Summary
The studio examines the effects of artificial intelligence and automation on architecture and cities. We explore meaningful form generating processes by the use of algorithmic and parametric tools and introduce the notion of growth typologies in architectural and urban design thinking.

Content
The advent of new digital technologies has had a twofold impact on architectural thinking and urban design, transforming, on one hand, the processes for form generation and design production through algorithmic and parametric technologies, and, on the other hand, enabling an escape from the static fate of the built environment by facilitating dynamic interaction between inhabitants and their surrounding. Our interest in the orientation “Form + Type” is to explore meaningful form generating processes by the use of data-driven design, algorithmic and parametric tools and introduce the notion of digital vernacular in architectural and urban design thinking. While developing a base of digital evidence specific to each site, each studio will explore novel means of deploying this data to support design and generate form. The intellectual aim of the studio is to question the extent to which the data-scape can artificially generate urban and architectural form. Our interest is directed at the decoding and recoding of two distinct domains of knowledge: exteriority which represents a many-layered geographic condition and anteriority which represents the embedded knowledge of local architectural typologies and systems. While the exteriority of geographic data is crucial to our research, we place a primary emphasis on the generative potential of typology- what we have called “growth typologies”. Decoding anterior form and then recoding and deploying it across new territories allows us to challenge the role of architecture in urban developments of increased scale and complexity.

Keywords
Data-driven design, digital vernacular, growth typology, artificial intelligence, automation, morphogenesis.

Learning Prerequisites
Important concepts to start the course
(1) Parametric Methods: In alignment with the goals of the “Form + Type” orientation, this studio will explore meaningful form generating processes by the use of algorithmic and parametric tools and introduce the notion of growth typologies in architectural and urban design thinking.
(2) Digital Generative Design Tools: We assert that it precisely the new wave of digital tools (scripting, parametric modeling, and associative geometry) that enable the type of approach which is forwarded by the
studio's agenda. The ability to organize and leverage information permits the architect to approach projects of new scales and complexity. The logical management of variation allows the architect to avoid repetitive solutions and to maintain an equally high level of conceptual rigor across the entire project, to engage with that complexity rather than reducing it. An additional aspect is the ability to quickly and accurately produce quantitative information during the design process which can be used to strengthen the argument or inform the decision-making process.

Learning Outcomes
By the end of the course, the student must be able to:

• Interpret the morphogenetic parameters and other issues of relevance to the project using drawings and diagrams.
• Critique a specific project brief and a specific context and respond with a meaningful data-driven design concept.
• Translate a data-driven design concept into meaningful architectural and/or urban propositions at appropriate scales and levels of granularity.
• Produce coherent architectural representations and models at sufficient levels of detail.
• Formulate the morphogenetic narrative and create convincing arguments for the design propositions.
• Develop convincing final diagrams, drawings, renderings, simulations, physical and digital models.
• Interpret the site-specific parameters and other issues of relevance to the project using drawings and diagrams.
• Critique a specific project brief and a specific context and respond with a meaningful data-driven design concept.
• Translate a data-driven design concept into meaningful architectural and/or urban propositions at appropriate scales and levels of granularity

Transversal skills
• Collect data.
• Design and present a poster.
• Make an oral presentation.

Teaching methods
Presentations, Mapping exercises, Hands-on design activities, Design reviews, Group projects.

Expected student activities
Group discussion, Case studies, Mapping, Sketching, Designing, Design Reviews, Pin-Up, Desk Crits.

Supervision
Assistants       Yes

Resources
Websites
• http://ldm.epfl.ch