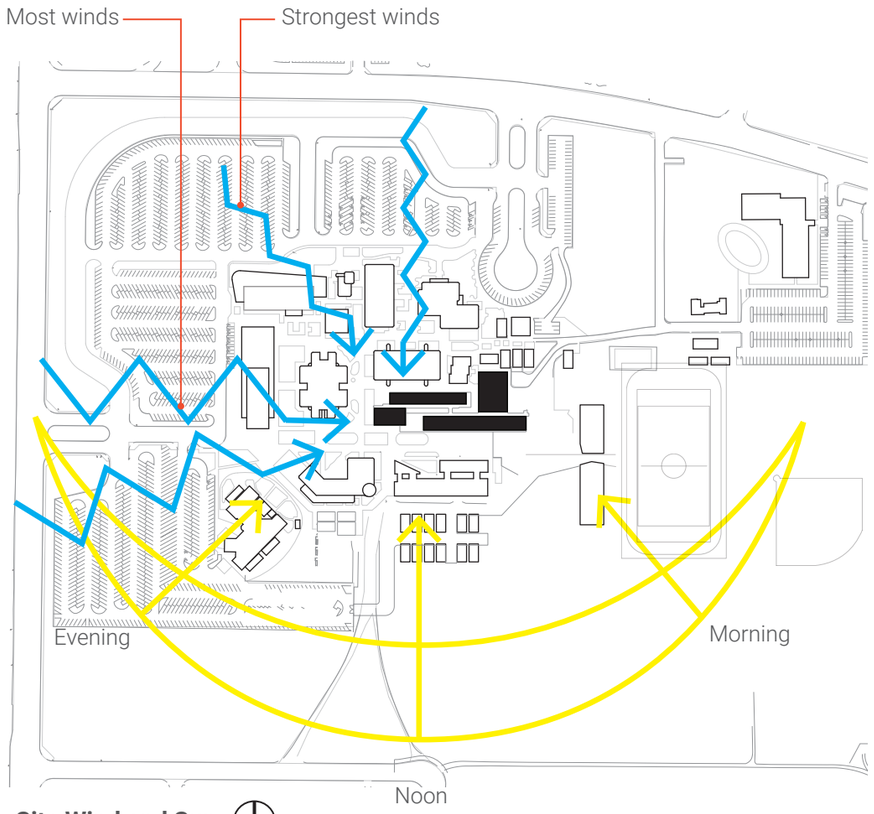
(Bottom)
Responses to visioning boards helped designers gain a general understanding of the desired aesthetics.



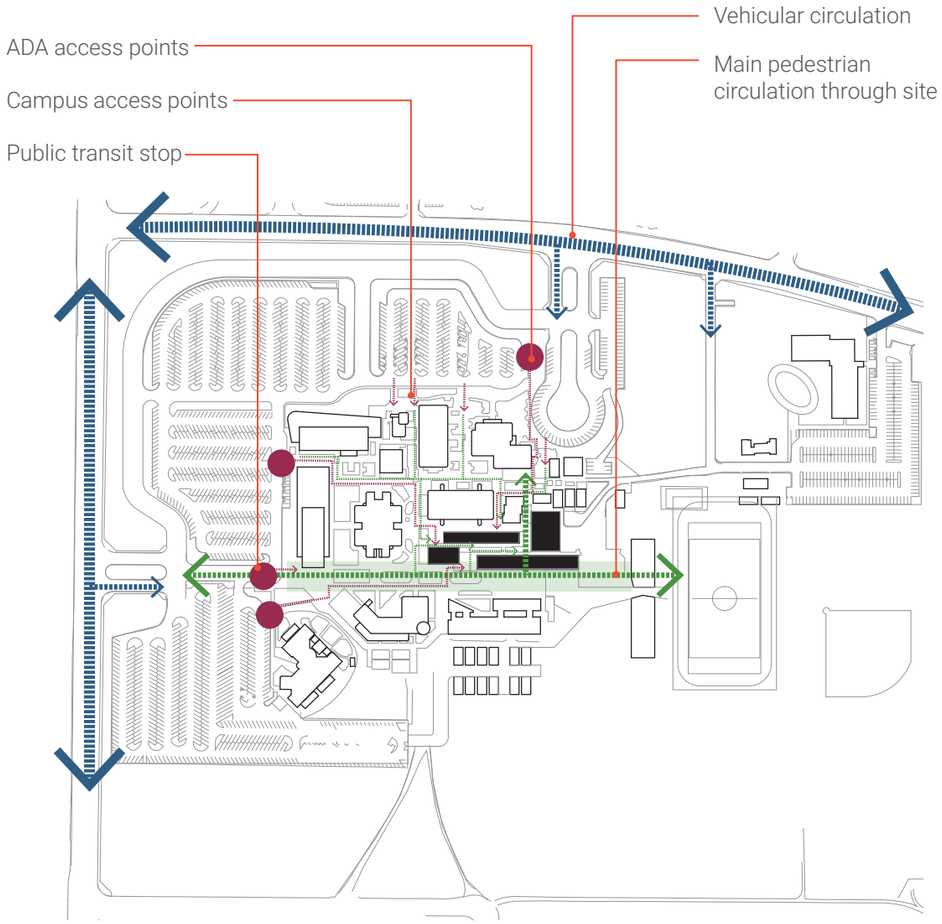
Physical Environment

Early in the design process the design team completed climate analysis to better understand the natural context and then, based off the climate, recommended solutions for shading to strive for sustainability.

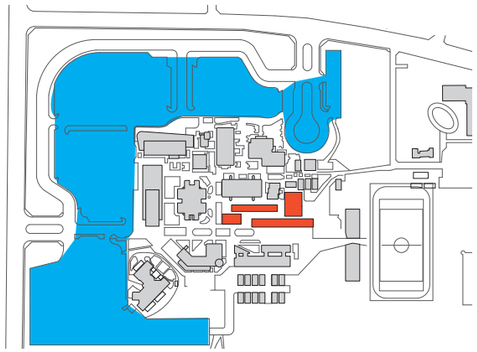
Additional analysis of campus circulation, green space and building massing enhanced connections between the new building and the overall campus.



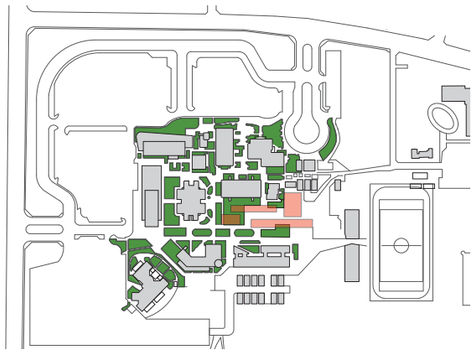
Site Wind and Sun



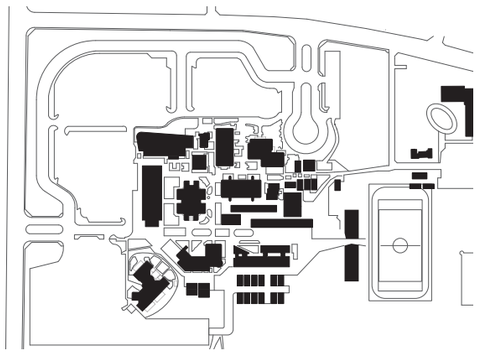
Site Circulation



Existing Parking



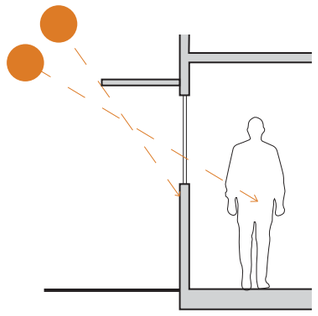
Existing Green Space / Vegetation



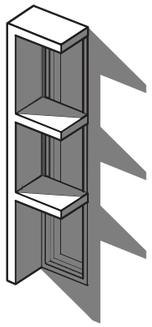
Campus Density

Physical Environment

Facade Study

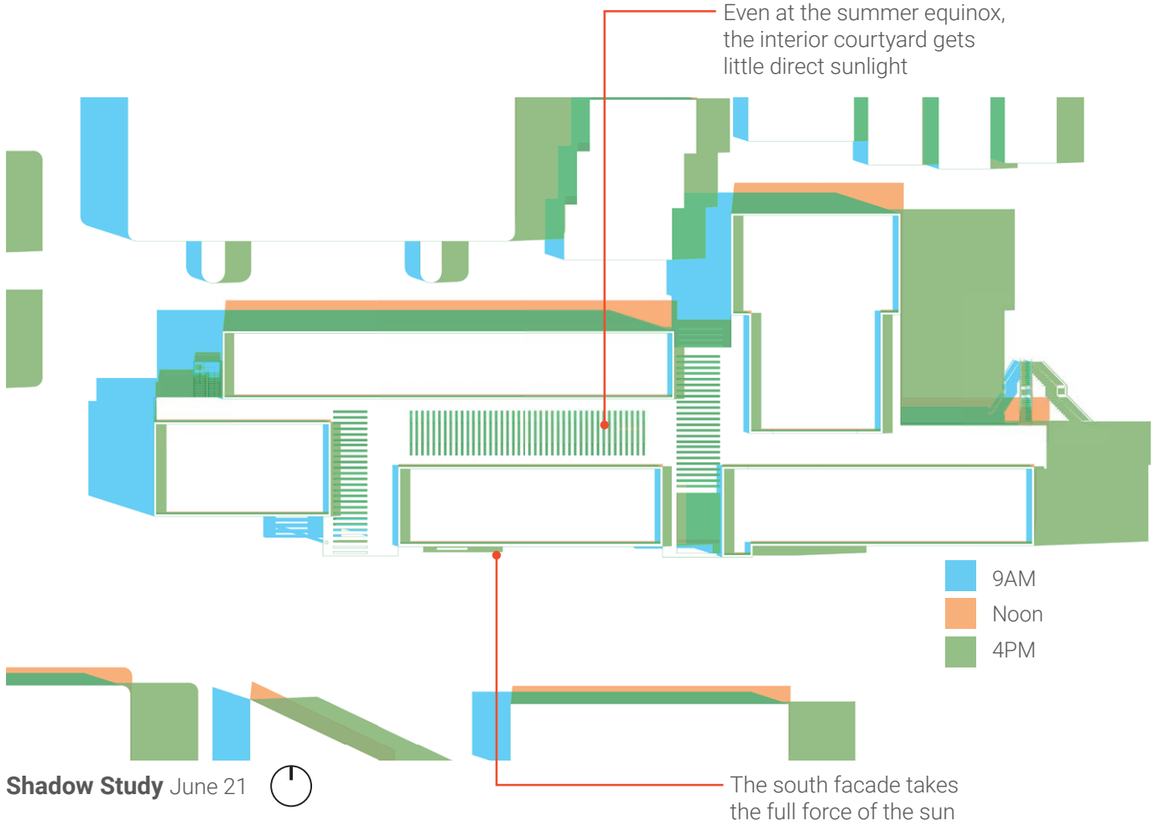


Solar Shading Study

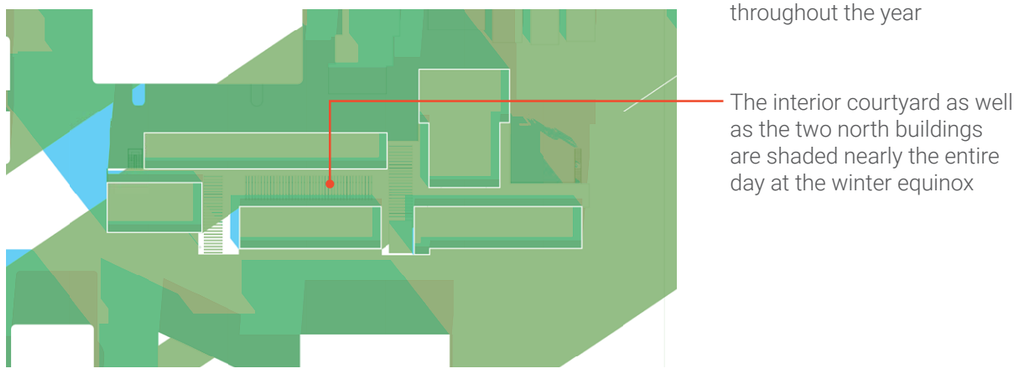


Climate Responsiveness: Shading of a building is hugely important in the Menifee climate to passively reduce energy costs and usage. Building overhangs, storefront shading louvers, and trees provide shade while the building's exterior glazing allows for natural lighting without overheating the building.

During warm summer months, overhangs block unwanted direct sunlight, reducing cooling loads. Light shelves simultaneously shade glazing while increasing access to natural light, reducing the need for electrical lighting. Extending the overhang to block the summer sun angle from 11am - 5pm reduces direct heat gain.

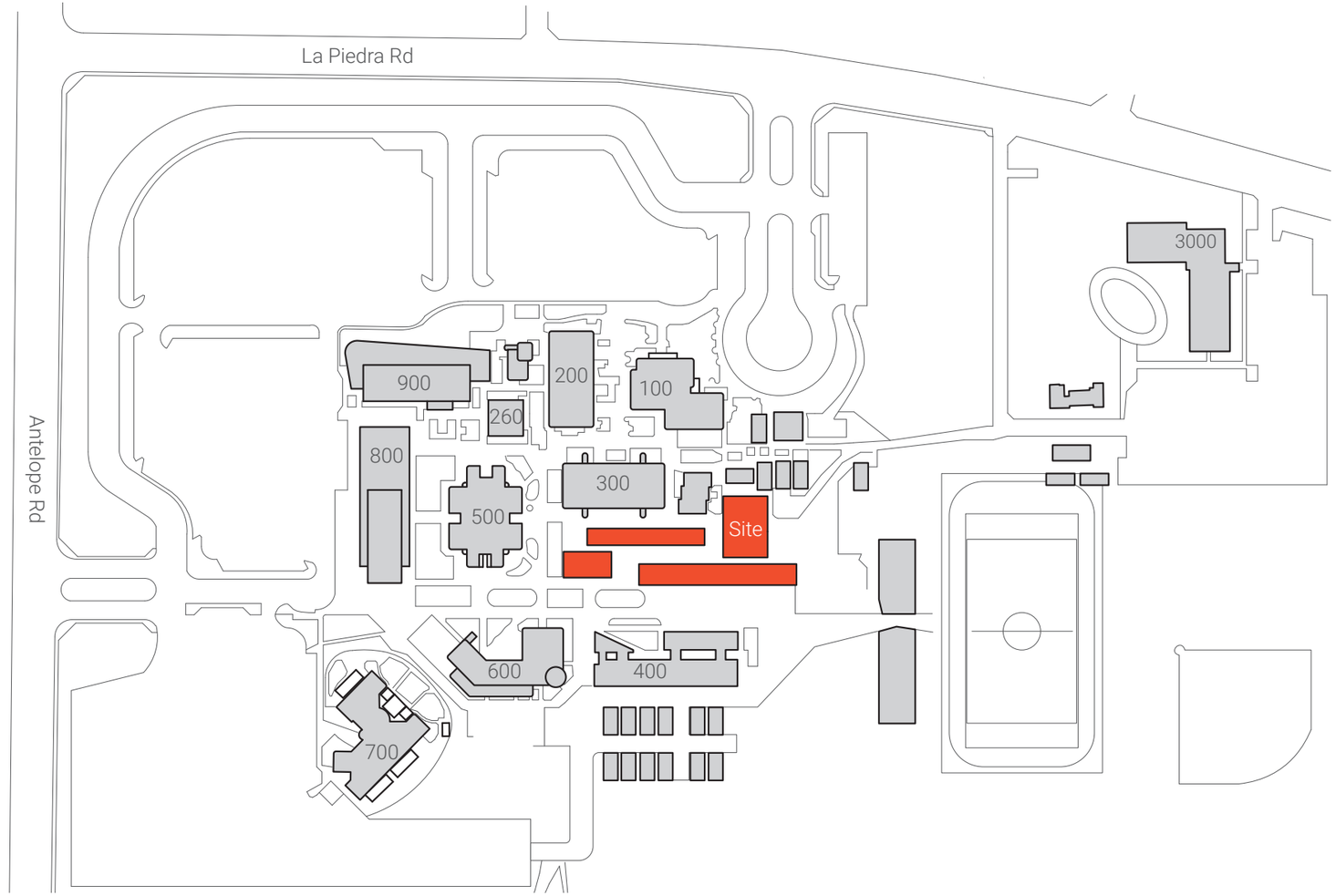


Shadow Study June 21

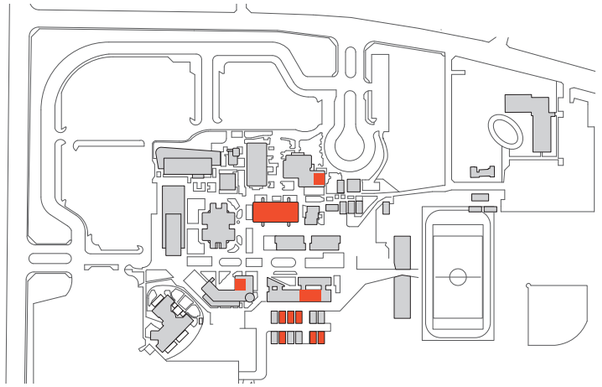


Shadow Study December 21

Physical Environment



Campus Plan



Current Campus

Creating a Campus Center: The Math and Science departments are currently scattered throughout the campus. While the departments might be familiar with one another, they lack a sense of centralized community and opportunities to collaborate and interact with one another. The individual departments have little to no interaction with the other math and science departments.

The MSJC Math and Science Building will serve as the **new center** for the math and science departments on the Menifee Valley Campus. This project not only brings all the departments under one roof where they can learn and challenge and engage with one another, but also creates a new physical center of the campus, emphasizing the campus axis and putting collaboration at the heart of MSJC.

Existing Site 3D View

Educational Environment - Vision & Goals

Community

The design shall create a sense of community for STEM students, faculty, and staff, as well as become a hub of interaction for all campus members. Indoor-outdoor public gathering spaces will enhance the campus experience along circulation pathways.

Learning on Display

Laboratories and classrooms shall connect with STEM students and the greater campus community through the large amount of interior and exterior window glazing. Additional displays for student projects and research shall populate the circulation and soft spaces of the facility.

Focus on Student Success

The new Math and Science building will focus on interaction and personal connection with students and faculty. Laboratories will allow for instructors to be more engaged with the class while being able to focus on individual success for greater hands-on teaching and learning. Collaborative spaces throughout the building encourage student-teacher interaction as well as peer to peer collaboration for the successful outcome of the students.

Flexible and Adaptable Design

Through the use of modular furniture, lab-bench modules and standardized classroom and laboratory spaces, the design of the new Math and Science building shall allow for maximum furniture flexibility and growth for decades to come. Multi-use spaces, such as huddle rooms, also maximize the use of support spaces throughout the day as students, staff, and faculty share their time in each space.

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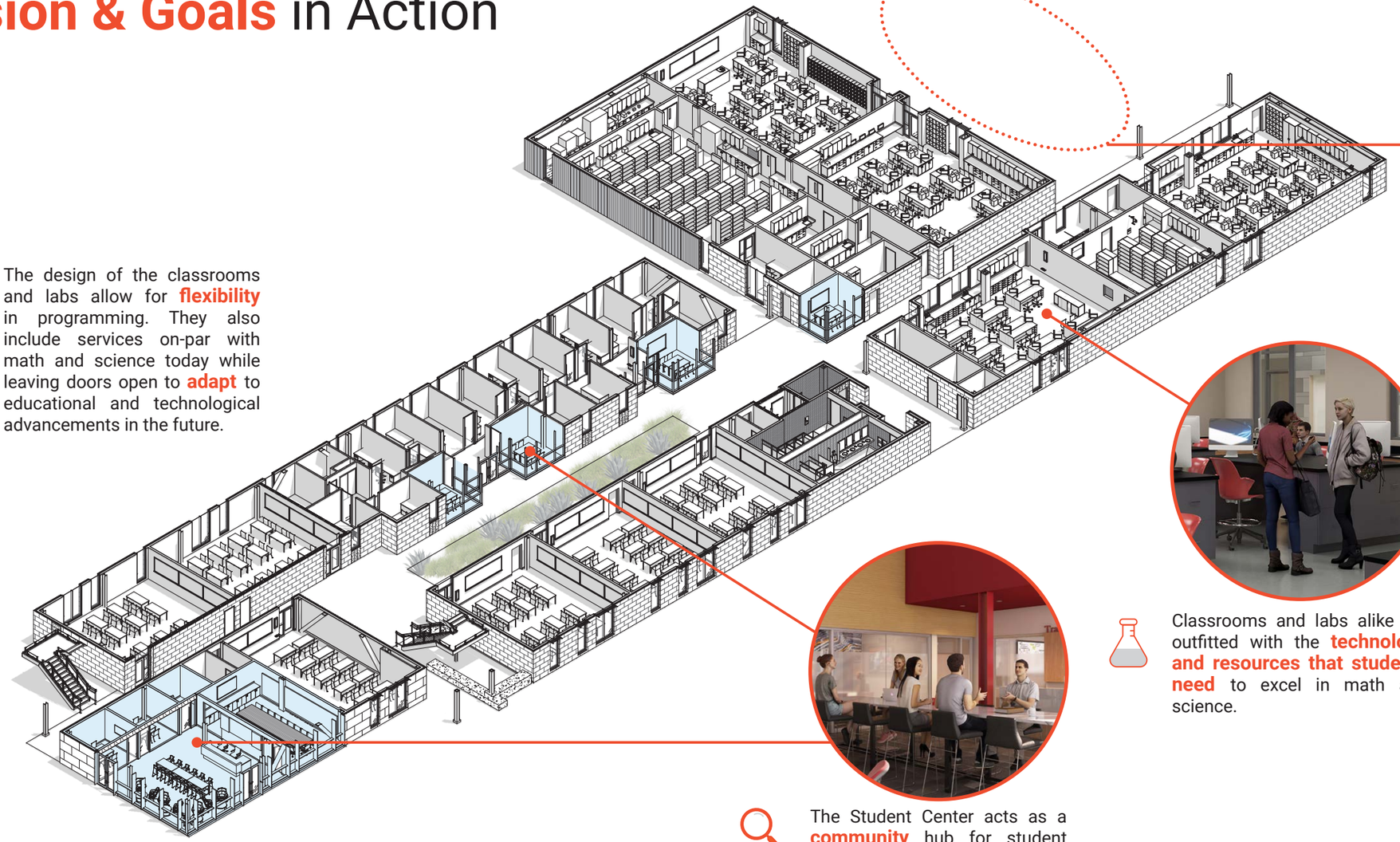
Vision & Goals in Action

The design of the classrooms and labs allow for **flexibility** in programming. They also include services on-par with math and science today while leaving doors open to **adapt** to educational and technological advancements in the future.



Outdoor learning space creates a **focus on student success** through opportunities for hands-on learning. This space also puts **learning on display** at the heart of the campus.

Classrooms and labs alike are outfitted with the **technology and resources that students need** to excel in math and science.

The Student Center acts as a **community** hub for student activity and learning for the whole campus. Huddle rooms put **learning on display** as students, faculty, and staff collaborate within.

Design Results - Building Program

On the first floor of the two-story building is the biological sciences – Biology, Microbiology, and Anatomy and Physiology labs - as well as general classrooms. During the user group meetings, the designers found that the Biology department needed to be on the ground floor so that they could have direct access to the outdoors and use outdoor space for studies on plants. This is one area of opportunity to put **learning on display** and allow all MSJC students to be in proximity to other studies.

The programming for the Student Center came not only from the designers' vision to create a campus hub, but also from the vision of the users. The program elements were dictated by the original project proposal in 2010 and during the user group meetings the designers and end users came to the decision together that combining flexible student space and smaller study rooms on the corner of the building would create the student hub the campus needs.

On the second floor are math classrooms and the physical sciences – Chemistry, Physics, and Astronomy. The balcony on the south side of the building is designed for the astronomy department to set up their telescopes.

Level 2

Level 1

- Faculty Offices
- Study, Huddle, and Conference Rooms
- Student Center
- Classroom
- Biology Labs
- Physical Science Lab
- Lab Services
- Student Outdoor Space

Collaboration
at the Center

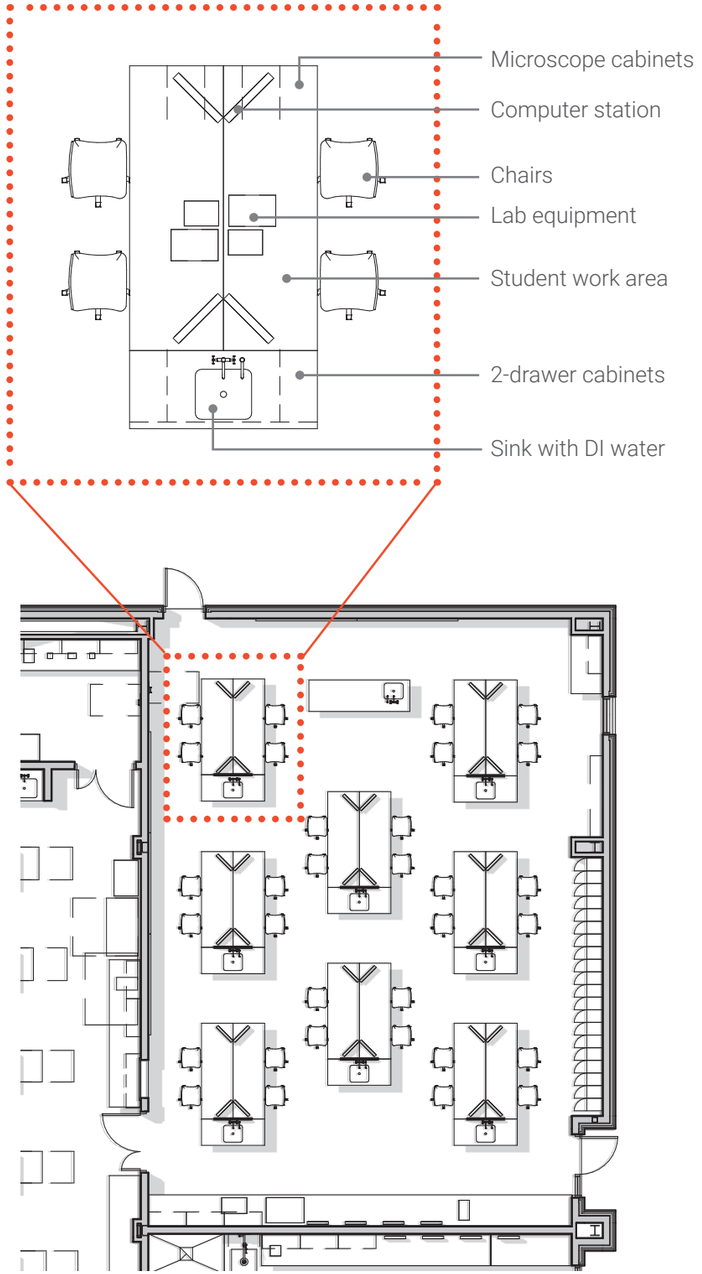
Outdoor study spaces promote campus community and take advantage of Menifee's temperate climate. Huddle rooms, located adjacent to public outdoor spaces, give students and faculty space to collaborate. Unlike the current state of the campus where the math and science departments are disconnected, being in one building and having access to shared spaces makes it possible for departments to interact with and learn from one another.

Space Type: Biology Labs

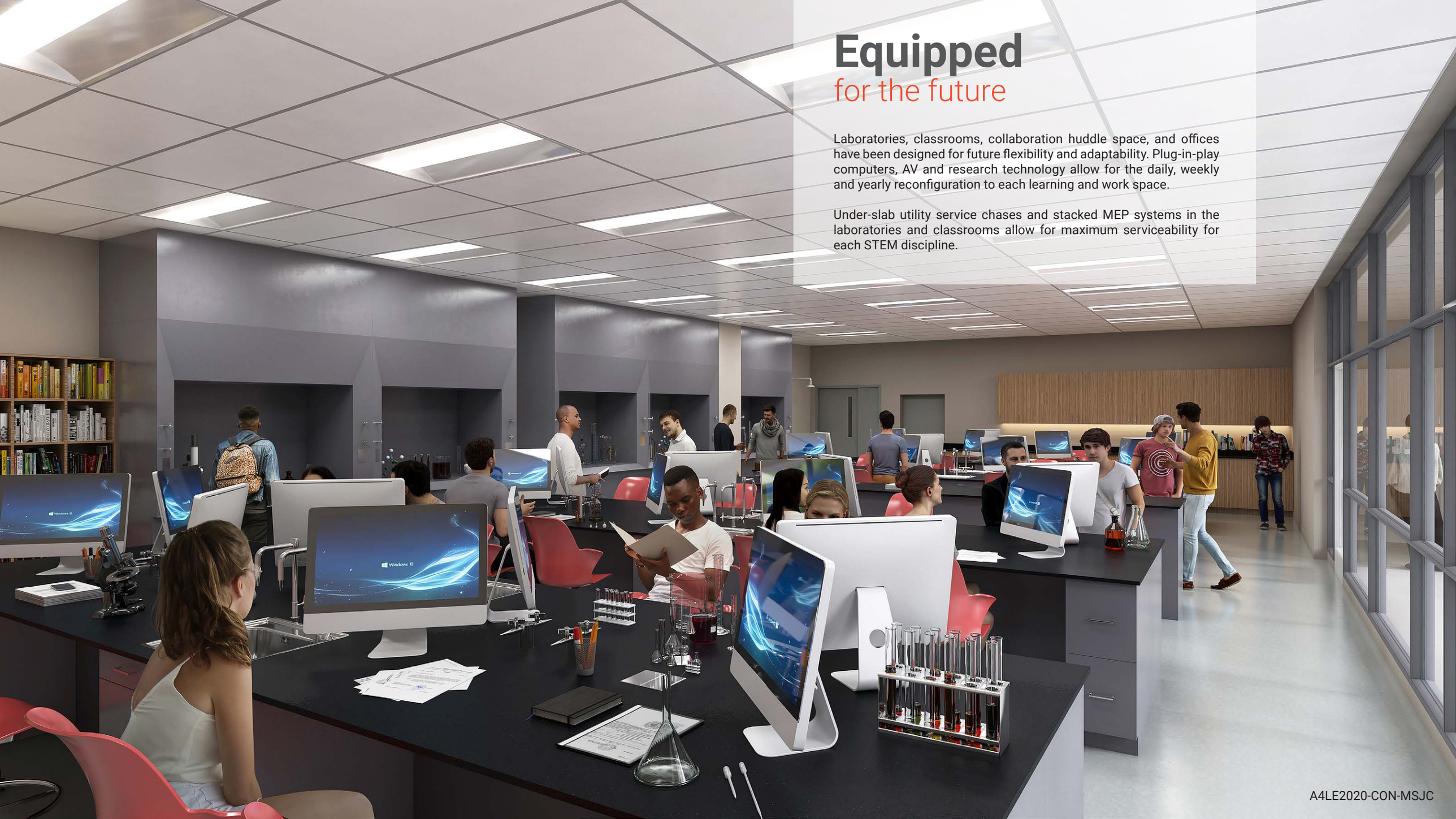
The lab spaces for the biology department include 3 lab types: Microbiology, Biology, and Anatomy & Physiology.

The Microbiology and Biology spaces have been grouped together with a common area for support between the sessions. These labs are set up for 24-32 students. Students work in pairs and lab benches have been laid out to support group work with a single shared sink between the two groups. Each student work station includes a computer for equipment charting and data entry. The lab includes multiple points of access with a designated areas for students to store their belongings while in the lab. This keeps the floor area clear for both students and instructors to move freely throughout the lab.

The Anatomy and Physiology spaces have been grouped together with a common prep room between them. The lab has a similar layout to the Biology spaces but will support the dissection of human anatomy in a small scale while utilizing an AR dissection table. Each student work station includes a computer for the charting and data entry of the experiment. The cadaver lab will remain in its existing location on campus.



Biology Lab Plan



Equipped
for the future

Laboratories, classrooms, collaboration huddle space, and offices have been designed for future flexibility and adaptability. Plug-in-play computers, AV and research technology allow for the daily, weekly and yearly reconfiguration to each learning and work space.

Under-slab utility service chases and stacked MEP systems in the laboratories and classrooms allow for maximum serviceability for each STEM discipline.

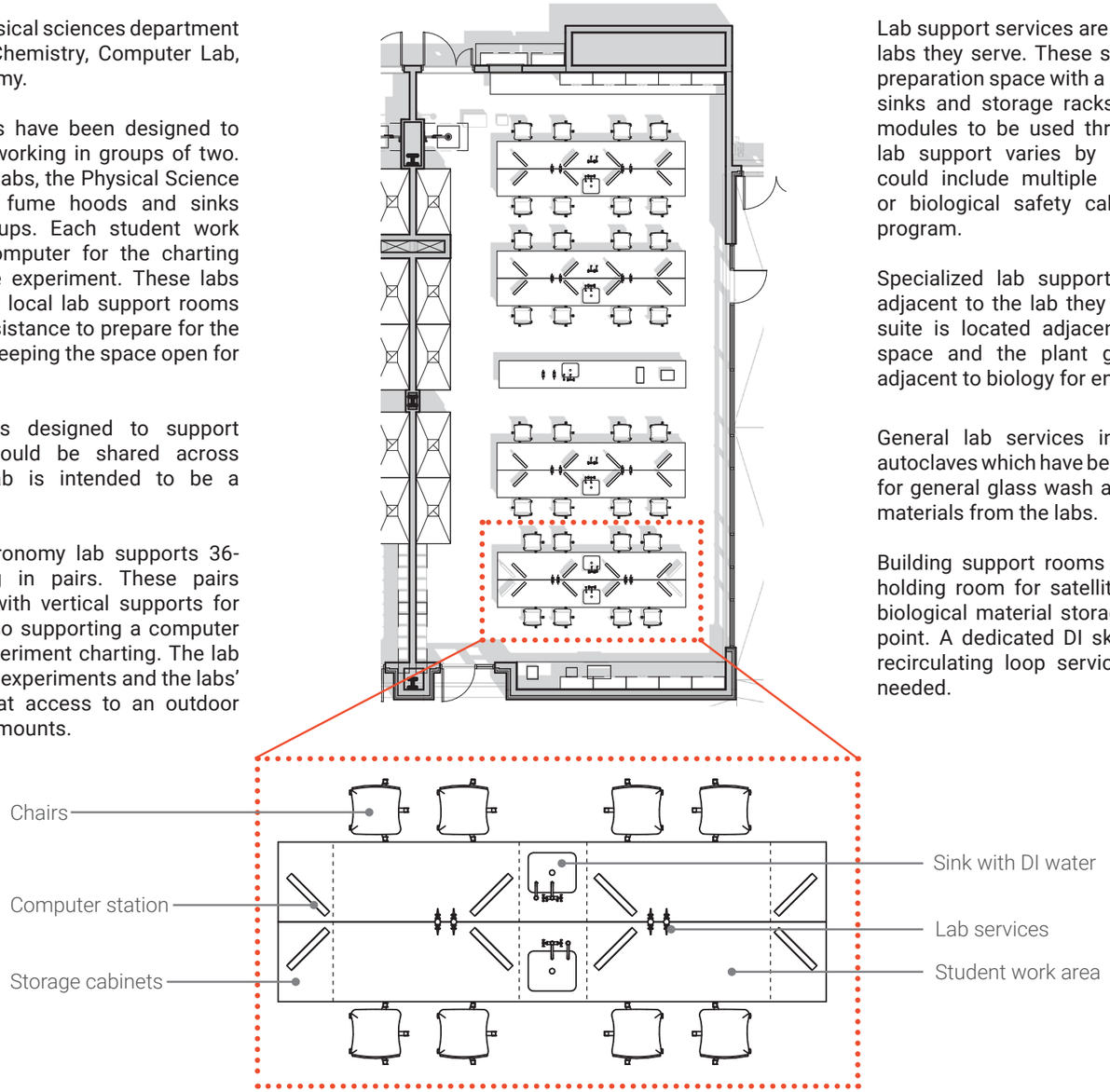
Space Type: Physical Science Labs

Lab spaces for the physical sciences department include 3 lab types: Chemistry, Computer Lab, and Physics / Astronomy.

The chemistry spaces have been designed to support 32 students working in groups of two. Similar to the Biology labs, the Physical Science labs share chemical fume hoods and sinks between student groups. Each student work station includes a computer for the charting and data entry of the experiment. These labs are also supported by local lab support rooms for instructors and assistance to prepare for the following class while keeping the space open for the current class.

The computer lab is designed to support 32 students and should be shared across departments. This lab is intended to be a simulation lab.

The Physics and Astronomy lab supports 36-40 students working in pairs. These pairs share a single desk with vertical supports for experiments, while also supporting a computer for data entry and experiment charting. The lab support houses future experiments and the labs' location provides great access to an outdoor balcony for telescope mounts.



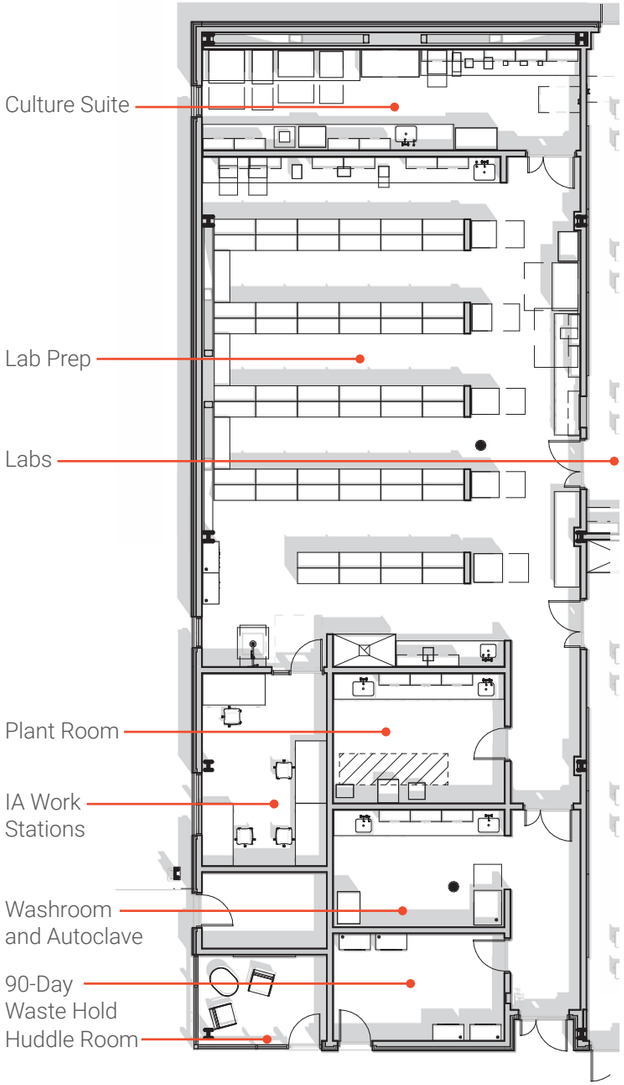
Space Type: Lab Services

Lab support services are located adjacent to the labs they serve. These spaces typically include preparation space with a series of casework with sinks and storage racks for different learning modules to be used throughout the year. The lab support varies by lab type and support could include multiple chemical fume hoods or biological safety cabinets as needed per program.

Specialized lab support services are located adjacent to the lab they serve. The cell culture suite is located adjacent to the microbiology space and the plant grow room is located adjacent to biology for environmental studies.

General lab services include wash rooms / autoclaves which have been located on each floor for general glass wash and decontamination of materials from the labs.

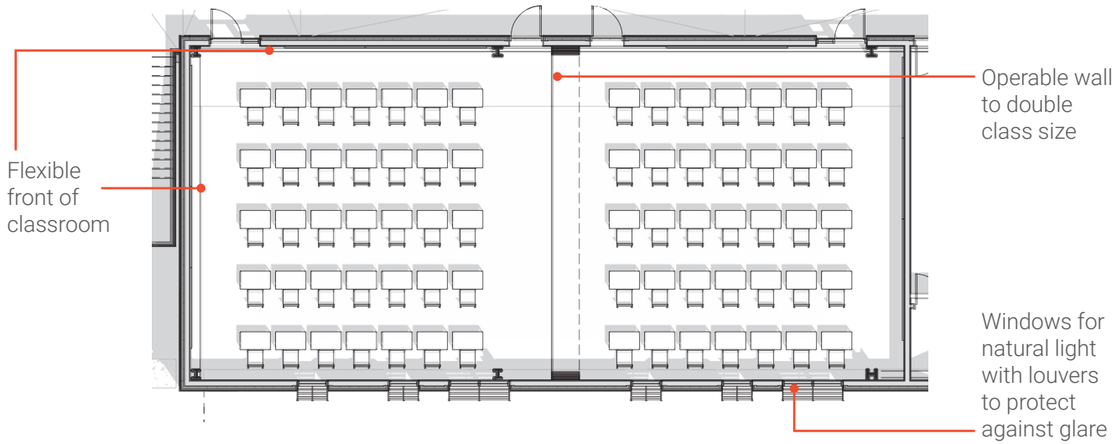
Building support rooms also include a 90 day holding room for satellite chemical waste and biological material storage for a single holding point. A dedicated DI skid/room for a building recirculating loop services the lab spaces as needed.



Space Type: Classrooms

Classrooms are split between both building levels to allow access for all disciplines.

Classrooms will be designed to 21st century learning standards. Furniture will be mobile and flexible, creating learning environments that focus on group work and/or individual studies. Rich AV systems, multiple digital display screen and input locations will surround the students within the learning environment. Additional whiteboard space is required for mathematical and physics computations.



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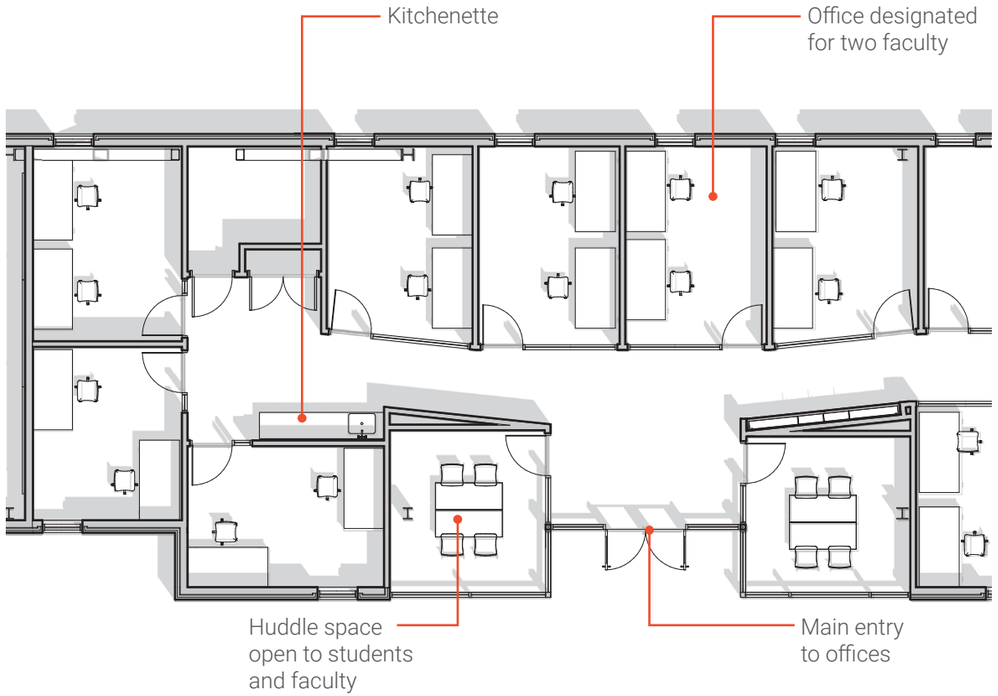
Community Space
for the whole campus

The Student Center creates the front door to the Math and Science building, welcoming students and visitors from the west along the main campus promenade. This space, as well as the activated outdoor space, encourages students and staff to engage with and learn from one another, regardless of their department or area of study.

Space Type: Offices

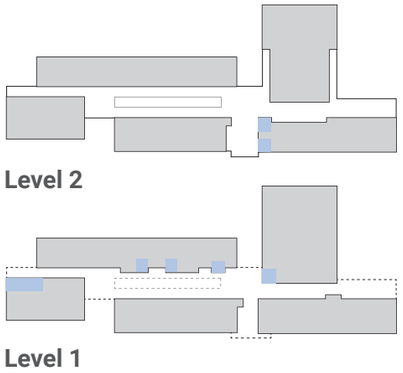
Faculty offices are clustered around huddle rooms and additional support spaces, such as the kitchenette and copy alcove. They are mixed among the different STEM pathways, creating an environment to cross pollinate among the different disciplines. Each office is shared by two faculty members.

For additional counseling and meeting space, huddle rooms are located adjacent to the offices; these spaces can be used by both faculty and students. This mixture of spaces, disciplines, and users cultivates an environment of collaborative learning.

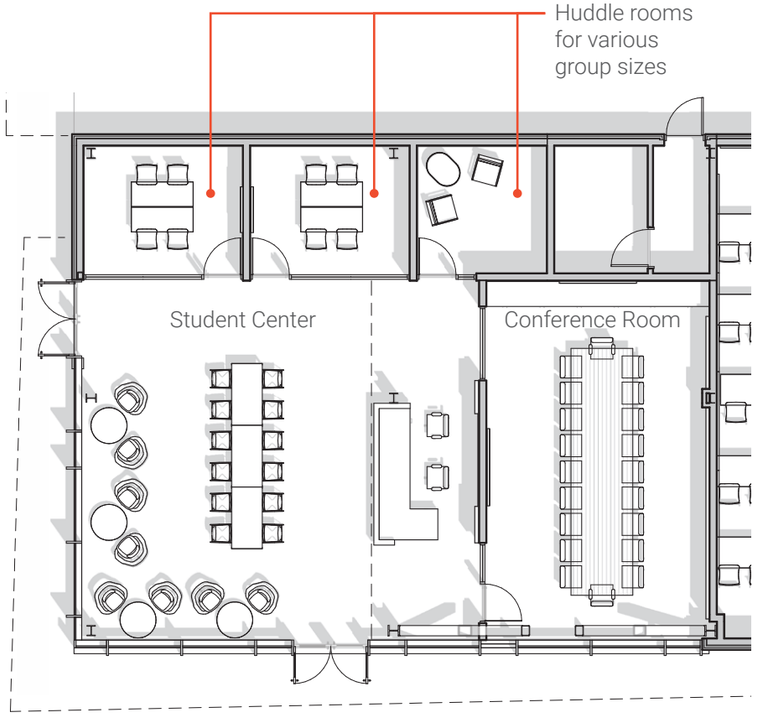


Space Type: Study, Huddle, and Conference Rooms

A mix of furniture styles, AV equipment, and meeting room sizes allow students to choose the right study space for their individual and group study needs. These spaces are accessible to students and faculty alike. Huddle rooms include a TV, whiteboard, and tables and chairs for students to work on a group project together, for a faculty member to provide extra help to a student outside of class time, or for faculty to collaborate on curriculum. Huddle and study rooms are spread throughout the building so that all departments have access. And the collaboration within these spaces is highlighted with storefront systems opening up into the public realms of the building.



The selected interiors materials play off of the school's colors, provide texture and interest at key locations, and contribute to the durability and longevity of the building.



Advancing
Math and Science

The MSJC Math and Science Building will develop community at the heart of the campus, put learning on display to showcase student work and encourage others to learn, focus on student success, and allow flexibility and adaptability to continue being a productive learning environment for decades to come.