



**MORPHING**

**MATERIALS**

SMART PROGRAMMABLE MATERIALS FOR DESIGN  
SOLUTIONS

SAT-SUNDAY //  
SEPTEMBER 07-08

**v5.06**

## ABOUT \ \

This course focuses on developing and intergreting new materials Bi-metals like nitinol (memery retaining wire) into our architecture design workflow.

## COURSE DESCRIPTION \ \

Material Computation is a design strategy that can be utilized by controlling inherent properties of material (length, size, density, etc.) with the help of data and microcontroller. This course will explore 'smart materials' - which can be programmed for specific design challenges (climate, space usage, preferences, etc.) that can arise in myriad of architectural situations. In the workshop you will be able to integrate these concepts in your design projects, detail them and explore a new dimension in built environment design. Besides learning about existing cases and synthesizing their techniques, the workshop will also be about hands on programming, prototyping in utilizing smart materials, their fabrication, working assembly detailing.

## STRUCTURE \ \

The course is structured in three stages, primary stage will include equipping participants with technical knowledge of how to use allied scripting techniques and hardware to utilize smart materials. Intermediate stage will explore possibilities and application to spark application level ideas. Third stage will involve group level prototyping - discussion - review of the design.

### DAY 1 SATURDAY (8 HOURS)

1. INTRODUCTION TO SMART MATERIALS AND THEIR PROPERTIES.
2. USE OF CONDUCTIVE FABRIC AND BIMETALLIC STRIPS
3. TAKING DATA OUT OF MATERIALS
4. USE OF ACTUATORS AND SENSORS
5. GRASSHOPPER INTERFACE WITH UDP
6. MAKING MATERIAL COMMUNICATE WITH DIGITAL INTERFACES USING GRASSHOPPER AND FIREFLY.

### DAY 2 SUNDAY (8 HOURS)

1. UTILIZING MATERIAL COMPUTATION STRATEGIES IN REAL TIME ARCHITECTURAL SITUATIONS
2. MAKING A SCALE ARCHITECTURAL PROTOTYPE WITH THE HELP OF LEARNED TECHNIQUES, PRESENTATION AND REVIEW FOR THE SAME.

## TAKE AWAYS \ \

- Understanding how to utilize different materials in architectural context.
- Understanding how bi-metallic materials work and we can incorporate them in our design context.
- Your designed model along with you and some more goodies.

## REQUIREMENTS \ \

- Participants should bring their own computer with above mentioned software installed. More details will be sent to the registered participants.
- Intermediate knowledge of 3D modelling acquired on Rhino. (If you wish to gain expertise in Rhinoceros Join our workshop Algorithms and Parametric Fabrication in Design V 5.01)
- Intermediate knowledge of Grasshopper. (If you wish to gain expertise in grasshopper Join our workshop Programming Morphologies V 5.02)
- In order to experiment on your own Arduino kit an extra amount of **50 USD** for Arduino kit has to be paid.
- Link to the respective software for download will be sent to the registered participants separately.

## TOOLS \ \

All the participants should have following tools installed on their workstations:

1. **Rhinoceros SR12** or Higher (30-day Trial version can be downloaded from <https://www.rhino3d.com/download>)
2. **Grasshopper for Rhino** (<http://www.grasshopper3d.com/page/download-1>)
3. **Weaverbird for grasshopper** (<http://www.giulio-piacentino.com/weaverbird/>)
4. **Lunchbox for grasshopper** (<http://www.food4rhino.com/app/lunchbox>)
5. **Firefly for Grasshopper** (<http://www.food4rhino.com/app/firefly>)
6. **Arduino IDE 1.6.0** (<https://www.arduino.cc/en/Main/OldSoftwareReleases>)
7. **AutoCAD**
8. **Adobe Suite**



## REGISTRATION \ \

A total of **20 seats** are available for the workshop per workshop coordinator. Registration will close 3 days prior to the workshop or till the seats last.

Please follow the link to complete the registration:

**1 PASS permits 1 PARTICIPANT in 1 WORKSHOP**

Refer to the [eduPass](#) Section to learn more about the Professional/Student/Group/Multiple registration.

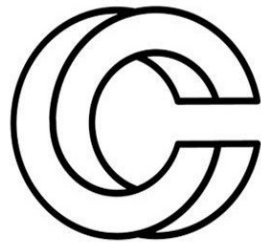
## CALENDAR \ \

The workshop will be held on:

**SEPTEMBER 07 : 10:30 AM - 7:30 PM (SATURDAY)**  
**SEPTEMBER 08 : 10:30 AM - 7:30 PM (SUNDAY)**

**VENUE:** Third Floor, 145/1, Shahpur Jat, New Delhi





# CLASSROOM COMPETITIONS

**Classroom competitions** are a part of this series of workshops and is meant for all the designers who want to explore their way with hands on experience to gain skills and create real world projects. Under this series you participate in workshops at one of these Micro-studio and get awarded a trophy.

In association with **UNI**, we are now expanding our vision of creating these micro-studios globally with a fusion of online design community and offline classrooms.

This fusion will help us in combining different ideologies and diverse methodologies, to create a continuum which links ideas such as exploration, debate and collaboration at a global level to understand and create '**Architecture of Everything**'



# EDUPASS

EDUpass is a pass which can be used to participate in any workshop in this series (registration to be done 3 days prior the commencement of the workshop). Multiple EDUpasses can be purchased and used in a group to attend a single workshop or a single participant can register for multiple workshops.

For example, If you had purchased 6 passes, you can register to 6 different workshops or bring along 5 other friends/colleague with you to attend a single workshop of your choice.



## HOW DOES IT WORK?

A Participant can purchase as many passes as he/she wants and 1 PASS permits entry to any 1 workshop and classroom competition of his/her choice.



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