DSN S 546 Fabricating Potentials

1 Made of one hundred fifty cast plaster tiles — individually formed by pouring plaster over nylon stretched atop wooden dowels — the new wall possesses an unmistakable corporeal quality. Bulges and crevices; love handles and cleavage; folds, pockmarks, and creases; these are among the characteristics of human skin that come to the fore. (Matsys, P_Wall)

2 The binary principle embodied in the punched-card operation of the Jacquard loom was inspiration for the data processing machines to come. The use of replaceable Jacquard punched cards to control a sequence of operations is an important step in the history of computing hardware.

3 Casa Dent, Culebra, Puerto Rico, Mark West and students at Centre for Architectural Structures and Technology (CAST), University of Manitoba, Canada.

Logistics
6 credits, 1055 Communications
1.10-5.20 MWF

Instructors
Shelby Doyle AIA LEED AP | doyle@iastate.edu
Assistant Professor of Architecture

Olivia Valentine | ovalen@iastate.edu
Assistant Professor of Art & Visual Culture

Maximum Capacity: 25

Studio is open to:
All undergraduate of senior classification and graduate students in the College of Design

Workshop:
Bodies in Formation: Flexible Formwork and Digital Simulation by Andrew Kudless of MatSys

Course Fees:
$200-900 (depending on field trip locations and fabrication resources)

Community Partner:
To be confirmed. Tentatively Blackbird Enterprises.

Required Hardware + Software:
._Rhino v5 or v6 (985 Windows license for students in the ISU Bookstore or 195 online)
._Grasshopper for Rhino (free)
._Kangaroo (free)
._Adobe Creative Cloud (Photoshop, Illustrator, InDesign, After Effects)
._Autodesk Suite (AutoCAD, 3DS Max)
._Knowledge of 3D modeling is highly recommended, experience with Rhino is a plus but not required
._Laptop and mouse

"The best way to appreciate the merits and consequences of being digital is to reflect on the differences between bits and atoms."
Nicholas Negroponte, Founder MIT Media Lab

Technology and design are cultural undertakings. The Fabricating Potentials studio arc pursues a view of technology that includes not only the ‘how’ (skills and techniques) of computational design but also the ‘why’ (processes and impacts). This studio examines the relationships between technical advances in computational design (bits) and the consequences of these advancements upon the built environment (atoms).

To this end, we will explore the intersection of computation, textiles, and construction. Students will leverage the tools of the ISU Computation & Construction Lab to fabricate textile structures for flexible concrete and plaster casting.

In groups of 4-6, students will design and construct installations which explore the potential of custom textile formwork for concrete and plaster. Through iterative prototyping, full-scale mock ups, computational studies, and digital fabrication students will examine the potential of integrating computation and textiles into construction practice. Final location for the installation to be determined but will likely be a public venue in Des Moines.

The studio will also participate in a funded workshop conducted by Andrew Kudless of MatSys www.matsys.design

DSN S 546 Fabricating Potentials Arc

This is a course located in the ISU Computation & Construction Lab (CCL). The CCL is a research group established to connect developments in computation to the challenges of construction and was co-founded by Shelby Doyle, Nick Senske, and Leslie Forehand. ISU is a land-grant institution in the very first state to adopt the Morrill Act and in support of this mention the CCL works to share knowledge beyond campus borders by leveraging design and construction as tools of public engagement with non-profits and small towns in Iowa. The outputs of the CCL are research, education, and outreach and additional information can be found at: ccl.design.iastate.edu

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The Spring 2019 version of DSN S 546 builds upon previous coursework at Iowa State University College of Design:

Fabricating Potentials Spring 2016 Studio: 80/35 Pavilion
80/35 Musical Festival | Des Moines, Iowa | Doyle

ccl.design.iastate.edu/2016/08/30/80-35-pavilion/
16 students: Architecture, Interior Design, Industrial Design

Named one of the The Best Student Design-Build Projects Worldwide 2016 by ArchDaily

Fabricating Potentials Spring 2017 Studio: IM_RU
Flyover Fashion Festival | Iowa City, Iowa | Doyle

ccl.design.iastate.edu/2017/05/19/im_ru/
15 students: Architecture, Interior Design, Landscape Architecture

Project selection for the 2017 Association for Computer Aided Design in Architecture (ACADIA) Conference at MIT

Fabricating Potentials Spring 2018 Studio: Bluestem
Bluestem | Madrid, Iowa | Doyle

ccl.design.iastate.edu
16 students: Architecture, Interior Design, Landscape Architecture

Spring 2018: ARCH 433 + ArtIS 482/582 Seminar in Fabricating Tools: Computation + Weaving | Doyle + Valentine

ccl.design.iastate.edu
14 students: Architecture, Art + Visual Culture, Interdisciplinary Design