

University of Kansas  
School of Architecture, Design & Planning

**ARCH 701**  
**RESEARCH METHODS IN ARCHITECTURE**  
**Spring 2012**

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

3 credits / G  
Class Number 58537

Instructor: Kapila D. Silva, PhD  
Office: Marvin Studios 132  
Office Hours: T 3.00pm - 5.30pm  
E-mail: [kapilads@ku.edu](mailto:kapilads@ku.edu)

Teaching Assistant : Julie Lawless  
Office : Snow Hall 217  
Office Hours: TBA  
E-mail : jumawila@ku.edu

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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, interpreting, and comparatively evaluating relevant information for such an inquiry. These techniques include, among others, historical, archival, ethnographical, experimental, simulational, survey, mapping, statistical, and qualitative analysis methods. The course also provides you an understanding of the role of applied research in determining function, form, and systems and their impact on human conditions and behavior.

### **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. 2<sup>nd</sup> 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**.

## Course Assessment

Assessment is based on 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 in order to reflect each member's level of contribution, each group should discuss that with the instructor before May 10, 2012.

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 a **suitable format** (8.5 x 11 or 11 x 17 or other format) **hard copy version** and are **due at the beginning of the class 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 final grade will be determined as follows:

Assignment 1	15%
Assignment 2	15%
Assignment 3	15%
Assignment 4	15%
Assignment 5	15%
Assignment 6	15%
Assignment 7	10%

**Participation:** This includes your enthusiastic participation in class discussions and in the assigned research task. 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 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

January 18	Course Introduction; Interpretive-Historical Research
January 25	Group Meetings/Work (E-mail team members names)
February 01	Ethnographic Research / Research Ethics <b>(Assignment 1 due)</b>
February 08 & 15	Group Meetings/Work
February 22	Typological Research <b>(Assignment 2 due)</b>
February 29	Group Meetings/Work
March 07	Sustainable Design Research <b>(Assignment 3 due)</b>
March 14	Group Meetings/Work
March 21	SPRING RECESS
March 28	Design Hypotheses & Evidence-based Design <b>(Assignment 4 due)</b>
April 04	Individual Work
April 11	Simulation Research <b>(Assignment 5 due)</b>
April 18	Individual Work
April 25	Course Review <b>(Assignment 6 due)</b>
May 02	Individual Work
May 09	<b>Assignment 7 Research Report (Final) Due</b> (E-mail a PDF version to the instructor by 9.00pm)

## Research Project

Student teams (**04 students from the same studio in a team**) will investigate the following research questions in relation to the specific **Place Type** that you will be designing in the studio. The outcome of the research study will become a part of your Comprehensive Studio documentation. **The first four 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.

You are expected to **consult your Comprehensive Studio Instructor** in conducting these investigations. Studio Instructors will be able to provide you with appropriate case studies/precedents, reading materials, and other useful sources and contacts of information.

### Research Task 1 (due February 01):

#### **Interpreting the Place Type**

Study the key socio-cultural, political, and urban contextual roles played by the particular place type that you will be designing over its course of history, with particular attention given to the contemporary times. The study should focus on four specific questions: (a) how has this place type emerged and evolved responding to what socio-cultural and political issues in the society; (b) how has this place type become a catalyst for growth and/or change in its physical context and the urban fabric; (c) how have architects who worked on this place type interpreted its societal and contextual role and expectations in their designs; and (d) what are the key expectations that this place type is supposed to deliver in today's societal and physical context with regard to your own project's site and community.

You may need to locate specific precedents of the place type for this investigation. Select at least **04 precedents** that have made significant impact on its urban and societal context. Read architects' own reflections and writings of other architectural critics on how the designers interpreted the societal and contextual expectations of those place types.

Student teams from the same studio may decide either to divide the four specific questions among themselves to focus on or to investigate all four questions within each team.

*Recommended:* Groat & Wang: Chapter 6- Interpretive-Historical Research

### Research Task 2 (due February 22):

#### **Defining the User Needs**

Study the user/stakeholder objectives, needs, and expectations of the place type and clearly develop and define the program for the studio project. With the help of your Studio Instructor, identify the different groups of your clientele, develop a list of programmatic aspects you want to discuss with the client and user groups, and devise a questionnaire. If possible, try to **identify four different groups of users**, whom four student teams in the same studio could interview separately. Interview and/or survey the client/user groups and report the findings. You also can observe the current behavior of a key user group in a specific space of or within the place type, and use the data to understand how users interact with their setting or function within specific spaces.

If you do not have direct access to the user groups/client of your specific project, locate and talk to users of a similar project. For example, if your project is a hypothetical film school project and thus does not have an

identifiable client, interview students and faculty at KU film or theater school.

You could use a range of research techniques, including surveys, structured interviews, focus group interviews, cognitive mapping, etc., for this purpose. You may also conduct more organized observations using techniques such as activity mapping.

*Recommended:* Groat & Wang: Chapter 7- Qualitative Research and Chapter 8- Correlational Research

### Research Task 3 (due March 07):

#### **Typological Analysis**

Most place types have a generic typology in which certain functions and spaces are organized in a fairly similar manner across different buildings of the same place type. These are Core design attributes that remain constant in any given design of the specific place type. In the meantime, all other functions and spaces change in response to architect's design preferences and other contextual and programmatic requirements. These Peripherals are what give architects greater design freedom. Do you think the place type you design too have such a generic typology, in which there are Core design attributes that remain constant and other Peripheral design attributes that change depending on the context, program, and designer preference? Are there single or multiple typologies for the place type? What factors have determined the emergence of such typologies? If your place type does not have specific typologies, what are the reasons for it?

Each team should **select 04 precedents** of the place type designed within last 20 years. Consult your own Studio Instructor to determine the best precedents for this purpose. Locate plans and sections of those precedents. Develop abstract analytic

diagrams of the plans and sections, identifying the essential Plan Configuration, Sectional Configuration, Primary Circulation Pattern, Program Distribution Pattern, and Served/Service Spatial Pattern for each precedent. Compare and contrast the patterns of the precedents. Do you see any commonalities in each pattern across the selected precedents? Derive a common abstract typology or typologies for the place type based on these patterns. Identify the Peripheral design attributes that do not play any significant role in determining the generic place typology. Discuss what factors may have determined the emergence of the generic typology/typologies for the place type. Include the plans, sections, photos, and your diagrams for each precedent.

### Research Task 4 (March 28):

#### **Sustainable Design Principles**

The Living Building Challenge and Biophilic Design are two approaches that lead the discussion of sustainable design today. You will study these approaches in-depth and identify the ways how these approaches would impact the design of your selected place type. **Each team should pick 04 specific principles** out of the 20 principles included in the Living Building Challenge and other principles in Biophilic Design. Discuss how the selected principles relate to your place type and site conditions and what specific design strategies, materials, and technologies are available for achieving the desired objectives.

*Recommended:*

Jason McLennan (2010). The Living Building Challenge 2.0: A Visionary Path to a Restorative Future. Seattle, WA: International Living Building Institute.

Stephen Kellert, Judith Heerwagen, & Martin Mador (2008). Biophilic Design: The Theory,

Science, and Practice of Bringing Buildings to Life. NY: John Wiley & Sons, Inc.

Alison G. Kwok & Walter Grondzik (2011) The Green Studio Handbook: Environmental Strategies for Schematic Design. London, UK: The Architectural Press.

Research Task 5 (due April 11):

**Design Hypotheses and Evidence**

This particular step is specifically about your own individual design project and, therefore, **should be carried out individually**. Based on the findings of above research investigations on the selected place type, derive a set of principles that could guide your own Comprehensive Design Project. You are making a range of design decisions (design hypotheses) 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 (plans, sections, elevations, perspectives, analytic diagrams). Articulate how the design principles derived from the previous research tasks (on the societal and contextual role of the place type, user needs, place typology, and sustainable design principles) have informed those design intentions. **Select at the least 04 specific major design decisions to reflect upon**. If your design is not informed by the design principles derived from the previous research conducted, discuss why you did not rely on those research and, in such an event, what other research/evidence you have to support your design claims.

Research Task 6 (due April 25):

**Simulation of Building Envelope**

This particular step is specifically about your own individual design project and, therefore,

**should be carried out individually**. Mention your design intentions/hypotheses behind the design of the envelope system in your design project and how you expect it to perform. Using suitable software programs, run a simulation analysis of the climatic responsiveness and/or energy performance of your building envelop/skin 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.

*Recommended:*

Groat & Wang: Chapter 10 – Simulation and Modeling Research.

Research Task 7 (due May 09):

**Final Research Report**

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. Please e-mail the PDF version to the instructor by 9.00pm.

## **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](http://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