



## Natural/Sustainable Building Certificate



### *The New Carbon Architecture: Reversing Climate Change with Construction*

Our seven-week Natural/Sustainable Building Certificate is a unique course of study providing hands-on exploration of both green technologies and natural elements and the means by which they can be used to create truly resilient structures and shelter. In a climate-adaptive world where embodied carbon increasingly plays a major role in sustainable and resilient designs, building high performance green structures with materials and methods that are low-carbon to carbon sequestering becomes imperative. From the design and planning stages through the finishing touches, students will gain comfort and experience working with both natural materials such as straw, wood, clay, sand, stone, and lime as well as manufactured green high performance building materials.

Students will learn to design, erect, shape, sculpt, and detail the walls, roofs, and floors that enclose healthy, comfortable, and low-impact living spaces. The program includes an Introduction to Carpentry and Natural Building, as well as segments on Insulative Natural Wall Systems, Thermally Massive Natural Wall Systems, Natural Plasters, Advanced Plaster Techniques, Earthen Floors, Natural Paints & Finishes, and will conclude



with individual practicum projects and presentations. The Natural/Sustainable Building Certificate provides the opportunity to develop a range of natural building skills for owner-builders and aspiring professional natural builders alike.

## **Materials to Bring**

- Sturdy work gloves
- Measuring tape, utility knife
- Favorite trowels and hawks
- Notebook and pens, pencils
- Clothes to get dirty (long sleeved shirts and long pants to protect from the straw)
- Eye Protection
- Work boots
- Dust mask
- Camera

## **Tentative Program Schedule**

### **WEEK 1: Intro to Natural Building**

Monday

- What is Natural Building?  
    "Anatomy of shelter in a natural building context pt.1"

Tuesday

- Lab - Adobe Block Making;  
    "Anatomy of shelter in a natural building context pt.2;  
    "Ecology & Natural Building- A closer look"

Wednesday

- field trip - local natural building projects

Thursday

- Intro to design and drafting

Friday

- Detail drawings; review week 1 and revisit definition of natural building

### **WEEK2: Intro to Carpentry and building**

Monday

- What is Structure  
    "Anatomy of structure"

Tuesday

Foundations, floor systems, wall systems and roofs



Wednesday

- field trip - local building projects

Thursday

Begin carpentry project

Friday

- Practicum

### **WEEK 3: Natural Wall Systems: Insulation**

Suggested Reading

Paul Lacinski and Michel Bergeron. *Serious Straw Bale*

Chris Magwood, Peter Mack, Tina Therrien. *More Straw Bale Building*

Edited by Bruce King. *Design of Straw Bale Buildings: The State of the Art*

Monday

- Introduction to materials, tools and techniques, beginning bale stacking, squaring a bale, resizing

Tuesday

- Building Science, Air fins, Insulative Wall Details

Wednesday

- House Tours, Material Sourcing tours (clay pit, straw baler, wood lot, lumber mill, manure harvesting)

Thursday

- Bale work, Intro to Light Straw Clay and Woodchip Clay

Friday

- Plaster prep (air fins, metal lath, burlap and more)

### **WEEK 4: Natural Wall Systems: Mass**

Monday

- Design, Foundations (site prep, trench digging)

Tuesday

- Massive Wall Materials – Sourcing, Selection, Build/Mix Cob, Building Science (Thermal Properties of Massive Walls)

- Social Justice & Natural Building in an Urban Setting

Wednesday

- Site visits (clay pit, gravel yard), Make cob balls for upcoming tadelakt segment

Thursday

- Build/Mix Cob, Oven or wattle frame construction
- Permaculture and Natural Building



Friday

- Wattle and Daub Construction/Materials, Build/Mix

## **WEEK 5: Natural Plasters**

Suggested Reading

Adam Weismann and Katy Bryce. *Using Natural Finishes: Lime and Clay Based Plasters, Renders and Paints – A Step-by-step Guide*

Cedar Rose Guelberth and Dan Chiras. *The Natural Plaster Book*

Lynn Edwards and Julia Lawless. *The Natural Paint Book*

Monday

- Rough Clay Plastering

Tuesday

- Lime Plastering, Prepping space for plaster

Wednesday

- Rough lime plastering on exterior walls

Thursday

- Interior clay plaster

Friday

- Finish clay/finish lime plaster on interiors

## **WEEK 6 (pt.1): Advanced Plasters and Finishes**

Suggested Reading

Adam Weismann and Katy Bryce. *Using Natural Finishes: Lime and Clay Based Plasters, Renders and Paints - A Step-by-Step Guide*

Cedar Rose Guelberth and Dan Chiras. *The Natural Plaster Book*

Stafford Holmes, Michael Wingate. *Building with Lime: A Practical Introduction*

Monday

- Historical and modern uses of lime, sourcing materials, basic principles and ratios for formulation.
- Mixing of base coat plasters and finish coat plasters

Tuesday

- Basic lime plaster finishes over drywall, tadelakt creation and application

Wednesday

- Tadelakt finishing, sealers and waxes that can be applied to lime plasters.
- Limewash and the basics of fresco painting.



## **WEEK 6 (pt.2): Earthen Floors**

Thursday

- Materials and methodology, logistics, maintenance
- Rough floor installation

Friday

- Finish floor installation, Finishing options, oil/wax finish, hard sealer finish, silicate finish

## **WEEK 7 (pt.1): Natural Paints**

Monday

- Materials discussion (binders, carriers additives, pigments), Make alis paint base, color study using alis paint

Tuesday

- Make lime-casein paint base, color study using lime casein paint

## **WEEK 7 (pt.2): Practicum**

Wednesday

- Individual work/study

Thursday

- Individual work/study

Friday

- Practicum Presentation, Graduation