Specialization in

Computational Design for the Built Environment

Dive into the future of design with cutting edge algorithms that turn visionary ideas into practical solutions

Learn | Apply | Build | Scale

@ L.A.B.S is your Launchpad to lead the future of Design and Technology

We are an Action Oriented Lab for Advancements in Design & Technology

Ideas Powered by technology | Design meets Data | Global Mentors

Real World Projects | Industry Ready learning | Tech Driven Workflows

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COURSE DESCRIPTION

WHAT IS THE COMPUTATIONAL DESIGN PROGRAM BY @L.A.B.S. ?

Stay Ahead with Advanced Design Tools

Keep up with evolving technologies like evolutionary design and algorithmic processes in the fast-paced construction industry

Gain Skills to Lead and Innovate

This course empowers architects, engineers, and construction professionals to drive impact and innovation in their projects

Optimize Workflows for Improved Results

Leverage evolutionary design and algorithmic tools to enhance optioneering, automate workflows, and improve design outcomes

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FEATURES

DISCOVER

5+ SOFTWARES

25+ PLUGINS

DEVELOP

Augmented Reality Integrations

Bridge physical and digital spaces

Advanced Scripting in C# & Python

Automate, customize, and command your tools

Create Web Applications

Design and deploy interactive web-based tools

Customize Your Own Plugin

Build tailored solutions for your unique design needs

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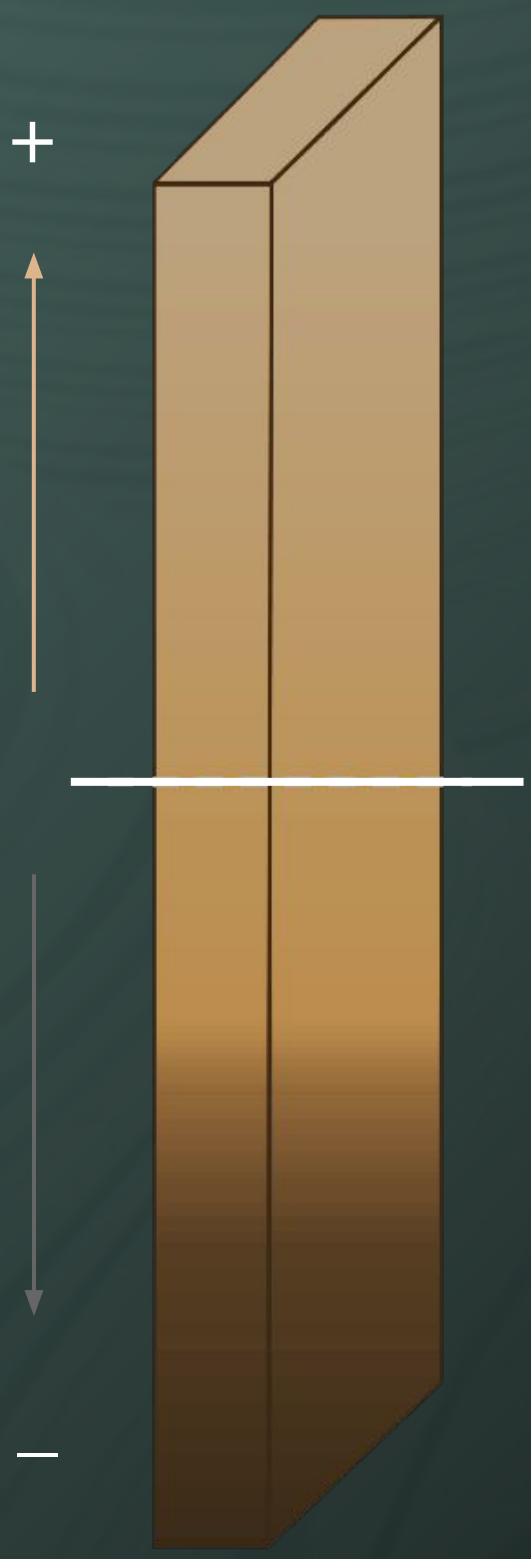
INDUSTRY



OPTIMIZED
DESIGN

&

INCREASED
EFFICIENCY

REDUCED
TIME

&

MINIMAL
COST

GAIN COMPETITIVE ADVANTAGE

With

Surging Infrastructural Development Demand for Innovation

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CAREER

DRIVE IMPACT

CREATE
Data Driven

CURATE
Automated Workflows

CULTIVATE
Energy Efficient Design

FIRMS

BIG · Gensler · Foster + Partners · OH+K · snaptrude · nbbj · POPULOUS

PROFESSIONAL ROLES

- Digital Fabrication Specialist
- Building Performance Analyst
- Immersive Reality Specialist
- Algorithmic Designer
- Computational Specialist
- Design Technology Specialist

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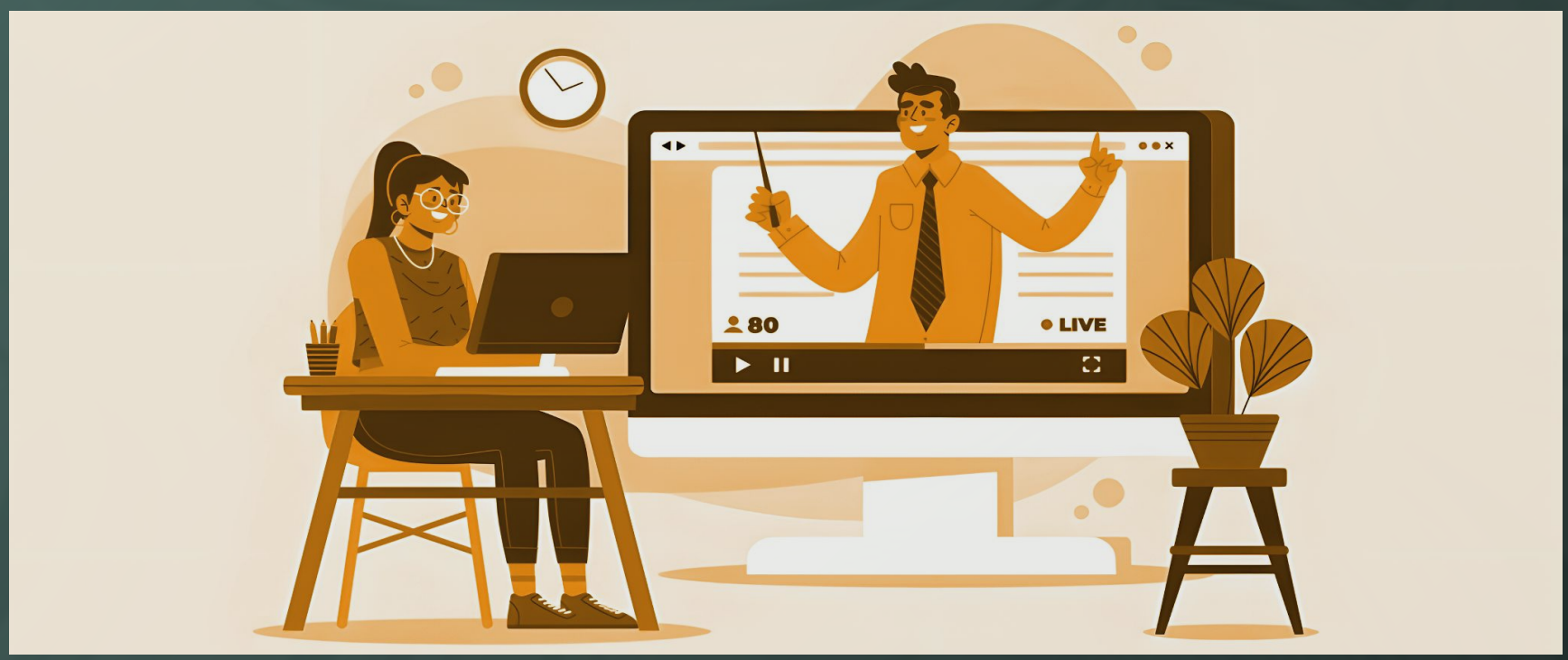
FRAMEWORK



Learn From the Global Experts
Experts from multidisciplinary fields

Practical Skills Development
Industry - Aligned Applications

Career Guidance
Customized Career Development Plans

PEDAGOGY

- **LIVE CLASSES :** All classes are conducted live
- **FREQUENCY :** 2 classes per week, Each class is 3 hrs
- **STRUCTURE :** Organized into 4 modules - Beginner to Advanced
- **SUPPORT :** Each module includes support and query sessions
- **TOTAL DURATION :** 50+ hrs over 10 Weeks

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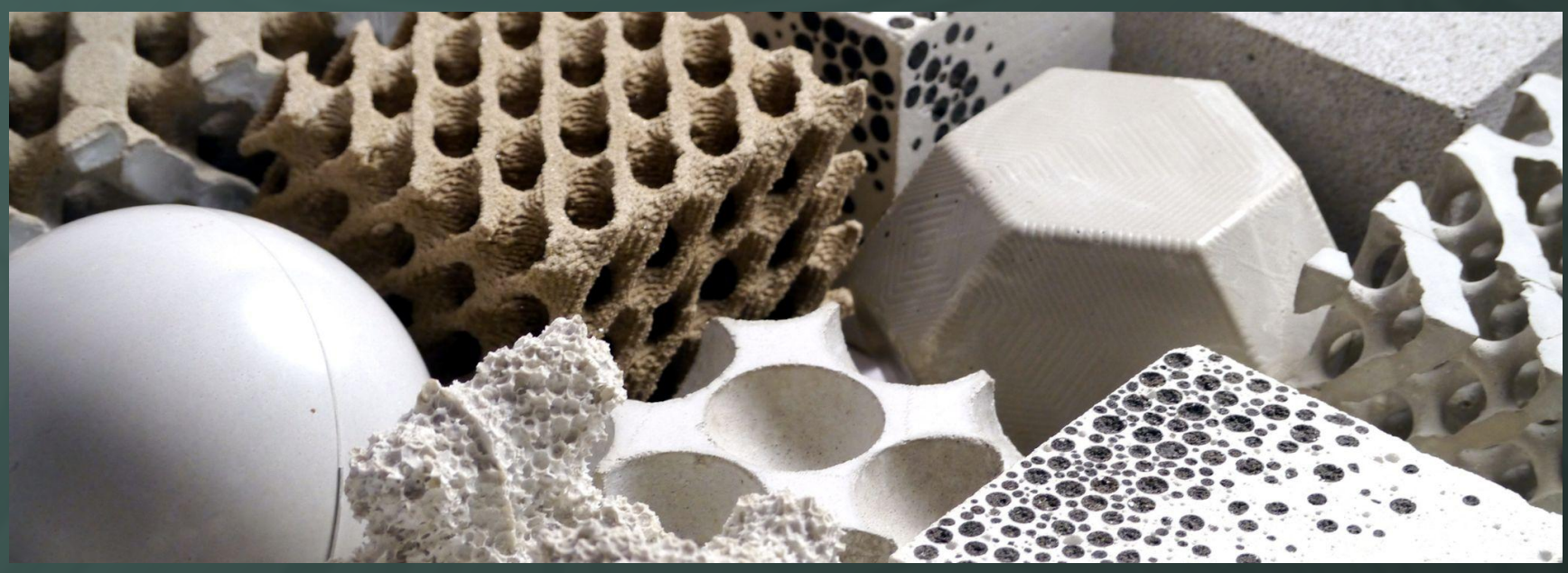
CURRICULUM

LEARN - Foundation

Build a solid foundation in computational thinking & visual programming



Introduction to Computational Design

- ❏ **OVERVIEW** : Definition, Principles, and Evolution
- ❏ **RELEVANCE** : Applications across different industries

Core Concepts

- ❏ **CORE CONCEPTS** : Decomposition, Pattern Recognition, Abstraction
- ❏ **LOGIC** : operators, conditional statements, and iterative structures
- ❏ **PRINCIPLES** : Application of principles in geometry Development

Introduction to Grasshopper

- ❏ **TOOL INCEPTION** : Grasshopper, Introduction and purpose
- ❏ **INTERFACE** : Navigating the Grasshopper interface & Components
- ❏ **WORKFLOW BASICS** : Data flows, Structuring & Modeling
- ❏ **AUTOMATION** : Automated Design Workflows for Architectural design

Introduction to Environmental Analysis

- ❏ **PLUGIN INCEPTION** : Ladybug Overview and environmental applications
- ❏ **DATA COLLECTION** : Environmental data types & extraction methods
- ❏ **SETUP** : Configuring Rhino and Grasshopper for environmental work
- ❏ **SIMULATION** : Human & Horster plugins for weather performance analysis

Grasshopper | Rhino | Ladybug | Human | Horster

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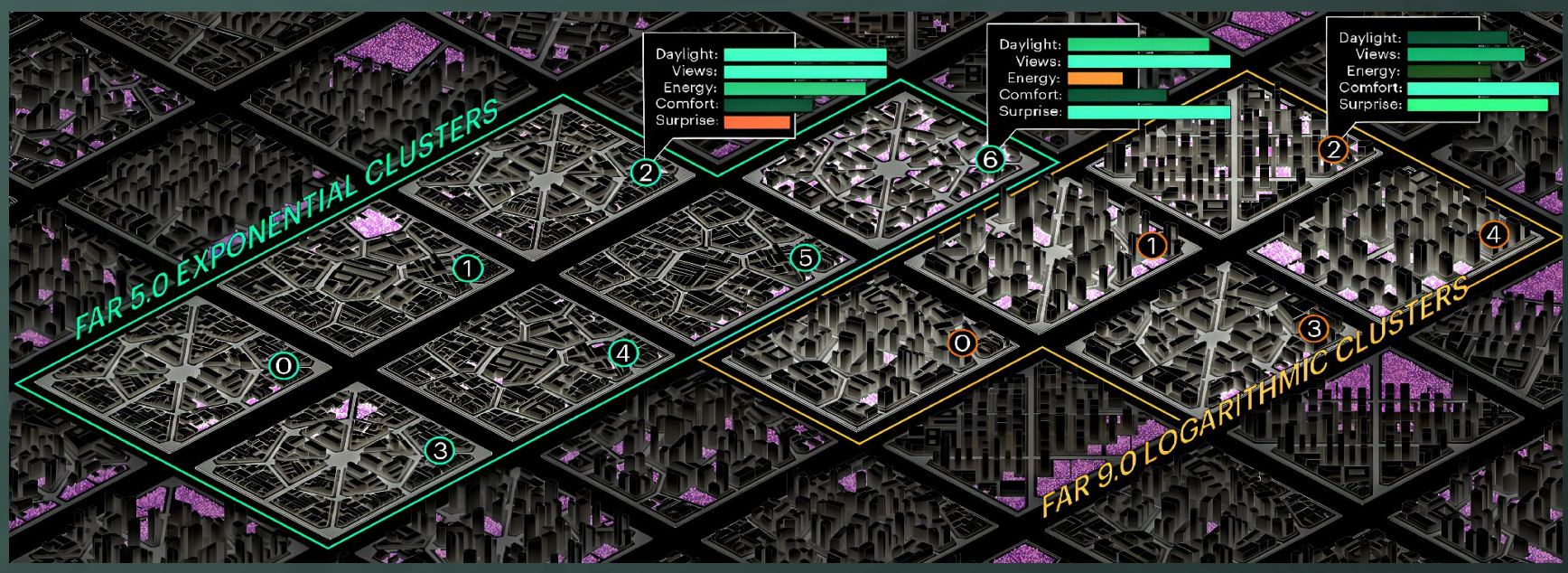
CURRICULUM

APPLY - Intermediate

Level up with urban workflows, generative design and digital representation



Computational Workflows for Urban Design

- ❏ **INTRODUCTION** : Computational workflows for urban projects
- ❏ **METHOD** : Methodology for conceptual phase to basic urban setup
- ❏ **DATA INTEGRATION** : Accessing open Data from OSM & Elk Plugin
- ❏ **URBAN ANALYSIS** : Site Analysis and Data Visualization

Generative Design in Urban Design & Planning

- ❏ **CONCEPTS** : Understanding and applying generative design concepts
- ❏ **NETWORK LOGIC** : Developing generative workflows & urban networks
- ❏ **NETWORK MODELING** : DeCoding Spaces Plugin, street network analysis
- ❏ **MASSING STRATEGIES** : Applying generative design to urban massing

Environmental Analysis for Urban Design

- ❏ **SOLAR STUDIES** : Exploring solar radiation analysis & its impact
- ❏ **SOLAR VISUALIZATION** : Sun Path & sun vector visualization techniques

Immersive & Interactive Digital Representation

- ❏ **WORKFLOW DESIGN** : Creating workflows for design option interpolation
- ❏ **WEB INTEGRATION** : Shapediver / MetaHopper, Interactive web platform

Elk | OpenStreetMap | DeCodingSpaces | Urbano | Ladybug | Honeybee | ShapeDiver | MetaHopper

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CURRICULUM

BUILD - Advance

Performative designing through data, optimization & interactive Workflows

Introduction to Performative Design

- ❏ **DATA INTEGRATION** : Environmental Data Linking to parametric models
- ❏ **MESH & SHADING LOGIC** : Weaverbird for shading form manipulation

Optimization and Net Zero Design

- ❏ **RADIATION ANALYSIS** : Wallacei/Galapagos for optimized solar radiation
- ❏ **CASE STUDIES** : Designing environmentally responsive buildings
- ❏ **NET ZERO** : energy modeling, daylight analysis & CFD Simulations
- ❏ **FACADE OPTIMIZATION** : optimizes solar exposure and shading

Evolutionary Design Strategies

- ❏ **EVOLUTIONARY ALGORITHM** : tower designs with Wallacei/Galapagos
- ❏ **MODULAR SYSTEMS** : Modular design and its implementation
- ❏ **LIBRARIES** : Cataloguing Modules, Organizing architectonic modules
- ❏ **SPATIAL STRATEGIES** : Assigning modules to volumes & public spaces

Visualization and Cloud Integration

- ❏ **AR VISUALIZATION** : Refining models for augmented reality visualization
- ❏ **CLOUD WORKFLOWS** : ShapeDiver Cloud Integration for user experience

Wallacei | Galapagos | Weaverbird | Kangaroo

LunchBox | Human UI

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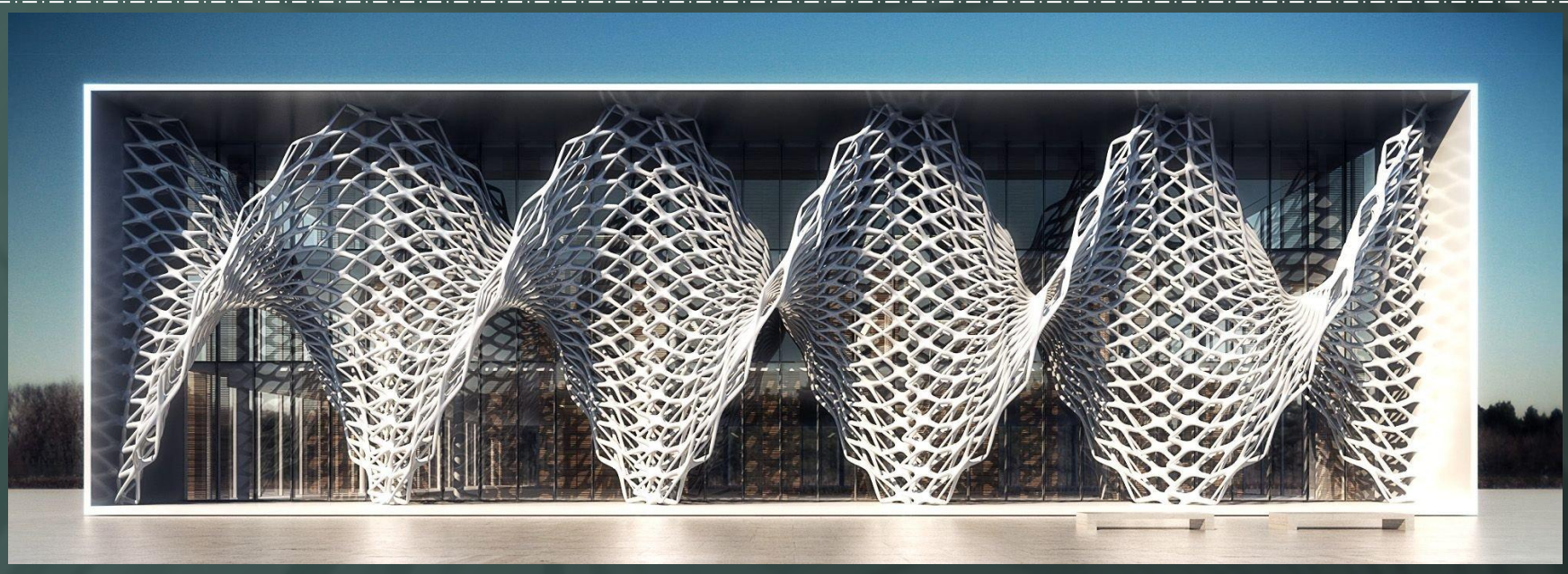
CURRICULUM

SCALE - Expert

Build, script, and deploy design systems at scale through custom development



Thermal Comfort & Open Space Configuration

- ❏ **PV ANALYSIS** : potential from facades PV arrays for maximum efficiency
- ❏ **ENERGY MODELING** : Calculate annual energy yield based on radiation
- ❏ **COMFORT DATA** : Strategically place vegetation using comfort data

Custom Component Creation using Python

- ❏ **SCRIPTING BASICS** : Basics of Python scripting for Grasshopper
- ❏ **MODULE INTEGRATION** : Integrating & managing custom components

Advanced Scripting & Plugin Development

- ❏ **C# SCRIPTING** : Develop advanced scripts and plugins using C#
- ❏ **TOOL PACKAGING** : Package and distribute custom tools for broader use

Platform Development

- ❏ **WEB STRUCTURE** : Build a website, focusing on page structure & layout
- ❏ **UX DESIGN** : Refine the website layout for an optimal user experience
- ❏ **VISUAL ENHANCEMENT** : Implement animations & enhance visuals
- ❏ **INTERACTIVE 3D** : Integrate ShapeDiver for interactive 3D visualizations

Python | C# | Visual Studio Code | ShapeDiver | HTML/CSS

JavaScript | Three.js

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CURRICULUM

@ LABS Personalized Learning

The @LABS Personalized Learning Track is a 2-week add-on offering 1-on-1 mentorship with a global expert to work on a project or skill of your choice

PERSONALIZED TRACK FLOW

Define Path

Select your focus area
Match with a mentor and set clear goals

Build & Refine

Attend mentor-led working sessions
Submit final work and receive expert feedback

CUSTOM LEARNING, REAL IMPACT

- **PERSONALIZED LEARNING :** Focused growth in your area of interest
- **EXPERT GUIDANCE :** Expert feedback tailored to your goals
- **STRONG PORTFOLIO :** Portfolio-quality output with mentor backing
- **REAL EXPOSURE :** Exclusive networking & publishing opportunities

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CAREER SUPPORT

@ LABS Career Support & Networking

Helping learners and professionals explore curated, Career paths, Access mentorship, and Build Global networks

whether you're

Emerging Professional | Upskilling | Shifting Domains

HIGHLIGHTS

Career Consultations
Personalized guidance on your goals, strengths, and roadmap

Application Support
Expert reviews for your CV, SoP, portfolio, & LinkedIn

Global Connect Network
Curated Introductions to firms, labs, and institutions worldwide

Masterclasses & Panels
Live sessions with global experts in AI, urbanism, design, and more

Global Program Guidance
Support for applying to master's, fellowships, or PhDs

Career Clarity | Global Exposure | Personal Branding

Lifelong Access | Expert Guidance | Curated Connections

You don't need to be enrolled in a course to participate, This program is open to all

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MENTORS

Aishwarya Arun

Computational Designer

Tech Developer

snaptrude

Julia Veiga

Generative Design Specialist

Urban Designer

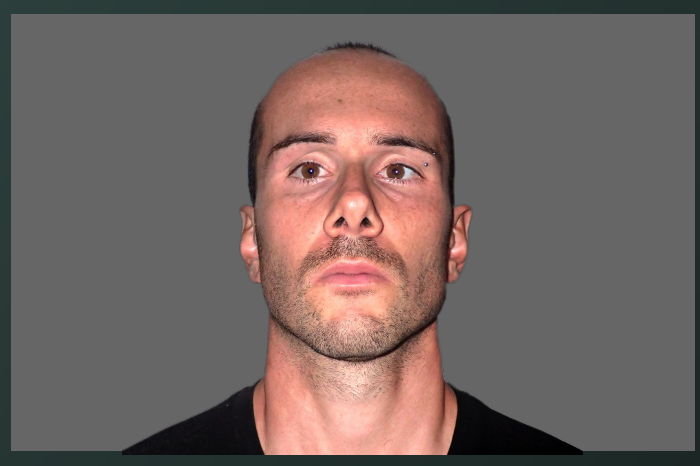
EXTERNAL REFERENCE

Disha Shetty

Environmental Analyst

Building Performance Analyst

Zaha Hadid Architects



Federico Caldi

Digital Fabrication Specialist

Immersive reality Specialist

IAAC

Maria Augusta Kroetz

Mobility Planner

Urban AI Specialist

Systematica

Pushkar Runwal

Teaching Associate

Urban Technology Consultant

THE URBAN LAB

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MENTORS

Kriti Nirmal

Urban Policy Analyst

Digital Governance Specialist

GOVERNMENT OF GUJARAT

Vasudha karnani

Architectural Technologist

AI Optimization Specialist

M:OFA

Victor Suarez

Founder - Venus AI

AI Researcher & Developer

IAAC

Mira Housen

AI Specialist

Algorithmic Design Consultant

ATOPOS

Yohan Wadia

Geospatial Analyst

Urban Planner

QLABS

Parshav Sheth

Big data Analyst

Academician

QLABS

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TESTIMONIALS

Aparna Surve

Dean - D.Y. Patil, School of Architecture, navi Mumbai

This workshop exceeded all expectations, moving past traditional methods to equip future architects with innovative skills! It's packed with creative insights and hands-on experiences that make integrating AI into architectural design exciting and accessible. I highly recommend it to anyone looking to explore how AI can enhance their design process—get ready to unlock new possibilities!

Anushka Shetty

Final Year Student - Balwant Sheth School of Architecture

My experience with the urban design module at @L.A.B.S. has been incredibly rewarding! Exploring innovative software for data-driven design was both enjoyable and engaging. I enhanced my design skills and learned to represent data in eye-catching ways. Mastering these tools will benefit my future projects and seamlessly integrate data analysis into my designs. Overall, this journey at @L.A.B.S. reignited my passion for creative and analytical design strategies!

Mehar Kalra

Project Engineer - CEPT Research & Development Foundation

Engaging with @L.A.B.S. has been a true technological awakening. Their insights into how AI and Big Data are revolutionizing urban planning revealed the potential for smarter, data-driven decision-making. I learned about practical applications and scaling these technologies to address real-world urban challenges. This experience deepened my appreciation for the vital role technology plays in shaping adaptive, future-ready cities!

Manmath Dhongle

Master Student - D.Y.Patil School, School of Architecture

I had a fantastic time at the workshop at DY Patil School of Architecture with @L.A.B.S., where I discovered how AI can transform our understanding of urban environments! I didn't just work with AI; I lived it! We explored how AI breaks down different parts of a city into colorful sections, making analysis fun and easy. The AI-generated visuals really brought the layout to life. Overall, it was an enlightening experience, and I loved the insights shared during the session!

Akshat Agarwal

Final Year Student - Balwant Sheth School of Architecture

I learned more in three months than in my entire four years of bachelor's! Attending the course at @L.A.B.S. was incredibly enriching. From extracting data with Google Maps and Google Earth Engine to mastering data representation, every moment was packed with knowledge. The highlight was critically examining how data is represented, allowing me to create various maps and determine which ones work best for different data types. I highly recommend this course to anyone interested in advanced urbanism!

Dhruvi Rathod

Master Student - IDPT SCET School of Architecture, Surat

I want to express my heartfelt gratitude for the fantastic workshop on AI workflows for architects at @L.A.B.S.! The sessions on AI models and their practical applications were enlightening and fun. The hands-on activities sparked my creativity and provided valuable insights that will elevate my future projects. Thank you for such an amazing experience that turned complex concepts into exciting possibilities!

PROGRAM INVESTMENT

INDIA

Total Program Fee

₹ 75,000

(Incl. Taxes)

ABROAD

Total Program Fee

$ 950

(Incl. Taxes)

Payment Types Accepted

EMI Options Available

If you need to Avail EMI Options Reach out to us and
our support team will guide you

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LABS

EMPOWERING INNOVATION IN DESIGN & TECH

THROUGH REAL-WORLD EDUCATION

Start Application

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