

Spatial Analysis

36. Analyze the functional layout of the existing campus space and make recommendations for future optimization. (WHU)

Answer:

Based on the detailed geographic data, here is an analysis of the campus functional layout.

1. Current Functional Analysis

I. Teaching Zone:

The teaching core is concentrated in the southern and central sectors of the campus. It forms a dense academic cluster including Teaching Buildings 1 through 7. These facilities are situated primarily along Qiushi Avenue and Qiushi 1st Road. While this centralization facilitates academic exchange, the high density of large buildings leads to significant congestion during peak class transition hours.

II. Living Zone:

The student accommodation is geographically bifurcated into East and West sectors.

- The East Area includes Dormitories 11-20 (e.g., Dorms 15, 16, 17, 18), which are relatively closer to the central library and sports facilities.
- The West Area comprises Dormitories 30-57 (e.g., Dorms 39, 55, 57), with some units located at the periphery, creating a longer commute to the primary teaching zone.
- Dining Services are decentralized to mitigate crowding, with Canteen 1 and Canteen 2 serving the central/east clusters, and Canteen 4 (the largest at over 6,300 \$m^2\$) serving the central residential areas.

III. Sports Zone:

This zone is well-defined and includes major outdoor spaces such as the main Information Faculty Playground (approx. 14,600 \$m^2\$) and the Xinghu Sports Field. These are complemented by indoor facilities, primarily the Information Faculty Gymnasium and the Culture and Sports Center, forming a comprehensive belt for physical activity near the student dormitories.

IV. Public Service Zone:

The Library (Information Branch) acts as the intellectual heart of the campus, centrally located to remain accessible from both teaching and living zones. Commercial services are heavily concentrated in the "Xinbu CBD" area. This commercial hub aggregates essential amenities, including supermarkets (e.g., Ziqiang Supermarket), cafes (e.g., Luckin Coffee, Tea Yan Yue Se), and convenience stores (e.g., 7-Eleven, Rosen), creating a vibrant but spatially concentrated service node.

2. Optimization Suggestions

I. Optimize the Main Road System: Priority should be given to upgrading Qiushi Avenue and Qiushi 1st/2nd Roads. As the primary arteries connecting the heavy traffic from the teaching buildings (No. 1, 4, 5) to the dormitory zones, easing bottlenecks here is critical for smooth campus flow.

II. Improve Commercial Service Layout: While the Xinbu CBD is well-stocked, the layout should be improved to ensure even distribution. Currently, high-frequency services like Logistics/Courier spots (e.g., Shentong Express) and dining options are clustered. Future planning should consider introducing satellite service nodes near the farther West Dormitories (e.g., near Buildings 50-57) to reduce the reliance on the central CBD for basic daily needs.

37. Please analyze the functional layout of the buildings on campus. (SZU)

Answer:

Based on the geographical data provided, the Shenzhen University Lihu Campus exhibits a highly structured functional layout, with distinct zones dedicated to academics, residential living, sports, and research.

1. Academic & Research Clusters (East & Northeast)

The academic core is primarily concentrated in the eastern and northeastern sections of the campus, featuring specialized clusters for engineering and science disciplines.

- Engineering Complex: A major hub comprising the College of Engineering (split into South and North Towers), the School of Materials Science (B2), and the School of Chemistry and Environmental Engineering (B1).
- Research Facilities: The National Supercomputing Shenzhen Center (Shenzhen Cloud Computing Center) is a prominent commercial/research facility located in the southern part of this zone. Nearby is the Shenzhen Institute of Advanced Technology.
- Academic Support: The Academic Exchange Center (B3) provides facilities for scholarly interaction. Other key academic buildings include Sifang Lou, Mingli Lou, Shouzheng Lou, Minglv Lou, and Mingde Lou, creating a dense network of educational infrastructure.

2. Residential "Garden" Zones (Central & West)

The residential areas are functionally grouped and distinctively named after plants and trees, creating a "garden" atmosphere for student living. These dormitories are mostly high-rise buildings situated near main roads and bus stops for accessibility.

- Dormitory Names: The buildings carry botanical names such as Wind Hyacinth (Fengxinzi), Hawthorn Tree (Shanzhashu), Poplar Forest (Huyanglin), Violet (Ziluolan), Holly (Dongqingshu), Oak (Qinggangli), Parasol Tree (Wutongshu), and Bougainvillea (Sanjiaomei).
- Layout Characteristics: These buildings are often described as modern high-rises with white facades and grid-like windows. They are strategically placed near amenities like the Huyanglin and Ziluolan bus stops.

3. Sports & Recreation Hub (Central)

A significant portion of the central campus is dedicated to athletic facilities, acting as a functional buffer and recreational space between the living and learning zones.

- Major Venues: The campus features the Zhikuai Gymnasium and the Zhichang Gymnasium (C3). There is also a large Zhikuai Stadium (Pitch).
- Aquatics & Courts: A swimming pool complex includes a large lap pool and a semi-circular pool. Additionally, there are multiple rooftop and ground-level sports pitches.
- Golf Course: The expansive Shenzhen Xili Golf and Country Club borders the campus to the west/southwest, adding to the green recreational surroundings.

4. Cultural & Service Anchors

Central amenities serve the entire campus population, bridging the gap between the residential and academic zones.

- Library: The Qiming Lou serves as the central library, characterized by a modern, angular design with a gray and white scheme.
- Auditorium: The Wenhui Auditorium is located near the academic zone, providing a venue for large gatherings and events.
- Dining: Functional service buildings like Caiwei and Famu are categorized as restaurants or

service centers, often located near sports or dormitory areas to serve daily needs. Commercial amenities like McDonald's and Luckin Coffee are also present.

5. Medical Zone (South)

The southern tip of the campus functions as a medical and health precinct.

- Hospital: The Shenzhen University General Hospital covers a large area here, providing comprehensive medical services distinct from the primary student teaching areas.

38. There is a construction site on campus. Please analyze its surroundings and the needs of the campus and suggest the best use of the space. (SZU)

Answer:

Based on the geographic data provided, here is an expanded analysis and proposal for the construction site, incorporating specific facility names and spatial relationships found in the campus layout.

Site Analysis

The identified construction site (Object 8507770) covers 5,370 m² and is strategically positioned at the coordinates [113.98544, 22.60413], effectively acting as a bridge between the residential western zone and the academic eastern zone.

Key Surroundings

- I. Academic & Service Nexus: The site is situated directly south of the major Four Square Building (Sifang Lou) and north of the Logging (Famu) dining and service complex. It is also immediately adjacent to high-density student housing, specifically the Holly (Dongqingshu) and Violet (Ziluolan) dormitories, ensuring a constant flow of students.
- II. Transportation Access: The location offers excellent connectivity, flanked by the "Lanyue Ridge South" bus stop to the south and the "Four Square Building" bus stop to the north, allowing for easy access via the campus road network.
- III. Green Spaces: The western edge of the site abuts the Lanyue Ridge forest, while the eastern side opens up to grassy landscaped zones, offering significant potential for biophilic design.

Recommendation: Multi-purpose Student Center

To maximize the utility of this central plot, I recommend developing a Multi-purpose Student Center that bridges the "Living" (dorms) and "Learning" (Sifang Lou) sectors:

- I. Study Commons (Ground Floor): Given the immediate proximity to the Holly and Violet dormitories, a 24/7 collaborative study space here would provide a safe and accessible alternative to the main library for late-night study sessions.
- II. Student Services Hub (Second Floor): This floor could centralize student organization offices and counseling services, placing them at the physical intersection of student life and academic administration.
- III. Rooftop Garden & Social Space: A landscaped green roof would visually and physically connect the building with the adjacent Lanyue Ridge, providing a scenic seating area that leverages the natural topography for relaxation and mental wellness.

39. Please analyze the main campus facilities that are within a 10-minute walk from the Oak Dormitory.

Answer:

Based on the geographic data provided, the "Oak Dormitory" is located at the coordinates (113.98368, 22.60343) in the dormitory cluster.

Here is an analysis of the main facilities within a 10-minute walk (approximately 800 meters) from this location, categorized by function:

1. Dining (1-3 Minutes)

The closest dining facility is effectively next door.

- Famu Restaurant: Located just ~140 meters to the east. This is the primary canteen serving this dormitory cluster.

2. Sports & Recreation (2-5 Minutes)

The dormitory is situated immediately north of the main sports complex.

- Zhikuai Gymnasium: Approximately 150-200 meters south. This facility features a green roof and is adjacent to the outdoor tracks.
- Zhikuai Stadium: Located just east of the gymnasium, about 250 meters away, featuring a soccer pitch and running track.
- Golf Course Views: The dormitory is bordered to the west/north by the Shenzhen Xili Golf Country Club, offering green views but no direct access.

3. Academic Facilities & Library (5-8 Minutes)

The walk to the main teaching area is short and convenient.

- Sifang Building: Approximately 400-450 meters to the northeast. This is a major teaching and administrative building.
- Qiming Lou / Library: Approximately 400 meters to the east. This acts as the central library for the campus.
- Wenhui Auditorium: Located slightly further east, about 600 meters away, but still well within a 10-minute walk.

4. Transportation (1-2 Minutes)

- Bus Stops: The "Wutong Tree" bus stop is practically outside the building, about 50-100 meters south. The "Violet" bus stop is also nearby to the north.

5. Medical (8-10 Minutes)

- Shenzhen University General Hospital: Located to the south, approximately 550-600 meters in a straight line. Following the roads (via Keyan Huan Road), it is roughly a 10-minute walk.

40. What is the overall connectivity structure of the traffic or pedestrian network in this area? (Optics Valley)

Answer:

Based on the geographic structured data, the overall connectivity structure of the area is a multi-modal, high-density transit network centered around commercial hubs. The connectivity relies heavily on the integration of rail (subway/tram), bus rapid transit (BRT), and dedicated pedestrian zones.

Here is the detailed breakdown of the connectivity structure:

1. Core Transit Hub: Optics Valley Square

The network is anchored by Optics Valley Square, which functions as the primary distribution node for the entire region.

- Subway Connectivity: The Optics Valley Square Subway Station (202148330) is a central node. The spatial data indicates it is surrounded by major commercial landmarks, acting as the primary entry point for pedestrian traffic into the area.
- Traffic Convergence: The data references the "Optics Valley Roundabout" as a landmark, which physically connects major arterial roads like Minzu Avenue.

2. Main Arterial Corridors & Public Transit Spines

The connectivity extends outward from the core along key avenues, characterized by specific transit modes identified in the building metadata:

- Guanshan Avenue - The "Smart" Corridor:
 - Modern Tram System: This area features a distinct tram network. Buildings like the residential blocks near Poly Times (799253917) are explicitly linked to "Guanshan Avenue railway_station" and "Chuangye Street tram_stop" (1047452110), indicating a rail-based surface connectivity structure.
 - BRT (Bus Rapid Transit): The data identifies "High-tech Avenue BRT" stops (799253918), showing that this corridor utilizes a layered transit system (Tram + BRT) to handle high-volume traffic.
- Minzu Avenue: This serves as a traditional bus-heavy corridor. Landmarks such as Optics Valley Capital Building (98965867) and residential areas (417791466) rely on "Minzu Avenue Bus Stops" as their primary connectivity nodes.

3. Dedicated Pedestrian Network

Unlike typical roadside sidewalks, this area features a massive, structured internal pedestrian network:

- World City Optics Valley Walking Street: This is a specialized pedestrian zone (9368629). The data describes its connectivity not just as "roads," but as a complex system of "footways," "tertiary" streets, and "steps/elevators".
- Internal Micro-Circulation: This structure allows pedestrians to traverse large commercial blocks (connecting the mall, cinema, and plazas) without interacting with vehicular traffic.

4. Micro-Connectivity (Last Mile)

The data reveals a "Transit-Oriented Development" (TOD) structure where commercial and residential buildings are tightly clustered around transit stops:

- Commercial Clusters: Buildings like Poly International Center and K11 Select act as local hubs, surrounded by high-density bus and tram stops within a 20-100 meter radius.
- Residential Access: Residential compounds (e.g., Poly Era, Constant Ivy) are spatially linked to these corridors, with "convenience stores" and "bus stops" listed as their immediate neighbors, ensuring walkable access to the wider network.

Summary of Structure:

The area uses a Hub-and-Spoke model. Optics Valley Square is the central hub, feeding traffic into the Guanshan Avenue and Minzu Avenue spokes. These spokes are supported by a multi-layered public transit system (Subway - Tram/BRT - Bus), while the Walking Street provides a segregated, high-capacity pedestrian circulation system at the core.