

MATERIAL SYNTAX

UNIVERSITY OF WATERLOO | SCHOOL OF ARCHITECTURE
Arch 684_002 | Fall 2017

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Office: 3017 | (by appointment)

Lecture Times, Building and Room Number: Wednesday 6:30-9:30 PM
(ARC 1101)

Course Description:

This course will explore design at multiple scales. Building from the micro-structure of material, the functioning form and the process of materialization to the design of an artifact. Conceived as a hands-on, concise design project, the course will look at Making as an emergent design process of direct engagement with conceptual and material elements.

Interest in materials to inspire curiosity and curiosity to challenge design boundaries are assets for this course.

Learning Objectives:

The course will provide opportunities to

1. Reconsider the role of fabrication and material research as an integral part of the creative process of design.
2. Investigate the role of design in the development of performance oriented materials
3. Introduce students to tools used to manufacture and prototype products and architecture components
4. Apply design rules for material selection, design for manufacturability, design for assembly
5. Recognize issues of product safety, risk, and reliability

Class Structure:

Each class consists of:

- Lecture
- Student presentation – project progress
- Class discussion (on selected topic as per schedule)

"In biology material is expensive but shape is cheap.

As of today, the opposite was true in the case of technology."

Julian Vincent

Attendance:

Attendance to all Lectures and Tutorials is required. Students are expected to arrive shortly before 6:30pm.

Course Schedule:

			Lecture	Class Discussion
MATERIAL CAPACITIES	W1	09.13	Re-scheduled for 10.26	
	W2	09.20	P 1A – issued - Material	Intro – Material Capacities Research Documentation
	W3	09.27	P 1A – deadline / P 1B – issued – D. Proposal	Material Informed Research Design Methodologies
	W4	10.4		Smart and Designed Materials
MATERIAL SYSTEM DESIGN	W5	10.13	P 1B – deadline / P2 - issued	Craft and Production
	W6	10.18		Additive M: Stereolithography
	W7	10.25		Additive M: Multi-material FDM
		10.26	Guest Lecturer – Oliver Krieg	Robot Made: Advancing Architectural Design Research
ARTIFACT DESIGN	W8	11.01		Technical Tutorial
	W9	11.08	P2 – Mid Review deadline - Prototype	Mid-Review
	W10	11.15		Technical Tutorial
	W11	11.22		Presenting Research / Research Narrative
	W12	11.29		Desk Reviews
	W13	12.04	End of Lectures / Classes	
	W14	12.13		
	W15	12.20	P2 - Final Project full submission deadline - Exhibition	

Course Evaluation

Project 1A	10%
Project 1B	20%
Project 2	60%
Participation	10%
Total	100%

Laptop and Software equipment:

Laptops should be ready for in class exercises. Students are required to have equipment and software tools ready (installed with appropriate license privileges) prior to class.

Digital Submissions:

Students must make and maintain regular backups of their digital files and documentation material. Lost or corrupt files will not be accepted as an excuse for late project submissions. Digital Submissions will be required for all assignments, as individual students or groups, throughout the term. All files must be submitted in readable pdf and mp4 formats to LEARN.

Credits:

Credit all sources for your work. Identify original authors of all visual documents. Footnote text sources. Include full captions for illustrations. Provide a detailed list of credits with each assignment.

Evaluation:

Each assignment throughout the term will be assessed on the following basis:

- Successful implementation of technical goals as well as meaningful design/architectural insight
- Ambition, clarity and appropriateness of the ideas addressed within the work
- Precision and craft of work developed
- The capacity of the submission to communicate the project's intention in the author's absence.

Deadlines and extension for ARCH 684_002 are only possible in cases of illness or incapacity. Requests for such extensions must be made before the project deadline, as soon as is possible, using the request for extension form available from the Undergraduate Student Services Coordinator – Colleen Richter, accompanied by a medical certificate when necessary, and submitted to the ARCH 684_002 instructor. Students must complete all assignments, and obtain a passing average in order to receive credit for this course. All assigned parts of the work must be completed. Punctual completion is required. Grade penalties will be applied to late submissions and chronic lateness may result in disciplinary review including refusal of acceptance. Late submissions must be accompanied by formal transmittal indicating reason for lateness. For submissions administered with evening deadlines, penalties would be assessed at 5% up to midnight, and 10% next day and each day afterward. 'Days' begin at midnight each day, and include weekends and holidays.

Academic Integrity:

In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. Refer to Academic Integrity website (<https://uwaterloo.ca/academic-integrity/>) for details.

A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70>) Student Petitions and Grievances, Section 4. When in doubt, please contact the department's administrative assistant who will provide further assistance.

Discipline:

A student is expected to know what constitutes academic integrity to avoid committing an academic offence, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g. plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course instructor, academic advisor, or the undergraduate Associate Dean. For information on categories of offences and types of penalties, students should refer to Policy 71 (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71>) Student Discipline. For typical penalties check Guidelines for the Assessment of Penalties (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/guidelines/guidelines-assessment-penalties>).

Appeals:

A decision made or penalty imposed under Policy 70 (Student Petitions and Grievances) (other than a petition) or Policy 71 (Student Discipline) may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72 (Student Appeals) www.adm.uwaterloo.ca/infosec/Policies/policy72.htm.

Note for Students with Disabilities:

AccessAbility Services (<http://uwaterloo.ca/disability-services/>), located in the new addition to Needles Hall, Room 1401, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the office at the beginning of each academic term.