Premise 1
In the last 30 years patterns of land use in many post-industrial cities have undergone dramatic transitions as declining population and displaced manufacturing industries have thinned the fabric of the built environment.

Premise 2
Urban agriculture has garnered sustained interest and energy as a viable practice to supply residents with fresh produce and reclaim vacant property within communities.

Premise 3
Vernacular architecture has a long history of shaping the identity of the agrarian landscape. Consider the recognizability of a grain silo or red barn punctuating the expansive horizon of a cultivated field. Meanwhile, the physical makeup of urban agriculture - its architectural and infrastructural instantiation(s) - remains relatively undeveloped.

Conclusion
Definition of these physical components could be a key element in (re)shaping the emerging condition of the post-industrial city. There is important work to be done in posing architectural questions to the Urban Farm.

Studio Themes
Grow Collective is the third in a series of six core design studios intended to immerse students in the fundamental principles of architectural design during your undergraduate tenure at Carnegie Mellon. Grow Collective elaborates on these architectural fundamentals by exploring architectural responses to the increased presence of urban agriculture in post-industrial cities. This thematic frame provides an opportunity for students to cultivate a deeper understanding of...

Enclosure >> Buildings modulate their environment. Through a complex layering of materials, the orchestration of mechanical systems, and careful siting buildings create microclimates altering the impact of the elements (e.g. wind, water, heat, and light) on our everyday activities. Seeking to avoid inside / outside binaries, we will explore a gradient approach to enclosure by mapping various programs along a continuum from wet to dry, light to dark, open to closed.

Systems >> Buildings do not exist in a vacuum. We will investigate how architectural propositions can participate in the ecological, infrastructural, and socio-political systems implicated by urban agriculture.

Making >> In addition to design representation, physical construction can be an inherent part of design education. Making at full scale will be a primary vehicle for inquiry during our semester with an introduction to digital fabrication.

Collaboration >> Architectural design does not develop in a vacuum. Throughout the semester you will learn to work in design teams and partner with community organizations in Pittsburgh actively involved in urban agriculture.
Projects
We will engage the issues noted above through three project-based explorations. The projects are concentrically nested – developing in duration, size, and complexity as the semester unfolds.

**Project 1.0: Folded Garden** >> construct a growing armature to sustain a plant through the season’s first frost.

**Project 2.0: Hoop House** >> design and build a portable greenhouse to extend the growing season of a raised planting bed in a local teaching garden.

**Project 3.0: Grow Collective** >> design a Center for Urban Agriculture in Pittsburgh with a teaching farm and public market to promote education and outreach for urban food production.

Course Structure
Studio will meet three days a week. In general, desk crits with your studio instructor, pinups, and reviews will occur **MON 12:30 - 4:20** and **FRI 1:30 - 4:20**. Digital Fabrication labs, studio lectures, and reading discussions will occur **WED 1:30 - 3:20**. Refer to the course calendar for key deadlines and deliverables.

Design Fabrication
In addition to providing a studio based learning experience centered around the semester’s three projects, **Grow Collective** will provide an introduction to the fundamentals of digital fabrication. Each of our three projects will provide an opportunity for students to be trained to operate key pieces of equipment in So/- dFAB. Design fabrication labs will introduce students to key concepts, tools, and workflows related to physically testing design concepts at full and model scales. A portion of each project grade will be allotted to design fabrication (see grading distribution below).

Objectives core skills / concepts
- You can realize design intent using legible shop / construction drawings.
- In addition to compelling representation, you can leverage digital design tools to construct physical artifacts.
- You can leverage physical and digital modeling to evaluate various design paradigms, using aesthetic and performative criteria.
- You can work collaboratively to realize complex goals.
- You can detail basic architectural enclosures.
- You can identify the ecological and infrastructural systems (e.g. water, energy, transportation) implicated in a design proposal.
- You can test ideas at full scale using material affordance to inform your design process.
- In addition to the objectives stated above, you will demonstrate ability in the following **NAAB SPC Criteria**: A.1,A.3,A.4, A.6, A.8, A.11, B.7, B.8, B.12, C.1, C.3, C.9

Studio Policies yes / no
- Technology should be used to inspire and execute your work in studio. Please do not graze on social media or stream content during studio. Texting during lectures – no. Looking up a quick image of an architect whose name is dropped during a review – yes.
- Attendance is essential to your development in studio. More than three unexcused absences will lower your final grade. Missing a review will result in a failing grade for that project. Disappearing for a few weeks while you pledge – no. Bringing a signed doctor’s note regarding a recent absence – yes.
- As architects we invest quite a bit of energy in the built environment. That ambition should be reflected in the way you maintain your studio space. Pushing last week’s lunch under last month’s site model – no. Hanging precedent and inspiration by your desk – yes.
- Context matters in architectural education. Spending time working in studio with your colleagues is invaluable. Mumbling “see you Monday” as you slip out of studio Friday afternoon – no. Encouraging a classmate who has been drooling on his / her desk for the last hour to go home and get some rest – yes.
- Computers are really helpful. Until they’re not. Back up your work! If your computer crashes the night before a review have a backup plan. Did we mention to back up your work?! Save often!
**Documentation**

Students are required to carefully document the product and process of all projects through considered drawings, images, physical prototypes, and digital models. Since the course encourages speculative thinking through making, students are encouraged to document failed attempts, detours, and hunches. A complete set of documentation should be uploaded as an indesign-package-folder to the SoArch archpc server at the close of each project (Template).

Use the following naming convention:
Folder Name >> Andrew ID_Project#
File Names >> Andrew ID_Project#.indd
Andrew ID_Project#.pdf
Example >> jdbard_Project1.pdf

**Studio Resources** files, readings, templates...
- **Calendar** a public Google Calendar
- **Files** a public Google Drive Folder
- **Precedent** a shared Pinterest board search for board *Grow Collective F15*

**General Resources** At your desk...
- *The Architect’s Studio Companion*, Allen & Iano
- *Graphic Standards*, Ramsey & Sleeper
- *Materials, Structures, and Standards*, McMorrough
- *Building Construction Illustrated*, Ching
- *USDA Online*
- *Grow Pittsburgh*

**Course Reader**

**Journals**
- Praxis Volume 13, Ecologies, ed. Amanda Reeser Lawrence & Ashley Schafer
- AD Volume 80, No 3, Territory, ed. David Gissen
- Bracket 1: On Farming, ed. Mason White & Maya Przybylski
- Pamphlet 30: Coupling Strategies for Infrastructural Opportunism, ed. Mason White et al.

**Collected Essays / Projects**
- Recovering Landscape: Essays in Contemporary Landscape Architecture, ed. James Corner
- Ecological Urbanism, ed. Mohsen Mostafavi with Gareth Doherty
- *The Landscape Urbanism Reader*, ed. Charles Waldheim

**Books**
- Above The Pavement–The Farm! Architecture and Agriculture At P.F.1, ed. Amale Androas & Dan Wood
- Nature’s Metropolis: Chicago and the Great West, William Cronon
- Edible Estates: Attack On The Front Lawn, Friz Haeg
- Subnature: Architecture’s Other Environments, David Gissen
- The Unsettling of America: Culture & Agriculture, Wendell Berry
- Taking Measures Across the American Landscape, James Corner & Alex Maclean
- Urban Farms, Sarah Rich
- Continuous Productive Urban Landscapes, Andre Viljoen
- Ecology in the 20th Century: A History, Anna Bramwell

**Articles**
- Eidetic Operations and New Landscapes, James Corner
- Representation and Landscape, James Corner
- The Architect’s Farm, Meredith Tenhoor
- Eco–Redux: Environmental Architecture From “Object” To “System” To “Cloud”, Lydia Kallipoliti

**Precedent**
- Future Cities Lab
- WorkAC
- R&Sien
- MVRDV
- Field Operations
- Urban Lab
- peg office of landscape + architecture
- Detroit Future City
### Grading Rubric

**A excellent** Work reflects outstanding achievement in content and execution. Work far exceeds given requirements. Students in this category demonstrate: High self motivation, Independent thinking and expression, Use precedent as a catalyst, Highly disciplined, Willingness to take risks, High ability to focus, Systemic questioning, Self critique and editing, Highest qualities of representation.

**B good** Work reflects high achievement in content and execution. Work exceeds given requirements. Students in this category demonstrate: Some external motivation, Periodic independent thinking, Good discipline, Beginning to take risks, Good qualities of representation, Periods of focus, Closed-ended questioning, Open to suggested critique and editing.

**C satisfactory** Work fulfills given requirements. Students in this category demonstrate: External motivation, Cannot extend precedent, Low discipline, Conformity, Short periods of focus, Average qualities of representation, Limited questioning, Dependent on external critique and editing.

**D poor** Work is less than satisfactory. Work minimally or incompletely fulfills given requirements. Students in this category demonstrate: Lack of motivation, Ignore precedent, Lack discipline, Duplication, Few periods of focus, Low qualities of representation, Little questioning, Non-responsive to external critique and editing.

**R inadequate** Work fulfills few or none of the given requirements. Work is substantially incomplete. Student missed one or more scheduled reviews.

**I incomplete** Given only for emergency or medical reasons. Contact coordinator as early in the semester as possible regarding an incomplete.

### Evaluation Criteria

#### Critical Inquiry
- + Syntheses of intensive and extensive thinking / Making connections outside the given scope / Work sacrifices breadth or depth / Takes project as given
- - Fragmented work / Inattentive to project aims

#### Communication
- + Strong verbal and visual communication / Legible verbal and/or visual communication
- - Poor verbal and/or visual communication

#### Creativity
- + Imaginative and risk taking / Inventive
- - Normative

#### Craft
- + High level of craft validates and extends impact of the work / Work is well-made
- - Lack of attention to details obstructs the work’s impact

#### Motivation
- + Self-Motivated / Needs faculty motivation
- - Lacks motivation

#### Voice
- + Voice of individual apparent / Developing a personal voice
- - Little personal voice

#### Editing / Process
- + Learns from critique / Develops through iteration / Develops work under the pressure of deadlines
- - Inability to respond to critique / little development of initial ideas

### Distribution

<table>
<thead>
<tr>
<th></th>
<th>Faculty</th>
<th>Coordinator</th>
<th>dFAB</th>
<th>Total</th>
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<tr>
<td>Project 1</td>
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<td>75%</td>
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## A2 Schedule

### Project 1: Planter

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>08.31</td>
<td>Project 1 Release: Planter So/ Assembly</td>
</tr>
<tr>
<td>09.02</td>
<td>L1: Grow Collective Intro (JB) dFAB: 2D I: Tags</td>
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<tr>
<td>09.04</td>
<td>Pinup: Planter Prototypes</td>
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<tr>
<td>09.07</td>
<td>Labor Day (no classes)</td>
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<tr>
<td>09.09</td>
<td>Work Day @ MLK Garden</td>
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<tr>
<td>09.11</td>
<td>Project 1 Rodeo Review</td>
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<tr>
<td>09.14</td>
<td>Reading Discussion 1 (JB, MLA)</td>
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<tr>
<td>09.16</td>
<td>Pinup: Sketch Models (Piano Wire + Shrink Wrap)</td>
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<tr>
<td>09.21</td>
<td>Desk Cuts: Redline Systems Drawing</td>
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<tr>
<td>09.23</td>
<td>L2: Constructed Nature(s) (JB) dFAB: 2D III Fixtures for bending</td>
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<tr>
<td>09.25</td>
<td>Pinup: 2” = 1’ Models Work Day @ MLK Garden</td>
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<tr>
<td>09.28</td>
<td>Desk Cuts: Redline Joint Details</td>
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<tr>
<td>09.30</td>
<td>L4: Modeling + Drawing for Fabrication (JB, JL)</td>
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<tr>
<td>09.32</td>
<td>Pinup: Full Scale Joint Prototype, Drawing Set</td>
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<td>10.05</td>
<td>Redline Drawing Set</td>
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<tr>
<td>10.07</td>
<td>L5: Learning at full scale (Guest JF) dFAB: Heat Shrink Tutorial</td>
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<tr>
<td>10.09</td>
<td>Final Approval Drawing Set, Construction Begins</td>
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<td>10.12</td>
<td>Construction</td>
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<tr>
<td>10.14</td>
<td>Construction</td>
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<tr>
<td>10.16</td>
<td>Transport + Onsite Installation</td>
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<td>10.19</td>
<td>Project 2 Release: Hoop House Grow PGH (Guest Presentation)</td>
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<tr>
<td>10.21</td>
<td>L6: Diagrams + Mapping (JB, JK)</td>
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<td>10.23</td>
<td>Fall Break (no classes)</td>
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<tr>
<td>10.26</td>
<td>Site Documentation</td>
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<tr>
<td>10.28</td>
<td>Reading Discussion 2 (JB, MLA)</td>
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<td>10.30</td>
<td>Studio Pinup: Grow Atlas</td>
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<tr>
<td>11.02</td>
<td>Desk Cuts: Redline Components Drawing(s)</td>
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<td>11.04</td>
<td>L7: Skin &amp; Bones, Enclosure (JB) dFAB: Modeling I</td>
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<td>11.06</td>
<td>Pinup: Study Sketches / Models</td>
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<td>11.09</td>
<td>Desk Cuts: Review Mid Review Deliverables</td>
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<td>11.11</td>
<td>Working Session</td>
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<td>11.13</td>
<td>Mid Review</td>
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<td>11.16</td>
<td>Desk Cuts: Redline Mid Review Drawings</td>
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<td>11.18</td>
<td>Reading Discussion 3 (JB, MLA) dFAB: Modeling II</td>
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<td>11.20</td>
<td>Pinup: Plan / Section</td>
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<td>11.23</td>
<td>Desk Cuts: Thanksgiving (no classes)</td>
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<td>11.25</td>
<td>Thanksgiving (no classes)</td>
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<tr>
<td>11.30</td>
<td>Desk Cuts: Review Final Review Deliverables</td>
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<tr>
<td>12.02</td>
<td>Model Review Session (JB, RT)</td>
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<tr>
<td>12.04</td>
<td>Pinup: Test Plots Dry Run: Final Review</td>
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<tr>
<td>12.07</td>
<td>Working Session</td>
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<td>12.09</td>
<td>Last Day of Classes</td>
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<td>12.15</td>
<td>Final Reviews</td>
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<td>12.16</td>
<td>Exit Interviews</td>
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<tr>
<td>12.18</td>
<td>Final Documentation Due (Sunday by 11:59pm)</td>
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### Planter Schedule

*Note: schedule subject to change. Follow google calendar for details and updates*