



**Architecture 692a:
Master of Building Science Thesis**

Units: 6

Term—Day—Time:

Wednesday (hybrid) / Friday (online),
1:00 – 5:50 PM

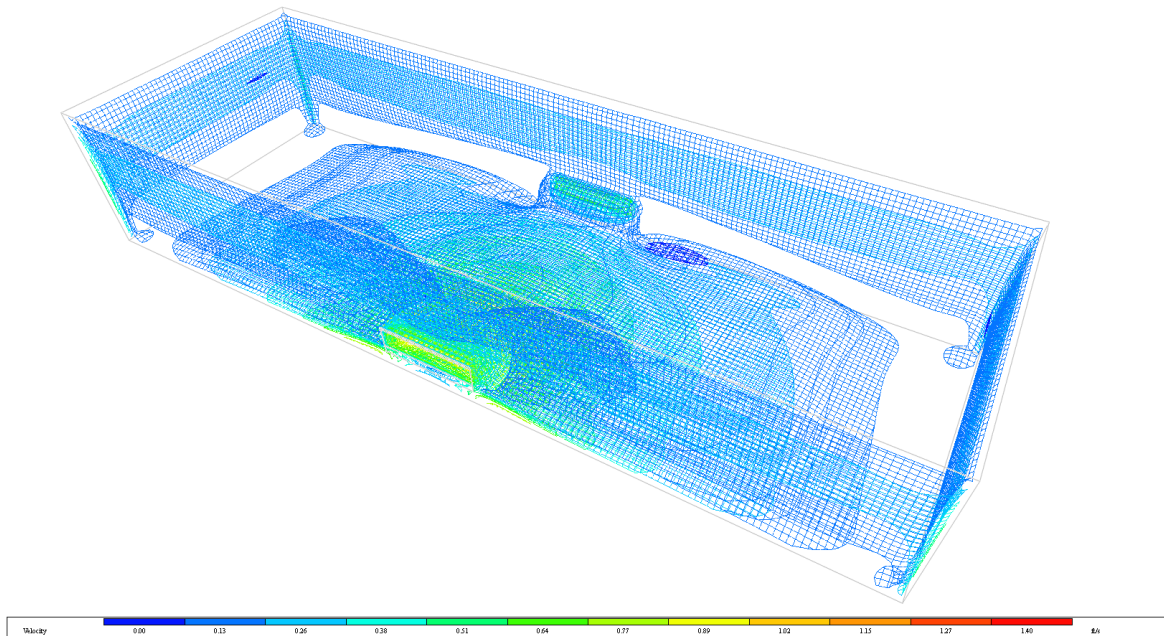
Location: Watt Hall, third floor, southeast corner (Watt 312),
ZOOM from BlackBoard Arch 692

Instructor: Professor Marc Schiler

Office: WAH 315 / marcs@usc.edu

Office Hours: Tuesday, Thursday 1:30pm -3:00pm
in addition to Wed, Friday from 1:00 – 6:00

Contact Info: marcs@usc.edu



Nikhita Sapuram, *Natural Ventilation in Tall Buildings: Development of Design Guidelines Based on Climate and Building Height*, 3/20/2019,

Course Description

Arch 692a is the first part of a two semester long thesis series. In the Master of Building Science program at USC, the written thesis is one of several important elements of the overall academic program. The completed written thesis represents the documented evidence of the ability to craft, carry out, and document a purposeful and detailed research activity. In the ARCH 692 course, the thesis student will learn how to undertake serious and scholarly scientific research and to document the process and results.

In the MBS program, we use the term “thesis” in several different ways. Perhaps the most common use is in referring to the written document that is produced. We talk about “turning in your thesis” or “making a copy of your thesis.” We also use the term thesis to describe the broad group of activities associated with the research. We often will refer to “working on your thesis” when we are talking about the research and not necessarily writing the thesis document. Collecting data in the field is part of “doing the thesis.” Finally, the word “thesis” is sometimes used to in reference to your “hypothesis statement.”

Because of the length of the thesis activities in the MBS curriculum, the thesis has taken on the appearance of a nearly insurmountable task. However, writing a graduate thesis is not as difficult as it at first appears. The key to documenting the thesis is to stay organized and work at it in small sections. The thesis document is the tangible piece of the thesis activity, but it does not have to be the “last” piece. If you have started the work, or participated in a substantial research project in the past, you know that the selection of the thesis, and carrying out the thesis research are both major parts of the thesis process. Documenting the results in a written thesis is just one part of the process.

Learning Objectives

- Students will learn how to formulate and test a research hypothesis.
- Students will learn how to conduct and write a literature review and be capable of identifying gaps in existing knowledge.
- The capability to identify and apply appropriate research methods as well as develop novel approaches to address research questions.
- An awareness of the ethical aspects of research and scholarly publications.
- Planning and organizational skills related to managing a thesis project.

Prerequisite(s): ARCH 596 – Introduction to Thesis

Co-Requisite(s): ARCH 694 – Research Publication Methods for Building Science

Concurrent Enrollment: Not Applicable

Recommended Preparation: Three Building Science Core Courses and at least one advanced course in the area of focus.

Course Notes

Grading Type is: In Progress (IP) / Credit (CR) / No Credit (NC).

For details see: <https://arr.usc.edu/services/grades/gradinghandbook/gradingpolicies.html>

Technological Proficiency and Hardware/Software Required

Software requirements will depend on the individual needs of each student. Familiarity with MS-Word, Powerpoint and Excel are necessary for all students. ARCH 507 and 615 are highly recommended courses.

Required Readings and Supplementary Materials

There will be readings posted on Blackboard and thesis committee members will supply students with required readings related to their thesis topic.

Description and Assessment of Assignments

Students’ learning outcomes will be assessed based on:

- Quality of the assignment/project/seminar
 - o How well articulate research objectives clearly, position the research within an academic or scholarly context.
 - o How much clearly state research questions and claims and propose the research framework with robust intellectual ideas regarding research validation, methods, expected results, and outcomes.
 - o How well illustrate a student's research thesis plan in written and oral forms within the range of introduction, literature review, and research methodologies, as well as expected results/outcomes

- Research/Project delivery
 - o On-time submission and presentation
 - o How well meet the required template and platform given according to the MBS program and/or the class thesis format.

Recommended Readings/Textbooks (not required, share)

- *The Literature Review: Six Steps to Success* Third Edition, by Lawrence A. Machi and Brenda T. McEvoy, ISBN-13: 978-1506336244 ISBN-10: 1506336248, May 2016,
https://www.amazon.com/Literature-Review-Six-Steps-Success/dp/1506336248/ref=pd_cp_14_4?pf_rd_m=ATVPDKIKX0DER&pf_rd_p=fcaa6d12-8b2b-4ad7-b277-864b2da79f6e&pf_rd_r=ZBX6FGMR8WMQHRP2VAB8&pd_rd_wg=acguo&pf_rd_s=desktop-dp-sims&pf_rd_t=40701&pd_rd_w=tYXPc&pf_rd_i=desktop-dp-sims&pd_rd_r=e50bf5e4-a590-11e8-ab56-99922abab8e3&pd_rd_i=1506336248&psc=1&refRID=ZBX6FGMR8WMQHRP2VAB8
- *Research Foundations, How Do We Know What We Know?*, Douglas Woodwell, 1st Edition, Kindle Edition, ISBN-13: 978-1483306742, ISBN-10: 1483306747
https://www.amazon.com/Research-Foundations-Douglas-R-Woodwell-ebook/dp/B00IKWG83I/ref=sr_1_14?ie=UTF8&qid=1534890116&sr=8-14&keywords=research+foundation
- *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches Fifth Edition* by John W. Creswell, J. David Creswell ISBN-13: 978-1506386706, ISBN-10: 1506386709
https://www.amazon.com/Research-Design-Qualitative-Quantitative-Approaches/dp/1506386709/ref=sr_1_5?ie=UTF8&qid=1534890219&sr=8-5&keywords=research+methodology
- *The Craft of Research, Fourth Edition* (Chicago Guides to Writing, Editing, and Publishing) Fourth Edition by Wayne C. Booth, et al, ISBN-13: 978-0226239736, ISBN-10: 022623973X
https://www.amazon.com/Research-Chicago-Writing-Editing-Publishing/dp/022623973X/ref=pd_cp_14_3?pf_rd_m=ATVPDKIKX0DER&pf_rd_p=fcaa6d12-8b2b-4ad7-b277-864b2da79f6e&pf_rd_r=ZBX6FGMR8WMQHRP2VAB8&pd_rd_wg=acguo&pf_rd_s=desktop-dp-sims&pf_rd_t=40701&pd_rd_w=tYXPc&pf_rd_i=desktop-dp-sims&pd_rd_r=e50bf5e4-a590-11e8-ab56-99922abab8e3&pd_rd_i=022623973X&psc=1&refRID=ZBX6FGMR8WMQHRP2VAB8

Useful Graduate School Thesis Links

- For an overview of the submission process and a review of the University's requirements, go to: <http://graduateschool.usc.edu/current-students/thesis-dissertation-submission/guidelines-for-submission/> (as of 8/20/2019),
- and for dates, go to: <http://graduateschool.usc.edu/current-students/thesis-dissertation-submission/submission-deadlines/> (as of 8/20/2019),
- For university formatting, go to: <http://graduateschool.usc.edu/current-students/thesis-dissertation-submission/guidelines-for-format-and-presentation/> (8/20/2019.)

Academic Conduct

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Section 11, Behavior Violating University Standards, found in the second half of <https://policy.usc.edu/scampus-part-b/>. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct/>.

Discrimination, Sexual Assault and Harassment

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity <http://equity.usc.edu/> or to the Department of Public Safety <https://dps.usc.edu/>. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The Center for Relationship and Sexual Violence Prevention <https://studenthealth.usc.edu/meet-the-relationship-and-sexual-violence-prevention-clinicians/> provides further support. See also "Support Systems" listed below.

Religious Holidays

The University of Southern California recognizes the diversity of our community and the potential for conflicts involving academic activities and personal religious observation. The University provides a guide to such observances for reference and suggests that any concerns about lack of attendance or inability to participate fully in the course activity be fully aired at the start of the term. As a general principle students should be excused from class for these events if properly documented and if provisions can be made to accommodate the absence and make up the lost work. Constraints on participation that conflict with adequate participation in the course and cannot be resolved to the satisfaction of the faculty and the student need to be identified prior to the drop/add date for registration. After the drop/add date the University and the School of Architecture shall be the sole arbiter of what constitutes appropriate attendance and participation in a given course.

Please contact **Prof Schiler** (marcs@usc.edu) by the end of the second week of class if you anticipate conflicts with religious holidays including missing lectures, inability to finish homework assignments on-time, or other items that may hinder your work in this class.

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as

possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Support Systems:

Student Counseling Services (SCS) – (213) 740-7711 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. engemannshc.usc.edu/counseling

National Suicide Prevention Lifeline – 1 (800) 273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. www.suicidepreventionlifeline.org

Relationship and Sexual Violence Prevention Services (RSVP) – (213) 740-4900 – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. engemannshc.usc.edu/rsvp

Sexual Assault Resource Center

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: sarc.usc.edu

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086

Works with faculty, staff, visitors, applicants, and students around issues of protected class. equity.usc.edu

Bias Assessment Response and Support

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. studentaffairs.usc.edu/bias-assessment-response-support

The Office of Disability Services and Programs

Provides certification for students with disabilities and helps arrange relevant accommodations. dsp.usc.edu

USC Support and Advocacy (USCSA) – (213) 821-4710

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. studentaffairs.usc.edu/ssa

Diversity at USC

Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. diversity.usc.edu

USC Emergency Information

Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible. emergency.usc.edu

USC Department of Public Safety – UPC: (213) 740-4321 – HSC: (323) 442-1000 – 24-hour emergency or to report a crime.

Provides overall safety to USC community. dps.usc.edu

See attached Course Schedule

Date	Schedule	Trajectory and Benchmarks
	Class Activities / Deliverable Due	
Wednesday, August 26, 2020	Lecture 01: Class orientation, review of syllabus, introduction of tracking system (white board), Lecture 02: Review of general thesis document outline and expectations. Studio: Individual meetings with students.	Review summer work, verify committee, verify method , set schedule.
Friday, August 28, 2020	Seminar 01: Student presentations of summer work. Studio: Individual guided work on writing and data collection. List of additional papers to be reviewed in ch 1 & 2.	
Wednesday, September 2, 2020	Culture of learning test: Find gaps in basic student Building Science knowledge base. Studio: Individual guided work on writing and data collection. Work on chapters 1 and 2.	2 weeks of parallel work: Revise Chapters 1 and 2. Submit to Chair, repeat. Proceed with work according to method diagram, including programming and data collection.
Friday, September 4, 2020	Complete the abstract, hypothesis, research objectives, and Chapters 1 and 2. Send to your Chair by Sunday midnight, Sept. 4. (Chair returns by Sunday, September 13.)	
Wednesday, September 9, 2020	Lecture 03: Method Diagram. Studio: Draw/generate a method diagram. Start writing complete version of Chapter 3.	
Friday, September 11, 2020	Lecture 04: Building Physics, Statistics, Artificial Intelligence algorithms. Studio: Work on method diagram and chapter 3.	Student submits final chapter 3 to Chair.
Wednesday, September 16, 2020	Seminar 02: Augmented Reality demonstration. Studio: Revise chapters 1 and 2 based on Chair feedback.	
Friday, September 18, 2020	Complete Chapter 3 and send to your Chair by midnight, Sunday, September 20. (Chair returns by Sunday, September 27).	
Wednesday, September 23, 2020	Lecture 05: Building Physics. Studio: Revise Chapters 1 and 2 and send Final to Committee.	Student revises chapters 1 and 2 and submits to Committee.
Friday, September 25, 2020	Studio: Revise Chapters 1 and 2 and send to Committee.	
Wednesday, September 30, 2020	Studio: Revise chapter 3 based on Chair feedback.	Student revises chapter 3 and submits to Committee.
Friday, October 2, 2020	Send the revised abstract, hypothesis, research objectives, chapters 1, 2, & 3 to your Chair by Sunday, October 4. (Chair returns by Thursday October 8)	
Wednesday, October 7, 2020	Lecture 06: Graphic representation of data. Studio: Outline expected data and proposed chapter 4.	Prepare Midterm Presentations
Friday, October 9, 2020	Lecture 07: Public presentations, mid-term presentation template review. Studio: Develop midterm presentation of chapters 1, 2, and 3. Include an outline of chapter 4 and expected data..	

Wednesday, October 14, 2020	Studio: Polish graphics, workshop presentations with other students. Setup up a "scribe" to record comments on Wednesday's presentation.	Midterm Presentations
Friday, October 16, 2020	MIDTERM PRESENTATION (12 slides - use template file) on overview: abstract, research objectives, hypothesis, methodology, and preliminary results of research.	
Wednesday, October 21, 2020	Revise and Send chapters 1 - 3 and proposed 4 to committee members and cycle through committee members in cascading fashion until all have approved.	Revise 1 - 4 as necessary based on Midterm. Continue revising chapter 4 based on data.
Friday, October 23, 2020	Open a student profile with the graduate school website. Cycle chapters 1-3 through committee members in cascading fashion until all have approved.	
Wednesday, October 28, 2020	Lecture on Abstracts for Conferences. Write and workshop an abstract.	Continue programming, collect empirical data, if appropriate.
Friday, October 30, 2020	Write abstracts, workshop and submit.	
Wednesday, November 4, 2020	Lecture 08: Journals, Conferences and Publications. Studio: Choose a journal or conference. Research the typical articles. Outline the structure. (Cycle chapters 1-3 through committee members in cascading fashion until all have approved.)	Get final approval from chair and committee on chapters 1-3 and outline of chapter 4.
Friday, November 6, 2020	Write a paper for a conference, based on expected outcome. (Cycle thesis chs 1-4 through committee members in cascading fashion until all have approved.)	
Wednesday, November 11, 2020	Lecture 09: Guest TBA*. Studio: Write a paper for a conference, based on expected outcome. (Cycle thesis chs 1-4 through committee members in cascading fashion until all have approved.)	Write proposal/abstract which "summarizes" the (projected) work and outcome.
Friday, November 13, 2020	Write a paper for a conference, based on expected outcome. (Cycle thesis chs 1-4 through committee members in cascading fashion until all have approved.)	
Wednesday, November 18, 2020	Lecture 10: Guest TBA. Write a paper for a conference, based on expected outcome. (Cycle thesis chs 1-4 through committee members in cascading fashion until all have approved.)	Submit a conference or journal proposal/abstract .
Friday, November 20, 2020	Studio: Cycle through committee members in cascading fashion until all have approved. Submit an abstract that "summarizes" the expected outcome of the project.	
Wednesday, November 25, 2020	Thanksgiving Break - no class today	Enjoy Break, prepare for final presentation.
Friday, November 27, 2020	Thanksgiving Break - no class today	

Wednesday, December 2, 2020	Send the revised abstract, hypothesis, research objectives, final Chapters 1, 2, & 3, and preliminary results of Chapter 4 to all committee members and Professor Studio: Prepare final presentations. See below.	Prepare Final Presentation
Friday, December 4, 2020	FINAL PRESENTATION (<20 slides - use template file). Title, 2-3 slides background; 6-8 slides methodology; 5-8 slides on initial research results. Email <i>presentation</i> and chapters 1-3 to Professor Schiler, Chair and Committee	

Guest Lecture Menu (vote for two)

Mark Gangi, independent sustainable architecture firm
 Kim Wiebe-Fifer, Buro Happold, head of sustainable division in LA
 Erin McConahey, principle in Ove Arup, Los Angeles
 Ilaria Mazzoleni, SCI-Arc, biomimicry, sustainability
 Behnisch Arkitekten, (showing John & Frances Angelos Law Center)
 Steve Dwyer, Army Corps of Engineers, Los Angeles Watershed
 Albert Sawano, Synchronis.
 Travis Longcore, Urban Forestry, Urban Light Pollution / Dark Sky
 Lorcan O'Herlihy, COTE award buildings
 Enoch Chow, Steven Ehrlich, Los Angeles
 Michael Lehrer,

Field Trip Menu (vote for two) if COVID allows

Field Trip to Cathedral, Disney, MOCA, Broad
 Field Trip to Main Library, Biltmore, AC Martin
 Field Trip to LACMA
 Field Trip, Energy Resource Center, SoCal Gas, Downey
 Field Trip, Southern California Edison, CTAC