

University of Kansas
School of Architecture, Design & Planning

ARCH 701
RESEARCH METHODS IN ARCHITECTURE
Spring 2011

Wednesdays, 7:00pm – 9:50pm
Room: Lindley 412

3 credits / G
Class Number 59130

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Course Description & Objectives

This course introduces students to architectural research as both a professional and scholarly activity, which constitutes systematic inquiry as a means of answering questions related to the creation of the built environment. It provides an overview of theories and methods that seek to clarify the relationship between people and places and a range of techniques on gathering, assessing, and interpreting information for such an inquiry. These techniques include, among others, historical, archival, ethnographical, observational, experimental, simulational, survey, mapping, statistical, and qualitative analysis methods. Students acquire skills in applying these techniques in design, programming, fabrication, and evaluation of places in particular, as well as in scholarly investigation of architectural issues in general.

As an introductory course, it is intended to provide you a foundation for reading, understanding, and using architectural research, and for taking advanced courses in research methods. You will develop skill in developing strategies to rigorously investigate

research questions and critically assessing the strengths and weaknesses of various research methods and quality of research projects.

Content and Structure

The course has several components: a research project, lectures and discussions, and a written research report. Class sessions will consist of discussions on a variety of research techniques and the progress of your research project.

Initially, we will discuss why we need research in design, what constitutes research in architecture, whether research is different from design, and how research can be applied in design. We will also explore the potential for understanding design as a mode of research inquiry.

As a discipline, architecture draws from a broad base of academic traditions: the natural sciences, the social sciences, and the arts and humanities. As a result, the sheer breadth of knowledge that relates to architecture can present a significant challenge for architectural researchers and those who would apply research in practice.

Unfortunately, the types and content of inquiry that constitute the discipline of architecture tend to reify themselves behind conceptual firewalls/barriers that prevent a robust and holistic discourse from emerging. Thus we will discuss this range of latent aspects in generating new knowledge in any discipline, such as the range of assumptions about the material and human reality that underlie different systems of inquiry, research design and strategy, and research quality.

The remainder of the course will systematically consider a wide array of specific research tactics – data collection and data analysis methods - that can be utilized in generating knowledge in different domains of architecture.

Course Readings

The readings provide general discussions of various research tactics and published examples of each. It is highly **recommended** referring to the following text, available in the **Hatch Library Reserve**, for research strategies & tactics.

Linda Groat & David Wang (2002) Architectural Research Methods. New York: John Wiley & Sons, Inc.

You may also refer to the following texts, available at KU Libraries, too.

Robert Sommer & Barbara Sommer (2002) A Practical Guide to Behavioral Research: Tools and Techniques. New York: The Oxford University Press.

Henry Sanoff (1991) Visual Research Methods in Design. New York: Van Nostrand Reinhold.

John W. Creswell (2003) Research Design: Qualitative, Quantitative, and Mixed Method Approaches. 2nd Edition. Thousand Oaks, CA: Sage Publications.

John Zeisel (1981) Inquiry by Design: Tools for Environment-Behavior Research. Monterey, CA: Brooks/Cole Publishing Co.

Copies of other **recommended** readings on specific research **examples** are available on the **Course Blackboard**. Information on how to use Blackboard is available at:

http://www.ku.edu/~ids/docs/Blackboard-Student_Essentials.doc

Course Assessment

Assessment is based on a semester-long research project and class participation. Your performance will primarily be assessed by the quality of your research project and the level of your engagement in it, evaluated in an on-going basis.

Research Project: This is the key assignment of the class, which is designed to help you understand how to conduct a research project and to advance your thinking about your own research interests in a 'hands-on' manner. The project is especially designed to go hand-in-hand with your Comprehensive Studio. You are given a research question to investigate, derive design principles from the study, to apply those principles into your own Studio project, and to test the validity of your design decisions or design hypotheses.

The research project should be undertaken in **groups**. Each group should have **four** members, ideally from the same Comprehensive Studio. I expect a very high quality final product, and the final grades will be equally distributed among the group members. If you want to see different weightings be assigned to reflect each member's level of contribution, each group should discuss that with the instructor before May 10, 2011.

The research project is conducted in several stages, and there will be a **series of submissions** to take you on this path step by step. You will be given specific instructions on how to work on these assignments. Each submission will be assigned a letter grade and the final grade will reflect the cumulative effect of these. However, it is expected that you will continue to improve these different steps of the project, so that your effort is clearly reflected in the final report, which will be noticed and rewarded.

All submissions should be in 8.5 x 11 **PDF versions sent to the Teaching Assistant via e-mail by 09.00pm on the day of the submission.** Names of the Group members and the submission title should be clearly identified on the cover page. Include a list of sources of reference, if any.

Grading: The Research Project will get 90% of the final grade, which will be determined as follows:

Initial Observation:	15%
Interview Data:	15%
Simulation- Phase 1:	15%
Simulation – Phase 2:	15%
Design Implications:	15%
Design Hypotheses:	15%
Class Participation:	10%

Participation: This includes your participation in class discussions and your enthusiastic participation in the **debriefing sessions** with the instructor. Since this subject of research methods is an unfamiliar territory to you, it is important to keep an on-going discussion with your instructors regarding your understanding of the subject. Consequently, a greater degree of ‘coaching’ is necessary. Thus, it is imperative to utilize the in-class meetings, assigned debriefing sessions, and the instructors’ office hours to the fullest.

Attendance: Attendance at all class meetings is mandatory. Three absences without prior

approval will drop your final grade by one grade point.

Schedule of Classes & Submissions

February 02	Introduction & Assignments
February 09	Experiments, Simulation & Observation Techniques (Group+ Question+ Building)
February 16	Interviewing Techniques
February 23	Group Work / Debriefing (Initial Observation Due)
March 02	Q 1- Simulation Workshop
March 09	Group Work / Debriefing (Interview Data Due)
March 16	Group Work / Debriefing (Q1- Simulation 1 Due) (Q 2 - Design Principles Due)
March 23	SPRING RECESS
March 30	Group Work / Debriefing (Q1- Design Principles Due)
April 06	Q2 - Simulation Workshop
April 13	Group Work / Debriefing (Q2 - Simulation 1 Due)
April 20	Discussion Session 1 (Q1 & Q2 Design Hypotheses Due)
April 27	Group Work / Debriefing (Q 1 & Q 2 – Simulation 2 Due)
May 04	Discussion Session 2
May 11	Research Report (Final) Due

Research Questions

Student teams (04 students from the same studio in a team) will pick one of the following research questions to investigate as a semester-long project. The outcome of the research study will become a part of their Comprehensive Studio documentation requirement.

Research Question 1: Building Envelop Study

Your team is required to select a buildings with the help from your **Comprehensive Studio Instructor** for a detailed study of its skin/envelop system and to derive a set of design principles that will guide the design of your own studio project's skin/envelop system. You are supposed to follow the steps given below in conducting the study. The due dates for specific steps are also given below. **The first four steps should be conducted as a team and the last two steps should be performed individually.** Grades will be assigned separately for team work and individual work, and your final grade will be determined by both.

Initial Observations (February 23):

During your first visit to the selected building, you will make a set of hypotheses with regard to the architect's design intentions that may have led the design of the particular skin/envelop system and its tectonic articulation. These design intentions may include a combination of the following: climate responsiveness, natural light/ventilation use, energy efficiency, programmatic requirements of the internal function(s) of the building and its spaces, user comfort levels, specific properties of the materials used, structural purposes, pure formal/visual aesthetic reasons, symbolic/imagery intentions, urban contextual

response, establishing external context/internal spatial connections, and the like. Report your hypotheses, supplemented with sketches and photographs, with a brief introductory description of the building, its function, and location.

Collect technical details of the envelop system as well. You may find the relevant information from the person-in-charge of the maintenance of the building, from the architects themselves, published literature of the building, or from manufacturer catalogues. Some information may be available on-line. You also can prepare a set of drawings of the envelop system and its specific details based on your own on-site observations.

Interview Data Collection (March 09):

In this step, you will interview the architects and users of the building in order to test the accuracy of your initial observations and hypotheses of the design intentions of the envelop system of the selected building. The interviews with the architects may lead to a reformulation of your hypotheses of the design intentions and give you insight into what to do and not to in making decisions on envelop system design. You will also interview the users of the building – who work/live there, who take care of the building, and who visit the building, in order to find out what they think of the building and the performance in terms of the design intentions listed above. You could conduct a range of research techniques, including surveys, structured interviews, cognitive mapping, etc, for this purpose. You may also conduct more organized observations using techniques such as activity mapping. Report your findings and

the evaluation of the success of architects' design intentions, based on the findings.

Simulation Research – Phase One (March 16):

Using a suitable software program, you will run a simulation of the climatic responsiveness and energy efficiency of the building envelop to investigate the degree to which the architects of the building achieved their design intentions with regard to the energy /climatic performance of the building. Here, you will also be testing your own hypotheses of this aspect. A workshop on the use of EcoTect Software will be conducted. Report your findings supplemented with relevant graphics.

Deriving Design Implications (March 30):

Based on the findings of above research investigations on the selected case study, derive a set of principles that could guide the design of building envelop systems, such as of your own Comprehensive Design Project. Use published literature on similar research studies and case studies to support your inferences and conclusions. Report your derived design principles supplemented with relevant graphics.

Design Hypotheses of your own building envelop (April 20):

This particular step is specifically about your own individual design project and, therefore, **should be carried out individually**. By this time you have already begun to detail out the tectonics of your own studio project. You are designing your building envelop system. What are your intentions behind this design? What factors determine the design decisions? You are making a range of design decisions (design hypotheses) on the building envelop

system assuming that your design would respond to a range of factors and that your design would perform in certain ways, when it is constructed and occupied. Write down those design intentions/hypotheses and the factors that guide them, illustrated with relevant graphics. Articulate how the design principles derived from the previous building study have informed your design intentions.

Simulation Research – Phase Two (April 27):

This particular step is specifically about your own individual design project and, therefore, **should be carried out individually**. Using suitable software programs, run a simulation analysis of the climatic responsiveness and energy performance of your building envelop system to test whether it would perform as you intended. Indicate your findings and what changes you may make to the design to improve the performance of the envelop system. Illustrate your report with relevant graphics.

Final Research Report (May 11)

Please submit a report containing all of the above submissions. You may make necessary revisions to the previous submissions before including them in this Final Report.

Research Question 2: Social Space Study

Your team is required to select a building with the help of your **Comprehensive Studio Instructor**, for a detailed study of its response to its social context and to derive a set of design principles that will guide the design of your own studio project's response to the social context. You are supposed to follow the steps given below in conducting the study. The due dates for specific steps are also given below. **The first three steps should be conducted as a team and the last three steps should be performed individually.** Grades will be assigned separately for team work and individual work, and your final grade will be determined by both.

Initial Observations (February 23):

During your first visit to the selected building, you will make a set of hypotheses with regard to the architect's design intentions on the social use of the public spaces in and adjacent to the building. You should select a specific interior space and its adjacent exterior space of the building for the analysis. Your observations should focus specifically on the degree of sociality generated in the public space through the design interventions. Some factors you may look at include: Role/function of the public space; the degree of use/activity of the space; program of the spaces; sense of orientation and flow of traffic through spaces; the spatial and tectonic articulation of the threshold (façade/skin, entry, etc) that separates the two spaces (interior and exterior); defensibility of the space (safety/security/natural surveillance/vandalism, etc); socio-cultural factors of the users; degree of connectivity (physical/visual/symbolic) of the space to other urban contextual factors; climatic responsiveness; material use; pure

formal/visual/aesthetic decisions; and design elements used. Report your hypotheses, supplemented with sketches and photographs, with a brief introductory description of the building, its function, and location.

Collect technical details of the spaces studied as well. You may find the relevant information from the person-in-charge of the maintenance of the building, from the architects themselves, published literature of the building, or from manufacturer catalogues. Some information may be available on-line. You also can prepare a set of drawings of the spaces and specific details based on your own on-site observations.

Interview Data Collection (March 09):

In this step, you will interview the architects and users of the building in order to test the accuracy of your initial observations and hypotheses of the design intentions of the public spaces of the selected building. The interviews with the architects may lead to a reformulation of your hypotheses of the design intentions and give you insight into what to do and not to in making decisions on public space design. You will also interview the users of the building – who work/live there, who take care of the building, and who visit the building, in order to find out what they think of the spaces and their performance in terms of the design intentions listed above. You could conduct a range of research techniques, including surveys, structured interviews, cognitive mapping, etc, for this purpose. You may also conduct more organized observations using techniques such as activity mapping in the spaces.

Deriving Design Implications (March 16):

Based on the findings of above research investigations on the selected case study, derive a set of principles that could guide the public space design of a building, such as of your own Comprehensive Design Project. Use published literature on similar research studies and case studies to support your inferences and conclusions. Report your derived design principles supplemented with relevant graphics.

Design Hypotheses of your own building spaces (March 30):

This particular step is specifically about your own individual design project and, therefore, **should be carried out individually**. By this time you have already completed the schematic design of your studio project. What are your intentions behind the design of its public spaces? What factors determine the design decisions? You are making a range of design decisions (design hypotheses) on the spaces assuming that your design would respond to a range of factors and that your design would perform in certain ways, when it is constructed and occupied. Write down those design intentions/hypotheses and the factors that guide them, illustrated with relevant graphics. Articulate how the design principles derived from the previous case study have informed your design intentions.

Simulation Research Design – Phase One (April 13):

This particular step is specifically about your own individual design project and, therefore, **should be carried out individually**. Develop a research design to test your design hypotheses/intentions regarding the use of its public spaces. You will either make a scaled-

mock up of these spaces or a virtual model of it. You should plan to interview/ survey the opinions of 10 non-architecture students and 10 architecture students with regard to the social function of your spaces. Your interview/survey questions should be carefully crafted to evaluate a range of design performance criteria of these spaces. These criteria will be based on the findings of your case study and your own design intentions. Submit the research design proposal describing the steps of the research, criteria evaluated/tested, and the list of questions/survey format.

Simulation Research Design – Phase Two (April 27):

This particular step is specifically about your own individual design project and, therefore, **should be carried out individually**. Conduct the research project. Report your data and the findings derived from the analysis of interview/survey data. Indicate any problems you may have encountered in the process and what implications that may have created for your findings. Based on the findings, reflect on the degree of validity of your design hypotheses/intentions in relation to the public space design in your own studio project. What changes would you make in your design in light of the findings of this simulation research? Indicate your reflections and design changes, if any, with relevant illustrations.

Final Research Report (May 11)

Please submit a report containing all of the above submissions. You may make necessary revisions to the previous submissions before including them in this Final Report.

KU and SADP POLICIES

Students with Disabilities

The KU Office of Disability Resources (DR) coordinates accommodations and services for all eligible students with disabilities. If you have a disability and wish to request accommodations and have not contacted DR, please do so as soon as possible. Their office is located in 22 Strong Hall; their phone number is 785-864-2620 (V/TTY). Information about their services can be found at <http://www.disability.ku.edu/>. Please also contact me privately in regard to your needs in this course.

Academic Misconduct

Academic misconduct by a student shall include, but not be limited to, disruption of classes; threatening an instructor or fellow student in an academic setting; giving or receiving of unauthorized aid on examinations or in the preparation of notebooks, themes, reports or other assignments; knowingly misrepresenting the source of any academic work; unauthorized changing of grades; unauthorized use of University approvals or forging of signatures; falsification of research results; plagiarizing of another's work; violation of regulations or ethical codes for the treatment of human and animal subjects; or otherwise acting dishonestly in research. When academic misconduct is alleged, the clear university policies and procedures expressed in the academic misconduct section of the student handbook, available at www.studenthandbook.ku.edu will be followed. Look specifically at the section on "Codes, Policies, Laws, and Guidelines" : <http://www.studenthandbook.ku.edu/codes.shtml#Academic%20Misconduct>.

Religious Holidays

Any student in this course who plans to observe a religious holiday which conflicts

with the course schedule or requirements should contact me at the **beginning of the semester** to discuss alternate accommodations.

Prerequisites

If any enrolled student has not completed all the prerequisites for the course, they may be administratively disenrolled unless they have a previously approved petition.

Disclaimer

The schedule and requirements for the course presented in this syllabus are subject to change in the event of extenuating circumstances.

LIST OF SOME USEFUL RESEARCH JOURNALS

Journal of Architectural and Planning Research
NA 1. J 68 Art & Architecture

Journal of the Society of Architectural Historians
NA 1. A 327 Art & Architecture

Journal of Architectural Education
NA 1. J 77 Art & Archi./ Hatch

Environment & Behavior
HM 206. E 5 Watson

Journal of Environmental Psychology
BF 353. J 68 Watson

Design Studies
NA 1. D 47 Art & Architecture

Traditional Dwellings & Settlement Review
NA 7117.5 .T 73 Art & Architecture

Journal of Architectural Engineering
TH 1. J 67 Art & Architecture

Journal of Interior Design
NK 1700. J 68 Art & Architecture

Journal of Design History
NK 1175. J 68 Art & Architecture

Health Environments Research and Design Journal----- Hatch

Environment & Planning A: City Planning
HT 166. E 55 Watson

Environment & Planning B: Planning & Design
NA 2005. E 58 Art & Architecture

Environment & Planning D: Society & Space
H 1. E 58 Watson

Habitat International
GF 101. H 28 Anschutz

Journal of Architecture
TH 4. C 48 Art & Architecture

Journal of Planning Literature
Z 5942. J 68 Art & Archi./ Hatch

Journal of Environmental Planning and Management
NA 9000. P 58 Art & Architecture

Indoor and Built Environment
TA 170. I 53 Engineering

Applied Acoustics
TA 365. A 6 Engineering

Ergonomics
TA 166. E 7 Engineering

Journal of Housing Research
HD 1361. J 66 Watson

Cities
HT 119. C 563 Watson

Sage Urban Studies Abstracts
HT 51. S 24 Watson

International Development Planning Review
HT 169.5 T 5 Watson

Environment and Urbanization
HT 243. D 44 E 58 Watson

Urban Geography
HT 101. U 74 Watson

Journal of Urban Affairs
HT 101. J 65 Watson

Urban Studies
HT 103. U 7 Watson

Journal of the Community Development Society HN 1. C 63 Watson	Material History Review F 1021. N37a Watson
Community Development 302.3405 C 737 Anschutz	Pioneer America E 161. p 56 Watson
Transportation Research D: Transport & Environment TA 1001. T 725x Engineering	Visual Anthropology GN 347. V 57 Watson
Urban Anthropology HT 101. U 6723 Watson	Visual Anthropology Review GN 347. S 86 Watson
Urban History HT 101. U 675 Watson	Winterthur Portfolio N 9. W 52 Art & Architecture
Journal of Urban History HT 101. J 68 x Watson	Space & Culture (International Journal of Social Spaces) Electronic Resource
Landscape GF 1. L 35 Anschutz	Journal of Urban Design Electronic Resource
Landscape & Urban Planning QH 75. A 1 L 35 Anschutz	Worldviews: Environment, Culture, Religion Electronic Resource
Landscape Architecture SB 469. L 3 Anschutz/ Hatch	Architecture, City and Environment Electronic Resource
Landscape Design SB 469. I 59 Anschutz	Journal of Housing and the Built Environment Electronic Resource
Land Use Policy KF 5698. Z 95. C 68 Law Library	Environment, Development and Sustainability Electronic Resource
Cultural Anthropology GN 301. C 85 Watson	Journal of Light & Visual Environment Electronic Resource
Journal of Cultural Geography GF 1. J 68 Watson	Journal of Environmental Policy & Planning Electronic Resource
Journal of American Folklore GR 1. J 8 Watson	Housing Studies Electronic Resource
Material Culture E 161. P 56 Watson	Intelligent Buildings Electronic Resource