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

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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

20+ PLUGINS

DEVELOP

- **Augmented Reality Integration**
- **Advanced Scripting in C# & Python**
- **Create Web Applications**
- **Customize your Own Plugin**

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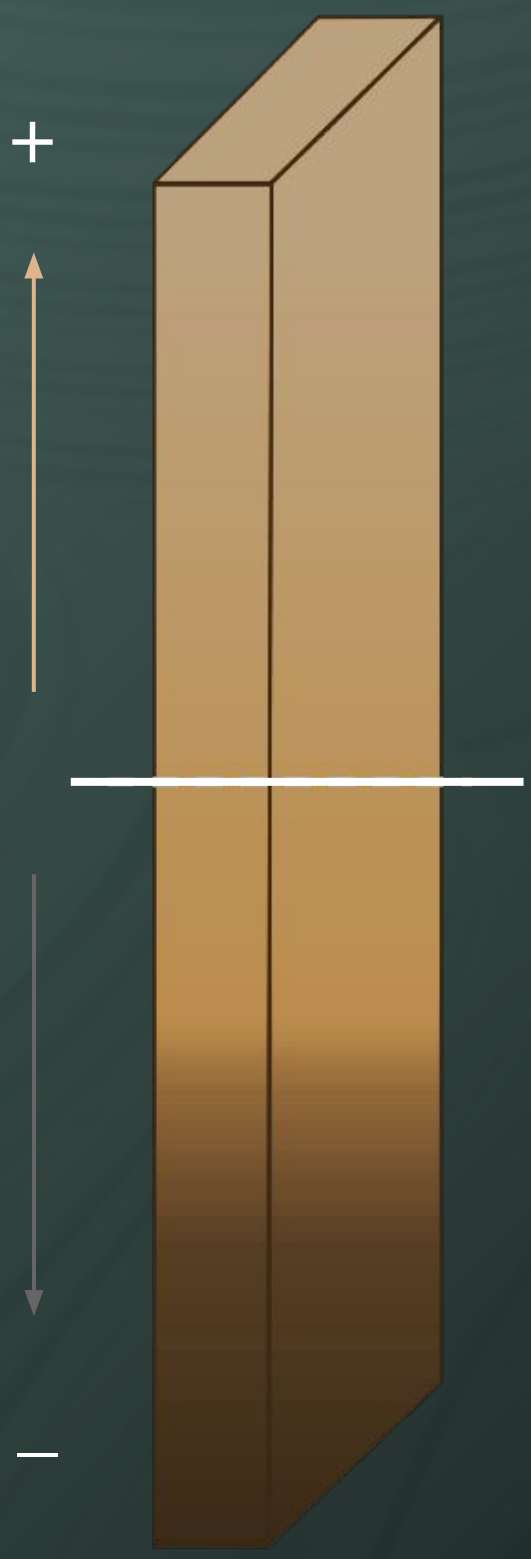
INDUSTRY



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 · OHK · 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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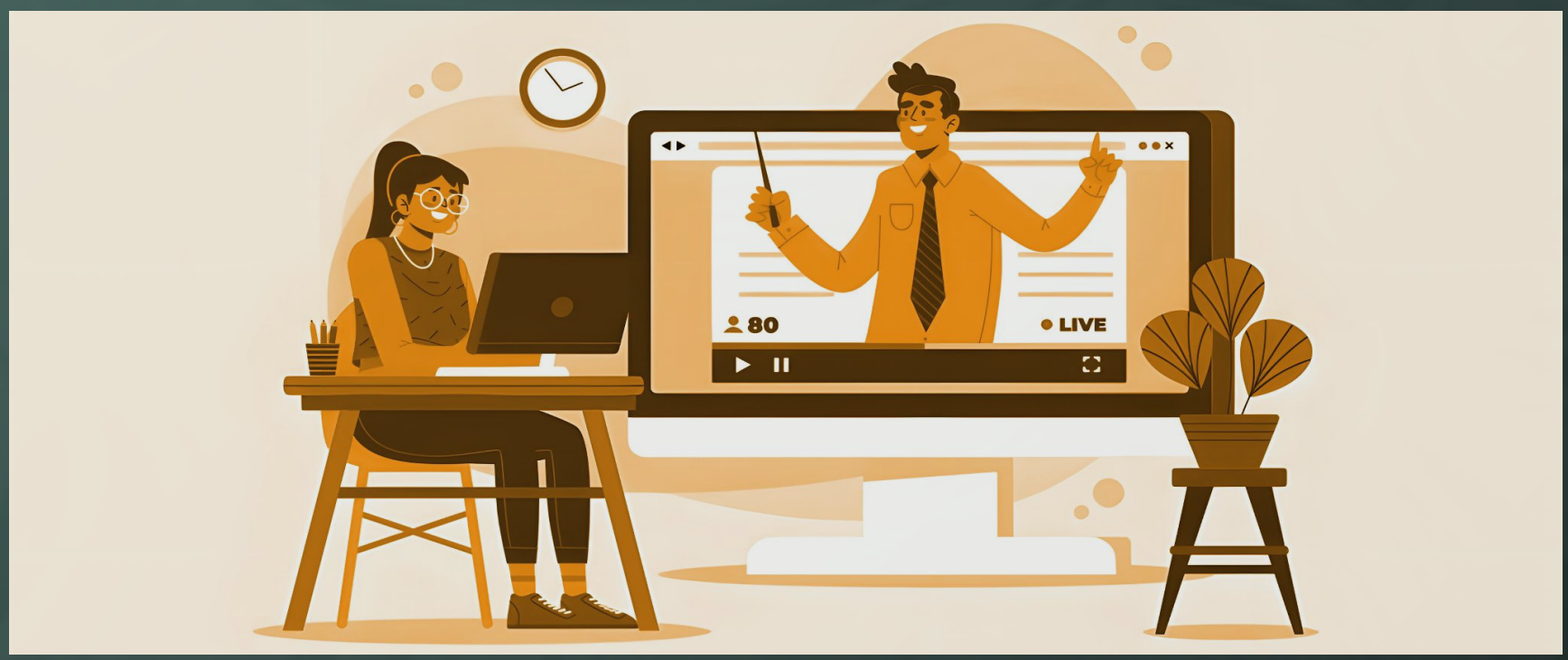
FRAMEWORK



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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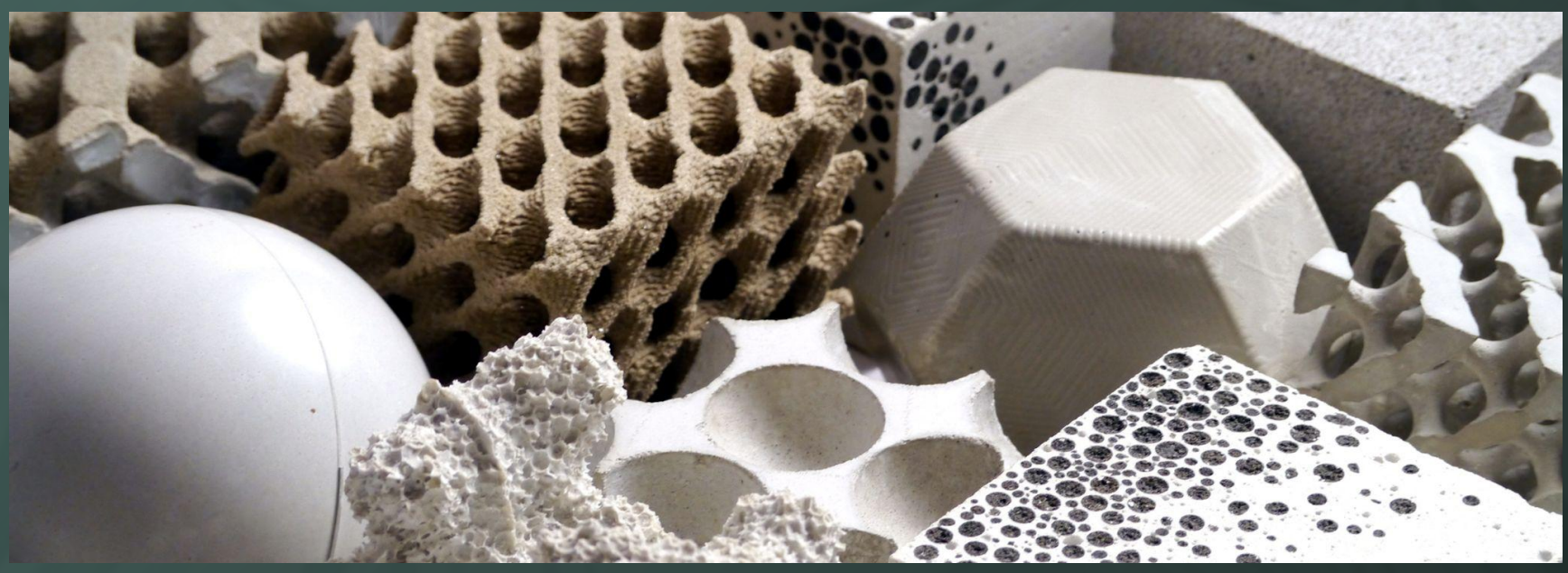
CURRICULUM

LEARN - Foundation



Introduction to Computational Design

- ❏ Definition, Principles, and Evolution
- ❏ Applications across different industries

Core Concepts

- ❏ Decomposition, pattern recognition, abstraction, and algorithmic design
- ❏ logical operators, conditional statements, and iterative structures
- ❏ Geometry Development: Application of principles in geometry

Introduction to Grasshopper

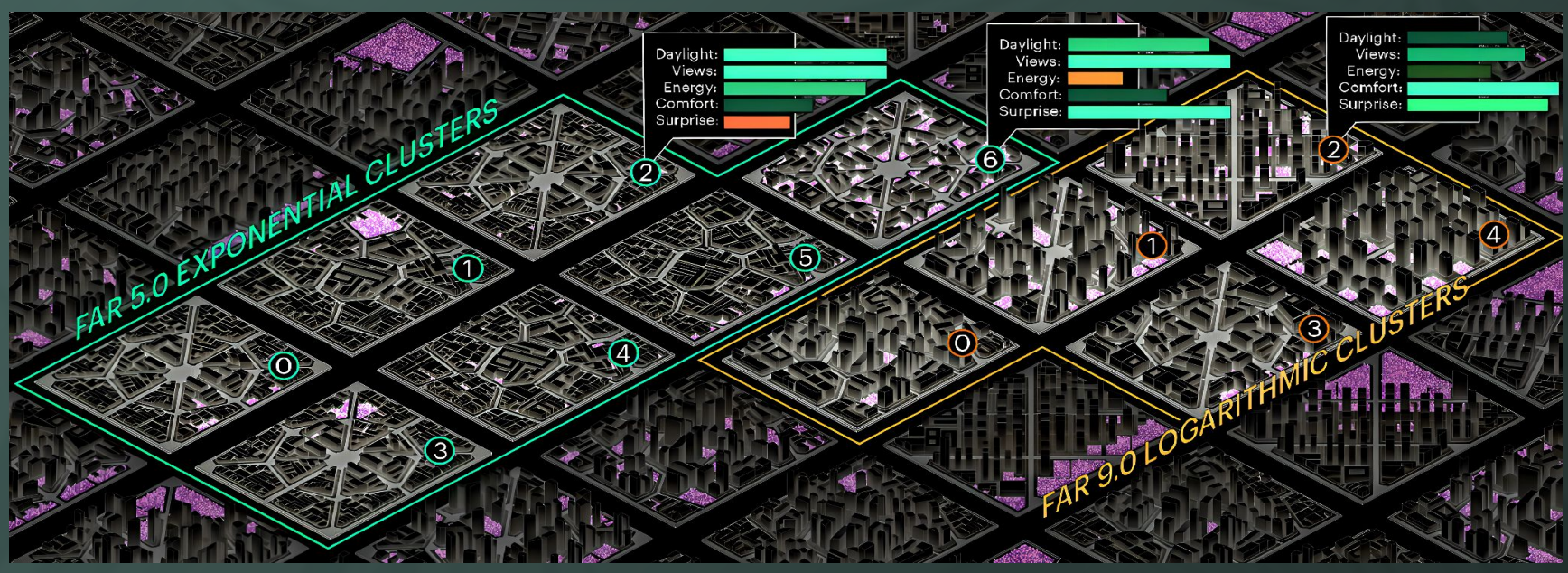
- ❏ Grasshopper Overview: Introduction and purpose
- ❏ Interface and Components: Navigating the Grasshopper interface
- ❏ Workflow Basic workflow, Data flows, and Parametric modeling
- ❏ Automated Design Workflows for Architectural design

Introduction to Environmental Analysis

- ❏ Ladybug Plugin: Overview and environmental applications
- ❏ Environmental Data: Types of data and extraction methods
- ❏ Setup Configuring Rhino and Grasshopper for environmental work
- ❏ Human & Horster Plugins: Weather Simulation

CURRICULUM

APPLY - Intermediate



Computational Workflows for Urban Design

- ❏ Introduction to computational workflows for urban projects.
- ❏ Methodology for conceptual phase to basic urban setup
- ❏ Creating a base file with open Data from OSM and Elk Plugin
- ❏ Site Analysis and Data Visualization

Generative Design in Urban Design & Planning

- ❏ Understanding and applying generative design concepts
- ❏ Developing generative workflows and modifying urban networks
- ❏ DeCoding Spaces plugin for street network Generation
- ❏ Urban Massing applying generative design to urban massing studies

Environmental Analysis for Urban Design

- ❏ Exploring solar radiation analysis and its impact on Urban form
- ❏ Sun Path and sun vector visualization techniques

Immersive & Interactive Digital Representation

- ❏ Workflow development where multiple design options are interpolated
- ❏ Shapediver / MetaHopper for interactive web platform

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CURRICULUM

BUILD - Advance

Introduction to Performative Design

- ❏ Environmental Data Integration, Linking data to parametric models
- ❏ Weaverbird & Ladybug Plugin Parametric shading by solar analysis

Optimization and Net Zero Design

- ❏ Using Wallacei/Galapagos to optimize sun hours and solar radiation
- ❏ Overview of designing environmentally responsive buildings
- ❏ Net Zero: energy modeling, daylight analysis & CFD Simulations
- ❏ Façade Optimization: optimizes solar exposure and shading

Evolutionary Design Strategies

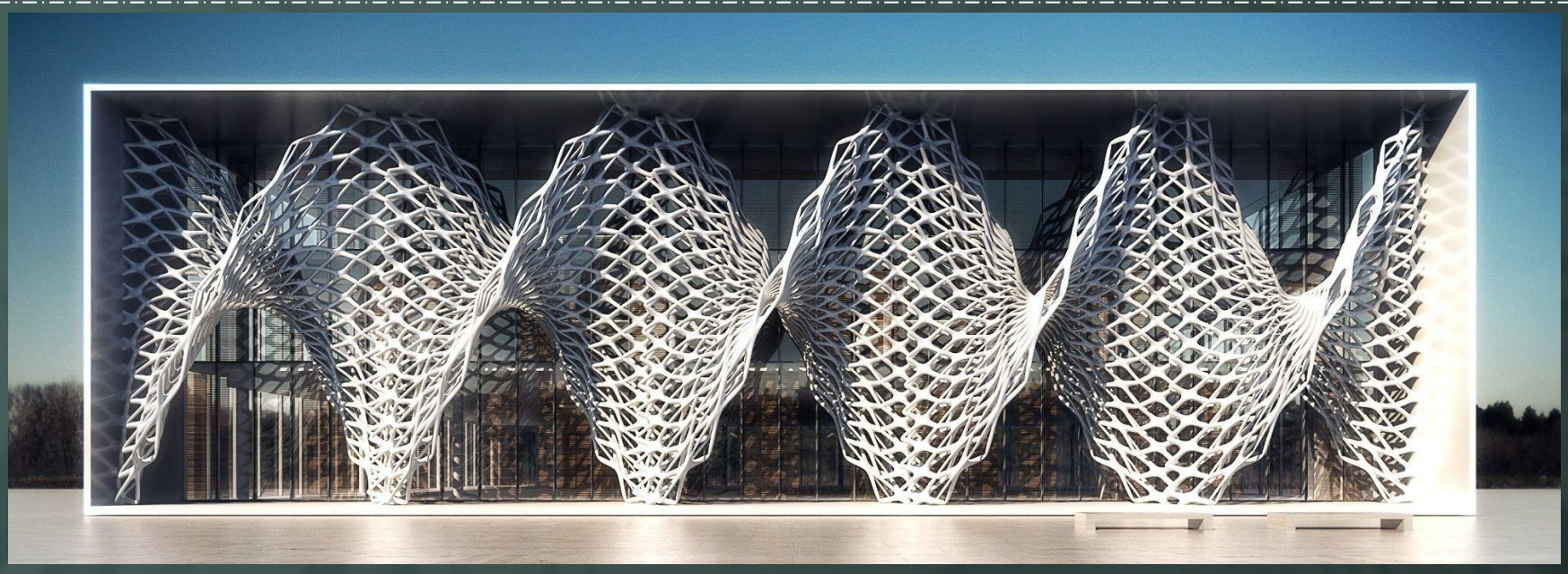
- ❏ Learn to optimize tower designs with Wallacei/Galapagos
- ❏ Understanding modular design and its implementation
- ❏ Cataloguing Modules, Organizing previous architectonic modules
- ❏ Strategy assigning modules to mass volumes and public spaces

Visualization and Cloud Integration

- ❏ Refining models for augmented reality visualization & user interaction
- ❏ ShapeDiver Cloud Integration for enhanced user experience & AR applications

CURRICULUM

SCALE - Expert



Thermal Comfort & Open Space Configuration

- ❏ Calculate PV potential from façades PV arrays for maximum efficiency
- ❏ Calculate annual energy yield based on solar radiation
- ❏ Place elements like canopies and vegetation based on comfort data

Custom Component Creation using Python

- ❏ Basics of Python scripting for Grasshopper
- ❏ Integrating & managing custom components & clusters in Grasshopper

Advanced Scripting & Plugin Development

- ❏ Develop advanced scripts and plugins using C#
- ❏ Package and distribute custom tools for broader use

Platform Development

- ❏ Build a website from scratch, focusing on page structure and layout
- ❏ Design and refine the website layout for an optimal user experience
- ❏ Implement animations and enhance visuals through post-processing
- ❏ Integrate ShapeDiver for interactive 3D visualizations

EXPERTS

Our mentors are experienced professionals from top firms worldwide, with a strong background in computational design and involvement in diverse, high-impact projects.

Aishwarya Arun

Computational Designer

Tech Developer

BIM Specialist

snaptrude

Julia Veiga

Founder - Veiga Associates

Generative Design Specialist

Urban Designer

EXTERNAL REFERENCE

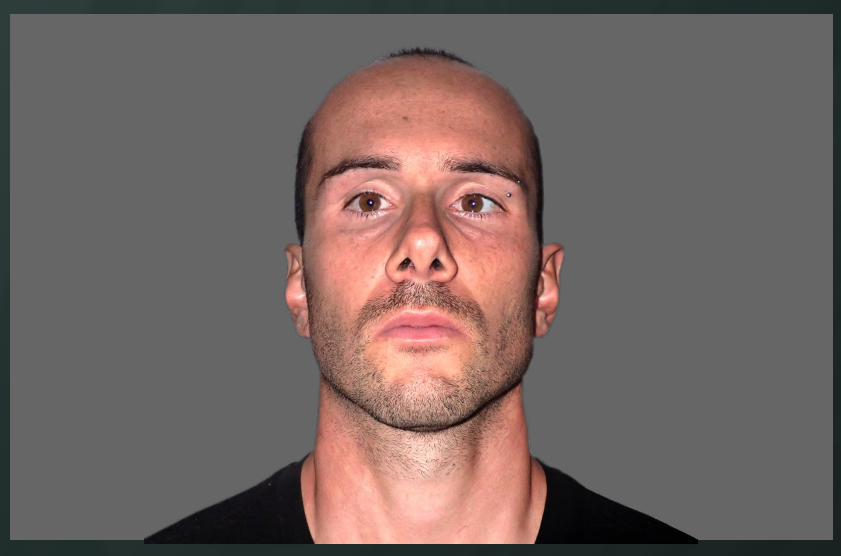
Disha Shetty

Environmental Analyst

Building Performance Analyst

Parametric Design Specialist

Zaha Hadid Architects



Federico Caldi

Digital Fabrication Specialist

Immersive reality Specialist

IAAC

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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

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