ARCHITECTURE AND COMMUNITY DESIGN PROGRAM

Academic Program Review

Self-Study
I. Mission and History

Mission

Please see discussion of Mission in main Department section of this document.

History

Please see discussion of Program origins and recent history in main Department section of this document.

Learning Goals and Outcomes

What, in general terms, are the goals of the undergraduate and graduate instructional programs?

1. Students will gain a broad understanding of the historic development of architecture and cities and an overview of theories, analyses and criticisms related to historical buildings, landscapes and cities.
2. Students will gain technical skills of graphic communication, analysis and representation, space planning, structure and material, and the role of society and culture in the process of architectural design.
3. Students will gain knowledge and understand the importance of using architectural skills to work with diverse communities both locally and internationally to create positive social change in the built environment.
4. Students will learn about the various factors that affect the relationship of ecology and environment to cities and buildings.

What are the student learning outcomes (SLOs) for each of these goals (in other words, what should students know, think, or be able to do as a result of completing the program)
<table>
<thead>
<tr>
<th>ARCD Program Goal</th>
<th>Relevant ARCD courses</th>
<th>Student Learning Outcomes</th>
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<tbody>
<tr>
<td>1. Students will gain a broad understanding of the historic development of</td>
<td>101: History of Architecture 1, 102: History of Architecture 2, 203: History of</td>
<td>a) Demonstrate a broad understanding of the development and trajectory of architectural history from prehistoric to contemporary times.</td>
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<td>architecture and cities and an overview of theories, analyses and criticisms</td>
<td>Architecture 3, 204: History of Architecture 4</td>
<td>b) Demonstrate a broad understanding of the concepts and terminology related to urban and architectural history.</td>
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<td>related to historical buildings, landscapes and cities.</td>
<td>110: Studio 1, 120: Studio 2, 230: Studio 3, 240: Materials &amp; Methods of Architecture,</td>
<td>c) Demonstrate ability to identify and describe the key developments in the history of architecture, landscape architecture and urban design.</td>
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<td>350: Studio 5, 250: CADD1, 270: BIM &amp; Applications, 300: CADD2</td>
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<td>2. a) Students will gain an understanding of basic visual principles, concepts,</td>
<td>340: International Projects, 372: Engineering, Design and Testing, 400: Community</td>
<td>a) Demonstrate knowledge of the key methods of visual representation.</td>
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<td>and modes of architectural representation. b) Students will learn to observe,</td>
<td>Design Outreach Studio</td>
<td>b) Demonstrate competence in using freehand and hard-line drafting, as well as three-dimensional model making as a component of visual communication.</td>
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<td>analyze and represent the built environment. c) Students will learn concepts of</td>
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<td>c) Demonstrate understanding of design methodologies and competence with architectural design.</td>
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<td>space planning, spatial and formal expression. d) Students will obtain an</td>
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<td>d) Demonstrate understanding of the fundamental concepts structure and materials in architectural design.</td>
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<td>understanding of structure and material in design and construction of buildings.</td>
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<td>e) Demonstrate strategies that promote cultural identity and human well-being.</td>
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<td>e) Students will understand the role of society and culture in the process of</td>
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<td>architectural design.</td>
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<td>3. Students will gain knowledge and understand the importance of using</td>
<td>240: Materials and Methods of Architecture, 310: Intro to Construction Materials,</td>
<td>a) Identify and describe the key concepts and working methods in the history and theory of community related architectural practice.</td>
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<td>architectural skills to work with diverse communities both locally and</td>
<td>312: Environmental Control Systems, 320: Sustainable Design, 322: Sustainable and</td>
<td>b) Demonstrate an ability to effectively use different methods of community engagement toward solving urban and architectural design problems.</td>
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<td>internationally to create positive social change in the built environment.</td>
<td>Equitable Architecture, 325: Intro to Landscape Architecture</td>
<td>c) Demonstrate an ability to effectively apply culturally sensitive architectural solutions to underserved communites.</td>
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<td>4. Students will learn about the various factors that affect the</td>
<td>240: Materials and Methods of Architecture, 310: Intro to Construction Materials,</td>
<td>a) Demonstrate a clear grasp of the concepts of climatology as it relates to architectural design.</td>
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<td>130: Concepts in Physics</td>
<td>c) Demonstrate an understanding of passive and energy efficient heating and cooling.</td>
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<td>5. Students will be introduced to the concepts and methods of civil and</td>
<td>240: Materials and Methods of Architecture, 310: Intro to Construction Materials,</td>
<td>a) Demonstrate an understanding of the principles of statics and mechanics.</td>
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<td>structural engineering</td>
<td>360: Intro to Structural Engineering, 372: Engineering, Design and Testing, PHYS</td>
<td>b) Demonstrate an understanding of the interdependence of engineering and architectural design.</td>
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<td>130: Concepts in Physics</td>
<td>c) Demonstrate an ability to analyze research data, and clearly communicate engineering concepts verbally and graphically.</td>
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<td>d) Distinguish between sustainable and non-sustainable choices in building materials and processes, in order to ensure appropriate decision-making.</td>
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What are the program’s diversity goals and objectives regarding students, faculty and program offerings?
ARCD diversity goals and objective are to attract students representing a full range of ethnic, cultural and economic backgrounds, to attract and hire faculty representing a full range of ethnic and cultural backgrounds, and to offer a curriculum that represents cultural diversity with a focus on underserved communities, within the context of an academically rigorous program preparing undergraduate students for successful application to graduate school and/or the professional workplace.

II. Curriculum General

If the program is in a department, please name all the degree programs offered solely by the department and name separately any interdisciplinary major or minor programs the department is involved in.

Please see overall department description at the start of this document.

What are the distinguishing features of the academic program?

USF's Major in Architecture and Community Design integrates an introduction to the disciplines of architecture with the social sciences and humanities. The program is grounded in the University's mission and commitment to building community for a more just and humane world. The 4-year undergraduate Major draws from the University's diverse resources and faculty to form a unique interdisciplinary program of study. It seeks to engage and foster individual creative talents, informed by a breadth of approaches and strategies for understanding the complexity of the contemporary built world. The aim is to educate students to be able to comprehend and influence our built environment and its relationship to natural systems through the discipline of design. Through this process we train students to become readers, interpreters, actors and designers of their cities, institutions, and communities. The curriculum has been carefully crafted to satisfy the entrance requirements for graduate programs in architecture and urban design and employment in the professional workplace in architecture related fields.

USF's interdisciplinary Major in Architecture and Community Design program emphasizes the critical role of design in negotiating between individual and collaborative acts of making and the larger framework of political, social, and cultural issues in the community. Students are educated to be passionate and capable professional innovators for positive change in the built environment. ARCD majors are trained to look at the built world with fresh eyes and to understand how communities function in relation to the structures that comprise them. They are guided by faculty towards a commitment to improvement of the quality of human life through improvement of place. Awareness of the crucial need for sustainable design in today’s world is fostered at every level.

Elements of the 48-unit major program include:
- Five intensive core studio courses addressing drawing and representation, metropolitan and global urban design issues, design methodology, building practice, housing, community design and institutional buildings
- The use of San Francisco and the greater Bay Area as urban laboratories to investigate design issues directly and locally including use of testing facilities and public organizations
- Training in both abstract and applied design
- Integration of the studio core within the context of liberal arts education in social sciences, math, and physics, as a preparation for graduate programs in architecture, landscape architecture and urban design, but also appropriate for any number of professional career tracks including politics, law, history, business, journalism, education or the visual arts
- Built-in semester abroad option for an international design, history, and social science semester in a foreign city
- A Bay Area and international community design outreach course focusing on real-world projects for underserved communities
- A professional practice seminar course with required internship with a local architecture related design firm
- Option of Architectural Engineering Minor, open to all majors, with additional coursework on topics of structural analysis, materials science and integration into design process
- Honors in Architecture & Community Design option for high-performing students to complete a year-long thesis project
- A small full-time faculty group augmented with adjunct faculty drawn from diverse areas of expertise within the university, government, and design profession communities
- A small cohort model of instruction (maximum 12 students per design studio).

Please additionally see the Student Learning Outcomes described in the table above.

**How many declared majors, double majors, and minors have the program had in each baccalaureate and/or graduate program over the last 5 years?**

The chart below describes these numbers – each year accounts for the largest count within that academic year:

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<thead>
<tr>
<th></th>
<th>Declared ARCD majors</th>
<th>Declared ARCD+ double majors</th>
<th>Declared ARCD minors</th>
<th>Declared ARCE minors</th>
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<td>2011-2012</td>
<td>115</td>
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<td>2012-2013</td>
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<td>2013-2014</td>
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<td>2014-2015</td>
<td>92</td>
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<td>18</td>
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<td>2015-2016</td>
<td>82</td>
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<td>10</td>
<td>24</td>
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</table>
How many degrees has the program awarded in each of the last 5 years?

The chart below describes these numbers – each year accounts for degrees awarded in the mid-year point (December degree date) as well as the summer immediately following the typical May graduation date.

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<tr>
<th></th>
<th>Bachelor of Arts in ARCD</th>
<th>USF degree with ARCD minor</th>
<th>USF degree with ARCE minor</th>
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<td>2015</td>
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<td>9</td>
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<tr>
<td>2016</td>
<td>28</td>
<td>2</td>
<td>17</td>
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</tbody>
</table>

For the period since the last review, indicate and interpret trends in enrollment, retention and graduation for your program. Based upon these data, what do you project enrollments to look like in the next 5 years? 10 years?

One of the most apparent trends from the first chart (declared majors & minors) above is the sharp drop off in 2013-2014. This was due to an Admissions Office error which affected departments campus-wide, and from which we have been slow to recover as can be seen by the continued low enrollment in subsequent years. For reasons unknown to us, the Admissions Office appears to have admitted a much fewer number of prospective students than usual, which led to much fewer numbers matriculating. We sincerely hope that the “old formula” is restored soon and that the enrollments will reach previous numbers. The greatest detriment of the low numbers is our inability to offer all the courses we believe should be offered, and that students ask for.

How does the program determine curricular content?

Curricular updates are constantly discussed among the three full-time faculty, at least twice monthly, with additional formal discussions including part-time faculty at the beginning of every semester. Significant changes to the overall curriculum are proposed or implemented up to once per year.

How are credit units assigned to courses? Do they meet the University’s Policy on credits?

Credit units are assigned following the University’s policy on credit hours per instructor contact time and time spent by students on the course work, but by observation ARCD majors typically spend at least one more hour per unit on ARCD courses than their other courses.
How does this curriculum compare with other programs nationally and internationally?

The ARCD program is a pre-professional undergraduate Bachelor of Arts program, which prepares students for entry to a professional degree program in architecture, landscape architecture, urban design or regional planning. Like other non-professional schools ours offers a broad range of courses which provide at least an introduction to the major areas of architectural study at the undergraduate level, including design, architectural history, materials and methods, and professional practice. We are different in that we offer more design studio courses (beginning in the freshman year), and include real world design/build projects with community partners as a key part of the regular curriculum. Additionally, our architectural history sequence runs over a two-year period, thereby doubling student exposure to this subject while they are concurrently taking studio design courses.

It is less straightforward to compare an U.S. undergraduate architecture program to international programs for the same age group. Different licensing and professional practice standards make architectural education regionally dependent.

What is the program’s philosophy with respect to the balance between Core Curriculum courses, service courses for other departments, and major courses?

Students are advised to select courses or pursue secondary programs outside of ARCD in a manner that supports and adds depth to their areas of interest. The university requirement is approximately one third Core curriculum, one third primary major, and the last third electives. The ARCD major has specific course requirements for a number of the Core courses, namely math must be Calculus for Liberal Arts, and lab science must be Physics, and a second Social Science course is also required. With the space for electives many students undertake minors, the most popular being Architectural Engineering, Environmental Studies, and Urban Agriculture in recent years.

III. Undergraduate Program

Please provide the Curriculum Map demonstrating the links between the learning outcomes and the courses in the program.
<table>
<thead>
<tr>
<th>Courses or Program Requirement</th>
<th>I = Introductory, D = Developing, M = Mastery</th>
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</thead>
<tbody>
<tr>
<td>ARCD 100: Introduction to Architecture &amp; Community Design (required courses in bold)</td>
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<tr>
<td>ARCD 101: Architecture History I</td>
<td>I</td>
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<tr>
<td>ARCD 102: Architecture History II</td>
<td>D</td>
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<td>ARCD 104: Fabrication Lab</td>
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<td>ARCD 110: Architecture Studio I</td>
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<td>ARCD 120: Architecture Studio II</td>
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<td>ARCD 150: Architectonics I</td>
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<td>ARCD 151: Architectonics II</td>
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<tr>
<td>ARCD 203: Architecture History III</td>
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<tr>
<td>ARCD 204: Architecture History IV</td>
<td>D</td>
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<tr>
<td>ARCD 220: Landscape Architecture Studio</td>
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<tr>
<td>ARCD 230: Architecture Studio III</td>
<td>I</td>
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<tr>
<td>ARCD 240: Materials and Methods of Architecture (formerly Studio IV)</td>
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<tr>
<td>ARCD 250: Computer-Aided Design and Drawing I</td>
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<tr>
<td>ARCD 270: BIM and Applications</td>
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<tr>
<td>ARCD 290: Introduction to Community-Engaged Practice</td>
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<tr>
<td>ARCD 300: Computer-Aided Design and Drawing II</td>
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<td>ARCD 310: Introduction to Construction Materials</td>
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<td>ARCD 312: Environmental Control Systems</td>
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<td>ARCD 320: Sustainable Design</td>
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<td>ARCD 322: Sustainable and Equitable Design</td>
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<tr>
<td>ARCD 325: Introduction to Landscape Architecture</td>
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<tr>
<td>ARCD 340: International Projects</td>
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<tr>
<td>ARCD 345SL: International Development and Community Outreach (Service-Learning)</td>
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<tr>
<td>ARCD 348SL: International Outreach Immersion (Service-Learning)</td>
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<td>ARCD 350: Architecture Studio V</td>
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<tr>
<td>ARCD 360: Introduction to Structural Engineering</td>
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<td>ARCD 370: Construction Innovation Lab</td>
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<tr>
<td>ARCD 372: Engineering, Design and Testing</td>
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<tr>
<td>ARCD 400SL: Community Design Outreach Studio (Service-Learning)</td>
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<td>ARCD 401: Architectural Theory and the Written Word</td>
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<td>ARCD 410: Portfolio Lab</td>
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<td>ARCD 430: Professional Practice/Internship</td>
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<td>ARCD 498: Thesis Preparation Seminar</td>
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<td>ARCD 499: Honors Thesis Seminar</td>
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</tbody>
</table>

1. Students will gain a broad understanding of the historic development of architecture and cities and an overview of theories, analyses and criticisms related to historical buildings, landscapes and cities.
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<th>Course</th>
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2. a. Students will gain an understanding of basic visual principles, concepts, and modes of architectural representation.
b. Students will learn to observe, analyze and represent the built environment.
c. Students will learn concepts of space planning, spatial and formal expression.
d. Students will obtain an understanding of structure and material in design and construction of buildings.
e. Students will understand the role of society and culture in the process of architectural design.
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<th>Course</th>
<th>PLO3</th>
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Are the major and minor requirements coherent or a collection of unrelated courses? Is the program structured in a logical, sequential and consistent manner?

The major requirements are coherent and structured in a logical, sequential and consistent manner. Please see a summary of offered courses and degree requirements in Appendix 2 of the ARCD program description.

Do students learn about the discipline’s historical roots and development, as well as current trends and directions?

The history of architecture curriculum examines the historical roots and development of the discipline from early cultures to the most recent times. Contemporary trends and directions in design, theory and criticism are examined in the history classes and reinforced through further discussion in the design studios. The “book end” courses, Intro to Architecture & Community Design and Professional Practice/Internship, together look at the historic evolution and contemporary approaches to the practice of architecture.

What are the core requirements for the major and for any concentrations or specialty areas?

Please see Appendix 2 for ARCD Major and Minor Requirements:

How well is this faculty able to support any concentrations and specialty areas cited in the Catalogue?

The faculty is able to fully support the specialties sited in the campus catalogue. In most cases, the specialty areas have been built around faculty research areas with well-resourced background.

How frequently are core courses and electives offered and in what sequence?

Core courses and electives are typically offered once per academic year, either in the fall or spring semester, with the exception of ARCD 104: Fabrication Lab which is offered every semester. Courses required for the major are in bold:

typical fall semester courses
ARCD 100: Intro to Architecture & Community Design
ARCD 102: Architecture History 2
ARCD 104: Fabrication Lab
ARCD 110: Architecture Studio 1
ARCD 150: Architectonics 1
ARCD 204: Architecture History 4
ARCD 230: Architecture Studio 3
ARCD 250: CADD 1
ARCD 270: BIM & Applications
ARCD 290: Community Engaged Practice
ARCD 310: Intro to Construction Materials
ARCD 312: Environmental Control Systems
ARCD 320: Sustainable Design
ARCD 322: Sustainable & Equitable Design
ARCD 325: Intro to Landscape Architecture
ARCD 350: Architecture Studio 5
ARCD 400: Community Outreach Design Studio, service-learning
ARCD 410: Portfolio Lab
ARCD 498: Thesis Preparation Seminar
(PHYS 130: Concepts In Physics)

**typical spring semester courses**
ARCD 101: Architecture History 1
ARCD 104: Fabrication Lab
ARCD 120: Architecture Studio 2
ARCD 150: Architectonics 2
ARCD 203: Architecture History 3
ARCD 220: Landscape Architecture Studio
ARCD 240: Materials and Methods of Architecture
ARCD 300: GIS for Architecture
ARCD 340: International Projects Studio
ARCD 345: International Development & Community Outreach, service-learning
ARCD 360: Intro to Structural Engineering
ARCD 370: Construction Innovation Lab
ARCD 372: Engineering, Design and Testing
ARCD 401: Intro to Architectural Theory and the Written Word
ARCD 430: Professional Practice/Internship
ARCD 499: Honors Thesis Seminar
(MATH 107: Calculus for the Liberal Arts)

**typical summer course**
ARCD 348: International Outreach Immersion, service-learning

Additionally, many Special Topics electives at both the 290 level and 390 level are offered depending on faculty availability and enrollment.

**Do students experience any difficulties in meeting graduation requirements for the program due to the frequency of course offerings?**

Students who enter the program in the fall of their freshman year have no difficulty completing the program in four years. Transfer students are advised to plan for the required number of semesters to complete the program, and so far course offering frequency has not resulted in problems. In the case of a severely under-enrolled course, faculty have usually been able to accommodate by offering the course in the form of a
Directed Study, thereby allowing the student to complete the requirement. This is not a permanent solution, however, and greater and steadier enrollment numbers can prevent this.

**What is the prerequisite sequence between lower-division and upper-division courses?**

Numbered courses (studio 1, 2 etc) generally have the lower number course prerequisite to the next higher number course.

**What is the proportion of lower-division to upper-division courses offered?**

Currently we have 16 lower division and 19 upper division courses, not including special topics that may be offered in either division.

**What are the average class sizes in core courses, required major courses and electives? Are these class sizes appropriate for the learning goals/outcomes and learning objectives of the curriculum? How do they compare to those of other programs in the University?**

University core courses are limited to 40 students. Required studio courses in the major are limited to 12 students. Required lecture courses in the major are limited to 40 students. CAD courses are limited to 18 students. Elective course have a range of 12-24 students.

These class sizes are appropriate for the learning goals/outcomes and learning objectives of the curriculum and are generally comparable to those of other departments in the College of Arts and Sciences. The exception would be studio courses, as these classes are specific to the major as well as limited by the available physical space.

**What is the mix of majors to non-majors enrolled in your program’s courses?**

Most of our program’s courses are enrolled only by ARCD majors. We have had 10 ARCD minor students (along with 111 ARCD majors) in the last 5 years, and those students are required to take some architecture studio, architecture history and elective courses. Also, while most of the 53 ARCE minors have been ARCD majors, there have been 9 non-ARCD majors minoring in ARCE in the last five years – Environmental Science, Computer Science, 5 Physics and 2 Mathematics majors. Therefore we can estimate the mix to be 85% ARCD majors and 15% others in our courses.

**What efforts are made to incorporate new perspectives, ideas and knowledge into the curriculum and to remove outmoded methodologies and viewpoints?**

New perspectives, ideas and knowledge enter our curriculum primarily by two avenues: 1) continual research by and education of our full-time faculty through conferences and other scholarly activities and events, and 2) close contact with the evolving professional
field through adjunct faculty and professional contacts. Curriculum is reviewed formally a minimum of twice per academic year at faculty meetings, and much more frequently in casual discussions among faculty and with professionals. The Program Director is tasked with leading changes to the curriculum. In ARCD, adjunct faculty desire for engagement and sense of commitment to the growth and development of the program, is rewarded with both part-time and full-time faculty members being invited to meet once a semester as a group, to discuss curricular issues and ideas for improvements. Additionally, the faculty of sub-areas (history, design, methods & materials, Computer Aided Design (CAD) in the ARCD major are encouraged to meet separately to discuss curriculum, individual course content, and relevancy to current directions in the field.

**What courses have been deleted or substantially updated in the past five years? If you know what new courses are to be offered in the next five years, please include a separate list of such courses.**

No courses have been technically deleted, but ARCD 240: Architecture Studio 4 has undergone a significant update. The need was recognized for a solid lecture course on the materials and methods of architecture, and “Studio 4” had become the place where this content was introduced, however the studio format seemed to detract from the technical nature of the content. Students expressed frustration at having design problems where they thought there should be a “technically correct answer”, and this in turn deterred them from design exploration. At the critical juncture between lower division and upper division, it was decided that the technical content needed to be delivered in a much more clear-cut way with a textbook to follow and shorter design & model-making/mock-up exercises to support the content. We have offered the newly formatted course once so far and the results seem promising.

Many new courses and emphases have been added to the curriculum in the past five years. Three new required courses: ARCD 100: *Introduction to Architecture and Community Design*, which provides an overview of the profession and related fields, helping freshmen to establish a sense for where their studies will take them, ARCD 104: *Fabrication Lab*, introducing students to the tools and procedures for physical making including lessons on resource care, and ARCD 401: *Intro to Architectural Theory and the Written Word*, a survey of important architectural theories and theorists with emphasis on developing argument. Additionally four concentration areas have been developed within the curriculum, each with new as well as updated courses: Architectural Engineering with new courses ARCD 310: *Intro to Construction Materials* and comprehensive “engineering studio” ARCD 372: *Engineering, Design and Testing*; Advanced Digital Technology category with new courses focusing on work flow such as ARCD 270: *BIM & Applications* (introducing Revit), and ARCD 300: *CADD2* updated to host rotating advanced topics such as Advanced BIM, Rhino, GIS for Architecture, and 3D terrestrial laser scanning; an area devoted to community-engaged design and outreach with new courses ARCD 290: *Intro to Community-Engaged Practice* and ARCD 345: *International Development and Community Outreach* joining in the existing *International Projects*,
What policies and practices are in place to ensure a modicum of uniformity in terms of grading standards, course content, and learning outcomes across the curriculum?

When new adjunct faculty write their syllabi, the Program Director is careful to provide the Program Learning Outcomes that should be met by that course, and any rubrics or assessment strategies that have been known to work for that course. Faculty meeting time is spent going over the trajectory of the typical student through the curriculum so that faculty are aware how their courses interact and reinforce each other.

How much and what type of writing assignments does the department require? What does the program offer its most outstanding students, e.g. honors track, capstone course, senior thesis, etc?

Writing assignments are required for all lecture format courses and some design studio courses. In Intro to Architecture & Community Design and History of Architecture classes 1 – 4, the assignments vary from short one-page response papers to three-page papers on a particular discussion question. Upper division courses such as Sustainable Design, International Projects, International Development & Community Outreach, International Outreach Immersion, Construction Innovation Lab, Engineering, Design and Testing, Community Design Outreach Studio and Professional Practice/Internship also require writing assignments in the form of design proposal descriptions, reflections on their process and experience during the process in terms of client and team experience, final reports and communications. The Portfolio Lab class requires students to work on a Statement of Purpose. The courses with the largest writing components are Architecture Theory and the Written Word and Intro to Construction Materials, in which students learn how to conduct engineering materials research and must produce a technical paper.

At the end of their junior year, students earning high GPAs in both the ARCD major (3.50 min) as well as their overall USF coursework (3.30 min) are invited to apply to the Honors in Architecture and Community Design. The Honors program is a year-long investigation into an environmental design problem leading to a thesis proposal supported by research and containing a social or environmental justice element. Other opportunities with varying and specific selection criteria include research assistantships with faculty on ongoing projects, which have led to published works.

What opportunities exist to actively involve students in learning through internships, work-study, practicum, study abroad, etc?

All students complete at least one required internship through the senior-level Professional Practice/Internship course. Many students additionally participate in
internships during semester breaks. These have been very successful as many internships become full-time employment for students upon graduation. Recent local firms and organizations have included Public Architecture, Huang Iboshi, Arkin Tilt, the City of Berkeley Planning Dept, Asian Neighborhood Design, Perkins & Will, and the San Francisco Airport Planning Dept to name a selection.

Work-study is available to outstanding students in the form of research assistantships with full-time faculty, monitors for the computer labs and fabrication shop, graders/readers for courses, and positions with the campus Facilities/Project Management team.

The curriculum is designed to accommodate studying abroad during the spring of the junior year. Students apply to any one of the 120+ universities with whom USF already has an agreement, or on rare occasions set up an arrangement with other institutions. Recent study abroad destinations have included the Danish Institute for Study Abroad in Copenhagen, the American University in Paris, Sophia University in Tokyo, Boston University program in London, University College in Dublin, Fairfield University program in Florence, and the Centre for Environmental Planning and Technology in Ahmedabad, India.

In the summer the ARCD program offers a Service-Learning immersion course open to all majors which brings USF students to work with local communities on design, building and social projects jointly with the help of local Non-Governmental Organizations. Destinations have included Zambia, Mexico, Colombia and most recently Nicaragua.

In what ways have you been able to involve undergraduates in research? How do you assess the results?

Full-time faculty are able to hire students as research assistants. In the last five years 12 students have been employed in these positions, which are coveted and selective. Results are assessed on an individual basis, with the student continuing for multiple semesters if successful and receiving specific praise in letters of recommendations for graduate school applications or employment. Any publications or other work by a professor is meant to contain acknowledgement of the contribution by each student involved in the project, including co-authorship.

How well prepared are majors for graduate study in the field?

For students interested in pursuing professional tracks in architecture and related fields, the ARCD program offers a broad and thorough introduction to the major areas of the field. As of mid-2016, we have graduated 10 classes of seniors ranging from 11 to 35 students in the class. Many do not choose to apply to graduate school right away, but 90% of those students who do apply have been successful. We have had ARCD alumni continue on to UC Berkeley, UCLA, University of Washington at Seattle, California College of the Arts, Savannah School of Art and Design, University of Southern California, Southern California Institute of Architecture, Columbia University, Rutgers
Are undergraduates interested in graduate programs in the field? What percentage are interested and what percentage actually go on to graduate studies? What other academic and non-academic fields are they entering upon?

Undergraduates are definitely interested in graduate programs in the field, but not necessarily right away after graduating college. From typical graduating classes approximately 25-30% apply to graduate schools right away, and almost all of those who apply do attend right away. Although we are not aware of all of our alumni’s movements, it appears that about a quarter of them go right away to graduate school, about half of them find employment in architecture or closely related fields, and the last quarter pursue semi-related fields such as social work, education, community organization, and so on.

Graduate Programs

We currently do not offer any graduate programs in or affiliated with Architecture and Community Design.

IV. International and Online Programs

For all USF programs taught overseas or online, please describe the curriculum. How is it similar or different to programs taught on the Hilltop campus or branch campuses?

The summer international outreach immersion program offers students the opportunity to build and/or continue design work at the actual international site of projects they have worked on during the previous academic year. In the fall semester Community Design Outreach Studio and spring semester International Projects, International Development & Community Outreach and Construction Innovation Lab courses, students work on real world projects for underserved communities located in multiple countries. This program is different from other programs taught on the USF campus in that it is integrating a real world design calendar into the academic year, connecting classroom learning to the actual sequencing of projects much as graduates might experience in professional offices. The summer course is also open to other majors, providing a true cross-disciplinary problem-solving setting.

Semester Abroad programs are created and managed by individual host institutions at each destination. Since the sponsored programs are open to all majors, they are not necessarily architecture programs that our students can plug directly into. In fact of the 120+ options, only four have architecture programs – DIS in Copenhagen, CEPT in Ahmedabad India, Boston University internship program in London and University College Dublin in Ireland. Students attending any other school will focus on general core
courses highlighting that region and resume full architecture study upon their return in the fall of their senior year.

**How was/is the program set up? How were/are classes scheduled?**

The overall structure and scheduling of the International Outreach Immersion summer course depends on the needs of the host local NGO. For example since 2007 we have worked with the NGO Viviendas León in Nicaragua to assist in design, building and social programs for rural poor communities outside the city of León. Planning for the summer student trip begins more than 6 months in advance with setting of dates and continues through the spring semester as the projects develop with the spring students. Students who attend the summer immersion are not necessarily the same as those who worked on the projects in the spring, but the course focuses as much on the service-learning aspect with reflective assignments and writings as the actual project work.

ARCD has conducted International Outreach Immersion summer courses in Nicaragua, Mexico, Colombia and Zambia. There are partnering university connections for the programs in Nicaragua, Mexico, and Colombia. The hands-on upper division, community outreach studio courses also engage international NFO partners and universities in interactive design exchanges via the Internet, through email and PDF exchange, interactive SketchUp, and Skype conferencing. These occur in dozens of places around the world; in U.S. states, South America, Central America, the Caribbean, northern Africa, sub-Saharan Africa, Middle East, South Asia, and Southeast Asia.

Semester Abroad programs are set up and scheduled completely by the host institution.

**Who has taught in the international or online programs? Overall, what has been the quality of instruction? What support services were provided by USF?**

Full-time faculty from ARCD have taught the International Outreach Immersion courses – Seth Wachtel or Hana Mori Böttger. Quality of instruction has been very high according to informal feedback as well as teaching evaluations. Support from the USF Provost’s office has been very high in approving all budgets and immersion course proposals, and support from the Center for Global Studies has been very high in sorting through logistics for all traveling students and faculty.

**What have been the results of learning outcome assessment? (If no assessment has been made, simply state this and explain why not).**

Learning outcomes are most clearly exhibited in Final Reflection Essays written by students. For the most part, the summer international outreach immersions are extremely successful with students gaining perspective not possible in non-immersion courses. Almost all students state that they are moved to participate in service in the future, and would recommend the experience to any of their peers.
Semester study abroad participants have provided similar informal feedback, and almost all recommend the experience to their peers.

V. Admission and Transfer Policies

Are there any requirements for admission to the program?

All admissions to USF are handled centrally by the Office of Admissions, with no additional requirements of portfolio or other materials. The only special condition is that students applying to ARCD must have a higher high school GPA than those entering most other programs at USF.

Are there any internal procedures for accepting credit from elsewhere (advanced placement, transfer, study abroad etc)? What are they?

All external credit from advanced placement, previous institutions and study abroad first come through the central Transfer Office where they may be assigned Core credit if applicable. Any courses that are architecture-related are given general ARCD elective credit, and then it is up to the student’s advisor (one of the three full-time faculty in ARCD) or the Program Director to identify substitution equivalents and make those requests. In the case of a student requesting advanced standing in our program due to previous coursework, after the Transfer Office accepts their coursework as general ARCD electives, we typically request that the student send images of their work in the topics they are attempting to place out of. Some combination of the Program Director, other full-time faculty and/or the instructors of the courses in question review the work examples and determine whether the student seems to have the material of that course. Then, unit credit equivalents are found in the transferring course work and substitution requests are made by the Program Director or advisor.

Are there any procedures for awarding credit to experiences other than traditional instruction (experiential learning, undergraduate research, internships, Previous Learning Assessment, etc.)?

Many non-traditional techniques are already built in to our curriculum, but if a student wishes to propose a new learning experience, it is typically accepted in the form of a Directed Study with structure, outcomes and deliverables determined together with a lead professor.

VI. Advising

Please see the general description of advising practices in the department section toward the beginning of this document. Specifically for the ARCD program, the Program
Director maintains advising quality by briefing the other advisors about new or changed offerings and providing a detailed list of courses offered in the upcoming semester. In the past year (2016) a series of advising “cheat sheets” have also been created for each semester level, so that students and advisors have a visible guide to what courses they are expected to take, how many units of credit they should have accumulated in order to graduate on time, and so on. Additionally, time between courses, special events and lectures on campus, student organization events, local field trips and even an annual ski trip have provided many informal opportunities for faculty-student interactions.

VII. Overall Academic Quality

What, in the opinion of the faculty, is the overall quality of the program?

Faculty generally agrees that the overall quality of the program is high. Faculty also agree that it is the responsibility of a program as small and nimble as ours, to constantly assess and improve all aspects of the program at the end of each semester.

How, in the opinion of the faculty, does the program compare with others nationally and internationally?

In terms of quality and depth of education the ARCD faculty feels that the program provides at least an equivalent program to others nationally. In some areas, such as required design studios, architectural history courses, community outreach, service learning, construction technology, digital technology and international study opportunities, the faculty feels that the ARCD program excels when compared to others of the same enrollment. We also have a strong emphasis on social justice issues pervasive throughout the entire curriculum instead of being treated as a special area of focus. Additionally, in recent years we are stressing the importance of systems thinking especially in the realm of ecological sustainability, responding to the call from leaders of industry that such an education is even more valuable than high levels of training in specific skills. According to their feedback, we are one of very few architecture programs addressing this.

Our program generally compares well with other programs nationally and internationally, but where it does not compare as well is in having a long history (being just 12 years old this year), a large and diverse faculty base and vast resources. In terms of number of full-time faculty, the ARCD program with only three full-time faculty relies too heavily on part-time faculty (10-12 in a typical semester).

ARCD faculty, both full and part-time, strongly feel that the facilities, both in terms of classroom space and equipment, are woefully sub-par when compared to others nationally.
Describe any special strengths and/or unique features of the program. Are there special research emphases that make a contribution to the program?

As mentioned above, one of our special strengths is the presence of a strong social justice component throughout the curriculum. This is manifest by exposing students to physical exploration of materials and constructions from an early stage in order to promote a personal investment in material and design choices, and by introducing real community partners who engage in mutually beneficial service-learning partnerships with the students.

The four-semester architectural history sequence, already unique due to its spread of global architecture themes layered over a longer period of the curriculum, is now bookended by an *Introduction to Architecture and Community Design* course in the first semester which establishes the place of the architect in the broader field and in society, and the senior-level *Architecture Theory and the Written Word* course in which students study and develop discourse techniques.

In the last two years the department has come to own a Leica ScanStation 3D laser scanner, opening up a new area of study in the realm of digital heritage preservation and structural monitoring which have been readily incorporated into our advanced level curriculum. We are not aware of any other undergraduate program training students in these techniques.

We also place great importance on place and regionally specific needs – on one hand the city of San Francisco is utilized as an urban laboratory for studio and real projects and research in the progression of architectural design studios from basic architectural drawing skills to complex architectural and urban design solutions. International immersion summer programs stem from real world projects students work on with community partners during the fall and spring semesters. A number of courses such as *Construction Innovation Lab* and *Engineering, Design and Testing* are focused on the development of site specific and culturally appropriate building techniques and technologies for developing world locations of real world projects. This research emphasis makes an important contribution to the program’s emphasis on assisting local and international underserved communities. This is also a unique demonstration of the mission of the university as a whole.

**In what areas has the program improved or deteriorated within the last 5 years? Please describe the evidence used to support these conclusions along with plans for eliminating any deficiencies (include expected timetables).**

The program has improved in all areas over the last five years, including architectural history, architecture design studio courses and sequence, construction technology, digital technology and professional preparation courses.
Please see the discussion about enrollment issues in the overall department section toward the beginning of this document. This has contributed to some deterioration of our program, as has the severe problems of lack of space and facilities, a discussion which is also gathered in the Department level section of this document.

VIII. Assessment of Student Learning

What are the program learning outcomes? Please provide access or include as hardcopies Annual Assessment of Program Learning Outcomes reports.

Please see the ARCD Program Learning Outcome maps presented earlier in this report.

What are the standards by which you measure success in achieving the learning outcomes?

The ability of students to gain admission to graduate school and the percentage entering graduate school is also another method to assess the success in achieving program learning goals. The higher the percentage of accepted applications signals a greater rate of success for the program.

The ability of students to get jobs in the field and be retained by their employers is a strong indicator. Positive feedback about a USF graduate’s abilities from an employer would also be useful information in determining the success of achieving learning outcomes. In recent years, the sites of our senior-year internships have been calling us requesting more and more of our students as interns, a highly positive outcome.

The final review/presentation at the end of each design studio is a clear indicator of whether a student has met the learning objectives of the studio. Reviewers consisting largely of professionals in the field critique and judge the level of student work. The level of student architectural design work at the final (review) stage, the percentage of students moving to the following studio, and the comments of the reviewers provides a fair measure of the success of the instruction and learning.

The Portfolio Lab class is another indicator of the level of fluency of the student work. Here students compile a portfolio of their architectural work done over three/four years in the program, which they use toward graduate school applications or job applications.

In addition to the portfolio, digital records of student work are collected for every course in an archive. Fluctuations of successes and challenges in each semester can be noted and discussed with the faculty.

How does the faculty utilize evidence from the Annual Assessment of Program Learning reports to make changes and inform them of the quality of student learning that occurs in the program?
We have just completed our first such report so we will work with the Dean’s office to develop the best action plan. In 2016 we created and began implementing a set of freshman-year and senior-year diagnostic questions which aim to measure how well students have gained technical skills, and whether we have met our curricular goals of developing environmental designers with respect for history, context and culture. It will take a number of years still until we have our first complete set of replies from a cohort who answered the questions as freshmen and then again as seniors.

**How does the program determine whether individual courses are meeting their program learning outcomes?**

Please see the earlier discussion about how the PLOs match to the individual courses. Initial feedback about a course usually comes to us informally from students actively taking the course. Subsequent formal information comes from the final work produced in the course as well as the teaching evaluations, in which many questions are asked about the perceived relevance of the course material (and not just about the teaching). Syllabi are periodically reviewed and conversations with repeating instructors lead to refinements to ensure the PLOs are met.

**What factors have facilitated or impeded the program’s ability to meet its learning outcomes?**

The lack of quality studio space, workshops, meeting space, and review space has been a major impediment to the program’s ability to meet program outcomes. The resourcefulness, patience and creativity of our dedicated faculty and staff members has facilitated our ability to meet the learning outcomes.

**What are the program’s reflections on the data on retention and persistence to graduation?**

For the first 8 or 9 years of the program’s existence we had increasing numbers of enrollment and approximately 80% or more retention following the freshman year. In the last 3 years we have suffered very low enrollment (again, due to an Admissions error) and only about 50-60% retention following the freshman year, resulting in very small class sizes of 12 to 18 students. We have reflected greatly on this, and two issues that seem critical are: 1) the physical space (we have only four studio spaces accommodating 12 students each, a fabrication shop which is also a classroom and therefore not always accessible, and a computer lab shared with two other programs resulting in its availability only on three weekdays after 3pm and shared weekends, for example); and 2) the fact that we do not have enough full-time faculty teaching core courses and providing a solid image of the big picture at all levels of the curriculum. To address the first issues, we have sent constant reminders to the administration of our needs, but cannot make progress without their full cooperation, and for the second, we also send constant messages of our need for more full-time faculty lines but in the meantime we have been
making a concerted effort to assemble a strong team of first-semester instructors, in fall 2016 for the first time this will include Prof. Seth Wachtel.

After the first year we seldom lose students, and in fact gain quite a few transfer students from other majors within USF or from other institutions. We typically welcome 2-3 new transfer students per year, usually into the second-year level but also into the first or third year levels as well. As our program becomes more well-known throughout the SF Bay Area, California, and the US, we believe students wishing for a rigorous and practical architecture education with service at its core, are seeking us out.

How are program expectations communicated to students? Are they informed as to their progress in meeting program learning outcomes?

Program expectations are communicated to the incoming freshman class at the beginning of the fall semester during the departmental and program orientations. The expectations of the architectural design studio progression complemented by the history of architecture curriculum, the building technology classes and community outreach or all enumerated and communicated to students during orientation.

Specific outcome expectations addressed by individual courses are reiterated in the syllabus of that course, and students are aware of their progress throughout courses by grades visible on Canvas, the online classroom website, or other direct feedback from the instructor.

Overall program outcomes are also reinforced every semester during one-on-one advising sessions with their assigned faculty advisers.

Has the program participated in the evaluation of any of the Core areas? Please include in the appendices the report(s).

The Program Director of Fine Arts was on the Core F committee during a Core evaluation period, in which the overall outcomes for the Core were rewritten. Currently the Art + Architecture Department Chair (Assoc. Professor of Architecture & Community Design Seth Wachtel) is Chair of the Core F committee, allowing us to ensure a close match between our Core F courses and the required outcomes of that Core designation.

IV. Faculty

Demographics

Please discuss, assess and evaluate the faculty demographic data.

The full-time faculty consists of one Asian male, one Asian female, and one White male. In fall 2016, the adjunct faculty will consist of 3 White females, 3 Asian females, 2 African-American females, 5 White males, 1 Arabic male and 1 Asian male. In total (18
faculty members) that would be exactly 50% men, 50% women, and the racial breakdown would be 50% White, 33% Asian, 11% African-American and 5.6% Arabic.

If the ideal goal with faculty demographics is to match the student demographic as closely as possible, then we should have more women and Latino/Latina faculty. However, as faculty demographics of architecture programs in the U.S. go, we believe we have a significantly diverse and representative faculty for the students to relate to.
Teaching

Please list for each faculty member in the program, the courses taught during the academic year along with the number of units and student credit hours.

This list illustrates course assignments in typical recent academic years, including both full-time and adjunct faculty, with courses required for the major in **bold**:

Renata Ancona, Adjunct

*ARCD 151: Architectonics II* (2 units)

Christopher Andrews, Adjunct

*ARCD 230: Architecture Studio III* (4 units)

Hana Böttger, Assistant Professor

*Prof. Böttger is term full-time faculty and has a greater teaching requirement than the other two full-time faculty who are tenure-track.*

*PHYS 130: Concepts in Physics* (4 units) for ARCD majors

*PHYS 130 labs* x 2 sections (2 teaching units each, no additional student credit hours)

*ARCD 310: Intro to Construction Materials* (4 units), required for ARCE minor

*ARCD 348: International Outreach Immersion, Service-Learning* (4 units)

*ARCD 360: Intro to Structural Engineering* (4 units), required for ARCE minor

*ARCD 372: Engineering, Design and Testing* (4 units)

*ARCD 498: Thesis Preparation Seminar* (2 units), required for Honors in ARCD

*ARCD 499: Honors Thesis Seminar* (2 units), required for Honors in ARCD

Maki Boyle, Adjunct

*ARCD 110: Architecture Studio I* (4 units)

Shelley Brock, Adjunct

*ARCD 150: Architectonics I* (2 units)

Catherine Chang, Adjunct

*ARCD 120: Architecture Studio II* (4 units)

*ARCD 230: Architecture Studio III* (4 units)

Steven Doctors, Adjunct

*ARCD 100: Introduction to Architecture & Community Design* (2 units)

*ARCD 203: Architecture History III* (2 units)

*ARCD 401: Introduction to Architectural Theory and the Written Word* (4 units)

*ARCD 430: Professional Practice/Internship* (4 units)

Nathaniel Eck, Adjunct

*ARCD 300: CADD 2 Topics in Advanced Digital Technology* (2 units)

*ARCD 322: Sustainable & Equitable Architecture* (4 units)

*ARCD 345: International Development & Community Outreach, Service-Learning* (4 units)

David Galbraith, Adjunct

*ARCD 110: Architecture Studio I* (4 units)

Jacob Herczeg, Adjunct
ARCD 250: CADD I (4 units)
Max Jacobson, Adjunct

ARCD 120: Architecture Studio II (4 units)
Sam Jensen Augustine, Adjunct
ARCD 312: Environmental Control Systems (4 units)
Tyler Kobick, Adjunct

ARCD 240: Materials and Methods of Architecture (4 units)
Grace Lee, Adjunct
ARCD 220: Landscape Architecture Studio (2 units)
ARCD 325: Introduction to Landscape Architecture (2 units)
Carol Mancke, Adjunct

ARCD 240: Materials and Methods of Architecture (4 units)
Paul Okamoto, Adjunct
ARCD 320: Sustainable Design (4 units)
Matthew Peek, Adjunct

ARCD 151: Architectonics II (2 units)
ARCD 350: Architecture Studio V (4 units)
Sasha Petrenko, Adjunct

ARCD 104: Fabrication Lab (1 unit), cross-listed with ART programs
Tanu Sankalia, Associate Professor
*Prof. Sankalia is Director of the Urban Studies program and therefore some of his teaching obligation is met by Urban Studies and M.A. in Urban Affairs courses.

ARCD 101: Architecture History I (2 units)
ARCD 204: Architecture History IV (2 units)
ARCD 410: Portfolio Lab (2 units)
Rafi Sarkis, Adjunct

ARCD 102: Architecture History II (2 units)
ARCD 240: Materials and Methods of Architecture (4 units)
ARCD 270: BIM & Applications (2 units)
ARCD 300: CADD 2 Topics in Advanced Digital Technology (2 units)
ARCD 350: Architecture Studio V (4 units)
Jerome Tobias, Adjunct

ARCD 250: CADD I (4 units)
Sharone Tomer, Adjunct

ARCD 101: Architecture History I (2 units)
Seth Wachtel, Associate Professor
ARCD 340: International Project (4 units)
ARCD 370: Construction Innovation Lab (4 units)

ARCD 400: Community Design Outreach Studio, Service-Learning (4 units)

Do the faculty as a whole possess the appropriate background and expertise to deliver the current curriculum?
Yes, all courses are built around the expertise of faculty members, and only adjunct faculty with appropriate background and expertise are hired to deliver them. If an appropriate instructor cannot be found for an elective, it is not offered.

**How are teaching assignments made within the program?**

The expertise and background of full-time faculty are well known to the Program Director who ultimately makes teaching assignments usually according to their requests. Adjunct faculty are interviewed by the Program Director or reassigned as appropriate.

**With regard to interdisciplinary programs, how are teaching loads negotiated and balanced between the home department and the interdisciplinary program?**

Although not academically affiliated, the Urban Studies (URBS) Program Director is a member of the ARCD full-time faculty, and due to his obligations with this new program he has not been able to teach as many ARCD courses as he might otherwise. We are still working out a balance so that the ARCD curriculum does not suffer from his absence.

**To what extent do faculty enjoy teaching the courses they teach?**

Each full-time faculty member is able to select the courses they would like to and feel best suited to teach.

Similarly, adjunct faculty are chosen for, and are offered courses that fit their areas of expertise and interest. Professionals who choose to teach in the ARCD program do so out of a desire to impart knowledge to the next generation of architects and designers and a desire to stay connected to current trends in the field.

**Do faculty wish they taught different courses or taught existing courses differently?**

Faculty are generally free to make changes to their courses in order to maximize their expertise and effectiveness. Changes can be made through informal discussions with the Program Director or at faculty meetings.

**Is the curriculum flexible enough to allow innovation in teaching methods and the development of new courses?**

The curriculum is highly flexible both in allowing innovation in teaching and in the development of new courses. Both innovation in teaching and the development of new courses are discussed with the Program Director and at faculty meetings.

**Has new technology affected the way in which courses are taught?**
Aside from the purely logistical, such as use of classroom website “Canvas” to organize and make available class materials as well as in-progress grades for all students, there are several new courses which exist because of the introduction of new technology. Digital techniques have become essential to information analysis, design exploration and graphic communications in our profession, and we have followed these closely thanks to our professional network and active adjunct faculty. We have several courses which teach not only the specific skill of manipulating that technology or software, but also teach workflow – how to decide which tool is appropriate. For example, in *BIM & Applications* which introduces the 3D modeling program Revit in the context of Integrated Project Delivery, students learn the basics of using Revit and how this is a tool which requires the architect to see herself as a member of a very tight team, responsible for understanding the other components and systems of a project, rather than an independent agent who passes her work on to others.

**Does the program monitor its overall teaching effectiveness? How?**

The Program Director requests to view teaching evaluations for new adjuncts and any others for whom there has been informal feedback that necessitates further inquiry. The Program Director also sits in and observes classes of new adjuncts and those considering applications for promotion. Any issues are addressed proactively and constructively. The Program Director does not, however, have access to the teaching evaluations of fellow full-time faculty, so any teaching issues among full-time faculty must be self-identified and addressed more informally, or become a conversation between the Dean or Associate Dean and that full-time faculty member.

**What does the program do to help faculty, particularly junior faculty, improve student learning?**

Informal mentoring and advice from senior faculty is the most common form of support. Every new full-time faculty is assigned an official mentor in the program as well.

**Other than classroom teaching, how is the faculty involved in student learning and development (e.g. independent study, mentorship, advising)?**
In any given semester and even in semester breaks it is common for faculty to supervise several students conducting Directed Study projects. Occasionally students have a specific topic they want to dig deeper into, or need to earn a few more units of credit toward graduation and design a project together with a faculty member. Recent examples include an investigation into the most common construction systems in the Kathmandu area of Nepal and an analysis of how each type fared in the 2015 earthquake, or a project describing the historic and political context of the proposed canal through Nicaragua, and its effect on the environment along its path as well as the displacement of communities.

All faculty members are well known for their availability and openness to informal student mentoring and advising as well as the official advising sessions which occur once per semester. Most faculty have an “open door” policy – as long as they are there, students are welcome to drop in.

Since 2014 the ARCD program has offered an Honors program, in which students conduct a year-long environmental design investigation with a proposal. Each project has one of the three full-time faculty as an advisor, as well as an additional faculty member from outside of ARCD. Between the three full-time faculty members we have advised a total of 21 Honors projects as of the time of this report.

Finally, many faculty members also have private practices, and countless students have enjoyed internships and longer-term employment at these firms. This has been a wonderful expansion of their education.

X. Research

What are the faculty’s research and creative interests and aims? Please describe the research and/or creative work of the program, focusing primarily on achievements since the last review.

Seth Wachtel
Professor Wachtel’s focus is low-cost housing, urban landscapes in underserved communities, and the development of innovative construction techniques that produce sustainable, heritage preserving and culturally appropriate buildings for human environments. This emphasis is paired with a teaching pedagogy that introduces real projects to upper division studios. He created and teaches the Community Design Outreach, Construction Innovation and International Projects courses, which provide students the opportunity to work on real world design/build projects for underserved communities both locally and internationally. These courses provide a research platform from which to engage students in building methods research and provide design assistance to a broad set of projects ranging from community gardens, to housing, community centers, schools and clinics.
Achievements since the last program review:

National Endowment for the Humanities grant award, 2015-2016. This Digital Humanities Grant allows the development and testing of a grassroots, crowd sourcing approach to recording physical heritage sites. The effort is to demonstrate the feasibility of recording important but little known built heritage with crowd-sourced local community-based volunteers, widely available low-cost technology such as smartphones, and an open-source Internet-based communication and workflow infrastructure. The potential result of this demonstration is a fundamental shift in the “who, what, where, and how” of recording the world’s built heritage. Not simply increasing the output of the prevailing approach, we will dramatically increase the number of sites recorded each year, but also provide a more localized and culturally dynamic and organic site selection process. This effort seeks to provide a complementary and robust database to serve as a precursor to later more in-depth recording, provide visibility, and drive research on sites not formerly accessible to a wide audience.

Writing a book titled, Engaged Design: A Model for Architectural Education (currently in contract with Routledge Press), which offers a model for architectural education that bridges the gap between traditional architectural education and the realities of designing and building in the real world. It details the way I educate college students about the built environment, about justice focused development practices, and about the positive impact each of them can and ought to have in improving marginalized communities and sensitive habitats. This community-engaged way of teaching that provides three important things to a coming generation of design professionals: an awareness of, and sensitivity to the equal value of peoples and cultures different from their own; an awareness of the massively negative and unsustainable impact on the planet of the dominant approach to development; and the power in each student to have an immediate impact and a rapidly growing ability to effect change as they develop skills and put them to use.

Co-author of Kreyol Living Wisdom & Haiti Regeneration: Using Indigenous Environmental Patterns, which describes indigenous Haitian house and community design and proposes using these local and familiar approaches in post-earthquake reconstruction and development.

Community Development Block Grant from the California Department of Housing and Community, co-applicant with Groundwork Institute and Lake County, CA. Project to investigate the viability of increasing home ownership by current renters, through a developer block purchase and sellback scheme, coupled with county assistance with street and house frontage improvements to raise property values.

Co-founded the USF Urban Agriculture program, in which students operate the organic community garden on the University of San Francisco campus and do community outreach work in underserved San Francisco neighborhoods.
Created designs with student teams for a range of projects serving marginalized communities in the Bay Area and abroad. 15 examples:

- Bibliotheque Du Soleil, a community library in Carrefour, Haiti. Project is nearing completion.
- Bridgeview Teaching and Learning Garden, Bayview District, S.F., won the San Francisco Neighborhood Empowerment Network award for Best Green Community Project.
- Goyena Community Center, rural Nicaragua. Project complete and occupied.
- Tea Processing Facility, rural Nepal. Project complete and operational.
- Seawater Cooled House design for rural seaside communities, ongoing project with Venezuelan Consul of San Francisco.
- Maasai Cultural Center, Tanzania. Design complete, community partner seeking funding.
- Orphanage for Girls, Morocco. Design complete, adapted by Moroccan architecture firm, currently under construction.
- Pomo Nation Head Start School, Ukiah, CA. Design and engineering complete, seeking Federal funding.
- Melrose Leadership Academy K-8 School Grounds redesign. Design Presentation was instrumental in school receiving $900,000 in grant funding.
- City Impact Clinic redesign, Tenderloin District, San Francisco. Project implemented.
- Veterans Village Project, Ft. Collins, CO. Land use planning and design of community made up of self-built small homes for veterans. Currently under review by local municipality.
- Basongabang, Cameroon, project to improve sanitation, access to potable water, and reduce cooking smoke inhalation. Collaboration with nonprofit and local volunteers.
- Pedestrian/Horse Bridge, Enchanted Hills Camp for Blind Children, Napa, CA. Design uses local harvested and milled dead wood from camp property.

Tanu Sankalia  
Professor Sankalia’s scholarship focuses on the planning and design of cities. He is particularly interested in the material history of cities, in specific projects, varying in scale from the neighborhood to the metropolitan, through which he can reflect on issues of state control, the political economy of development, citizenship, urban sustainability, and urban informality among others. By using critical, interdisciplinary frameworks, his work explores how state officials, planners, and other urban actors envision, negotiate and contest the production of cities, and what their visions and actions mean for our collective experience of urban life as well as for the disciplines of architecture, city planning and urban design. His recent scholarship on the urban transformations of San Francisco’s Treasure Island seeks to bring redevelopment plans for its future into critical public dialogue with the island’s history as a naval base, world’s fair site, and airport serving as an illuminating backdrop. Thus his work informs the interrelationships of city
planning (as policy and practice), public purpose (ideas of the common good), and urban life (the everyday urban experience).

He is currently working on several projects research projects –

A co-edited volume of essays titled Urban Reinventions: San Francisco’s Treasure Island, Lynne Horiuchi and Tanu Sankalia Eds. will be published in early 2017 by the University of Hawaii Press. This book examines new redevelopment plans for the man-made, 400-acre Treasure Island, which is in the middle of San Francisco Bay, with it’s history as naval base and world’s fair site serving as an illuminating backdrop.

A second book project, titled The Urban Unseen: San Francisco’s Interstitial Spaces, is under preparation this fall. The project is a study of spaces found between nineteenth century Victorian-era residential buildings in San Francisco. The observation, documentation and interpretation of these spaces forms the core of my study, and provides the basis to write about a wide range of subjects such as urban perception, urban memory, image of the city, urban morphology, architectural tradition, historic preservation, art practice, and architectural design.

He is working on three papers that are near completion. They have all been presented at conferences over the past two years.

Askancing Modernities: Towards an Understanding of the Global South, is a project with Prof. Pedro Lange-Churion (Modern and Classical Languages, Film Studies and Urban Studies). The paper proposes ways to bridge cultures across Latin America and South Asia around shared experiences of urban space and modernity.

The Bandra Bandstand Waterfront: Urban Design, Public Space, and Citizenship in Mumbai, is a paper that examines efforts of local residents to restore a historic waterfront promenade in the upscale neighborhood of Bandra, Mumbai. The article discusses the production of public space in Mumbai in the context of economic polarization, attempts by Mumbai’s elite to make it a world-class city, and the lack of government action in the management of public space.

Idleness and Lived Space: Traditions of campus life and the design of the School of Architecture, Ahmedabad, examines student life on an architecture school campus. It makes the case for “idleness” as a necessary condition for artistic production and argues that the design of a campus can lend itself, even encourage, idleness as an integral part of everyday campus life.

Hana Böttger
Prof. Böttger has a combined background in structural materials engineering and architecture, and her research focuses on investigating and legitimizing engineering properties of very low-carbon building materials so that their use can become more ubiquitous and contribute to the “drawdown” of the very high percentage of CO₂
emissions attributable to the building industry, as well as encourage the spread of safer construction techniques in regions with very limited resources.

USF does not have any engineering programs or testing facilities, therefore Prof. Böttger has relied on her close ties with a network of professionals, local universities and private research labs in order to design and conduct materials investigations especially in the realm of seismic reinforcing for earthen structures using low-cost techniques. She has given numerous conference talks and lectures, and published two papers on this topic in the last 5 years, with a third currently under review.

In 2012 the Dept of Art + Architecture acquired a 3D laser scanner, a Leica ScanStation C10. This is an instrument which uses laser technology to quickly record the exact distance to surfaces in all directions around it, creating a “point cloud” file which can be used to create highly accurate 3D models or line drawings. Prof. Böttger has incorporated this instrument into her teaching and research by using it to start a structural monitoring program at Mission San Miguel, one of California’s historic adobe missions. She and her student research assistants make two trips per year to acquire point cloud data on the condition of the mission buildings and then subsequently develop models and drawings which can be used for historic preservation purposes and as an educational tool for local Native American tribes to tell their own story of mission life, as well as a structural record to monitor the condition of the buildings.

Prof. Böttger has a term teaching position with the university, so her obligations are only in the realms of teaching and service. Still, she manages the robust research agenda described above by integrating the work into her teaching and service activities. For example, she employs outstanding students as research assistants continuously, and some have even become co-authors on her papers due to their contributions. She feels very lucky that her area of research is so accessible to undergraduate students that the value of the work can double as a unique extension of the students’ education as well.

What is the recent history of research support, fellowships, grants, awards, contracts or commissions by members of the program? Please list by title and principal investigator any major research projects and include a brief description. For sponsored projects, list sources, amounts of funding and duration. (List all grant proposals made by the faculty whether funded or not).

Seth Wachtel

National Endowment for Humanities, Digital Humanities Start Up Grant for Discovery and Documentation of At-Risk Built Heritage –2015

NEH Chair – 2015-2016

USF Distinguished Teaching Award – 2014
Community Development Block Grant – California Department of Housing and Community, co-applicant with Groundwork Institute and Lake County, CA – 2012

NEN Award 2011 – Best Green Community Project for “Bridgeview Teaching and Learning Garden”; project designed and built during multiple Community Design Outreach studios. Awarded to nonprofit community partner Quesada Gardens Initiative.

Michael Lee Environmental Foundation Grant, $20,000 grant to support the funding of the Bayview Hunters Point Project, San Francisco, CA – 2010

USF Service Learning Award – 2010

College of Arts and Sciences Service Award - 2009

Tanu Sankalia

2014 Faculty Development Grant – $8000 towards a subvention for the publication of “Urban Reinventions: San Francisco’s Treasure Island,” Lynne Horiuchi and Tanu Sankalia Eds. University of Hawaii Press.

2013 NEH Summer Award – Mumbai-Caracas: Urban Mirrors, A documentary video essay, Tanu Sankalia and Pedro Lange-Churion. Denied

2012-2013 Provost’s Faculty Innovation Award – Askancing Modernities: Towards an Understanding of the Global South, Tanu Sankalia and Pedro Lange-Churion. Denied

2010 MacDowell Fellowship
Tanu Sankalia was awarded the MacDowell Colony Fellowship, a three-week residency to work on a research project at the colony in Peterborough, New Hampshire.

Hana Böttger

- USF College of Arts & Sciences Faculty Development Fund 2011-2016 all funded, $14,348 total.
- Special Recognition Award for Architecture and Community Design program at the 2008 32nd Annual Service and Merit Awards.
What has been the impact of faculty research in the field and more broadly over the last 5 years?

Seth Wachtel

Seth Wachtel’s research and creative work has impacted both communities and the profession through project design/building work with underserved communities, preservation-recording methods, and through collaborative innovation of building methods using a blend of modern and vernacular techniques and materials. For community impact there have been dozens of projects design for local and international communities. A number of these are built and operational, others under construction, and others seeking funding.

Built projects include:

- A community center in the rural village of Goyena, Nicaragua, where the community now houses incubator businesses, computer training, a clinic, and library, in addition to being a place for community-based activities.
- A house for a single mother in Sutiaba, Nicaragua, a rural community near Leon.
- A vocational training school for youth in Nagarote, Nicaragua
- A tea processing facility in the Makalu region of Nepal, where farming families from formerly subsistence farming community are collectively processing tea for wholesale and retail income.
- A community library in Carrefour, Haiti (nearing completion)
- Design and construction participation for an orphanage school library in Lusaka, Zambia
- Japanese-American World War II Internment Camps Historic Archiving Project
- Three community gardens in San Francisco
- Educational garden for a culinary afterschool program
- Backyard food gardens in the underserved Bayview neighborhood of San Francisco
- Community garden in Richmond, CA
- An entranceway to a popular playground in Berkeley, CA
- A cob bench at a local elementary school
- Performance stage for children at a San Francisco park

Historic Preservation:

- *Discovery and Documentation of At-Risk Built Heritage*, National Endowment for Humanities, Digital Humanities Start Up Grant (current)

Construction innovation:

- “Fiber Sock House” construction method utilizing local sewing craft and agricultural waste to develop self-built housing
- Gabion Band – current collaborative project with construction innovator Randolph Langenbach and the Colorado School of Mines to adapt timber
and concrete ring band strengthening to traditionally unreinforced stone construction in Nepal

● Development of a modern approach to reintroducing traditional “Gingerbread” house construction as a seismically better alternative to under-regulated cement-based construction in Haiti
● Collaborative development of timber bamboo connections on a project in the Colombian Andes

**Hana Böttger**

Prof. Böttger’s research has contributed significantly in the field - her studies on the capacity of the straw in cob (earthen building material of soil, straw, sand and water) to provide reinforcement value in areas of seismic activity has been accepted by the City of Berkeley to make possible the first known officially permitted cob structure in the State of California.

More broadly, Prof. Böttger serves as an advisor and contributor to several research organizations who seek to increase the technical literature and visibility of very low-carbon building materials and techniques. She has opened up her classrooms to investigations that are identified by builders, engineers and product manufacturers who need performance information in order to support the spread of sustainable practices.

**What are the primary areas of emphases and strengths within the program?**

The Architecture and Community Design program has four main areas of emphases – Architectural Design and Representation, History of Architecture, Community Outreach and Building Technology. The strength of the program is its unique approach to architecture design pedagogy in terms of community outreach: serving underserved communities locally and internationally through design and building solutions.

The program is also strong in its architectural design studio emphasis. Students take a minimum of five and up to seven studios during the four years of undergraduate study. The studio curriculum comprises a rigorous approach to representation, analysis, design, building technology, and systems thinking which provides students with a strong foundation for graduate school and jobs in the field.

**What factors have shaped and in future are likely to shape the areas of expertise in the program?**

No single factor has been completely responsible for shaping the areas of expertise in the Architecture and Community Design program. There are several factors that have influenced areas of expertise, which have positively resulted in a diverse program. Some of the factors are as follows:
• The Jesuit and University of San Francisco mission of serving underserved communities and working towards social justice has helped shape the entire area of community engagement. This has led to an expertise in working with a wide range of communities around the world to design and build projects with them. There are several classes such as the Community Outreach Design Studio, International Projects, International Development & Community Outreach, Engineering, Design and Testing, International Outreach Immersion and Construction Innovation Lab that attest to this expertise.

• Location and the idea of engaging with the city and using it as a laboratory for design and community-related projects has led to an expertise in urban design issues related to the San Francisco Bay Area. Architecture Design Studios 2, 5 and 7 deal with community, urban and architectural design projects related to San Francisco.

• The focus on providing a solid undergraduate architectural education that complements the core liberal arts curriculum of the College of Arts and Sciences has shaped a certain kind of “teaching” expertise.

• Environmental sustainability is an emphasis in all areas, driving course development and the need for expertise in this area.

• Whole systems thinking to approach design problems in addition to specific skill development is also a common theme across many kinds of courses, from design studios to digital technology.

In what ways have changes in your discipline (paradigms, funding patterns, technologies, etc.) influenced research, scholarship and creative work in the program?

There has been a strong and active response to a number of issues that currently affect environmental design: the condition of the urban poor, the growth of informal settlements and increased urbanization, issues of environmental sustainability have generated a growing interdisciplinary approach to designing sustainable communities. All have influenced the refinement or creation of new courses and direction of the ARCD program over the past five years.

Some programs are more heterogeneous than others. What variations exist among your faculty in terms of methodologies, paradigms, or subfield specializations? Do these differences create obstacles to communication and, if so, what steps have been taken to promote communication between different constituencies? How successful have these strategies been?

The Architecture and Community Design program does not have issues with communication due to the small size of the faculty. Despite various subfield specializations among full-time and part-time faculty, there is a good deal of communication. The program holds a retreat for its full-time faculty at the end of the
spring semesters, and all-faculty meetings at the beginning of every semester. These meetings have been successful in framing the overall direction of the program and generating ideas for curriculum development.

**What impediments to faculty productivity exist and in what ways can these be reduced?**

The main impediment to faculty productivity in the Architecture and Community Design program is the sheer lack of space. The quality of studio teaching is thus hampered, which in turn affects morale and productivity. Moreover, certain classes such as *Construction Innovation Lab* and *Engineering, Design and Testing* have no space in which to they can experiment with alternative, new and innovative building techniques or engage in materials testing.

**What are the expectations for faculty research/artistic creation/performance in terms of quality and quantity? Are they being met, and if not, why not? How do the program’s expectations compare with the College as a whole and with similar departments at other colleges and universities?**

The expectations for faculty research/artistic creation/performance are well delineated in the faculty handbook and in the CBA. Individual faculty research and performance expectations are also arrived at through discussions with the Associate Dean, and with the Dean through the Academic Career Prospectus process. It would appear that expectations are being well met as the two tenure-track faculty members have been awarded tenure within the last few years.

**Service**

**What are the major service contributions made by faculty to the college and university over the last 5 years? Please be selective and do not include or append faculty resumes or vitae.**

**Seth Wachtel**

- Proposal to create a MA program in Interior Design and Architecture
- Proposal to expand the digital film offerings to create a more robust film program at USF
- Proposal to develop educational partnerships with Chinese universities in architecture, environmental and digital film studies
- Developed initiative and relationship with Lake County, CA to create a semester residency program for outreach components of campus majors
- Developed relationship with property owner in Marin County to donate property to USF
- Faculty representative on the Board of Trustees Facilities Committee
- Member of the Chair Release Task Force
Tanu Sankalia

Served department, college and university a great deal over the last 5 years. Most significantly, developed with Prof. Pedro Lange-Churion the BA in Urban Studies program. Directed the program for the last 2 years, since its inception, dealing with curriculum issues, hiring adjunct faculty, advising students, creating agenda for our Urban Studies Advisory Board, and representing the program at the College Council.

Over the last two years, served on two search committees. Over 2014-2015, served on the search committee to hire a tenure track faculty for the Art History program in the Department of Art + Architecture. The search was focused towards an Asian art historian and my background in Indian architecture was particularly useful to the committee.

In 2015, was asked by the Associate Dean of Social Sciences to serve on a search committee to hire a tenure track, full-time professor for the Sociology Department.

Over the last 5 years have traveled to universities in Colombia, Mexico and India and tried to set up teaching, student exchange, and research collaborations with them: Universidad de Piloto, Bogota, Colombia; Universidad Iberoamerican, Puebla, Mexico; and Center for Environmental Planning and Technology (CEPT) University, Ahmedabad, India.

Hana Böttger

- Created Architectural Engineering minor program and developed (and taught) three of the courses for it – 61 students have completed the minor since 2011
- Created the Honors in ARCD program and the two required seminar courses for it – 20 students have completed Honors thesis projects since 2014
- ARCD Program Director from 2011 to present – increased breadth and prominence of digital technology courses including establishing computer lab for ARCD, led revisions to core studio curriculum, refined advising system, organized events and lectures
What are the major outreach programs that faculty have been involved in since the last review?

ARCD faculty have established an international outreach program in which students work with international community partners during the semesters and have the opportunity to travel to the sites in order to further engage with the community for design, building and social projects. Destinations and faculty leaders have been:

- 2008 - León, Mexico – Seth Wachtel
- 2008 - Goyena, Nicaragua – Seth Wachtel
- 2009 – León, Mexico
- 2009 – Goyena and Nagarote, Nicaragua – Seth Wachtel
- 2010 - Goyena, Nicaragua – Seth Wachtel
- 2011 - Cali, Colombia – Seth Wachtel
- 2012 - Bogotá & San Andrés, Colombia – Tanu Sankalia
- 2013 - León & Goyena, Nicaragua – Seth Wachtel
- 2015 - León & Goyena, Nicaragua – Hana Böttger
- 2016 - León & Goyena, Nicaragua – Hana Böttger

Additionally, semester projects in International Projects, Construction Innovation Lab, Engineering, Design & Testing, Community Design Outreach Studio, and International Development & Community Outreach have had numerous community partners in all regions of the world as well as very locally such as in the cities of Oakland and San Francisco.

Aside from course work, the ARCD program has participated in the San Francisco Symphony’s “Adventures In Music” program wherein our students travel to 5th grade classrooms in the San Francisco Public School District in order to talk to children about arts topics common to architecture and music such as pattern, rhythm and number values.

In what ways are the faculty linked to the community (paid and unpaid consulting, faculty service on community boards/commissions etc.)?

Seth Wachtel

- Board Member, Self-Sustaining Communities
- Advisory Board Member, Recording Heritage Network
- Advisory Board member, Quesada Gardens Initiative
- Board Member, Medicorps International
Tanu Sankalia

Served on the Board of Trustees of the Ecole Bilingue de Berkeley, a WASC accredited independent school in Berkeley, California, as the Chair of the Buildings and Grounds Committee.

Hana Böttger

- Member of Northern California Cob Advisory Board
- Advisor to SmartShelter Foundation for the improvement of construction information for resource-challenged regions
- Co-founding member of Natural Building Guild, a clearinghouse and hub for research on low-carbon building materials and methods
- Member, former steering committee member and mentor of the Organization of Women Architects
- Twice organizing committee for BuildWell conference, managed student poster sessions
- Reviewer and critic for undergraduate architecture design reviews at California College of the Arts, UC Berkeley, Diablo Valley College
- Co-founding organizer of neighborhood emergency preparedness group in Berkeley, CA

XI. Relationship with other Departments and Programs

In what ways does the program collaborate with other departments and/or programs at USF?

ARCD collaborates with many other departments and programs at USF by way of cross-listed and interdisciplinary course offerings, ARCD faculty serving on advisory boards or participating in joint planning of events or institutions. Specific examples include:

- Prof. Wachtel and Prof. Böttger working with faculty in Environmental Science, Physics, Computer Science, Math, Chemistry and Biology toward envisioning a new School of Engineering for USF
- Several ARCD courses in Sustainable Design and Sustainable & Equitable Architecture cross-listed with Environmental Studies program
- Physics, Math and Environmental Science majors completing the Architectural Engineering minor
- ARCD courses open to all majors to encourage cross-disciplinary problem-
solving and service-learning: *International Development & Community Outreach* and *International Outreach Immersion*

- Prof. Böttger working with faculty from Computer Science, Environmental Science and English, and School of Management faculty and admin toward a joint “hackathon” design competition event, plus future collaborations of co-taught courses
- Prof. Sankalia teaching in Urban Affairs and Environmental Management graduate programs and Urban Studies undergraduate program
- Prof. Böttger serving on MS in Energy Management advisory board
- Prof. Böttger working with McCarthy Center for Social Justice and the Public Good to bring more community-engaged teaching practices to science faculty
- The department’s new 3D laser scanner has opened opportunities for Art History, Computer Science and the University Library to collaborate or contribute specialties
- Prof. Wachtel serves on the Steering Committee for the Urban Agriculture Minor, helping guide the USF community garden he established with a Media Studies faculty member in 2009.
- Prof. Wachtel is activity engaged with USF’s McCarthy Center for the Public Good, primarily through extensive community partner connections and projects.

**What is the program’s assessment of the successes and disappointments of those collaborations?**
These collaborations have been overwhelming successful, leading only to more collaboration opportunities.

**Are there any impediments to developing interdisciplinary research or connections to other programs?**
No, these connections are highly encouraged by the university.

**How could the University aid you in strengthening and developing such ties?**
The work of strengthening these ties is very time-consuming, so the greatest aid from the university would be an acknowledgement and allotment of time for faculty to devote toward this work.

**For Interdisciplinary and Online Programs:**
ARCD is not an interdisciplinary or online program.

**XII. Recruitment and Development**

In what areas and specialties does the program wish to hire in the future? What is the rationale for recruitment in these areas?
Since the ARCD program is largely focused on undergraduate teaching it is imperative that any new faculty be able to fill several roles – design studio teaching in combination with an expertise in another area. The two areas that the program has discussed hiring in are historic preservation and building science with a focus on sustainability issues. Other than specializing in these areas, it is extremely important that new hires can pursue research and scholarship in their areas of expertise.

**What are the anticipated retirements that need to be taken into account in long-range planning over the next five to ten years?**

There are no anticipated retirements in the near future.

**In what ways does the program help foster professional development and growth of the faculty?**

Professional development is encouraged formally at the College level such as through regular Writing Retreats in the spring and fall semesters. At the department level, senior faculty are very open to mentorship and shared opportunities with junior faculty.

The Faculty Development Fund is another means by which the College supports professional development. Support for teaching effectiveness, scholarly travel and research is provided through the Faculty Development Fund.

**How are junior faculty members mentored with respect to their teaching, scholarship/art, and service?**

Each junior faculty is appointed a mentor in the Department of Art + Architecture. The Dean’s office and the Center for Teaching Excellent hold numerous teaching workshops for first and second year junior faculty. Junior faculty are also supported by events and seminars of CRASE, the Center for Research, Artistic and Scholarly Excellence, and all faculty are supported by the Faculty Development seminars and lunches through the Dean’s office.

**Are information and expectations communicated effectively, especially to junior faculty?**

Monthly faculty meetings and meetings with one’s mentor serve as effective sources of information. In addition, the Academic Career Prospectus process and other workshops on teaching, service, research, and the tenure process in general serve as useful and effective sources of information for junior faculty.

**XIII. Departmental Governance**
XIV. Students

What is the program looking for in its students?

All ARCD students are admitted through the centralized Admissions Office without any additional application or portfolio review at the Program level, so we do not have any control over any aspect of the incoming students. The program would ideally look for students who have a deep interest in architecture as a profession, who are willing to approach the discipline through a combination of drawing and design skills, and historical and theoretical analysis, with detail and system-wide perspective. It would also look for students who are willing to pursue the discipline into graduate school in various forms: architecture, urban planning, urban design, structural engineering, environmental design, landscape architecture, and interior design. It also seeks students who have a level of dedication and commitment that is commensurate with the nature of the discipline.

What kind of students is the program well suited to serve?

The program is very well suited to students who care about social justice issues and how environmental design problem-solving can effect change. It is also well-suited to students seeking a rigorous architectural foundation within a liberal arts context, from which to explore everything from “classical” architecture paths to any number of careers in related fields including socially oriented work.

How does the program define “quality” in terms of admission to the program where relevant?

As stated above, admission quality is set at the University level.

Are there striking ethnic, racial and/or gender disparities among majors and non-majors taking courses in the program and USF students as a whole? If so, are there ways to attract those not normally attracted to the program?

There is one striking difference between ARCD major demographics and that of USF overall – our students are approximately 11% African American whereas the USF overall student population is only 4.4% African American. We are uncertain as to why there is this significant difference. Otherwise the differences are within one or two percentage points in the other major racial categories of Latino, White, Asian and Pacific Islander. ARCD students are 62% female (compared to 63% USF) and 38% male (37% USF).
What efforts are made to create an intellectual and social climate that fosters student development and supports achievement of the program’s objectives (e.g. clubs, student chapters of professional organizations, etc)?

The American Institute of Architects, Students USF chapter has become very active in recent years, organizing many events throughout the year including peer mentorship pairings, informal tutoring, tours and field trips, and lecture series.

Do students affect policy and operations (e.g. student membership on program committees, representation at faculty meetings, etc)?

Students’ input is always welcomed informally, but not as part of faculty meetings or other proceedings.

How are program expectations communicated to students?

Initially, program expectations are communicated through Department and Program orientation for freshmen that is held at the beginning of the academic year. Regular student advising by full-time ARCD faculty is conducted each semester during course registration periods and during office hours. Learning outcomes are reiterated in every syllabus with links to the course outcomes.

Are students kept informed of their progress in meeting intended learning outcomes?

All instructors are encouraged and instructed to use Canvas, the online classroom website, to keep track of grading and all class materials so that students are always aware of their standing in the class as well as the grading categories that represent various outcomes.

XV. Staff

Please see the descriptions and discussion in the Department section of this document.

XVI. Diversity and Internationalization

Diversity

Describe the inclusion of underrepresented groups for students (by entering cohort), faculty (by academic rank), and staff.

Students, by cohort not including international students (underrepresented groups only, the remainder being White):

<table>
<thead>
<tr>
<th></th>
<th>Class of 2016</th>
<th>Class of 2017</th>
<th>Class of 2018</th>
<th>Class of 2019</th>
</tr>
</thead>
</table>

95
Faculty, percentage in 2015-2016 academic year (underrepresented groups only, the remainder being White):

<table>
<thead>
<tr>
<th></th>
<th>(27)</th>
<th>(6)</th>
<th>(15)</th>
<th>(17)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>26 %</td>
<td>17 %</td>
<td>27 %</td>
<td>29 %</td>
</tr>
<tr>
<td>Latino</td>
<td>22 %</td>
<td>33 %</td>
<td>20 %</td>
<td>18 %</td>
</tr>
<tr>
<td>African American</td>
<td>11 %</td>
<td>33 %</td>
<td>0</td>
<td>18 %</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>3.7 %</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Arabic</td>
<td>3.7 %</td>
<td>0</td>
<td>0</td>
<td>6 %</td>
</tr>
</tbody>
</table>

Staff:
No underrepresented groups are included among our Program Assistants, Outreach Coordinator, Director of Visual Arts Technology, or Studio Manager.

What steps has the program taken to ensure an environment that values diversity and supports all faculty, students, and staff?

All members of the ARCD and greater Art + Architecture Department community, especially those in positions of high visibility, take great care to express inclusion regardless of race, ethnicity, religion, gender, gender identity, sexual orientation, vegetarianism or any other characteristics which contribute to the diversity of our community.

What factors facilitate or impede efforts to recruit members of underrepresented groups?

ARCD faculty do not have control over applications to our program. However, through the program’s active community outreach program there are opportunities for faculty and students to interest and encourage high school students, parents and educators to consider the ARCD program as a future educational destination.

What factors facilitate or impede the program’s ability to retain students and faculty from underrepresented groups once they have been recruited?

The inadequate physical facilities of the program are a continuing retention issue, which drives away individuals from all student groups, underrepresented or otherwise.
Is there anything the University can do to help with recruitment and retention?

We recently took a close look at the number of students applying to ARCD, accepted into ARCD, and enrolling in ARCD. There is a large drop off in accepted students choosing our program and following through with enrollment, so the University can help us by starting the recruitment effort immediately upon acceptance rather than months later in the process. Most importantly, we absolutely need university support in order to address the lack of space, high-quality facilities and resources to attract and keep students engaged in the program.

Internationalization

How have international issues been integrated into course content and the curriculum?

The History of Architecture classes 1 through 4, taught over 4 semesters, have adopted the text *A Global History of Architecture* as a primary reference. This text, unlike previous histories of architecture, takes on a much larger, “global” perspective to the study of the history of architecture. The history of architecture in Latin America, Asia, and Africa are given equal importance alongside Europe and North America.

The *International Projects, International Development & Community Outreach* and *Construction Innovation Lab* classes and the *Community Design Outreach* studio deal with projects in Africa, Asia and Central America, most of them with active community partner participation. Students along with Associate Professor Seth Wachtel have the opportunity to work on real projects for underserved communities in countries such as Zambia, Mexico, Nicaragua, Haiti, China and Cuba.

In the second semester of the junior year, students have the opportunity to spend a semester abroad at an international location. During almost every summer there have been international immersion opportunities as well, through the service-learning course *International Outreach Immersion*, most recently working with a local NGO in León, Nicaragua to provide design, building and social project assistance.

Have students in the program taken advantage of study-abroad programs organized by USF or other institutions?

Yes, greatly. Every year our juniors take advantage of the study abroad opportunities, and the flexibility in our curriculum that allows and even encourages a semester abroad. Approximately one third of every class has participated in some form of study or internship abroad.
Have faculty participated in international programs sponsored by USF or other institutions?

Yes. With Ibero University in León, Mexico.

Does the program recruit and retain international students, faculty and staff?

One full-time faculty member is from India. In every student cohort we have international students, who comprise approximately 23% of the entire ARCD student body. At the time of this report, nearly half of our international students are from China, with one each also from Indonesia, Myanmar, Qatar, Philippines, Mexico, Brazil, Thailand, Czech Republic and Paraguay.

Does the program have any international partnerships and collaborations with educational institutions and public or private sector organizations?

Past and present partnerships and collaborations include:

Architecture Program, Ibero Leon University, Leon, Mexico
Architecture Program, Javeriana Cali, Colombia
Architecture Program, Ben Gurion University, Israel
Budapest Semester Abroad Program
HCP Design, Planning and Management Pvt. Ltd., Ahmedabad, India
Corumvli Architecture, Lusaka, Zambia
Venezuelan Consul General, San Francisco

NGOs:
Lubuto Library Project, Zambia
ViviendasLeón, Nicaragua
Casas Loyola, México
Bien Estat Evita, Panama
SmartShelter Foundation, The Netherlands/Portugal
Playing For Change, Nepal
Society Development Center, Nepal
Give Light Foundation, Morocco
Maasai Conservation Fund, Tanzania
Cambodia Film Commission, Cambodia
Bustan, Israel
Groundwork Institute, Cameroon and China
St. Vincent de Paul, Bangalore, India

What are the goals, priorities and challenges of the program in this area?

The Study Abroad program and international exposure generally are a top priority for the ARCD program. The program would like to see every student spend a semester, or at least part of their undergraduate education, in a foreign country. The goal is to
develop as many study abroad programs as possible, particularly in developing world locations.
One challenge is enabling students to fulfill their Arts and Sciences Core Curriculum requirements, i.e. finding courses abroad that are equivalent to core courses offered at USF. Another challenge is finding funding to enable students to pay for a semester of study abroad.

XVII. Technology and Informational Resources Technology

How well do the university’s computer hardware and software policies and campus support for technology meet the program’s needs?

The ARCD program is effectively supported by the Department’s own Director of Visual Arts Technology staff member, which allows for most issues and needs to be addressed immediately without relying on the campus-wide ITS department. Hardware needs are not adequately met in that ARCD students do not have any dedicated computer lab. Until January of 2015 ARCD students and courses shared two Apple computer labs with the entire Dept of A+A. Due to the increasing needs of the Design program as well as ARCD’s need for Windows-based software, an additional underutilized computer lab space was identified in another building, which now has 18 dual-booting Apple computers and is shared three ways between the Dept of Modern and Classical Languages, the Design Program, and ARCD. Due to this arrangement ARCD can only use the lab for courses on Mondays and Wednesdays after 3pm, and it is open for shared lab use by students of all three programs on evenings without courses and weekends. Ideally ARCD should have its own dedicated dual-booting computer lab.

What technical computing skills are required in the discipline?

No computer skill courses are part of the required major curriculum, but we have at least four courses which teach or heavily utilize computing skills: 

- ARCD 250: CADD 1, an introduction to SketchUp, AutoCAD, Adobe Creative Suite including Photoshop and InDesign
- ARCD 270: BIM & Applications, an introduction to Autodesk Revit and Integrated Project Delivery
- ARCD 300: CADD 2, an advanced CAD course with rotating topics such as Rhinoceros, GIS, Advanced Revit and Leica Cyclone/Autodesk Recap for 3D point clouds
- ARCD 410: Portfolio Lab, wherein students rework and compose portfolio material for graduate school or employment applications

Additionally, Microsoft Office software such as Word, Excel and PowerPoint are relied upon regularly to complete course assignments and presentations.

How does the program provide students with training in appropriate technology and online skills?
See above for the list of courses focusing on digital technology skills. *ARCD 310: Intro to Construction Materials* additionally teaches the use of Microsoft Excel to create plots of scientific data.

**Describe how technology is used for curriculum delivery in the program.**

Many, but not all instructors use *Canvas*, the online classroom website tool, in order to disseminate resource materials, facilitate discussions among students, keep track of grades, and receive assignments and communications. Some instructors additionally have their own or other reference websites for tutorials and examples. Communications with many community or project partners is conducted via Skype or Zoom videoconferencing in order to accommodate distances to international or even somewhat local regions.

**Does the program plan to increase the use of technology in the classroom (e.g. online courses, distance learning, CD-ROM, Internet, computer software, clickers, etc.) and in what ways?**

The Program is open to increasing the use of technology in whatever ways necessary as determined by the instructors of the courses. For example, an instructor has just requested a tool which allows images or websites quickly found on an individual smart phone to be communicated to and then projected on a screen wirelessly via the computer in the classroom. This would be a great benefit due to the fact that our tight classroom space makes it difficult for instructors to be providing desk-side critiques with one student while still engaging the whole class.

**How effective has the program been in integrating new technology and pedagogy?**

The program has been very nimble and effective at integrating new technology and pedagogy that arises due to the profession’s dependence on certain kinds of technology. The sequence of courses on BIM (Revit), Rhino and Recap (3D point cloud software) came about within a very short period of time due to a quick response to taking advantage of opportunities such as participation in the 2013 Dept of Energy Solar Decathlon competition, which required all submissions to be Revit files.

**Distance Learning or Online Learning** *(See response above in Art + Architecture Department section)*

**Library** *(See response above in Art + Architecture Department section)*

**Facilities** *(See response above in Art + Architecture Department section)*
XVIII. Conclusions

What are the program’s strengths? What examples of long-term excellence, recent accomplishment, or improvement characterize the program’s recent history? In what ways could the program be considered a leader in its field?

According to feedback from our students’ early employers and internship sites, visiting professionals and architecture licensing board members, as well as our faculty who have experience working in other architecture programs and our own observations, we believe our ARCD program at USF is truly unique for its curriculum-wide emphasis on social justice issues and the use of hands-on, community engaged practica to teach a systemic approach to environmental design problem-solving. This is evident in everything from the way architectural history is taught from a global and inclusive perspective, to how the term “alternative materials” is stricken from the Construction Materials course in order to direct students to consider all materials for their fundamental strengths and properties, to the choice of Revit as the 3D modeling program in order to instill the understanding of the architect as a member of a team who is responsible for working with the other trades and seeing the building as a series of interacting systems, to the facilitation of community partner-involved real projects for which students develop a true investment. Our greatest strength is in the unity and support our faculty have exhibited in promoting this social justice-directed approach.

What are the program’s weaknesses? Where could the program most improve? What challenges or obstacles make it difficult to overcome these weaknesses? What further challenges do the faculty foresee in the coming years?

Our greatest weakness, without a doubt, is the lack of proper physical facilities. It is standard for architecture programs in the US and elsewhere to provide one desk per student so that they can work in a focused way on their projects and develop a sense of place and a studio culture with their cohorts. The fact that we have only one desk per 3 students means that we ask every student to remove the work from their desk after class time, thereby breaking up their work flow and preventing further exchange among them. We do not have other casual workspace to offer them either, so work can only continue in their own apartments (most do not have drafting tables at home) or back in the classrooms after classes are over for the day. This directly works against the messages of community engagement and high expectations of work quality that they otherwise hear from us.

The second weakness is the shortage of full-time faculty. Although we have been lucky to retain a core of highly dedicated adjunct faculty members who contribute selflessly to the program, there is still significant turnover in the personnel each semester, which prevents the very important messages of the program learning outcomes from being delivered optimally. Only one of the three full-time faculty regularly teaches a required studio course, one must share his time with another Program, and the third teaches almost entirely the courses in the architectural engineering area. It is essential for us to
have at least two additional full-time faculty members in order to sufficiently cover all of the focus areas with the solid message of our Program Learning Outcomes.

**What changes have occurred in teaching, research and service in the field(s) over the past five years that have influenced the program’s view of its role in the University and the field?**

The most noticeable change in the industry is the greater and greater demand for young professionals with skills in whole-system thinking, sometimes desirable above specific technical skills. This has affected our program’s view of its role by encouraging us to provide more interdisciplinary opportunities for students such as courses that are open to all majors (ARCD 290: Community-Engaged Practice, ARCD 345: International Development & Community Outreach, ARCD 348: International Outreach Immersion) and have mixed groups working on problem-solving together, as well as organizing short-term design competitions where teams are required to be mixed-majors. Both directly and indirectly we have been building in integrated systems thinking into our curriculum.

**What changes have taken place in the relationships between the field and other related fields? What has been the impact, if any, of interdisciplinary studies, international studies, area studies, experiential and service learning, distance learning, and technological change?**

It appears that the relationship between architecture and related fields has become more interdependent, with greater acknowledgement of the benefits of collaboration and integration as opposed to specialization. The effect on our curriculum has been to shift the focus toward systems thinking.

**Are there differences between the program’s view of its role and College/School and University expectations for the program?** (See response above in Art + Architecture Department section)

**How would the faculty describe the morale and atmosphere within the program? Does the program enjoy the kind of collegial relationships between its members that are conducive to sustaining and enhancing its excellence?**

Department morale is high, with an atmosphere of collegiality that is conducive to enhancing excellence within the department.

The only issue is that of the lack of space – it is the only thing that leads to any conflicts within or between programs, and it often contributes to bringing the morale down, especially in the ARCD program. Each year students regularly ask about the possibility of getting new and larger studios.
XIX. Comprehensive Plan for the Future

Please indicate the program’s integrated plan for improvement over the next 5 years (curricular, research, facilities, faculty recruitment and development, diversity goals, etc.)

(See response above in Art + Architecture Department section)

What are the core objectives and priorities and what is the sequence of action to be taken for each item?

(See response above in Art + Architecture Department section)

How will the program position itself, given the changes likely to take place within the discipline over the next 5 to 10 years?

The program already seems advanced and ahead of the curve, but the prominence of community-engaged, hands-on and interdisciplinary education will continue to be the central theme in order to educate young professionals who are problem-solvers as much as they are skilled technicians.

What opportunities exist to extend and build on present strengths and what are the major obstacles that impede the program’s progress?

We have significant capacity to offer additional courses in topics based on industry feedback and student demand, but we are impeded by lack of space and low enrollment.

What improvements are possible through reallocating existing resources?

Rotation of senior or full-time faculty through the required major courses could help to improve the continuum of communicating the Program Learning Outcomes and social justice emphasis of the curriculum to students at all stages. The detriment of this approach would be that the courses those faculty typically teach would be subject to some destabilization.

What improvements can only be addressed through additional resources?

Space – It is critical for the ARCD program to have significantly more, good quality studio and innovation space.
ARCHITECTURE AND COMMUNITY DESIGN

APPENDICES

Academic Program Review
Self-Study
ARCHITECTURE AND COMMUNITY DESIGN
APPENDIX 1

ARCD ADJUNCT FACULTY BIO-BIBS:

RENATA ANCONA
Graduated summa cum laude from the University of Florence, with architectural, urban design, and structural engineering studies at the University of Pescara, and a grant to research at U.C. Berkeley. Principal of Studio Peek Ancona, a research and design firm combining architecture, planning, and interiors, her extensive experience in the U.S. and Europe is characterized by a contemporary aesthetic focusing on a refinement of sustainable materials. Ancona’s use of technology is founded on academic research: her groundbreaking restoration study of the Laurentian Library forms a critical basis for contemporary materials innovations. A balance of construction projects, competitions, and publishing form the basis of her practice, with projects including LEED homes, housing, commercial, and civic buildings combining innovative structure and energy-efficient facade systems. Her work has been recognized by honors including the AIA California Design Award and through international publications.

MAKI BOYLE
Maki E. Boyle, ASLA, has been with the firm John Northmore Roberts & Associates since Fall, 2013 after completing a MLA at the University of California, Berkeley for which she produced a Design Guide for the Inyo National Forest. She also holds a BS in Landscape Architecture from Cornell University with a Concentration in Architecture. Mrs. Boyle has ten plus years of experience in Landscape Architecture and Project Development. She has successfully managed a variety of complex public and private projects at all levels of design and construction. As a steward of the natural environment, Mrs. Boyle balances her time between designing ecologically sensitive places, teaching, and rock climbing throughout the Eastern Sierras.

SHELLEY BROCK
Shelley Brock is a licensed architect and LEED Accredited Professional. She has taught the architecture design Studio One course at USF since 2009 and currently teaches Architectonics. She has also taught and lectured at the University of New Mexico and Columbia University architecture schools.

Shelley published a book with co-author Max Jacobson in 2014 called Invitation to Architecture. The book is based on their tandem approaches to teaching beginning level design courses.

She received an MArch from Columbia University in New York City in 1992, and a BA in French Literature and Art History from Sarah Lawrence College. In New York, she worked for William McDonough Architects on sustainable residential and institutional projects before relocating to Santa Fe, New Mexico. There, her work explored the forms
and materials indigenous to the Southwest including adobe and straw bale, incorporating passive solar and permaculture principles. Since moving to California in 2000, she has designed affordable housing, master planning and residential commercial and institutional projects.

CATHERINE CHANG
Catherine Chang is a practicing professional and instructor in the fields of architecture, landscape architecture, and urban design. Through her firm Catherine Chang Design Studio and her role as an educator, her attention is focused on the role of buildings and streetscape design in supporting rich, active pedestrian environments. Recipient of several design awards, she studied architecture and landscape architecture at UC Berkeley. Prior to starting her own practice, she worked at Calthorpe Associates and other notable urban design firms. She is currently an adjunct faculty instructor at USF Architecture and Community Design and UC Berkeley Extension Landscape Architecture Certificate programs.

STEVEN I. DOCTORS
Steven I. Doctors, PHD maintains a project management practice (The CM+ Group, LLC) in the San Francisco Bay Area. He received a Bachelor of Architecture from Cornell University and both a Master of Science and PhD in Architecture from the University of California (Berkeley). He has been teaching architectural history, theory, and professional practice in the Department of Art + Architecture since 2007. His research interests include the history of architectural practice, design theory and methods, project management methodologies, and project delivery strategies. Steven is licensed as an architect and general contractor, and is a member of the American Institute of Architects, the AIA Practice Management Knowledge Community, the American Society for the Advancement of Project Management, and the International Project Management Association.

NATHANIEL ECK
I am a highly effective and driven project management and design professional with a passion for making the world a better place for all. I have worked on over 60 public infrastructure design, engineering and construction projects. Projects have ranged in length from one year to three years. Individual project budgets have ranged from $500k to over $65MM with a total portfolio of over $150MM. I have coordinated and interfaced with top engineering, architecture, construction and energy firms such as AECOM, Gulf Interstate Engineering and Pacific Gas & Electric. I also have experience working on architectural design, urban design and construction projects for underserved communities in California, Colombia, Israel, Nicaragua and Oregon. I am particularly interested in the exploration of ways to address the social, economic and environmental issues facing underserved communities.

In addition to undergraduate and graduate degrees in Architecture and Urban Design I have a background in Information Technology (hardware R&D, application programming, user interface/ user experience design.)
Recently awarded National Endowment for the Humanities grant for the project “Discovery and Documentation of At-Risk Built Heritage.”

LESLIE GEATHERS
Leslie Geathers brings more than 20 years of multi-faceted experience in architecture, including work on projects ranging from commercial retail to single-family residential and multi-family affordable housing. In 1998 she began to specialize more in design of facilities for the young child when she joined Spaces For Children, a branch of McCamant & Durrett Architects, led by Louis Torelli, M.S.Ed., the nationally known premier child development environmental designer.

She became Project Manager and Designer in the creation of the 25,000 sq. ft. World Bank Children’s Centers, which are considered some of the most environmentaly focused childcare facilities in the United States. In a unique collaboration with Torelli, Ms. Geathers developed solutions for over 70,000 s.f. of Infant Toddler Childcare centers around the country. In 2005, she brought her impressive experience to Dorman Associates, Inc. where she has been instrumental in the design of both remodeled and new Children Centers.

Ms. Geathers has maintained her keen interest and commitment to socially and environmentally responsible methods and systems as they apply to our built environment. She has attended The San Francisco Institute of Architecture, University of California Berkeley Extension, and Merritt College to continue her education in such subjects as Permaculture, Urban Ecology, Ecological Architecture, Organic Architecture, and Sustainable Systems. Since 1997 she has served on the advisory board for the Merritt College Environmental Science & Ecological Design Program, and became an Adjunct Professor in 2002. She currently teaches Green Design and Urban Agroecology. In 2006 her role as an Ecological Design instructor expanded to the Architecture & Community Design Program at the University of San Francisco, where she taught Sustainable Design.

JUNE GRANT
June Grant received her Masters degree in Architecture from the Yale School of Architecture and her undergraduate degree from Baruch College, CUNY with a focus on International Economics and Finance with a minor in Studio/Ceramic Art. She is an architect with a long interest in the space of transactions and form. Upon leaving Steinberg Architects and AECOM, where she was a Principal and Associate Principal, respectively, she launched blink!LAB with 15 years' experience in design. Her architecture follows a trajectory from Retail to the Science and Technology markets. blink!LAB is focused on new forms for occupancy. A multi-disciplinary studio, staying small but thinking big collaboratively; we start with revealing the hidden influences. This attitude enables us to provide innovative adaptive designs that are research supported + strategic in implementation.
JACOB HERCZEG
Jake Herczeg is an Architect licensed in California. He has expertise in restaurant, retail, office, residential, institutional and hospitality projects in the San Francisco Bay Area, Los Angeles and in New York City. In 2012 Jake co-founded Herczeg + Tobias Architects. He holds a Bachelor of Architecture from the Cooper Union and holds an NCARB certificate. He is a native of Brooklyn, New York, and grew up working in his father’s architectural practice. Jake lives with his wife and daughter in San Francisco.

MAX JACOBSON
Ph.D. Architecture, University of California, Berkeley
Mr. Jacobson was an Associate at the Center for Environmental Structure in Berkeley, CA from 1971-74. He is co-author of A Pattern Language (Oxford University Press, 1977). In 1973, he completed his doctoral work on the design process. In 1974, with Murray Silverstein, he founded the JS partnership, an architectural firm providing comprehensive design and project management services. From 1972-76 and 1984-86, Mr. Jacobson was a Lecturer in Architecture at the University of California at Berkeley, and since 1975 has been an Instructor at Diablo Valley College. Mr. Jacobson is a register architect in California.

SAM JENSEN AUGUSTINE
Sam has worked on humanitarian, research and design projects in the Caribbean, Latin America, and Asia. Sam's undergraduate degree is in Environmental and Industrial Microbiology. His interests lie at the intersection of technology, environment and social aspects of building design and performance.
He has a Master of Architecture and a Certificate of Technical Teaching in Environmental Controls Systems from the University of Oregon Sam where he received a grant to study a combined water disinfection and thermal mass heating system. Sam was awarded the Architectural Research Centers Consortium's King Student Medal for Architectural Research.
Sam formerly worked at Siegel & Strain Architects was a Ginsberg Fellow for the U.S. Green Building Council. He currently works full time at PG&E's Pacific Energy Center.

TYLER KOBICK
Tyler Kobick is an architect and general contractor with a focus in rural architecture, custom fabrication, and ecological design. He is principal of a six-person design studio and construction firm, Design Draw Build, in Oakland, California, with a small office on the East Coast as well. With a pre-fab shop at ‘The Gate’ in San Leandro and an office on the Berkeley/Oakland border, Design Draw Build designs and builds a mix of commercial and residential projects. Current clients include Patch Adams’ Gesundheit Institute (Pocahontas County, WV), The University of Vermont (Burlington, VT), Eli’s Mile High Club (Oakland, CA), Brooklyn Preserve Church (Oakland CA), and the UC Theater (Berkeley, CA). Tyler holds two degrees in architecture, a B.S Arch from the University of Cincinnati, and a March from Dalhousie University, in Halifax, Canada. Design Draw Build is 18 months new to the Bay area, after years of moving with his business partner and others to design and build site-specific projects in Northern
California, Illinois, West Virginia and Vermont for the past 5 years. DDB is also a designer for temporary festival structures at Bonnaroo music festival, Outside Lands, and for Superfly Productions.

From 2004-2010, Tyler worked in the Mad River Valley of central Vermont on custom residential and commercial projects under the architect Dave Sellers, often splitting his time between the office and job-site. Many of Tyler’s design-build influences originated from this area of Vermont, where Yestermorrow Design Build School, Jersey Devil Architecture, John Connell, and Peter Gluck and Partners all started out. From 2005-2008, Tyler travelled extensively in the mountainous region of south-east El Salvador building rural medical clinics and developing a model school for land-place based education. He developed theories on the revitalization and preservation of small urban centers, sustainable locally-applied building technologies, and community-activated building projects which formed the basis of his masters research, and continue to inform his teaching.

Tyler was a founder of the Amun Shea K-12 School in Perquin, El Salvador and helped found the Ecological Design Co-laboratory Studio and think tank at the University of Vermont. He still teaches community facilitated design-build, materials and methods, and design drawing at the University of San Francisco, University of Vermont, and The Vermont Design Institute. He is also a passionate local foodie, painter, rock climber, and musician.

GRACE LEE
Grace Lee has worked broadly as an architectural, landscape, and urban designer in the Bay Area for the past 20+ years. As Adjunct Faculty, she has led undergraduate and graduate design studios in the Departments of Art + Architecture at the University of San Francisco, the Architectural Design Program in Civil and Environmental Engineering at Stanford University, and the College of Environmental Design at the University of California, Berkeley. At Stanford University she also has taught Stanford Pre-Collegiate students in the Summer Institutes and Stanford International Youth Program.

As Vice President of Carrasco and Associates Architects in Palo Alto, CA., she managed urban design, mixed-use development and multi-family housing projects. She has collaborated on landscape architecture and planning projects with Hood Design Studio and Field Paoli. She is a LEED Accredited Professional and a former chair and member of the Palo Alto Architectural Review Board. She received Masters degrees of Architecture and of City and Regional Planning at the University of California, Berkeley and Bachelors degrees of Art History and French Literature at Stanford University.

SHRADDA NAVALLI
Ph.D. candidate in the Dept of Architecture, University of California Berkeley.

JEFF OBERDORFER
As Executive Director and CEO of First Community Housing (FCH), Jeff Oberdorfer directs all aspects of the nonprofit’s work specifically aimed at developing affordable housing in the Bay Area. FCH provides quality housing for its tenants that is sustainable, conserves resources and produces contemporary architecture that fits within its
neighborhood context. We talked with Jeff about the organization’s work and its significant commitment to sustainable, affordable housing.

“We’re designed to be resilient within the everchanging political and financial climate that impacts affordable housing development,” explains Oberdorfer. “As a national leader in “greening” affordable housing, all of our recent developments have achieved LEED Platinum Certification. We also developed the first vegetative roof in the Silicon Valley.”

PAUL OKAMOTO
Paul Okamoto brings an expertise in sustainable design that bridges sustainable regional planning and green materials. He has managed the firm's sustainable projects, both in architecture and neighborhood planning. He has also overseen the firm's design for the renovation of the Salvation Army Chinatown Corps Community Center. Before establishing Okamoto Saijo Architecture in 1991, Mr. Okamoto worked with several prominent architects, including Peter Calthorpe on Laguna West, California, a "pedestrian pocket" suburb outside of Sacramento, and Paolo Soleri on the Arcosanti Project. He has co-authored a monograph, Sustainable Urban Renewal: Urban Permaculture in Bowden, Brompton & Ridleyton, and written numerous articles on the subject of ecological architecture and sustainable development in publications like Places (Winter 1995 issue on Sustainable Design). Mr. Okamoto is Past President of Urban Ecology, leading the organization through a period of major growth and started its Sustainable Bay Area and Community Design Programs. Okamoto has also served on the Board of Directors of Greenbelt Alliance, and was an appointed member of both the Bay Area Air Quality Management District Advisory Council and the City & County of San Francisco's Commission On Environment.

Mr. Okamoto received a Bachelor of Architecture from California Polytechnic State University, San Luis Obispo, in 1981. Subsequently, he received a Master of Architecture from University of Adelaide, Australia, in 1988. He was a Loeb Fellow at the Graduate School of Design, Harvard University, 2001.

MATTHEW PEEK
Matthew Peek studied architecture, urban design, and fine art at Berkeley, Columbia, and Yale, with a Fulbright at the University of Venice. Principal of Studio Peek Ancona, a research and design firm combining architecture, planning, and interiors, he is a licensed architect, member of the AIA, and contributor to international journals of architecture. Peek’s work investigates the use of cutting edge natural and composite materials, ranging from new uses for renewable materials to the most recent lightweight prefab and high-tech structures. Collaborations with international firms include EMBT, Ove Arup, Portoghesi, SMWM, and Renzo Piano's Favero + Milan. International broadcasts include a series of sixty-minute conversations with architects including Steven Holl, Richard Meier, and MVRDV. Peek has taught in U.S. and abroad, including collaborations with Architecture for Humanity and contributions to international relief efforts. His built projects include LEED homes, housing, commercial, and civic buildings combining innovative structure and energy-efficient facade systems. His work is recognized
internationally, through publications, competitions, and honors including the AIA California Design Award.

RAFI SARKIS
Rafi Sarkis is a LEED accredited architect. A graduate of the Rhode Island School of Design, he has practiced architecture in the San Francisco Bay area for over fifteen years. His architecture firm integrates environmental approaches and technological solutions into the design process. His multinational background and early childhood exposure to archeology in the Middle East and Europe have greatly influenced his contextual approach to architecture and pedagogy. As adjunct faculty at USF teaches History of Architecture II, which focuses on the rich and intricate interconnectedness between past built environments and the cultures, technologies and physiography which produced them. Through teaching he works to instill in the next generation of young architects, a sense of responsibility and stewardship towards our increasingly transnational and fragile environment.

JEROME TOBIAS
As co-founder of Herczeg+Tobias Architects, Jerome is responsible for the firm’s overall design direction and quality control. He has a hand in guiding every project as a mentor and collaborator. His focus is to find the best design solution for project, which demonstrate a keen thoughtfulness and innovation. Jerome has a wide variety of projects under his belt, including commercial renovations, branding for both food and retail, custom furniture and millwork, hotel renovations, large mixed-use complexes, single-family residential projects, and landmark building competitions.

Jerome earned his Bachelor of Architecture from the University of Kentucky and his Master of Architecture at UC Berkeley. He’s traveled abroad studying architecture in Japan, India, Thailand, Germany, and Spain. He’s taught first-year architecture studio at Chabot College and University of San Francisco. Previous to HTA, Jerome spent a combined 12 years at Kava Massih Architects and Freebairn-Smith and Crane Architects. He received his LEED AP certification and is a licensed architect in California.

SHARÔNE TOMER
Sharône Tomer is an architectural historian and licensed architect. She is currently completing her PhD in the History of Twentieth Century Architecture and Urbanism at the University of California, Berkeley. She received a Bachelor of Arts in Architecture from Washington University in St. Louis, a Master of Architecture from the University of Oregon, and a Master of Philosophy in Architecture from the University of Cape Town. She has taught architectural history and theory, design and urban studies at numerous schools including UC Berkeley. In addition to teaching she has worked at notable design and community housing firms in the San Francisco Bay Area. Sharône’s research focuses on modernity, activist architecture, and relationships between race, class, gender and architecture. She is particularly interested in urbanism in the Global South, and her
doctoral dissertation examines architecture as a site of the urban transitions that accompanied apartheid’s ending in Cape Town, South Africa.
ARCHITECTURE AND COMMUNITY DESIGN
APPENDIX 2

ARCD Course Descriptions and Degree Requirements:

REQUIRED ARCD COURSES + SUPPORTING COURSES

Freshman Year Fall Semester:

ARCD 100: Introduction to Architecture & Community Design
Architecture and community design encompasses diverse forms of engagement with society and the environment. Each of these raises important questions about the principles, purpose, and practice of architecture. Through lectures, readings, and walking tours, we will explore these questions and establish a solid foundation for continuing academic study in the ARCD program.

ARCD 104: Fabrication Lab
Art + Architecture Fabrication Lab, a required course for students majoring in Architecture, Fine Arts and Design, offers students supervised professional construction and safety training using the Fabrication tools and equipment. Students complete a variety of practical construction-based projects to develop and practice proper material and tool use. The conceptual, theoretical and practical instruction received in this course will prepare students for studio based course work and provide future access to the tools and labs in the Department of Art + Architecture.

ARCD 110: Architecture Studio I
A drawing skills class focusing on freehand drawing for architecture students. The course begins with contour drawing (line weight, overlap, scale), then tone drawing (shade and shadow), then orthographic projection and basic freehand perspective. It is a learning to observe and represent what you see course and is preparatory for the more advanced design studios. Conventions of mechanical drafting will be introduced toward the end of the semester.

ARCD 150: Architectonics I
The arrangement, or pattern of arrangement, or system of structure dealing with the principles of design and construction. The intention of this course is to develop an understanding of architectonics. Lectures and studio projects explore the concepts of dimension, scale, and order. Design investigations are assigned to develop methods for analysis, articulation of space, relationships of scale, and clarity of structure. Students will spend a significant amount of time, both during class and off-hours, working on their individual projects. The course offers the opportunity to develop studio skills in drawing and model form.

Freshman Year Spring Semester

ARCD 101: Architecture History I
This is the first semester of a four-semester sequence, which provides conceptual and analytical tools to understand the morphology of buildings and cities. Social justice, underserved communities and developing regions of the
world are equally emphasized alongside the more traditional view of focusing on the “great buildings” in history.

**ARCD 120: Architecture Studio II**

Introduction to design, two-dimensional presentation skills, and learning to see the built environment with an eye toward improving it. Includes basic model making and familiarity with building materials. A real world design problem for a municipality or non-profit organization is a component of this course.

**ARCD 151: Architectonics II**

Investigating how to conceptualize, construct, and represent complex architectural space. The definition of Architectonics in the context of this course is understanding the interdependence of three central themes played out in the core projects: poetic utilitarian construction, personal/sociological histories as they affect tectonics, and the translation of a 3-D Idea into 2-D Space, and back again into one of society’s most powerful 3-D spaces, that of Architecture. Architectonics 2 focuses on improving both representational and conceptual skills, viewing their mastery as interdependent. Projects will not necessarily begin with *a priori* concepts, but with a theme, collective and personal, that is to be investigated through construction and representation.

Also required:

**MATH 107: Calculus for the Liberal Arts**

**Sophomore Year Fall Semester**

**ARCD 102: Architecture History II**

This is the second semester of a two-year sequence, which provides the conceptual and analytical tools to interpret the morphology of the built environment from the macro scale of cities to the micro scale of buildings. The social role and cultural significance of architecture is explored alongside the formal and technological aspects of the discipline.

**ARCD 230: Architecture Studio III**

This studio introduces students to design issues at different scales of urban complexity. In part one of the studio, students explore the "grain" of the city—the individual dwelling unit—its history, place and relationship to the larger urban fabric. In part 2, they continue to examine aspects of living in the city through design projects that deal with multi-family housing and issues of affordability and social justice.

Also required:

**PHYS 130: Concepts in Physics**

**Highly Recommended:**

**ARCD 250: CADD I**

CADD 1 is an introductory course in Computer Aided Design and Drawing with a particular emphasis on workflow. The class will cover both line drawing,
3D modeling and presentation techniques, introducing SketchUp, AutoCAD, Photoshop and InDesign.

**Sophomore Year Spring Semester**

*ARCD 203: Architectural History III*
This is the third semester of a two-year sequence, which examines architectural production, by drawing from significant precedents from antiquity to the present. Social, political, economic and cultural issues of cities and buildings are equally emphasized, as are formal and technological processes.

*ARCD 240: Materials and Methods of Architecture*
This lecture course introduces building methods and materials of construction. An introduction to vernacular, contemporary, and renewable construction methods and how they relate to building type, location, life cycle, and design issues. Students make in-depth case studies, and learn the elements of graphic representation through design development and construction documents. Topics will include land use, housing, natural resources, aesthetics and comfort.

**Highly Recommended:**

*ARCD 270: BIM & Applications- elective for ARCE minor*
The BIM and Applications course uses the modeling program Revit to reveal how Building Information Modeling and Integrated Project Delivery work in tandem to produce a highly collaborative design process. As students gain an understanding of how design problems are solved using this approach, they also acquire a powerful visualization and design development tool which can be used in other studios and portfolio refinement.

*ARCD 300: CADD 2 – elective for ARCE minor*
This course will develop an understanding of digital tools and strategies, which engage and expand the design process, with the primary goal of utilizing the computer as a fluid, critical investigative tool. We will examine the impact of digital strategies, methodologies and practices on the work of contemporary architects, with individual research into modes of representation and its impact on tectonic development. Specific program(s) and topics change with every offering.

*ARCD 360: Intro to Structural Engineering – required for ARCE major*
Structural engineering is an essential component of building design. The goal of this course is to familiarize architecture students with structural engineering principles, so that they can incorporate them into their design processes. This will enable them to see structural engineering as an integral part of the process, rather than something separate that occurs after the "design work" is done. From their unique perspective as architecture students, students will find ways to question and challenge structural engineering principles that an engineering student may not.

**Junior Year Fall Semester**

*ARCD 204: Architectural History 4*
This is the fourth semester of a two-year sequence that studies building typologies and urban patterns using the example of the world’s cities and their histories. Cities and building resulting from the dominance of wealth and power are important, but so too are settlement patterns, streets, buildings, homes and gardens of all people through history.

**ARCD 350: Architecture Studio 5**

This design studio focuses on institutional buildings: schools, community centers, libraries, and other relatively small institutions that are an integral part of the urban communities they serve. The studio will deal with the identity of public buildings and their intersection with the social, cultural and political inclinations and aspirations of their communities. Students will be encouraged to act as part-formulators, facilitators and interpreters—and not merely passive translators—of a collective social vision realized through architecture. Through an analysis of context and program, and a critical appreciation of building precedents, students will provide architectural solutions that explore the design of collective space, institutional form, building structure and materiality. An important emphasis will be on developing and devising design processes that enable an analytical and rigorous approach to architectural design.

**Recommended:**

**ARCD 310: Intro to Construction Materials – required for ARCE minor**

An understanding of the basic properties of major construction materials is fundamental to becoming an effective architect or engineer. This course will introduce students to the properties, applications and design considerations of common construction materials. The course will be a lecture format supplemented by readings, field trips, laboratory experiments, exams and individual research projects. While designed primarily for students of Architecture, the course is also a rigorous introduction to civil engineering materials.

**ARCD 312: Environmental Control Systems – elective for ARCE minor**

This lecture course introduces students to energy and environmental issues as they relate to the built environment and the materials used to construct buildings. An overview of the basic principles of energy flow and energy use will be provided, as well as the fundamental climatic patterns and variables that have significant impact on building performance and occupant comfort. Passive building designs will be covered for each of the major global climate zones and students will be exposed to the underlying complexity of developing architectural solutions that address a wide range of local and global environmental concerns. Students will study the cultural and technological factors that have driven advances in efficiency and reduced environmental impact. The applicability of passive architecture, especially vernacular forms, as a means of furthering social justice and energy independence of occupants, will be emphasized in the course.

**ARCD 320: Sustainable Design**
This course will provide an interdisciplinary overview of Sustainable Design by presenting a historical and contemporary overview of ecological living practices through lecture, readings, guest speakers, and field trips. Topics include: Bioregion assessments, Sustainable communities, Environmental and Social justice, Permaculture, Native Science, Biomimicry, Urban Gardens and Food Security, Ecoliteracy and Primary Education, Global Economies, Environmental Preservation and Restoration vs. Development, The Global Environment, Impact of Developed Countries consumptive patterns, City Planning, and Green Business and Manufacturing.  

*ARCD 322: Sustainable and Equitable Architecture*

The Sustainable & Equitable Architecture course will provide an interdisciplinary introduction to sustainable design concepts and strategies. These concepts and strategies will then be analyzed based on their sensitivity to concerns of social, economic and environmental equity. The course will also provide an overview of various sustainable design standards such as: LEED, SEED, Living Building Challenge, Net Zero Energy and Passive House. Sustainable & Equitable Design will be framed as a way of thinking, operating and designing in a world facing rising pressures from blooming populations, urbanization, resource depletion, climate change, environmental degradation and socio-economic inequality.

**Junior Year Spring Semester**

Semester Abroad or if a student stays at USF during spring semester they may take:

*ARCD 340: International Projects*

International Projects provides students an opportunity to provide design assistance to international underserved communities, while gaining real world experience in the fields of architecture, landscape architecture, and urban planning. The course combines student development of an understanding and appreciation for contextual and cultural needs with the acquisition of professional practice skills.

*ARCD 345: International Development and Community Outreach*

The International Development and Community Outreach Service Learning course provides students with an overview of historical, political, and economic dynamics that impact global systems, inequalities, and developing countries. Students will work in teams on specific projects being implemented in specific communities by a partner NGO. Through readings, discussions and presentations, students will gain understanding of the systems and factors creating poverty and inequality in the world. Reflection activities range from individual to group exercises enabling students to better understand their relationship to the beneficiaries. The service component requires students to transfer their skills from their area of study and lead team projects identified by the partnering NGO in an iterative process.

*ARCD 370: Construction Innovation Lab*
Construction Innovation Lab pairs student teams with real world design/build projects in local and international underserved communities, where innovation in technology and building systems is required to best serve the needs of the partnering community. The course combines student acquisition of cultural competency with professional practice.

**Recommended:**

*ARCD 372: Engineering, Design and Testing – elective for ARCE minor*
This course builds on the skills learned in Intro to Structures and Intro to Construction Materials, to provide students with opportunities to technically analyze and perform materials research for real project partners. Student projects will focus on local and international underserved communities, where innovation in technology and building systems is required to best serve the needs of the partnering community. Students will be expected to utilize knowledge gained in introductory engineering courses to establish parameters and quantitatively summarize material and structural behaviors.

**Senior Year Fall Semester**

*ARCD 400SL: Studio 7 - Community Design Outreach*
Student involvement in real architecture design/build projects for non-profits, schools, municipalities and especially underserved communities in the Bay Area and internationally. In this studio class students take on a larger urban or rural design problem. The projects may be local or international and ideally will lead to student participation and leadership in a community building process for their project.

*ARCD 401: Intro to Architectural Theory and the Written Word*
We regularly engage with the physicality of architecture, that is, the buildings and places that enable, envelop, and mark our daily lives. Yet architecture also exists in the written word, captured in texts that theorize from diverse perspectives the process and significance of architectural conception and realization. Through extensive readings and student-led discussions, this course will carefully examine theories and perspectives as depicted in representative texts from antiquity to the present.

*ARCD 498: Thesis Preparation Seminar – required for seniors pursuing Honors*
This 2-unit course supports the ARCD Honors student to conceptualize and prepare an honors thesis proposal, including the specific aims, hypotheses, context and significance, design and methods, and analysis strategy. The importance of organizational skills, time management, collaboration, corrective criticism and editing will be emphasized. The Honors Thesis allows the student to pursue a topic of study over their final two semesters to produce thoughtful, thorough and innovative solutions which can make true contributions to their field.
Recommended:

ARCD 410: Portfolio Lab
The discipline of architecture is as centered on its discourse writing and verbalizing-as it is on building production. Through this course students will investigate the various approaches to writing about their work and establish a distinct focus of future professional inquiry. The class will examine how other architects have presented their work through publication and look at how the architectural press covers the work of architects. Students will then delve into their own projects to create a snapshot of their work projected in the form of a portfolio.

Senior Year Spring Semester

ARCD 430: Professional Practice/Internship
Course is divided into three parts; two lecture classes, one focusing on Professional Practice, the other Construction Management, and an outside internship. Student internships with architecture firms, non-profit housing developers, municipal planning or building departments, and other public-good oriented organizations in the Bay Area.

ARCD 499: Honors Thesis Seminar – required for seniors pursuing Honors
In this 2-unit course the ARCD Honors student will carry out the study developed as the Final Thesis Proposal in the first semester Preparation course. All data and background studies will be organized, analyses and design/written products presented in a thesis document to be submitted, and a final presentation. The Honors Thesis allows the student to pursue a topic of study over their final two semesters to produce thoughtful, thorough and innovative solutions which can make true contributions to their field. All projects are expected to address issues of social and/or environmental justice.

ARCD MINOR REQUIREMENTS
The ARCD minor requirements are intended to provide student minors with a basic and coherent introduction to architecture related fields through history, design and methods and materials. Additionally, the minor in Architecture and Community Design is designed to provide the non-architecture major with an appreciation of design, architectural history, urban planning and design, community outreach as it relates to architectural and landscape design projects in underserved communities.

A total of 20 Units from the following courses are required for the minor: Required courses:
ARCD 100: Intro to Architecture & Community Design (2 units)
ARCD 110: Architecture Studio 1 (4 units)
ARCD 400: Community Design Outreach Studio (4 units)

Select a minimum of two of the following:
ARCD 101: History of Architecture I (2 units)
ARCD 102: History of Architecture 2 (2 units)
ARCD 203: History of Architecture 3 (2 units)
ARCD 204: History of Architecture 4 (2 units)

Select a minimum of one of the following:
ARCD 120: Architecture Studio 2 (4 units)
ARCD 320: Sustainable Design (4 units)
ARCD 322: Sustainable and Equitable Architecture (4 units)

Select a minimum of one of the following electives:
ARCD 150: Architectonics 1 (2 units)
ARCD 151: Architectonics 2 (2 units)
ARCD 220: Landscape Architecture Studio (2 units)
ARCD 250: CADD 1 (4 units)
ARCD 270: BIM & Applications (2 units)
ARCD 300: CADD 2 (2 units)
ARCD 310: Intro to Construction Materials (4 units)
ARCD 312: Environmental Control Systems (4 units)
ARCD 320: Sustainable Design (4 units)
ARCD 322: Sustainable & Equitable Architecture (4 units)
ARCD 325: Introduction to Landscape Architecture (2 units)
ARCD 340: International Projects (2-4 units)
ARCD 345SL: International Development & Community Outreach (4 units)
ARCD 348SL: International Outreach Immersion (4 units)
ARCD 360: Intro to Structural Engineering (4 units)
ARCD 370: Construction Innovation Lab (2-4 units)
ARCD 372: Engineering, Design and Testing (2-4 units)

ARCE MINOR REQUIREMENTS
The Minor in Architectural Engineering provides an interdisciplinary overview of engineering topics associated with building design and the study and practice of engineering. The Minor consists of technically challenging courses that rely on a series of prerequisites, as well as experiment-based and skill-development courses that can be taken without prerequisites. The Minor provides a preview of the range of study in several engineering disciplines, such as civil, environmental and mechanical engineering.

The Minor requires the completion of twenty-four (24) units, as follows:
Required Courses (16 units):
MATH 109*: Calculus and Analytic Geometry I
PHYS 110*: General Physics I
ARCD 310: Introduction to Construction Materials
ARCD 360: Introduction to Structural Engineering
* MATH 109 and PHYS 110 – students must receive a C- or better in each course. ARCD majors may substitute MATH 107 and PHYS 130 for MATH 109 and PHYS 110, but must receive a grade of B- or better in each course.

Electives (8 units):
Choose two of the following (student is responsible for prerequisites):
ARCD 250: Computer Aided Design and Drawing
ARCD 270: BIM & Applications
ARCD 300: Computer Aided Design and Drawing 2
ARCD 370: Construction Innovation Lab
ARCD 372: Engineering, Design and Testing
ENVS 212: Air and Water w/Lab
ENVS 250: Environmental Data Analysis
ENVS 350: Energy and Environment
ENVS 410: Methods of Environmental Monitoring w/Lab
PHYS 310: Analytical Mechanics
PHYS 312: Statistical and Thermal Physics
PHYS 320: Electromagnetism

Highly recommended for those planning to continue in engineering programs:
CHEM 111: General Chemistry I
PHYS 210: General Physics II
PHYS 240: Modern Physics