SketchUp and Lumion (Complete Project Development-Architectural Animation)

University of Global Village (UGV), Barishal

COURSEINFORMATION			
Course Title	SketchUp and Lumion (Complete Project Development-Architectural Animation)	Lecture ContactHours	5.00
Covered Lab	Civil Engineering Drawing –II Sessional (3rd)		
PRE-REQUISITE			
SketchUp and Lumion 1,2,3			

No.	Course Outcomes
CO1	**Determine** diverse layouts and interpreting different results accurately.
CO2	**Analyze** plan and model characteristics and behavior under different conditions.
CO3	**Apply** software knowledge to solve engineering problems effectively.
CO4	**Plan** effectively to work individually and in a group.

SI	Content of Course	Class Time (hr)	CLOs
01	**Residential Community Complex Project** • Essential components of a residential area • Efficient layout plan of the project • 3D modeling • Rendering	03	CLO1, CLO2, CLO3, CLO4
02	**Resort and villas Project** • Essential components of a resort complex • Efficient layout plan of the project • 3D modeling • Rendering	03	CLO1, CLO2, CLO3, CLO4

03	**University Campus Area Project** • Essential components of a university • Efficient layout plan of the project • 3D modeling • Rendering	03	CLO1, CLO2, CLO3, CLO4
04	**Industrial Area Project** • Essential components of an industrial area • Efficient layout plan of the project • 3D modeling • Rendering	03	CLO1, CLO2, CLO3, CLO4
05	**Airport Project** • Essential components of an airport • Efficient layout plan of the project • 3D modeling • Rendering	03	CLO1, CLO2, CLO3, CLO4

Week	Topic	Teaching Learning Strategy	Assessment Strategy	Corresponding CLOs
01-03	**Residential Community Complex Project**	Lecture, Oral presentation, Software demonstration	Lab Test, Quiz, Report, Presentation	CLO1
04-06	**Resort and villas Project**	Lecture, Oral presentation, Software demonstration	Lab Test, Quiz, Report, Presentation	CLO2, CLO3, CLO4
07-09	**University Campus Area Project**	Lecture, Oral presentation, Software demonstration	Lab Test, Quiz, Report, Presentation	CLO2, CLO3, CLO4
10-12	**Industrial Area Project**	Lecture, Oral presentation, Software demonstration	Lab Test, Quiz, Report, Presentation	CLO2, CLO3, CLO4
13-15	**Airport Project**	Lecture, Oral presentation, Software demonstration	Lab Test, Quiz, Report, Presentation	CLO2, CLO3, CLO4

REFERENCEBOOKS
1. 1. SketchUp for Dummies: Aidan Chopra
2. SketchUp for Site Design: A Guide to Modeling Site Plans, Terrain, and Architecture: Daniel Tal
3. SketchUp for Builders: A Comprehensive Guide for Creating 3D Building Models Using SketchUp: John Brock
4. SketchUp for Interior Design: Various Authors
5. Mastering Lumion 3D: Ciro Cardoso
6. Lumion 3D Cookbook: Ciro Cardoso

Project 1

Residential Community Complex Project

A residential community complex is a self-contained development offering a variety of housing options and amenities. Here are some key components:

Residential Buildings:

- **Apartments:** Varying sizes and configurations to suit different needs and budgets.

[Opens in a new window](#) doingmoretoday.com

Apartment Buildings in a Residential Community Complex

- **Townhouses:** Multi-story units with private entrances and often some outdoor space.

[Opens in a new window](#) www.rocketmortgage.com

Townhouses in a Residential Community Complex

- **Single-Family Homes:** Detached houses with private yards and garages.

www.multihousingnews.com

SingleFamily Homes in a Residential Community Complex

Community Facilities:

- **Clubhouse:** A central gathering space with amenities like a fitness center, pool, party room, and business center.

www.homes247.in

Clubhouse in a Residential Community Complex

- **Parks and Green Spaces:** Playgrounds, walking trails, gardens, and open areas for recreation and relaxation.

Parks and Green Spaces in a Residential Community Complex

- **Retail and Dining:** Convenience stores, cafes, restaurants, and other retail outlets within the complex.

Retail and Dining in a Residential Community Complex

- **Security Features:** Gated entry, surveillance systems, and on-site security personnel to ensure safety and peace of mind.

Security Features in a Residential Community Complex

Infrastructure:

- **Roads and Parking:** Well-maintained roads, sidewalks, and ample parking spaces for residents and guests.

[Opens in a new window](#) [www.civicdesigncenter.org](#)

Roads and Parking in a Residential Community Complex

- **Utilities:** Reliable water, electricity, gas, and internet services.

[Opens in a new window](#) **H** [complexe-tanger-boulevard.com](#)

Utilities in a Residential Community Complex

- **Waste Management:** Efficient waste collection and disposal systems.

www.cleanindiatech.com

Waste Management in a Residential Community Complex

Additional Features (May Vary):

- **Pet-friendly amenities:** Dog parks, grooming stations
- **Educational facilities:** Schools or daycare centers
- **Healthcare facilities:** Clinics or medical offices
- **Community gardens:** Shared spaces for residents to grow their own produce

Diagram of Residential Community Complex Components:

www.pinterest.com

Diagram of Residential Community Complex Components

The specific components and amenities of a residential community complex can vary depending on the size, location, and target market. However, the overall goal is to create a self-contained and convenient living environment that offers a high quality of life for its residents.

Project 2

Resort and villas Project

Resort Components

Accommodation:

- **Hotel Rooms:** A range of room types, from standard to suites, offering varying levels of comfort and amenities.

 [Opens in a new window](#)

www.opalcollection.com

Hotel Rooms in a Resort

- **Villas:** Independent units with private pools, gardens, and enhanced privacy.

 [Opens in a new window](#) www.totstoo.com

Villas in a Resort

Food and Beverage:

- **Restaurants:** Offering diverse cuisines, from casual dining to fine dining.

[Opens in a new window](www.viceroyhotelsandresorts.com)
www.viceroyhotelsandresorts.com

Restaurants in a Resort

- **Bars and Lounges:** Providing a relaxed atmosphere for drinks and socializing.

[Opens in a new window](www.alamy.com) www.alamy.com

Bars and Lounges in a Resort

Recreation and Leisure:

- **Pools:** Swimming pools, including infinity pools, children's pools, and activity pools.

[Opens in a new window](www.omnihotels.com)
www.omnihotels.com

Pools in a Resort

- **Spa and Wellness Center:** Offering a range of treatments, massages, and relaxation therapies.

[Opens in a new window](hospitalityinsights.ehl.edu)
hospitalityinsights.ehl.edu

Spa and Wellness Center in a Resort

- **Fitness Center:** Equipped with modern exercise equipment.

[Opens in a new window](www.oceanplace.com)
www.oceanplace.com

Fitness Center in a Resort

- **Beach Access:** Direct access to the beach, with beach chairs, umbrellas, and water sports.

[Opens in a new window](www.oceanplace.com)
www.oceanplace.com

Beach Access in a Resort

- **Other Activities:** Depending on the resort's location and theme, activities may include golf, tennis, water sports, hiking, biking, and cultural excursions.

Conference and Meeting Facilities:

- **Meeting Rooms:** Equipped with audiovisual equipment for business meetings, conferences, and events.

www.anantara.com

Meeting Rooms in a Resort

- **Ballrooms:** Large spaces for banquets, weddings, and other special events.

www.sunwayhotels.com

Ballrooms in a Resort

Support Facilities:

- **Front Desk and Reception:** Handling guest check-in, check-out, and inquiries.

www.istockphoto.com

Front Desk and Reception in a Resort

- **Concierge Services:** Assisting guests with travel arrangements, tours, and other requests.
- **Security:** Ensuring the safety and security of guests and property.
- **Maintenance and Housekeeping:** Maintaining the cleanliness and upkeep of the resort.

Diagram of Resort Components:

Opens in a new window R^G www.researchgate.net

Diagram of Resort Components

The specific components of a resort can vary depending on its location, target market, and overall theme. However, the goal is to provide a comprehensive and enjoyable experience for guests, combining luxurious accommodations, exceptional service, and a range of recreational and leisure activities.

Project 3

University Campus Area Project

Academic Buildings:

- **Classrooms:** Lecture halls, seminar rooms, and specialized classrooms for subjects like science labs, art studios, and computer labs.

[Opens in a new window](#)
classrooms.uiowa.edu

Classrooms in a University Campus

- **Lecture Halls:** Large rooms designed for lectures and presentations.

[Opens in a new window](#) en.wikipedia.org

Lecture Halls in a University Campus

- **Libraries:** Central libraries and departmental libraries, providing access to books, journals, and digital resources.

www.topmastersineducation.com

Libraries in a University Campus

Student Facilities:

- **Student Center:** A hub for student life, often including dining halls, student lounges, game rooms, and student organization offices.

uh.edu

Student Center in a University Campus

- **Dormitories and Residential Halls:** On-campus housing options for students.

Opens in a new window www.clarku.edu

Dormitories in a University Campus

- **Dining Halls and Cafeterias:** Providing a variety of meal options for students.

Opens in a new window thevarsity.ca

Dining Halls in a University Campus

- **Student Union:** A space for student organizations to meet and host events.

Opens in a new window studentunion.utk.edu

Student Union in a University Campus

- **Health Center:** Providing basic medical care and health services to students.

 facilities.princeton.edu

Health Center in a University Campus

- **Counseling Services:** Offering mental health and academic counseling services to students.

counseling.uiowa.edu

Counseling Services in a University Campus

Administrative Buildings:

- **Administration Building:** Housing administrative offices, including the president's office, registrar's office, and financial aid office.

Administration Building in a University Campus

- **Faculty Offices:** Providing office space for faculty members.

Faculty Offices in a University Campus

Research Facilities:

- **Research Laboratories:** Specialized laboratories for scientific research and experimentation.

www.bu.edu

Research Laboratories in a University Campus

- **Research Centers:** Dedicated centers for interdisciplinary research and collaboration.

cos.northeastern.edu

Research Centers in a University Campus

Campus Grounds:

- **Green Spaces:** Lawns, gardens, and parks for relaxation and outdoor activities.

source.colostate.edu

Green Spaces in a University Campus

- **Walking and Biking Paths:** Providing pedestrian and cycling routes across the campus.

 [Opens in a new window](transportation.uw.edu)
transportation.uw.edu

Walking and Biking Paths in a University Campus

- **Athletic Facilities:** Sports fields, gymnasiums, and fitness centers.

 [Opens in a new window](www.2adays.com) www.2adays.com
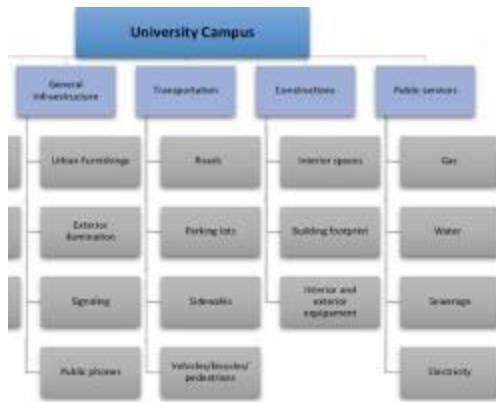
Athletic Facilities in a University Campus

- **Parking Lots and Garages:** Providing parking spaces for students, faculty, and staff.

Parking Lots and Garages in a University Campus

Diagram of University Campus Area Components:

Diagram of University Campus Area Components

The specific components of a university campus can vary depending on the size, type, and mission of the institution. However, the overall goal is to create a vibrant and supportive learning environment that fosters academic excellence and student success.

Project 4

Industrial Area Project

Key Components of an Industrial Area Project

An industrial area is a designated zone for industrial activities, typically encompassing various essential components:

1. Infrastructure:

- **Roads and Transportation:** Well-maintained roads, highways, and potentially rail or water access for efficient transportation of raw materials and finished goods.

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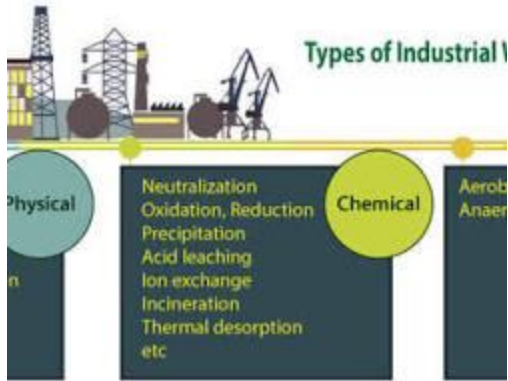www.researchgate.net

Roads and Transportation in Industrial Area

- **Utilities:** Reliable supply of electricity, water, natural gas, and telecommunications services.

Opens in a new window www.eci.us

Utilities in Industrial Area

- **Waste Management:** Effective systems for solid waste disposal, wastewater treatment, and pollution control.

Waste Management in Industrial Area

2. Industrial Buildings and Facilities:

- **Factories and Manufacturing Plants:** Structures designed for various industrial processes, including assembly, production, and warehousing.

Factories and Manufacturing Plants in Industrial Area

- **Warehouses and Distribution Centers:** Facilities for storing and distributing goods.

Warehouses and Distribution Centers in Industrial Area

- **Research and Development Centers:** Facilities for research, innovation, and product development.

Research and Development Centers in Industrial Area

3. Support Services:

- **Administrative Offices:** Providing space for business operations, including management, finance, and human resources.

Administrative Offices in Industrial Area

- **Labor Supply:** Availability of skilled and unskilled labor to meet the needs of industries.
- **Financial Services:** Access to banking, insurance, and other financial institutions.
- **Security:** Adequate security measures to protect property and personnel.

4. Environmental Considerations:

- **Pollution Control:** Measures to minimize air, water, and noise pollution.

Pollution Control in Industrial Area

- **Environmental Impact Assessment:** Assessment of the potential environmental impact of the industrial area and implementation of mitigation measures.
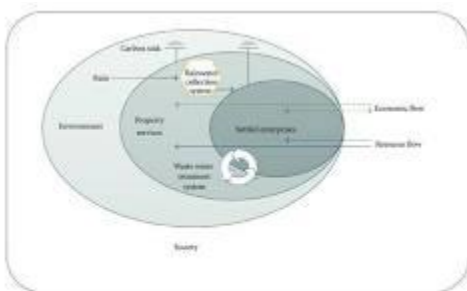
Environmental Impact Assessment in Industrial Area

- **Sustainable Practices:** Encouraging the adoption of sustainable practices, such as energy efficiency and waste reduction.

5. Social and Economic Factors:

- **Economic Development:** Creating jobs and contributing to economic growth.
- **Community Development:** Providing opportunities for local businesses and improving the quality of life for nearby communities.
- **Social Responsibility:** Addressing social issues related to the industrial area, such as worker safety and community impact.

Diagram of Industrial Area Components:

Diagram of Industrial Area Components

The specific components of an industrial area can vary depending on the type of industries, the local context, and the overall development plan. However, a well-planned industrial area should provide a conducive environment for businesses to thrive while minimizing negative impacts on the environment and surrounding communities.

Project 5

Airport Project

Key Components of an Airport Project

An airport project involves a complex interplay of various components, each crucial for its successful execution. Here's a breakdown of the key elements:

1. Airfield Infrastructure:

- **Runways:** The primary paved surfaces for aircraft takeoff and landing.

 Opens in a new window airplanning.com

Airport Runway

- **Taxiways:** Paved paths connecting runways to terminals, hangars, and other airport facilities.

 Opens in a new window flighttrainingcentral.com

Airport Taxiway

- **Aprons:** Paved areas in front of terminals where aircraft park for loading, unloading, and refueling.

Airport Apron

2. Terminal Buildings:

- **Passenger Terminals:**
  - Check-in counters
  - Baggage claim
  - Security checkpoints
  - Gates
  - Retail and dining areas
  - Restrooms and lounges

Airport Terminal Building

- **Cargo Terminals:**
  - Facilities for handling and storing cargo.

Airport Cargo Terminal

3. Air Traffic Control (ATC) Systems:

- **Control Tower:** A structure housing air traffic controllers who guide aircraft on the ground and in the air.

Airport Control Tower

- **Radar Systems:** Used by ATC to monitor aircraft movements.
- **Communication Systems:** Ensuring clear communication between ATC, pilots, and ground personnel.

4. Support Facilities:

- **Hangars:** Structures for aircraft storage, maintenance, and repair.

Opens in a new window air-pros.com

Airport Hangar

- **Fire and Rescue Stations:** Providing emergency response services.

Opens in a new window www.volusia.org

Airport Fire and Rescue Station

- **Ground Support Equipment (GSE):** Vehicles and equipment for aircraft maintenance, loading, and unloading.

Opens in a new window startpac.com

Airport Ground Support Equipment

- **Parking Garages:** For passenger and employee vehicles.
- **Fueling Facilities:** For refueling aircraft.

5. Infrastructure and Utilities:

- **Roads and Highways:** For access to the airport.
- **Utilities:** Reliable power, water, and communication systems.
- **Drainage and Sewage Systems:** To manage stormwater and wastewater.

6. Environmental Considerations:

- **Noise Mitigation:** Measures to reduce aircraft noise impact on surrounding communities.
- **Air and Water Quality:** Measures to minimize pollution.
- **Environmental Impact Assessment (EIA):** Assessing the project's potential environmental impact and implementing mitigation measures.

7. Safety and Security:

- **Security Systems:** Implementing security measures to protect passengers, personnel, and aircraft from threats.
- **Emergency Response Plans:** Developing and implementing emergency plans to handle various scenarios, such as accidents and natural disasters.

Diagram of Airport Project Components:

[Opens in a new window](#) en.wikipedia.org

Diagram of Airport Project Components

The specific components and their scale will vary depending on the size and scope of the airport project. However, a well-planned airport project requires careful consideration of all these elements to ensure safe, efficient, and sustainable operations.

ASSESSMENT PATTERN

CIE- Continuous Internal Evaluation (30 Marks)

SEE- Semester End Examination (20 Marks)

SEE- Semester End Examination (40 Marks) (should be converted in actual marks (20))

Bloom's Category	Tests
Remember	**05**
Understand	**07**
Apply	**08**
Analyze	**07**
Evaluate	**08**
Create	**05**

CIE- Continuous Internal Evaluation (100 Marks) (should be converted in actual marks (30))

Bloom's Category Marks (out of 100)	Lab Final (30)	Lab Report (10)	**Continuous lab performance** (30)	Presentation & Viva (10)	External Participation in Curricular/**Final Project Exhibition** (10)
Remember/**Imitation**	05		05	02	
Understand/**manipulation**	05	05	05	03	
Apply/**Precision**	05		05		Attendance
Analyze/**Articulation**	05		05		10
Evaluate/**Naturalisation**	05	05	05		
Create	05		05	05	