**School of Architecture | Georgia Tech | Fall 20xx**

ARCH 3010: Design Strategies (3 credits)

Credit Hours: 3 credits (3 contact hours)

Days and hours of class: TBD

Co-requisite: ARCH 3016

Instructor: Name

Office location/Email address

Office Hours

**Course Description** (from the Catalog) Go to <http://www.catalog.gatech.edu/colleges/coa/architecture/#coursestext> to find the course description for the class.

The design process as reflection in action. The logic of design decisions. The synthesis of diverse bodies of knowledge in design. Interdisciplinary collaborations in design.

The course is based on the understanding that each architectural problem is an invitation to the designer to synthesize a list of priorities and design approaches that are pertinent and unique to it. Architecture is a complex discipline, requiring the synthesis of pragmatic, scientific, aesthetic and cultural considerations. This course will survey the design strategies of multiple modes of practice and design thinking employed by architects by studying a series of seminal works of architecture as precedents.

**Instructional Methods**

This class format will include lectures, presentations and discussion.

# Learning Objectives

By the conclusion of this course:

* Students will understand that architectural design practices involve the participation of a variety of disciplines and stakeholders in partnerships that are collaborative and interdisciplinary.
* Students will gain understanding of analytical, critical, and/or formal approaches to the development of a synthetic approach to design strategies as they relate to program, use, ecology, etc.

# Course Requirements

Specific assignments will be given and graded throughout the semester, as a team and individually. Students should read each Assignment carefully and determine how to best address the multiple aspects of each one.

Assignment 1: 40%

Assignment 2: 40%

Attendance and Participation: 20%

**Archiving**

In some courses, selected students may be required to submit physical examples of their work or digital examples no later than one week after the end of term, to their instructors or administration for archiving. By enrolling, each student grants a license to reproduce and display his or her work. This is a chance for students to have their work shown online and potentially featured in forthcoming publications.

# Proposed Class Schedule, Readings, and Assignments

The class is structured in three parts: Principles, Case Studies, and Collaborative Design. Class lectures and discussions are focused on “classic” works and practices. Student assignments feature current works and practices.

**PART ONE: Theoretical background lectures on Principles**

*The architectural studio as a mode of inquiry*

Key readings:

* Schön D A, 1987, "The architectural studio as educational model for reflection in action", in *Educating the Reflective Practitioner* (Jossey-Bass, New York) pp 41-172
* Simon H A, 1969 *The Sciences of the Artificial* (MIT Press, Cambridge, MA)

*Analysis-synthesis vs conjecture-test: the logic of design decisions*

Key readings:

* Colquhoun A, 1985, "Typology and Design Method", in *Essays in Architectural Criticism. Modern Architecture and Historical Change* (MIT Press, Cambridge, MA) pp 43-50
* Ehrich A B, Haymaker J R, 2011, "Multi attribute interaction design: an integrated conceptual design process for modeling interactions and maximizing value" *Artificial Intelligence for Engineering Design, Analysis and Manufacturing* 26 85-101
* Hillier B, Musgrove J, O'Sullivan P, 1984, "Knowledge and Design", in *Developments in Design Methodology* Ed N Cross (John Wiley & Sons, New York) pp 245-264

*The logic of design: analysis, prediction and intuitive formulation*

Key readings:

* + March L, 1976, "The Logic of Design and the Question of Value", in *The Architecture of Form* Ed L March (Cambridge University Press, Cambridge)
  + Peponis J, 2005, "Formulation" *The Journal of Architecture* 10 119-133
  + Stiny G, March L, 1981, "Design machines" *Environment and Planning* B 8 245-255

*Conceptualization in design*

Key readings:

* Darke J, 1979, "The Primary Generator and the Design Process" *Design Studies* 1 36-44
* Dogan F, Nersessian N, 2012, "Conceptual Diagrams in Creative Architectural Practice: The Case of Daniel Libeskind's Jewish Museum" *Architectural Research Quarterly* 16 14-27
* Hillier B, 1993, "Specifically architectural theory: a partial account of the ascent from building as cultural transmission to building as theoretical concretion" *Harvard Architecture Review* 9 8-27
* Peponis J, Bafna S, Dahabreh S M, Dogan F, 2015, "Configurational Meaning and Conceptual Shifts in Design" *Journal of Architecture* 20 215-243
* Goel V, 1995 *Sketches of Thought* (MIT Press, Cambridge, MA)

*Modes of representation and their influence on design thinking*

Key readings:

* Evans R, 1995 *The projective cast: architecture and its three geometries* (MIT Press, Cambridge, Mass.)
* Carpo M, 2001 *Architecture in the age of printing* (MIT Press, Cambridge, MA)
* Culler J, 2001 *The pursuit of signs* (Cornell University Press, Ithaca, NY)
* Damisch H, 1994 *The origin of perspective* (MIT Press, Cambridge, MA)
* Robbins, E, 1994 *Why architects draw* (MIT Press, Cambridge, MA)

*Representational languages compared and contrasted*

Key readings:

* Eisenman P, 1999 *Diagram diaries* (Universe Publishing, New York)
* Lynn G, 1999 *Animate form* (Princeton Architectural Press, New York)
* Venturi R, 1992 *Mother's house* (Rizzoli, New York)
* Gad A, Gryczkowska A, 2017 *Zaha Hadid, early paintings and drawings* (Koenig Books, London)
* Secret Knowledge - Zaha Hadid on Kazimir Malevich 1/2 <https://www.youtube.com/watch?v=yye33DucQvw>
* Secret Knowledge - Zaha Hadid on Kazimir Malevich 2/2 <https://www.youtube.com/watch?v=Lg1b_n9IKUo>

**PART TWO: Design Case Studies**

*Headquarters, Swiss Re, Norman Foster*

Key readings:

* Jenkins D, 2009 *Norman Foster Works 5* (Prestel, Munich)

*Yokohama Terminal, Foreign Office Architects*

Key readings:

* Moussavi F, Zaera-Polo A, 2002 *The Yokohama Project* (Actar, Barcelona)
* Webb M, 2003, "Cruise control: international port terminal, Yokohama, Japan" *Architectural Review* 213 26-35

*Guggenheim, Bilbao, Frank Gehry*

Key readings:

* Boland R J, Collopy F, Lyytinen K, Yoo Y, 2007, "Managing as designing: lessons for organization leaders from the design practice of Frank O. Gehry" *Design Issues* 24 10-25
* Gehry F, 1995, "Frank Gehry 1991-1995" *El Croquis* 74-75
* Gehry F, 1998, "Museo Guggenheim Bilbao, Bilbao, Espana, 1991-1997" *El Croquis* 88-89 22-63
* Goldberg P, 2017, "The Guggenheim and Bilbao", in Building Art. *The life and work of Frank Gehry Ed P Goldberg* (Vintage Books, New York) pp 288-311
* Irving M, 2005, "Mind over matter: Richard Serra's Bilbao Guggenheim sculptures both respond to and challenge their context" *Architectural Review* 218 78-81
* Rappolt M, Chan E, Webb C, 2004 *Gehry Draws* (MIT Press, Cambridge, NA)
* Yoo Y, Boland R J, Lyytinen K, 2006, "From organization design to organization designing" *Organization Science* 17 215-229

*Stavros Niarchos Foundation Cultural Center, Renzo Piano*

Key readings:

* Newhouse V, 2017 *Chaos and culture: Renzo Piano Building Workshop and the Stavros Niarchos Foundation Cultural Center in Athens* (Monacelli Press, New York)
* Piano R, 2016 *Stavros Niarchos Cultural Center* (Fondazione Renzo Piano, Genoa)

*CCTV building in Beijing, Rem Koolhaas and OMA in collaboration with structural engineer Cecil Balmond: Integration of structure, aesthetic and symbolic significance*

Key references:

* <https://www.archdaily.com/236175/cctv-headquarters-oma>
* <http://oma.eu/projects/cctv-headquarters>
* <https://www.dezeen.com/2012/05/16/cctv-headquarters-by-oma/>
* <http://faculty.arch.tamu.edu/media/cms_page_media/4433/CCTVHeadquarters.pdf>
* <http://www.ctbuh.org/LinkClick.aspx?fileticket=72u7xH7OkEk>=

**PART THREE: Collaborative design and the integration of knowledge from diverse disciplines**

*Structure and form: Sydney Opera House*

Key readings:

* Arup O, Zunz J, 1988 *Sydney Opera House reprint series* (Sydney Opera House Trust, Sydney)
* Cochrane J, 1999, "A specialist partnership frustrated: Utzon and Symonds at Sydney" *Architectural Research Quarterly* 3 165-174
* Drew P, 1995 *The Sydney Opera House* (Phaidon, London)
* Murray P, 2004 *The saga of Sydney Opera House: the dramatic story of the design and construction of the Icon of modern Australia* (Spon Press, London)
* Utzon J, 1967, "The Sydney Opera House: what happened and why" *Architectural Record* 141 189-192
* Utzon J, Arup O N, 1966, "Sydney Opera House: engineer's view" *Architectural Record* 139 175-180

*Centre Pompidou: innovation and integration of architecture, structural engineering and mechanical engineering*

Key readings:

* Dal Co F, 2016 *Centre Pompidou* (Yale University Press)
* Piano R, Rogers R, 2018 *Centre Pompidou* (Fondazione Renzo Piano, Genoa)
* Rogers R, 1998 *Complete Works, Volume 1* (Phaidon, London)
* Silver N, 1997 *The making of Beaubourg* (MIT Press, Cambridge, MA)

*Architecture and music: Philips Pavilion and the Berlin Philharmonic*

Key readings:

* Treib M, 1996 *Space calculated in seconds.* *The Philips Pavilion, Le Corbusier, Edward Varèse* (Princeton University Press, Princeton, NJ)
* Scharoun H, et al, 1973 *The Berlin Philharmonic Concert Hall*, Berlin, West Germany, 1956, 1960-63 (A.D.A. Edita, Tokyo)

*Architecture and knowledge work*

Key readings:

* Allen T J, Henn G n, 2007 *The organization and architecture of Innovation: managing the flow of technology* (Elsevier; Butterworth-Heinemann, Amsterdam ; Boston).
* Allen T J, 1977 *Managing the flow of Technology: technology transfer and the dissemination of technological information within the R&D organization* (MIT Press, Cambridge, Mass.)
* Frampton K, 2002, "The Volvo case", in *Labour, Work and Architecture* (Phaidon Press, London) pp 64-75
* Gyllenhammar P, G., 1977 *People at work* (Addison Wesley, Reading, MA)
* Peponis J, Bafna S, Bajaj R, Bromberg J, Congdon C, Rashid M, Warmels S, Zhang Y, Zimring C, 2007, "Designing space to support knowledge work" *Environment and Behavior* 39 815-840

**Course Assignments**

**Assignment 1:** Student presentations and discussion (8-minute presentations, in groups of 5)

*Discuss the design strategies pursued by one of the following architects, focusing on one or two projects. The paper* should be no longer than 2000 words in length. It should be amply illustrated with figures, each properly captioned. **(Note: The List below is indicative. The list of possible assignments is to be expanded to offer more than 10 choices on any individual year.)**

*1. The work of Achim Menges*

Key Readings

* <http://www.achimmenges.net/>
* <http://icd.uni-stuttgart.de/?page_id=17788>
* Menges A, 2011, "Computational Design Thinking", in *Computational Design Thinking* Eds A Menges, S Ahlquist (Wiley, London) pp 10-29
* Menges A, 2011, "Integrative design computation. Integrating material behavior and robotic manufacturing processes in computational design for performative wood constructions", in *ACADIA. Integration through Computation*, Calgary pp 72-81
* Menges A, 2012, "Biomimetic design processes in architecture: morphogenetic and evolutionary computational design" *Bioinspiration & Biomimetics* 7 1-10
* Menges A, 2012, "Material Computation", in *Architectural Design \_ Material Computation* Ed A Menges (Wiley, London) pp 14-59
* Menges A, 2013, "Morphospaces of robotic fabrication", in *Robotic fabrication in architecture, art and design* Eds S Brell-Çokcan, J Braumann (Springer, New York) pp 142-161
* Menges A, Schwinn T, Krieg D, 2017 *Advancing Wood Architecture* (Routledge, London)

*2. The work of Kieran-Timberlake*

Key readings

* Kieran S, Timberlake J, 2004 *Refabricating Architecture* (McGraw-Hill, New York)
* Kieran S, Timberlake J, 2008 *Loblolly house. Elements of a New Architecture* (Princeton Architectural Press, New York)
* Kieran S, Timberlake J, 2011 I*nquiry* (Rizzoli, New York)

3. *The work of Peter Zumthor: phenomenology, inhabitation, light as a design element and hapticity*

Key readings

* Zumthor, P, 2006 *Thinking architecture*, Second expanded edition (Birkhӓuser, Basel; Boston)
* Zumthor, P, 2006 *Atmospheres: architectural environments, surrounding objects* (Birkhӓuser, Basel; Boston)
* Zumthor, P, 1998 *Peter Zumthor works : buildings and projects* 1979-1997 (Lars Muller publishers, Baden, Switzerland)

**Assignment 2:** Student presentations and discussion (8-minute presentations, in groups of 5)

*Offer a comparative critical assessment of two design strategies already discussed in class, with reference to specific examples associated with each strategy. The paper should be no longer than 2000 words in length. It should be amply illustrated with figures, each properly captioned.*

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# COURSE POLICIES

**Attendance**

Attendance at all class meetings is mandatory and crucial to successful completion of this course. If you do not present your work or participate in class your course grade will be affected. Attendance will be taken at the beginning of each class period and punctual arrival is required. Late arrivals or departures from class will be counted as absences; **more than two unexcused absences or three total absences will be grounds for reduction of your course grade by a full letter grade**. Absences will be excused only for medical or family emergencies documented in writing. Student must contact instructor as soon as possible to inform them of the emergency situation. Failure to do so will potentially result in an unexcused absence. Don’t jeopardize your overall performance and course grade by skipping class. You are not allowed to work on assignments for other courses during class meeting times for this course.

Your grade for this course will be determined based upon the quality of the work you produce, your improvement over the course of the semester, completion of required course assignments, quality of class participation, and attendance, attitude and ethical conduct.

**Grading**

Your grade for this course will be determined based upon the quality of the work you produce, your improvement over the course of the semester, completion of required course assignments, quality of class participation, and attendance, attitude and ethical conduct. Other factors impacting your grade include attendance, participation, timely completion of work, the depth of engagement in studio issues, and on demonstrating progress throughout the semester. Craftsmanship and competent and consistent execution of models and drawings is also important and it is factored into your grades. Remember, grades are earned by you – not given by your instructor.

* A grade of “F” indicates a failure to meet the course requirements, including attendance, minimum requirements concerning presentation and fulfillment of course requirements. In case of an “F”, the studio will need to be repeated.
* A grade of “D” means that you have significant attendance problems, your performance is poor, including failure to meet deadlines and/or the basic requirements of the course.
* A grade of “C” means that you have met the minimum requirements of the course.
* A grade of “B” means that you have met the basic requirements of the course.
* A grade of “A” means that your work clearly represents both a clear understanding of course themes and criteria, and a self-motivated exploration beyond the basic course requirements. Assignments that receive grades of “A” are exemplary projects in terms of concept, production, and craft.

Evaluation of a student’s performance in each course is the responsibility of the instructor for that course. If the grade is disputed, a student may appeal to the instructor for a review. If, after the review, the student still believes that a grade has been assigned unfairly, the student may submit a written request for a grade appeal to the School Chair. The petition must clearly state the reasons for the appeal. A committee of faculty and students will convene to review the work and make a decision as to whether the grade will stand or be changed. Petitions must be settled and a final grade submitted to the registrar no later than three weeks after the end of the term in which the course was completed. The School Chair will inform the student of the committee’s decision regarding the grade appeal, and their decision is final.

A student may receive a grade of incomplete (I) by requesting permission from the instructor prior to the date of the final examination or presentation. Permission will be granted only under extraordinary circumstances and usually for medical reasons.

# Academic Integrity and Conduct

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. All Georgia Tech students should familiarize themselves with and abide by the Georgia Tech Honor Code: <http://www.catalog.gatech.edu/rules/18/>. Any student suspected of cheating on a quiz or exam or caught plagiarizing will be reported to the Office of Student Integrity.

For expectations of student and instructor conduct more generally, consult section 19 of the catalog listed above, entitled “Code of Conduct,” http://www.catalog.gatech.edu/rules/19/, and section 22, entitled “Student-Faculty Expectations,” at http://www.catalog.gatech.edu/rules/22/.

All persons in the classroom are expected to behave with courtesy towards others and in a way that does not interfere with the regular conduct of the class. Cell phones are to be turned off when students enter the classroom and should remain off for the duration of class; laptop computers are to be used only for taking notes; and students should not engage in private conversations while the instructor or other students are speaking. Anyone who does not adhere to these basic courtesies will be asked to leave.

# Accommodations for Students with Disabilities

Any student with a disability, that may require accommodation, should contact Office of Disability Services at 404-894-2563 or visit <http://disabilityservices.gatech.edu> to make an appointment to discuss his or her special needs and obtain an accommodations letter. He or she should also schedule an appointment to speak with the course instructor.

**Emergencies**

In case of emergency (e.g., fire, accident, or criminal act), please call the Georgia Tech Police at 404-894-2500. Please note that Perry Minyard, IT Support Administrator for the College of Architecture, is also a firefighter and an Emergency Medical Technician (EMT) certified in performing CPR.

**Ownership**

Physical copies of student work submitted to the school to satisfy course requirements—including, but not limited to digital files, papers, drawings, and models—become the property of the school. It is assumed as no obligation to safeguard such materials and may, at its discretion, retain them, return them to the student, or discard them.

# College of Design Facility Rules and Guidelines

Please consult the Georgia Tech Student Handbook regarding the use of facilities and all Institute policies. Aerosol sprays of any kind are strictly banned from the studio and surrounding areas. A new spray painting booth is now in operation in the College of Design shop, on the ground floor of the East Architecture Building.

Shop Use: All students using shop facilities must first have completed an orientation. Safety first, always! Noise should be kept to a minimum. Music may be listened to only through headphones, including evenings and weekends.

Studio Housekeeping: Students should feel free to organize their space creatively and expressively, but with respect to others around them. Try to prevent clutter from becoming a nuisance, distraction, or a hazard. The cleaning staff makes every effort to determine what is and is not trash, but their job can be made easier if you keep drawings filed and models off of the floor.