CAL POLY
San Luis Obispo, California

Architecture

Professional Studio Syllabus

Introduction

The "Professional Studio" is a quarter long experience that combines a design studio and co-op employment. The design studio and co-op are conducted by members of the architectural firm under the guidance of an Architecture Department faculty member.

ARCH 451/2/3 Architectural Design 4.1/2/3 (5 units)
> Architectural design involving the comprehensive integration of Architectural theory, practice, design processes, and building systems with emphasis placed on mixed-use, multi-function projects set in an urban context. The design studio will meet two days a week.
>
> 5 units, Prerequisites: ARCE 316, Arch 353, or consent of department head.

ARCH 485 Cooperative Education Experience (8 units)
> The cooperative education experience will be three days a week. Co-op assignments will reflect the needs of the office while providing a variety of work experiences. Students will be invited to company wide activities that take place in the office including such activities as IDP lunches, team meetings, site visits, and continuing education seminars. When possible, assignments will parallel the studio project moving from the more conceptual to more technical.

ARCH 443 Professional Practice Activity (2 units)
> Students successfully completing a Professional Studio will enroll in a special section of Arch 443 during the winter quarter. Professional Studio students should contact the Architecture Department for details.

Professional Studio: Design

All Professional studios will address the following General and Educational Objectives. They reflect the goals the faculty have set for all fourth year design studios both on- and off-campus. Every design project by every firm each quarter is not expected to address all the bulleted items within the Educational Objectives. Design projects are expected to encompass the overall intentions of the objectives and address as many of the specific bulleted items as appropriate given the scope and goals of the project.

General Objectives

1. The project will involve the comprehensive design of a building type based on the work of the firm.

2. The project will further the student's ability and experience in architectural design that reflects the comprehensive integration of site, program, structure, and building systems.

3. The project will emphasize building design that meets applicable zoning ordinances and building codes.

4. The project will be of sufficient realism to make students aware of and prepare them to deal with the opportunities and constraints of real programs, users, and clients as they are dealt with in architectural practice.

5. The student will develop, improve and demonstrate his/her professional skills, knowledge, initiative and responsibility while working as a member of a team.

Educational Objectives

The student will demonstrate their ability to meet the following general NAAB criteria (numbered items) and the specific objectives preceded by bullets.

1 Speaking and Writing Skill
> Ability to read, write, listen and speak effectively.
>
> • Ability to communicate, both orally and in writing, design intentions at a level appropriate to an intended audience.

2 Critical Thinking Skill
> Ability to raise clear and precise questions, use abstract ideas to interpret information, consider diverse points of view, reach well-reasoned conclusions and test them against relevant criteria and standards.

3 Graphic Skill
Ability to use appropriate representational media, including computer technology, to convey essential formal elements at each stage of the programming and design process.

- Ability to develop concept and building representation skills appropriate to the design process and project.
- Ability to learn and apply graphic and presentation skills and techniques used by the firm.
- Ability to graphically communicate design intentions at a level appropriate to an intended audience.
- Ability to develop a comprehensive printed document of the team's work and products.
- Ability to develop and make a formal verbal and visual presentation of the team's design solution.

4 Research Skill
Ability to gather, assess, record and apply relevant information in the architectural course work.

- Ability to research, document and analyze architectural precedents related to a new project.
- Ability to research and document applicable building code requirements.
- Ability to research and document applicable zoning requirements.
- Ability to research and document applicable ADA requirements.

5 Fundamental Design
Ability to use basic architectural principles in the design of buildings, interior spaces, and sites.

- Understand the main stages in developing a project and their importance.
- Understand the content and role of Design Development (DD) and Construction Document (CD) packages.
- Understand the importance of developing a design process.
- Ability to apply architectural, urban design and practice theories to a design problem.
- Ability to identify and define the architectural issues of form, function, site, client and economy presented by a specific design project.

6 Collaborative Skill
Ability to recognize the varied talent found in interdisciplinary design project teams in professional practice; and work in collaboration with other students as members of a design team.

- Ability to work as a group and define roles to ensure the project is completed on time.
- Understand the consultants that are needed to complete any major project and their roles in the process.

10 Use of Precedents
Ability to incorporate relevant precedents into architecture and urban design projects.

- Obtain and draw upon the tested success of case studies.

13 Accessibility
Ability to design both site and building to accommodate individuals with varying physical abilities.

- Ability to design a building that meets the applicable ADA code requirements.

14 Sustainable Design
Understanding of the principles of sustainability in making architecture and urban design decisions that conserve natural and built resources, including culturally important buildings and sites, and in the creation of healthful buildings and communities.

- Understand the relationship between structure, construction, form, and a building's environmental impact.
- Ability to design a building whose orientation, form, configuration and construction minimizes its use of energy, water, land and natural resources.
- Ability to use LEED criteria to guide design decisions and assess the building performance.

15 Program Preparation
Ability to prepare a comprehensive program for an architectural project, including assessment of client and user needs, a critical review of appropriate precedents, an inventory of space and equipment requirements, an analysis of site conditions, a review of the relevant laws and standards and assessment of their implication for the project, and a definition of site selection and design assessment criteria.

- Ability to design for programmatic needs of moderate complexity.
- Ability to synthesize programmatic issues and translate them into a clear and appropriate architectural solution.

16 Site Conditions
Ability to respond to natural and built site characteristics in the development of a program and the design of a project.

- Understand the principles of good site planning and design.
- Ability to resolve ground plane elevations and cut and fill for sites with complex topography.
- Ability to resolve contextual issues as presented by the project.
- Ability to develop designs that meet building codes and zoning ordinances.
- Ability to design a site plan that synthesizes building configuration and orientation, typography, circulation, parking, and contextual response.

17 Structural Systems
Understanding of principles of structural behavior in withstanding gravity and lateral forces and the evolution, range, and appropriate application of contemporary structural systems.

- Ability to develop a hierarchical pattern of structural elements that resolves the forces acting upon a building.
- Ability to select and plan structural systems (basic material choices for structural elements that deal with vertical and lateral loads including shear walls as well as column and beam sizes and span depths).

18 Environmental Systems
Understanding of the basic principles and appropriate application and performance of environmental systems, including acoustical, lighting, and climate modification systems, and energy use, integrated with the building envelope.

- Ability to develop building elevations and envelopes that address thermal, lighting, and acoustical performance.

19 Life Safety
Understanding of the basic principles of life-safety systems with an emphasis on egress.

- Ability to resolve vertical circulation issues (stairs and elevators).
- Ability to meet the applicable code requirements for egress.
- Perform basic code analysis.

20 Building Envelope Systems
Understanding of the basic principles and appropriate application and performance of building envelope materials and assemblies.

- Ability to develop building elevations and envelopes that address compositional as well as thermal, lighting, and acoustical performance.

21 Building Service Systems
Understanding of the basic principles and appropriate application and performance of plumbing, electrical, vertical transportation, communication, security, and fire protection systems.

- Ability to meet mechanical space requirements (mechanical and fan room size and location placement, basic duct configuration in plan and section, cooling tower location, generic mechanical system type selection).
- Ability to accommodate vertical and horizontal plumbing cores and mechanical chases.

22 Building Systems Integration
Ability to assess, select, and conceptually integrate structural systems, building envelope systems, environmental systems, life-safety systems, and building service systems into building design.

23 Building Materials and Assemblies
Understanding of the basic principles and appropriate application and performance of construction materials, products, components, and assemblies, including their environmental impact and reuse.

- Learn to categorize and organize building information.

25 Technical Documentation
Ability to make technically precise drawings and write outline specifications for a proposed design.

- Ability to design and detail the construction of typical or primary building elements.

26 Client Role in Architecture
Understanding of the responsibility of the architect to elicit, understand, and resolve the needs of the client, owner, and user.

- Ability to design buildings that respond to the needs and values of clients, neighborhood community, and local government.

Design Outcomes

1. Case Studies
2. Site Analysis
3. Code, Zoning and ADA research and documentation
4. Design Proposal/Entitlement Package
   - Title Sheet
   - Site Plan/Landscape Plan
   - Composite Building Plans
   - Building Elevations
   - Building/Wall Sections
   - Enlarged Plans, Sections and Elevations
5. Materials Board (full-size)
6. 3D Visualization (physical or digital models)

   - Eye-level views of interior and/or exterior spaces that communicate experiential qualities
   - Eye-level and/or birds-eye views that portray site context
   - Other views that communicate building form and 3-dimensional development as desired

Design Submittal

The following materials are to be submitted by the team and are due after the final presentation on the first day of finals week.

Design Process Publication

   - Format 11 x 17 or 8.5 x 11, printed and bound
   - Use InDesign or PowerPoint to create
   - Include studio name, student names, mentor names, case studies, site analysis, code, zoning and ADA research, program and design process

Design Proposal/Entitlement Package Publication

   - Format 11 x 17 or 8.5 x 11, printed and bound
   - Use InDesign or PowerPoint to create
   - Include studio name, student names, program summary, research, analysis and design proposal

Note: Design Process & Proposal Publications may be combined.

Presentation Boards & Models

   - All teams must include some boards and may include models in their final presentation.

Digital Submissions

   - PDF or PowerPoint files of the Design Process and Design Proposal publications
   - Photoshop files of key perspective views, elevations and plans
   - PDF and/or PowerPoint files of all final presentation materials

Design Evaluation

A letter grade will be assigned at the end of the quarter based on the degree to which a student demonstrates his or her attainment of the previously stated learning objectives based on the specified student outcomes.

A Excellence in Attainment of Course Objectives
B Good Attainment of Course Objectives
C Acceptable Attainment of Course Objectives
D Poor Attainment of Course Objectives
F Non-Attainment of Course Objectives

The firm members teaching the Professional Studio should provide their grading recommendations to the Architecture Department faculty member at the end of the quarter. The recommendations should consider both the process and products of the team and the individual contributions and participation of each team member. The recommendations should be completed within 5 working days of the presentation at Cal Poly to allow grades to be submitted on-time.

The Architecture faculty member will consider the recommendations, the presentations and the submittals in determining the final grade.

Late Work

Work will not be accepted after the first day of finals week. Grades will be based only on the materials that are submitted on-time.

Design Process

The design process will be supported by lectures, seminars, field trips, and slide presentations. Members of the firm will provide weekly desk/class critiques with additional critiques as appropriate.

The Cal Poly faculty member will attend a mid-quarter presentation at the firm.

A final presentation will be made by the students at Cal Poly on the first day of finals week for the quarter.

Design Texts & References

As identified and provided by the firm.

Professional Studio: Co-op

Cal Poly and the Architecture Department recognize the benefits of work experience to shape and refine a student's career goals and created the "co-op" program to assist students in making this work experience into an opportunity for reflection as well as action. The Co-op Guidelines for the Architecture Department can be found on the department's web site within the Current Students section.

The co-op portion of the Professional Studio Program is a variation on the department's general co-op program. As such, the following describes the co-op responsibilities for Professional Studio students.

Each student taking part in the Professional Studio is involved in a co-op that will earn 8 units of credit.

It is the responsibility of every Professional Studio student to submit a report that must consist of three parts: (1) a journal, (2) a thematic paper, and (3) a sample portfolio. The content of each part is explained in more detail below.

Journal: The journal is a weekly summary of your personal reflections on your experiences on a day-to-day basis in the firm. The approximate length of the journal is one page per week, more if necessary to adequately describe the experience.

Thematic Paper: Cooperative experiences are reliant on students being placed "in the field". Therefore, the report on the work experience is based on fieldwork rather than library research. The paper is not a chronology of events or activities. It is meant to be a meaningful, reflective summary of your experience in the firm. The paper can expand on aspects of practice relating to the firm's operation that include client-architect relationships, design technology, economics of practices, and so on.

Sample Portfolio: In addition to a thematic paper and journal, students must present graphic examples of work done during the co-op in the firm.

Co-op Submittal

Each student must document their co-op experience in a three-ring binder. The Co-op Notebook is due by the end of finals week.

The co-op documentation for a Professional Studio should include the following:

- Title Page with Student Name
- Journal (see above)
  Educational Seminars attended
  Meetings Attended (Client, Team, Construction)
  Construction site visits (photos & notes)
- Thematic Paper (see above)
- Co-op related handouts or readings provided by the firm
- Sample Portfolio (see above)

Co-op Evaluation

Co-ops are "Credit/No Credit" courses. Successful completion of the course is dependent on the submittals outlined above and the evaluation of the student's co-op supervisor.

The student should go to the Co-op page of the departmental web site and download the Supervisor Evaluation form and provide it to the supervisor. Once completed the supervisor should send the evaluation to the Architecture Department faculty member acting as the co-op advisor. This should be completed within 5 working days of the presentation at Cal Poly to allow grades to be submitted on-time.

Other Requirements

Other requirements as described in the Co-op Guidelines do not apply for students participating in a Professional Studio co-op.

For example, there is no "debriefing" interview required at the end of the quarter for the Professional Studio Co-op. The midterm meeting with students at the firm will include a discussion of the co-op experience and substitute for the end of quarter debriefing.