

## *AAE 772L – Architectural Design VI*

**Number & Title of Course:**

AAE 772L – Architectural Design VI

**Credits**

6

**Course Description:**

Continuation of Architectural Design V, AAE 771L.

**Course Goals & Objectives:**

- To develop and refine critical design thinking skills through the use of research assignments, analysis of project specific site and programmatic criteria, site development strategies, building conceptual design, and architectural systems development.
- Within the framework of the assigned project, students will also learn and demonstrate knowledge and applications of accessibility, sustainability, and life safety issues and concerns.
- An emphasis will be placed on computer applications and modeling as advanced methods of analysis, design and documentation. Both physical and digital models will be utilized to ascertain spatial qualities of specific building design proposals.
- Additional emphasis will be placed on integrative passive and active solar techniques and other climatologically sensible design approaches.

**Student Performance Criteria:**

B.1. Pre-Design

B.2. Site Design

B.3. Codes and Regulations

B.4. Technical Documentation

B.5. Structural Systems

B.6. Environmental Systems

B.7. Building Envelope Systems and Assemblies

B.8. Building Materials and Assemblies

B.9. Building Service Systems

C.2. Integrated Evaluations & Decision-Making Design Process

**Pre-Design:** Students will be able to prepare a comprehensive program for an architectural project that includes an assessment of client and user needs; an inventory of spaces and their requirements; an analysis of site conditions (including existing buildings); a review of the relevant building codes and standards, including relevant sustainability requirements, and an assessment of their implications for the project; and a definition of site selection and design assessment criteria.

**Site Design:** Students will be able to respond to site characteristics, including urban context and developmental patterning, historical fabric, soil, topography, ecology, climate, and building orientation, in the development of a project design.

**Codes and Regulations:** Students will be able to design sites, facilities, and systems that are responsive to relevant codes and regulations, and include the principles of life-safety and accessibility standards.

**Technical Documentation:** Students will be able to make technically clear drawings, prepare outline specifications, and construct models illustrating and identifying the assembly of materials, systems, and components appropriate for a building design.

**Structural Systems:** Students will be able to demonstrate the basic principles of structural systems and their ability to withstand gravitational, seismic, and lateral forces, as well as the selection and application of the appropriate structural system.

**Environmental Systems:** Student will be able to demonstrate the principles of environmental systems' design, how design criteria can vary by geographic region, and the tools used for performance assessment. This demonstration must include active and passive heating and cooling, solar geometry, day lighting, natural ventilation, indoor air quality, solar systems, lighting systems, and acoustics.

**Building Envelope Systems and Assemblies:** Understanding of the basic principles involved in the appropriate selection and application of building envelope systems relative to fundamental performance, aesthetics, moisture transfer, durability, and energy and material resources.

**Building Materials and Assemblies:** Understanding of the basic principles used in the appropriate selection of interior and exterior construction materials, finishes, products, components, and assemblies based on their inherent performance, including environmental impact and reuse.

**Building Service Systems:** Understanding of the basic principles and appropriate application and performance of building service systems, including lighting, mechanical, plumbing, electrical, communication, vertical transportation, security, and fire protection systems.

**Integrated Evaluations and Decision-Making Design Process:** Ability to demonstrate the skills associated with making integrated decisions across multiple systems and variables in the completion of a design project. This demonstration includes problem identification, setting evaluative criteria, analyzing solutions, and predicting the effectiveness of implementation.

**Topical Outline:**

Research on Integrated Systems and Site	20% of semester
Field Trip (e.g., Phoenix or Palm Springs)	2% of semester
Pre-Design Phase	18% of semester
Schematic Design	20% of semester
Design Development	40% of semester

**Prerequisites:**

AAE 771L. Co-requisite ABS 741

**Textbooks/Learning Resources:**

- Sketchup
- AutoCAD

**Offered:**

Spring Semester, annually.

**Research**

To begin, the studio will be split into small groups to investigate the following topics:

1. **Site Documentation:** Careful production of a master site plan (digital format), overall site model (digital-format), and physical site model to be used as shared resources in studio.
2. **Office and Work Space Typologies:** Study of office building precedents in arid environments, examples of and theories behind our ever-changing notions of office work space.
3. **Building Core, Floor Plates + Circulation:** Circulation core sizing and quantity based on building occupancy. Analysis of possible floor plate organization strategies as related to work space proportions and vertical and horizontal circulation.
4. **Structural Systems:** Structural frame and spanning options with typical bay proportions and floor-to-floor heights (structural depths).

5. **HVAC Systems:** Possible mechanical systems for heating and cooling including any required heavy equipment units, necessary mechanical space, heating and cooling zoning logics.
6. **Building Code and Zoning Review:** Code and zoning analysis of our site as it pertains to necessary fire ratings and suppression methods, materials, and additional programmatic spaces (restrooms, parking allocation, lobbies, etc).
7. **ADA and Life Safety Review:** All relevant guidelines for accommodating those with disabilities and addressing life safety concerns, based on building typology, size, and occupancy.
8. **Sustainability:** Investigating daylighting proportions, self-shading skins, ventilation, and other passive systems for arid environments with diagrams and precedent studies.

All research should be compiled into a central 11x17 (landscape orientation) booklet in one week's time. The booklet should include a group cover, a well-organized and logically categorized collection of all relevant research information with appropriately referenced graphics, images and original text, and a reference bibliography. All sources should be cited.

### **Deliverables**

Each student will be responsible for producing the following design deliverables for each presentation:

1. **Physical Section Model (1/8" Scale).** This model should show a complete slice of the building including 1-2 typical "bays", building core, mechanical systems, structural systems, skin/envelope condition, and site design (from Main Street to rails).
2. **Massing Model within Larger Site Context.** Model should clearly denote building cores and uses (color-coding for example) within the overall massing of the project and contextual relationships. This can be a "flat" deliverable (rendering or drawing from a digital model).
3. **Partial Detail Floor Plans (1/8" Scale).** Partial floor plans of the areas shown in the section model (see Item 1) as needed to show "typical" conditions of retail, office, and roof/mechanical penthouse areas.
4. **Building Skin/Envelope Assembly Diagram (1/4" Scale).** A partial wall section or cutaway shown three-dimensionally (axon or perspective) that communicates all critical components and materials of building envelope and relationship of this skin to the building systems.
5. **Perspectives.** Two interior and two exterior perspectives. Should include human figures to show scale.
6. **Diagrams.** Two or three-dimensional graphics communicating the integration of the design research (site responses, spatial relationships, formal manipulations, circulation, structural system, HVAC system, sustainable concepts, code/ADA/life safety compliance).

Immediately after presentations, each student is responsible for producing a written report consisting of a summary of individual critiques and feedback. Formatting requirements will be discussed in class with instructors prior to presentations.

### **Presentations**

Presentations (refer to attached course schedule) will consist of round-robin pin-ups for feedback from external consultants specializing in design, sustainable strategies, structural systems, mechanical systems, and code compliance. The deliverables outlined above are requirements for all presentations. It is expected that these deliverables will iteratively improve in quality and overall development as the semester progresses. All deadlines and presentation dates are non-negotiable. Late project submissions will not be accepted and will be assigned a failing grade of zero (0). The only exception is to have written approval from your instructor. Approval must be obtained from the instructor a minimum of 48 hours before the final deadline.

Attendance during studio time is mandatory. Please, no cell phone calls or text messaging during lectures, field trips, critiques, etc.

### **Evaluation**

Individual assessments and review will be based on the following criteria:

1. Preparation and participation in discussions and individual reviews;
2. Ability to develop and maintain a schedule for carrying out the assignments;
3. Products and outcomes of the design process;
4. Progress through the course;
5. Comprehension of complexity of issues under consideration;
6. Ability to develop an original position with regard to the issues under consideration;
7. Appropriateness of response; and
8. Communication of ideas, both graphically and verbally.

**Academic Misconduct**—Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's function as an educational institution.

An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the *Student Academic Misconduct Policy* (approved December 9, 2005) located at: <https://www.unlv.edu/studentconduct/student-conduct>.

**Copyright**—The University requires all members of the University Community to familiarize themselves **with** and to follow copyright and fair use requirements. **You are individually and solely responsible for violations of copyright and fair use laws. The university will neither protect nor defend you nor assume any responsibility for employee or student violations of fair use laws.** Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional information can be found at: <http://www.unlv.edu/provost/copyright>.

**Disability Resource Center (DRC)**—The UNLV Disability Resource Center (SSC-A 143, <http://drc.unlv.edu/>, 702-895-0866) provides resources for students with disabilities. If you feel that you have a disability, please make an appointment with a Disabilities Specialist at the DRC to discuss what options may be available to you. If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to the instructor during office hours so that you may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach the instructor in front of others to discuss your accommodation needs.

**Religious Holidays Policy**—Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor **within the first 14 calendar days of the course for fall and spring courses (excepting modular courses), or within the first 7 calendar days of the course for summer and modular courses**, of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit: <http://catalog.unlv.edu/content.php?catoid=6&navoid=531>.

**Transparency in Learning and Teaching**—The University encourages application of the transparency method of constructing assignments for student success. Please see these two links for further information:

<https://www.unlv.edu/provost/teachingandlearning>

<https://www.unlv.edu/provost/transparency>

**Incomplete Grades**—The grade of I—Incomplete—can be granted when a student has satisfactorily completed three-fourths of course work for that semester/session but for reason(s) beyond the student’s control, and acceptable to the instructor, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. The incomplete work must be made up before the end of the following regular semester for undergraduate courses. Graduate students receiving “I” grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the time indicated, a grade of F will be recorded and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the I grade.

**Tutoring and Coaching**—The Academic Success Center (ASC) provides tutoring, academic success coaching and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, visit <http://www.unlv.edu/asc> or call 702-895-3177. The ASC building is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of the SSC (ASC Coaching Spot). Drop-in tutoring is located on the second floor of the Lied Library and College of Engineering TEB second floor.

**UNLV Writing Center**—One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 702-895-3908. The student’s Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: <http://writingcenter.unlv.edu/>.

**Rebelmail**—By policy, faculty and staff should e-mail students’ Rebelmail accounts only. Rebelmail is UNLV’s official e-mail system for students. It is one of the primary ways students receive official university communication such as information about deadlines, major campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. Students’ e-mail prefixes are listed on class rosters. The suffix is always @unlv.nevada.edu. **Emailing within WebCampus is acceptable.**

**Final Examinations**—The University requires that final exams given at the end of a course occur at the time and on the day specified in the final exam schedule. See the schedule at: <http://www.unlv.edu/registrar/calendars>.