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/intensions 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.