Carnegie Mellon University
School of Architecture

2018 Visiting Team Report

B. Arch. [150 credit hours]

The National Architectural Accrediting Board
March 24-28, 2018

Vision: The NAAB aspires to be the leader in establishing educational quality assurance standards to enhance the value, relevance, and effectiveness of the architectural profession.

Mission: The NAAB develops and maintains a system of accreditation in professional architecture education that is responsive to the needs of society and allows institutions with varying resources and circumstances to evolve according to their individual needs.

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I. Summary of Visit

a. Acknowledgments and Observations

University Administration**,** Interim Provost Laurie Weingart, Dean and Chief Administrator of the College of Fine Arts Dan Martin, and Professor Steve Lee, Head of the School of Architecture, were highly engaged and supportive of the initiatives, program goals, and values of the architecture programs within the context of the university. The program enjoys great support from local practitioners, alumni, and members of the profession. The support staff are collegial and highly competent in their areas of expertise, providing valuable support for the students, the faculty, and the college. The Program Head and Chief Academic Administrator, Stephen Lee, was extremely competent and helpful in providing all necessary information as the team proceeded with the review of the program before and during the visit.

Faculty and students were collegial, receptive, and available to provide valuable feedback. The team room exhibits of student projects were well-organized, comprehensive, and reflective of the high quality of the architecture education rendered in this institution. This provided the NAAB visiting team with an excellent perspective of the program and its recent accomplishments.

Students at the School of Architecture are highly diverse, inclusive, and collegial with a great positive attitude. They appear confident in their decisions to attend the program, proud of the educational path they are pursuing, and well attuned to the career opportunities the school will ultimately provide them. The *student body*, in the undergraduate and graduate degree programs, reflects an interest and rich balance of those with roots in Pittsburgh, as well as a significant cadre of students from around the U.S. and abroad who have chosen the integrated art, design, technology, and research based architecture education of this institution. This rich integrated pedagogy combined with the rich mix of cultural, linguistic, and experiential backgrounds enhances a unique learning environment for all students.

Faculty members are deeply engaged in the program and their commitment is reflected in teaching excellence and the pursuit of meaningful research. The faculty exhibit spoke of a broad engagement in professional and academic pursuits beyond the classroom, and demonstrated its direct bearing on the quality of the program.

Carnegie Mellon University (CMU) at its core is a multidisciplinary institution with art and technology jointly incorporated in its academic and research works. Architecture, being a blend of art and technology, benefits from the overall brand of CMU with a multi-disciplinary approach at its core, and a setting in which science, engineering, humanities, and art are intertwined physically and programmatically in its overall DNA.

The ***architecture program*** is justifiably proud of a “technical culture of making and computation” as well as “integration of design and research” in the practice of architecture that melds classroom and studio work with hands-on learning and scientific inquiry. This is an essential part of the program from the beginning of the course of study through major group engagement.

The city of Pittsburgh is an essential aspect of the character of the architecture program at CMU. The setting of a city with a rich history and complex urban context, and increasingly one of the most livable, affordable green innovation post-industrial hubs, provides faculty and students many opportunities for exciting and challenging design topics, study of local architectural and urban landmarks, and the basis for many of the research and outreach programs in which the academic community is engaged. The school also takes advantage of the industrial history of the region and has made important connections with industry, especially in the building materials and products sectors and in STEM-based research.

An integrated transdisciplinary and interdisciplinary scientific research based design combined with immersive technology and computational design is an inherent part of the life of the architecture program. Led by administrators with a clear vision, as well as an enthusiastic, highly competent and committed faculty, the School of Architecture embodies a culture of research that is perhaps unique in how it is balanced with strong design and scholarship values, which is based on an ethos of combining professional training with interdisciplinary education.

b. Conditions Not Achieved

I.2.3 Financial Resources
A.7 History and Culture
B.1 Pre-Design
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II. Progress Since the Previous Site Visit

2009 Condition I.2.1, Human Resources & Human Resource Development:

Faculty & Staff: *An accredited degree program must have appropriate human resources to support student learning and achievement. This includes full and part-time instructional faculty, administrative leadership, and technical, administrative, and other support staff. Programs are required to document personnel policies which may include but are not limited to faculty and staff position descriptions.*

- *Accredited programs must document the policies they have in place to further Equal Employment Opportunity/Affirmative Action (EEO/AA) and other diversity initiatives.*
- *An accredited degree program must demonstrate that it balances the workloads of all faculty and staff to support a tutorial exchange between the student and teacher that promotes student achievement.*
- *An accredited degree program must demonstrate that an IDP Education Coordinator has been appointed within each accredited degree program, trained in the issues of IDP, and has regular communication with students and is fulfilling the requirements as outlined in the IDP Education Coordinator position description and regularly attends IDP Coordinator training and development programs.*
- *An accredited degree program must demonstrate it is able to provide opportunities for all faculty and staff to pursue professional development that contributes to program improvement.*
- *Accredited programs must document the criteria used for determining rank, reappointment, tenure and promotion as well as eligibility requirements for professional development resources.*

Students: *An accredited program must document its student admissions policies and procedures. This documentation may include, but is not limited to application forms and instructions, admissions requirements, admissions decisions procedures, financial aid and scholarships procedures, and student diversity initiatives. These procedures should include first-time freshman, as well as transfers within and outside of the university.*

An accredited degree program must demonstrate its commitment to student achievement both inside and outside the classroom through individual and collective learning opportunities.

Previous Team Report (2012): Human Resources (Faculty & Staff) are inadequate for the program. The team notes that some positive steps have been made with the hiring of several

new tenure-track faculty, planned hires for two more in the coming year, and an increased focus on design quality by the new head. However, other issues noted by the 2005 team remain. Chief among these is the heavy reliance on adjunct faculty, the narrow understanding of adjunct faculty as almost exclusively professionals in local employment, severely limited mechanisms to support and evaluate junior faculty, and the ongoing uncertainty around pedagogy and design expectations in the upper years of the curriculum. In addition, a new issue is emerging, which is the succession plan for the retirement of senior research faculty in the near future, and how these high-level programs will continue to engage with the professional program. There is uncertainty about both the composition of existing faculty search committees, and about the strategic process to address future faculty hires.

> ***2018 Visiting Team Assessment:*** The Visiting Team noted a significant increase in hiring of full-time faculty, both tenure-track, teaching-track, special faculty, and visiting faculty. The George Pauly Visiting Fellowship and the Ann Kalla Professorship in Architecture both attract dynamic emerging practitioners and studio educators who are engaged in teaching design studios and research-by-design seminars. The school has extended a tenure-track offer to a candidate as a successor to Professor Omer Akin. It is anticipated that this new faculty member will join the School of Architecture in summer 2018. After a three-year SoA research appointment, a new tenure-track faculty in sustainable design was hired in 2016, as successor to Professor Volker Hartkopf.
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> A new category of full-time professor, known as Studio Professor, for studio design leadership and critical thinking has been created. As a result of implementation of new measures, there has been a steady growth in the ratio of hiring full-time to adjunct, which in academic year 2017-2018 is 27 to 31, versus 16 to 36 in 2012-2013.
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> The program has also established a leadership succession plan providing leadership opportunities, including associate head, thesis coordinator, graduate track chairs for new faculty members, and school committee chairs. The SoA has also undertaken revised and clearer criteria for reappointment, tenure, mentoring and casebook review for the reappointment process.

2009 Student Performance Criterion A.7, Use of Precedents: *Ability* to examine and comprehend the fundamental principles present in relevant precedents and to make choices regarding the incorporation of such principles into architecture and urban design projects.

Previous Team Report (2012): Very basic examples of precedents are used for exercises for 48-453; these are largely 20th-century vernacular urban conditions, but no earlier examples are evidenced in student work. None of the work presented in 48-100 provides evidence of the use of precedent.

> ***2018 Visiting Team Assessment:*** The team noted, in response to unmet SPC A.7 Use of Precedents, that a new required second year course, ARCH 48-250 Case Studies in Architecture and Cities, has been introduced and is in place. This course is taught by a new tenure-track urban design faculty member.

Previous Team Report (2012): Causes of Concern

A. **The tradition of autonomy** in both the school and the college is a double-edged sword. While it has allowed the School to create its own identity, it has promoted a lack of academic engagement with other CFA programs that is negative, and a culture of tentative connections between faculty from different areas within the School.

> ***2018 Visiting Team Assessment:*** The Visiting Team observed that the School of Architecture has a healthy and positive degree of autonomy within the College of Fine

Arts with respect to governance, administration, and decision making. Based on its observations and discussions with students, faculty, and staff, the Visiting Team noted that there is an opportunity to respond to student and faculty interest in increased engagement with other schools within the College and to further increase engagement with other programs across the university. This engagement could be teaching, research, and/or service-based and could occur at multiple academic levels, in various combinations of disciplines, and in different forms.

While students and faculty indicated that curricular constraints might limit increased engagement, the team noted that the physical arrangement of the College buildings could be leveraged to encourage and support increased engagement. Most important, increased engagement with other College programs supports the School's mission of providing "deep immersion in the discipline of architecture, intensified by the broader Carnegie Mellon culture of interdisciplinary innovation and creative inquiry."

B. **There is a need to address emerging issues in contemporary architecture, such as** global engagement, new practice models, and interdisciplinary study.

2018 Visiting Team Assessment: The School of Architecture has made significant progress in these areas. These areas include a higher level of interdisciplinary and multidisciplinary education through problem solving and design thinking at the intersection of art, engineering, management and technology's default. The 2018 Visiting Team noted this inherent character of the CMU architecture program addresses this concern. B.Arch. students, in their second and third years, are exposed to real site projects in Pittsburgh and work with stakeholders, mainly in the Urban Design Build Studio sequence, which embraces critical practice. The Environmental Charter School project, which encompasses four Pittsburgh neighborhood sites, is supported by the faculty who teach ARCH 48-381 Ethics and Practice and ARCH 48-380 Real Estate Design and Development. By using these sites as hands-on examples in their classes, they are helping create a contemporary model of integrated/interdisciplinary teaching and practice.

The CMU has a global campus and provides engagement for students and faculty at an international level.

C. Faculty **appointment and promotion mechanisms** need significant improvement.

Despite much conversation, **clear expectations for faculty success are not evident.** That difficulty is compounded by the fact that faculty mentoring is nonexistent. Instead of a culture where all faculty have a stake in the anticipated success of junior faculty colleagues, nearly the opposite occurs: there is a process by which those faculty find their own "bottom up" path to academic success.

2018 Visiting Team Assessment: The School of Architecture's addendum to the Faculty Handbook provides greater clarity about the criteria for reappointment, tenure and mentoring and includes a new procedure known as "casebook review," which gives junior faculty an opportunity to receive formal feedback from the School Review Committee on their reappointment materials throughout the process.

D. There is a **continuing over-reliance on adjunct faculty**, and especially of a single type (i.e., local practitioners). Individually, these adjuncts bring commitment and talent to the program. But despite their numbers, the team finds that they do not have the same voice as regular faculty on significant issues, especially for the strategic direction and governance of the School.

2018 Visiting Team Assessment: The team noted that continuity of adjunct faculty who are involved in professional practice provides significant value and benefit to the program and students' educational experience and opportunities for employment. These adjunct faculty clearly are respected members of the School. The team noted that there is a balanced condition now, and the previous team's concern about the program's overreliance on adjunct faculty has been addressed. The School has hired a substantial number of full-time faculty, tenure-track faculty, special teaching faculty, and visiting faculty.

As noted in the APR, the program increased the number of full-time faculty members in the 2017-18 academic year to 27 full-time from 16, in 2012-13. During the same period the program decreased the number of adjunct faculty to 31 from 36, a reduction that is in line with observations noted in the 2012 VTR.

E. **While multiple methods of communication exist within the school,** both individual faculty members and different interest groups within the faculty have not yet found the means to affect a meaningful conversation that can enhance the professional program.

2018 Visiting Team Assessment: The team observed effective and respectful communication between different groups of faculty, students and staff within the School; both individuals and groups were engaged and committed. In addition, the team noted examples of cases in which the School leadership was receptive to and responded positively to comments and recommendations from students, staff, and faculty, and has made modifications and implemented effective measures toward promoting further respectful communication and cooperation at all levels.

F. The new pedagogical models for Comprehensive Studio and the History and Theory stream need to be carefully and continually examined; criteria are spread across several courses and semesters.

2018 Visiting Team Assessment: The team noted that this concern now falls within Integrated Architectural Solutions of Realm C. Integrated Architectural Solutions is currently fulfilled by the sequence of Materials & Assembly, Structures/Statics, Enviro I & II, Advanced Construction Studio, Ethics & Practice and Real Estate Design & Development.

The History sequence is expanded to two semesters, including Historical Survey I, covering History of Architecture from ancient times to 1900, taught in spring of the freshman year; and followed by Modern Architecture & Theory for all students in the fall semester of the second year. Students are required to take one more elective history course.

G. Given the school's aspirations to be a "top five" school in the *Design Intelligence* rankings, a question must be asked: **are students being underserved** in present and future employment circumstances **by awarding a B. Arch. degree** for 486 units, when other programs, considered to be peers by Carnegie Mellon, are awarding M. Arch. degrees for 504 units.

2018 Visiting Team Assessment: The number of units required in the degree program has been reduced to a minimum 450 units, which is based on the minimum NAAB requirements with 135 units of General Education. However, the program has developed and implemented an Accelerated Master's Program with specialization toward a combined B.Arch. and a Master of Science. This enables students to complete the AMP

degree in six academic years. In further response to this goal, the School is pursuing an Accredited Master's Degree in Architecture.

H. **Regarding facilities**: While the MMX addition is not anticipated to be built in the near term, the possibility to enhance the entire CFA, both academically and culturally, with this future project should remain a priority.

2018 Visiting Team Assessment: The team was informed that a consultant has been hired to work with the CFA and its Schools to develop programs and planning for the Posner Building, that will be vacated by the Tepper School of Business when it moves to its new building in September 2018. The SoA will take advantage of classrooms and the lecture hall in Posner Hall, but will not relocate faculty, staff or studios to this building.

I. Despite the substantial recent improvements**, there are important facilities concerns in the short term** that need to be addressed. These include continual monitoring of safety and overcrowding in the shop, increasing utilization of the digital fabrication lab, and improvements to studio spaces for pinups, group projects, and larger project assembly areas.

2018 Visiting Team Assessment: The School of Architecture has hired a new SHOP director, and there are part-time attendants during evening and weekend hours per university requirements. Additionally, students are required to complete safety training related to all equipment. The University's Department of Environmental Health & Safety conducts regular shop inspections and actively tracks compliance with recommended changes. Students receive dFAB training in studios in their second year, and incoming graduate students complete digital skills training workshops before the beginning of their first semester.

The School has implemented several measures to address the constraints on SHOP usage. Sign-up sheets are used to manage the number of students in the shop at peak times. In addition, the number of students in the shop at any given time is limited. These increase the effectiveness of students' use of the SHOP as well as its capacity to serve the School.

Funding has been allocated for HVAC improvements to studio spaces. A separate university budget is being set aside to improve the classroom and studio space. The team noted that these effectively address immediate concerns about facilities.

III. Compliance with the 2014 Conditions for Accreditation

PART ONE (I): INSTITUTIONAL SUPPORT AND COMMITMENT TO CONTINUOUS IMPROVEMENT

This part addresses the commitment of the institution, its faculty, staff, and students to the development and evolution of the program over time.

Part One (I): Section 1 – Identity and Self-Assessment

I.1.1 History and Mission: The program must describe its history, mission, and culture and how that history, mission, and culture shape the program's pedagogy and development.

- Programs that exist within a larger educational institution must also describe the history and mission of the institution and how that shapes or influences the program.
- The program must describe its active role and relationship within its academic context and university community. The description must include the program's benefits to the institutional setting and how the program as a unit and/or individual faculty members participate in university-wide initiatives and the university's academic plan. The description must also include how the program as a unit develops multidisciplinary relationships and leverages opportunities that are uniquely defined within the university and its local context in the community.

[X] Described

2018 Analysis/Review: Carnegie Mellon University (CMU) is a private, internationally ranked research university with a 117-year history. It is recognized as a destination for world-class talent from around the globe. The University has programs in areas ranging from science, technology and business, to public policy, humanities and arts, which are housed in seven schools and colleges. The strength of the university in education is focused on research, creativity, and the cultivation of an active, technology-enhanced "know how to learn" environment. The University benefits from a small student-to-faculty ratio and an education focused on creating and implementing solutions for real problems, interdisciplinary collaboration and innovation.

The School of Architecture (SoA) is one of the five schools within the College of Fine Arts (CFA) alongside Art, Design, Drama, and Music. The CFA is internationally renowned for its unique multidisciplinary capabilities and distinctive pedagogical approaches for the success and influence of its students and alumni, as well as leadership in the development and transformation of the professions. The College shares numerous research projects, interdisciplinary centers and educational programs with other units across the university.

The SoA provides deep immersion in the discipline of architecture, intensified by the broader Carnegie Mellon culture of interdisciplinary innovation and creative inquiry. Students, have the opportunity to extend their core knowledge through studios and coursework in architecture disciplines such as sustainable design or computational design or urban design, or interdisciplinary interaction with Carnegie Mellon University's other renowned programs.

At its founding, the goal of the SoA was to create a particularly American fusion of the Ecole Poly-technique and Ecole des Beaux-Arts. Throughout the years, the architecture program was broadened; in 1967, Ph.D. program in Computer Science was implemented, and in 1972 a M.S. and a Ph.D. were offered in Building Science. Since then, scientific and technical research has been at the center of the SoA's mission and identity. Since 2008 Professor Stephen Lee, who is currently in his second five-year term as the head, has been leading the School. He has worked to revise the B.Arch. curriculum to provide more fundamental courses in the first three years, and to provide greater flexibility in the last two years. A new 3+2 B.Arch. curriculum was implemented in the 2012-13 academic year to respond to student interest and ambitions and to refocus the School on themes of design thinking, learning by doing, and improving the quality of the built environment.

I.1.2 Learning Culture: The program must demonstrate that it provides a positive and respectful learning environment that encourages optimism, respect, sharing, engagement, and innovation between and

among the members of its faculty, student body, administration, and staff in all learning environments, both traditional and nontraditional.

- The program must have adopted a written studio culture policy and a plan for its implementation, including dissemination to all members of the learning community, regular evaluation, and continuous improvement or revision. In addition, the plan must address the values of time management, general health and well-being, work-school-life balance, and professional conduct.
- The program must describe the ways in which students and faculty are encouraged to learn both inside and outside the classroom through individual and collective learning opportunities that include but are not limited to field trips, participation in professional societies and organizations, honor societies, and other program-specific or campus-wide and community-wide activities.

[X] Demonstrated

2018 Analysis/Review: The university is committed to cultivating an active, technology-enhanced, ”know how to learn” environment. The relatively small size of CMU and the SoA enable a great deal of personal contact between faculty and students. The year-long "Freshman Seminar." focuses on establishing a learning culture and offers advice for a healthy, productive college life and architecture school experience. The University and the School encourage instructors to include messages about health, wellness, and support services in all syllabi and introductions to all courses. In studios, this includes an emphasis on issues of time management, finding ways to become “unstuck,” and managing between multiple design parameters.

Academic Coaching (https://www.cmu.edu/acadev/programs/counseling/index.html) covers topics such as time management, effective work habits, and study techniques. It also helps establish peer tutoring, and other supplemental instruction.

The Global Communications Center (https://www.cmu.edu/gcc/) is a resource supporting students' efforts by helping them communicate their ideas logically and precisely.

The Visiting Team’s review of multiple syllabi demonstrated that the learning culture is well-addressed. The Team noted that it was also emphasized in the student handbook. First-year students report an in-depth review of learning culture issues during freshman orientation. Other students in the second to fifth year reported that it was reviewed at the start of most courses.

Students also reported a reinforcement of learning culture with some professors and courses. The “work” and “overload” culture is only allowed if the student has achieved a required GPA of 3.2.

Based on discussions with students, the team noted that students are aware of the Learning Culture Policy; however, the team noted from discussions with students that they were not consistently aware of their role in ongoing development of the Learning Culture Policy, specifically the schedule for them to review and provide input on this to the School leadership.

I.1.3 Social Equity: The program must have a policy on diversity and inclusion that is communicated to current and prospective faculty, students, and staff and is reflected in the distribution of the program's human, physical, and financial resources.

- The program must describe its plan for maintaining or increasing the diversity of its faculty, staff, and students during the next two accreditation cycles as compared with the existing diversity of the faculty, staff, and students of the institution.
- The program must document that institutional-, college-, or program-level policies are in place to further Equal Employment Opportunity/Affirmative Action (EEO/AA), as well as any other diversity initiatives at the program, college, or institutional level.

[X] Demonstrated

2018 Analysis/Review: The School adheres to the University policy on diversity and inclusion and fulfills its commitment to these areas with a variety of programs and initiatives.

CMU has adopted university-wide policies on Equal Employment Opportunity/Affirmative Action, and these are presented on the CMU website. Further, these policies have been interwoven into the university's current strategic plan. While no formal SoA diversity plan has been provided, specific initiatives and actions undertaken by SoA in support of these policies involve activities from recruitment of students, faculty and staff to admissions and throughout numerous aspects of the entire program offered by SoA. Students emphasized the strong support of faculty and staff for all areas of diversity. It is clear that the School embodies the University's diversity plan at all levels.

The School of Architecture is a member of Architecture Learning Network and as such is involved in a number of programs throughout Pittsburgh and the wider local region that serve to identify, encourage and help prepare individuals from underrepresented groups in the pursuit of careers in architecture and related fields. These groups include: Architecture Explorations, summer precollege programs, and UDream (short-term employment program, recognized by the AIA). Additionally, the student admission process has been altered to emphasize student portfolios rather than the traditional reliance on test scores as a way of expanding the opportunities for individuals from underrepresented groups.

Working with the local chapter of the National Organization of Minority Architects (NOMA), SoA students have restarted the CMU chapter of the National Organization of Minority Architecture Students (NOMAS) and work with the local architecture community to expand minority involvement and hiring practices in the area. The SoA is actively represented on the University Faculty Diversity, Inclusion and Development Committee, which is a university-wide initiative to improve and implement faculty recruitment, hiring and retention policies. CMU has instituted a scholarship program for underrepresented groups. Students in the SoA are eligible and are encouraged to apply for assistance through this program.

The enhanced minority recruitment programs have resulted in the 50/50 male to female split of recent entering classes as well as a growing number of students from a variety of underrepresented groups entering the program.

I.1.4 Defining Perspectives: The program must describe how it is responsive to the following perspectives or forces that affect the education and development of professional architects. The response to each perspective must further identify how these perspectives will continue to be addressed as part of the program's long-range planning activities.

A. Collaboration and Leadership. The program must describe its culture for successful individual and team dynamics, collaborative experiences, and opportunities for leadership roles.

[X] Described

2018 Analysis/Review: The APR describes and the Visiting Team observed a variety of elements, programs, and initiatives that are aligned with the School's mission and the University's mission that create and support a culture for successful individual and team dynamics, collaborative experiences, and opportunities for leadership roles. Examples of these include:

- Ways in which studios are developed, delivered, and led
- Community service and community-focused activities and design projects
- University engagement activities
- Student organizations (e.g., American Institute of Architecture Students, National Organization for Minority Architecture Students, and Alpha Rho Chi)
- The School's student publication, *interpunct*

The APR outlines other initiatives and activities that support collaboration and leadership.

B. Design. The program must describe its approach for developing graduates with an understanding of design as a multidimensional process involving problem resolution and the discovery of new opportunities that will create value.

[X] Described

2018 Analysis/Review: A rigorous three years of Design thinking, process and technical instructions are followed by two years of open electives. Design thinking is one of the SoA's three pillars along with Sustainability and Computation. It is developed out of the School's deep conviction about the power of design to improve both society and our planet.

Foundation, *Elaboration* & *Integration* are the themes of the first three years (this was a revision to the original 10 themed studios). The last two years are dedicated to Advanced Synthesis Option Studios.

The multi-dimensional nature of the students' thinking and understanding is clearly demonstrated through generative diagrams (structural, envelope, environmental, social, geometric, ext.) included by the students in their presentations to explain the information and process used to reach the resulting architectural design.

C. Professional Opportunity. The program must describe its approach for educating students on the breadth of professional opportunities and career paths, including the transition to internship and licensure.

[X] Described

2018 Analysis/Review: The SoA provides information on the opportunities available to students through a number of avenues. These include the SoA website, class lecturers and studio practices such as the ASO Studios, and through contact with the significant number of practicing architects on the faculty. Conversations with students have indicated the students are informed of their professional opportunities and aware of their professional advisors.

D. Stewardship of the Environment. The program must describe its approach to developing graduates who are prepared to both understand and take responsibility for stewardship of the environment and natural resources.

[X] Described

2018 Analysis/Review: Stewardship of the Environment is one of the School's three principles. Fundamental building sciences are introduced in Building Physics, a first-year course that helps students understand, assimilate, and begin to develop design principles around issues of heat and light. Two required Environmental Science courses are focused on passive systems at a small scale and technically advanced systems at a larger scale. In third year, students are required to take a studio titled "Integration I: Environment, Form, and Feedback,' which focuses on systemic design thinking linked to the development of forms and organizations in large scale urban environments, and "Integration II: Advanced Construction Studio," which is concerned with advanced systems integration, and focuses heavily on building performance.

E. Community and Social Responsibility. The program must describe its approach to developing graduates who are prepared to be active, engaged citizens able to understand what it means to be professional members of society and to act ethically on that understanding. \

[X] Described

2018 Analysis/Review: Students are introduced to the idea of social responsibility in the first year, and these principles are reinforced and enhanced as students move through the program. Students are taught that architecture is culture based and is an integral part of society. Using Pittsburgh as an urban laboratory, first-year students take an "Exploring Pittsburgh" class to learn to read the city and its culture. Projects in design studio are developed to include the public and the community as stakeholders in the process. and this is reinforced through participation in community and regulatory board meetings. The upper level ASOS studios further enhance these principles by exploring the social, cultural and community influences on projects as well as the effects design can have. Additionally, the students become involved with work in public interest design through the Urban Design Building Studio (UDBS), a collaboration of students, faculty, and allied professionals who work with community members on implementation of appropriate, affordable, and replicable design solutions

I.1.5 Long-Range Planning: The program must demonstrate that it has a planning process for continuous improvement that identifies multiyear objectives within the context of the institutional mission and culture.

[X] Demonstrated

2018 Analysis/Review: The University has an overall 2025 long-range plan, which includes the enhancement of a number of activities such as the Student Advisory council, the Ebery Center for Teaching Excellence, a university-wide data collection plan, and faculty course evaluations by the University. The entire plan for 2025 can be found at: https://www.cmu.edu/strategic-plan/.

The SoA has developed a leadership succession plan and is working to enhance its role in the future development of CMU and the community.

The School has demonstrated a clear academic vision with a focus on five major perspectives including sustainability and computational design. However, “multi-year objectives” for fulfilling this vision have not been identified.

I.1.6 Assessment:

A. Program Self-Assessment Procedures: The program must demonstrate that it regularly assesses the following:

- How well the program is progressing toward its mission and stated objectives.
- Progress against its defined multiyear objectives.
- Progress in addressing deficiencies and causes of concern identified at the time of the last visit.
- Strengths, challenges, and opportunities faced by the program while continuously improving learning opportunities.

The program must also demonstrate that results of self-assessments are regularly used to advise and encourage changes and adjustments to promote student success.

B. Curricular Assessment and Development: The program must demonstrate a well-reasoned process for curricular assessment and adjustments, and must identify the roles and responsibilities of the personnel and committees involved in setting curricular agendas and initiatives, including the curriculum committee, program coordinators, and department chairs or directors.

[X] Demonstrated

2018 Analysis/Review: The University, as a whole, is assessed and accredited through a voluntary, peer review self-assessment process coordinated by the Middle States Commission on Higher Education (MSCHE), last affirmed on November 21, 2013, as well as the NAAB Review in 2012, studio coordinators’ evaluation of the studio outcomes and their sequence at the end of each semester, best students four year work exhibits every spring for outside professionals assessment and ranking of the works toward selection of student recipients for travel grants, and Faculty Course Evaluations (FCE). FCEs are used to improve the quality of teaching and learning, and faculty promotions. Additionally, the Student Advisory Committee (SAC), which consists of three undergraduate representatives from each year of the B.Arch. program, the President of the AIAS chapter, and the President of the NOMAS chapter, meet on a monthly basis with the Head and staff to discuss issues of concern to the students and provide their feedback on issues such as instructors, current curriculum courses, facilities and other academic and non-academic items.

Additionally, CMU’s Presidential Advisory Board (PAB) process is a standard self-assessment tool used by the CMU President and Provost to evaluate all units on campus. The PAB last visited the SoA in 2014.The report, as stated in the APR, points to the major strengths, challenges and long-range recommendations as a guide for SoA’s long-range planning for hiring goals and curricular development.

This report includes a recommendation for development of the M.Arch. program, which is currently in its candidacy status. Lastly, the SoA began an annual online survey in summer 2017 to collect feedback and input from alumni and current students which can be used to assess the impact of the School's initiatives and inform the program's long-range planning.

In summary in addition to institutional and program accreditation processes, the SoA demonstrates an effective variety of mechanisms for assessment through engagement with and input from students, faculty, alumni, and the profession:

- The Presidential Advisory Board (PAB)\
- Student councils (Undergraduate Student Advisory Council & Graduate Advisory Council)
- Surveys of students, faculty, alumni, and professionals
- Award programs
- Employer visits
- Participation of alumni critics, visiting critics, and external guests' lectures, visits, and discussions
- Faculty evaluations

Part One (I): Section 2 – Resources

I.2.1 Human Resources and Human Resource Development:

The program must demonstrate that it has appropriate human resources to support student learning and achievement. Human resources include full- and part-time instructional faculty, administrative leadership, and technical, administrative, and other support staff.

- The program must demonstrate that it balances the workloads of all faculty to support a tutorial exchange between the student and the teacher that promotes student achievement.
- The program must demonstrate that an Architecture Licensing Advisor (ALA) has been appointed, is trained in the issues of the Architect Experience Program (AXP), has regular communication with students, is fulfilling the requirements as outlined in the ALA position description, and regularly attends ALA training and development programs.
- The program must demonstrate that faculty and staff have opportunities to pursue professional development that contributes to program improvement.
- The program must describe the support services available to students in the program, including but not limited to academic and personal advising, career guidance, and internship or job placement.

[X] Demonstrated

2018 Team Assessment: Faculty of SoA are encouraged to present works in global venues, attend local and regional continuing education workshops, participate in juries at benchmark institutions and pursue research and/or endowment funding to support their development and creative activities. To pursue their development initiatives there are various funding and scholarships from the School's GM account, as well as external funds such as the Gruger Faculty Discretionary Fund, the LiCeaga Fund, the Ferguson-Jacobs Prize, and the College Frontiers of Research Funds. At the university level, the Berkman and the Wimmer Funds are available as well. The total faculty funded research 2015-2017 was $4,407,531.

A number of support services for students are available, including a full-time academic advisor, a special faculty academic advisor, and assigned mentors through both the Faculty Mentor and Peer Mentor Programs. Additional academic resources through the Carnegie Mellon Advising Resource Center, the Intercultural Communication Center, and the Global Communication Center, personal advising from the Office of International Education through assigned Foreign Scholar Advisors for international students, also Counseling and Psychological Services (CAPS), and University Health Services are also available to students. Every student is also assigned a Housefellow through the Office of Student Life to serve as a liaison between their academic and personal/social needs.

The School of Architecture has an assigned Architect Licensing Advisor (ALA), Alexis McCune Secosky, who supports and guides students with their employment opportunities, and in helping them with understanding and engaging in the Architectural Experience Program (AXP), as well as the steps to licensure. In 2017, an Alumni Relations and Career Advisor was appointed to connect alumni with job opportunities to students seeking employment, attract their attention to career fairs, and introduce a newsletter with job opportunities called Opportunity Knocks, as well as forging close alliances and connections with the CMU Career Center, where a specialist also works with architecture students. Although SoA does not offer guaranteed job placement, it has a series of arrangements with prestigious firms such as SOM, KPF, Payette and others for summer internships as well as other evolving opportunities.

SOA has also started their first panel discussion, MY ARCHITECTURE which presents a discussion on architectural careers in creative arts, as part of the lecture series.

CMU has made arrangements with La Salle University School of Architecture in Barcelona, ES and Politecnico di Torino (PoliTo) in Torino, IT and is hosting three Master's students from PoliTo through the European Erasmus program and anticipates multiple SoA faculty to be in residence at PoliTo over the next three years with a jointly awarded Erasmus + Mobility grant.

The Team noted that discussions with staff revealed that there is a sufficient number of staff for the current number of students. However, staff members noted that they would be able to advise students more effectively and consistently and better respond to students needs with more staff members. They also noted that as the Bachelor of Arts in Architecture (B.A.) degree program is developed and enrollment increases, there might be a need for more staff (or faculty) to support advising.

Reinventing CMU's history as a leading institution built on a campus wide alliance between the Arts and Technology, there is a need to ensure equitable resources and facilities, and recognize the inequities in federal, industrial and foundation support for research, endowed chairs and scholarships, and named buildings in the areas represented by CFA and HSS.

Also, with CMU's history as a leading institution for educating the working class, there is a need for ensuring a greater number of need scholarships, especially in those fields where future compensation provides less potential for graduates to be able to repay loan debt in less than ten years.

I.2.2 Physical Resources: The program must describe the physical resources available and how they support the pedagogical approach and student achievement.

Physical resources include but are not limited to the following:

- Space to support and encourage studio-based learning.
- Space to support and encourage didactic and interactive learning, including labs, shops, and equipment.
- Space to support and encourage the full range of faculty roles and responsibilities, including preparation for teaching, research, mentoring, and student advising.
- Information resources to support all learning formats and pedagogies in use by the program.

If the program's pedagogy does not require some or all of the above physical resources, the program must describe the effect (if any) that online, on-site, or hybrid formats have on digital and physical resources.

[X] Described

2018 Team Assessment: Long Range Plan I.1.5 specifically mentions that "There has been NO new square footage added to the SoA since the last NAAB visit. Consequently, the space planning consists of an endless shell game trying to match cohort sizes to square footage and the re-design of workstations and layouts to use the space we have more efficiently."

The Visiting Team noted a consensus of comments regarding physical resources. Students, faculty and staff commented in interviews that there is insufficient studio space. Air quality, visual privacy and acoustical privacy in some spaces are needed. Storage facilities need to be expanded.

As the foundation to the pedagogy of the first professional degree programs, the studios are of ultimate importance. There is one large studio in CFA, CFA 200, and one large studio in Margaret Morrison Carnegie Hall, MMCH 312. During the summer of 2017, the SoA renovated the studios in both buildings and created modified workstations. The first and second year students were moved to CFA 200 and the third, fourth, and fifth year B.Arch. students to MMCH 312. This allows upper level B.Arch. students to be co-located with the studio-based graduate programs, M.Arch., Master of Advanced Architectural Design, and Master of Urban Design. During the Visiting Team's tour of facilities, space improvements, modifications to HVAC, and other improvements were specifically outlined. Adjacent to the studios are some lecture and seminar spaces, as well as faculty offices. Classrooms are not traditionally arranged with rowed seating, but instead provide furniture that is used more for collaboration in workshops and research labs that can be moved to accommodate different uses. This demonstrates the effective efforts of administrative leadership and faculty to meet program needs with available resources.

There is the Digital Fabrication (dFAB) Lab provides space and resources for modeling, prototyping, and construction. This lab contains extensive Robotic and automated equipment, as well as traditional

production equipment and tools. This lab is in the basement of the Margaret Morrison Carnegie Hall and is approximately 4000 SF, which includes 1000 SF of dedicated robotic fabrication space. Equipment in this space includes,7 and 8- axis industrial robotic cells, 4-axis CNC Router, (2) 75W laser cutters, vacuum former, and two (2) 3D printers (PLA, Plaster Powder).

The Computational Design (CoDe) Lab, has been created to facilitate collaboration with other disciplines. This space is divided into two, 300 SF spaces: a classroom and a fabrication/ office space.

The floor area of the Robert L. Preger Intelligent Workplace is 6700 SF.

The Shop (CFA A) Is a highly used area for the fabrication of models that do not require C&C or Robotic equipment.

Project RE "Urban Design Studio" is an entirely separate building located approximately three miles from campus and easily reached by public transportation or bicycle. It is supported by over $6 million in research funding. It is a 14,900 SF space with a community room, studio and gallery space, metal, stone cutting space, and wood shops. It acts as a community workshop, job training facility, and fabrication center. There is a commitment of $500k for improvements to the existing facilities, seating, pin up space, projection, and provision of 5k monitors for each student. (students now will be providing their own laptops but software will be provided.) The Tepper School relocation will result in a reshuffling of spaces in the Tepper facility and potentially the CFA building as well. As of the current ARP, no plan for this reshuffling has been articulated. Short term and long-range planning and expansion of space depends on the plans for other Colleges and Schools in Margaret Morrison, CFA and future vacation of the Tepper facility.

As a result of space constraints, most studio professors, visiting professors, and adjunct faculty have shared office space, as well as designated technology and meeting spaces. There are allocated lecture and classroom spaces. Full time faculty also receive an annual GM account with $1,850 for travel, fees, books, etc. Tenured and tenure-track faculty have individual office spaces while performing teaching duties. All faculty and staff have access to the specialized facilities including Shop, dFAB, Code, etc.

The team would like to note a distinction between the need for more physical space and the desire for the School to be consolidated in one building, both of which were expressed by faculty, staff, and students. Students, faculty, and staff described the impact that housing different parts of the program in two different buildings has on the program. These ranged from factors that had the potential to negatively impact students' educational experience to factors of convenience. For example, consolidating the School in one building might lead to increase opportunities for interaction between faculty, staff, and students as well as the potential for students to engage in and observe reviews of other studios.

I.2.3 Financial Resources: The program must demonstrate that it has appropriate financial resources to support student learning and achievement.

[X] Not Demonstrated

2018 Team Assessment: The team identified several areas in which the limitations of the current budget have an impact on student learning and achievement. The size and quality of facilities necessitates increased funding and support from the university. Research projects and special projects depend largely upon faculty-sought grants and funding. There is a lack of funding for faculty sabbatical, which have not been awarded for a significant period of time. This has the potential to negatively impact faculty productivity, teaching, and strength as well as the School's ability to retain current faculty and recruit new faculty.

I.2.4 Information Resources: The program must demonstrate that all students, faculty, and staff have convenient, equitable access to literature and information, as well as appropriate visual and digital resources that support professional education in architecture.

Further, the program must demonstrate that all students, faculty, and staff have access to architecture librarians and visual resource professionals who provide information services that teach and develop the research, evaluative, and critical-thinking skills necessary for professional practice and lifelong learning.

[X] Demonstrated

2018 Team Assessment: Students and faculty said their acces to information resources was sufficient. The library is also being used by faculty, staff and student to conduct research on various topics associated with academia and professional practice. Students are provided with computers to access digital information through the library. The School of Architecture's library is found in Hunt Library on the fourth floor and is right next to the architectural librarian's office. The architecture librarian, Martin Aurand, is clearly identified as such on the CMU Libraries website and is also displayed as a reference when searching the online database for architectural resources.

I.2.5 Administrative Structure and Governance:

• **Administrative Structure:** The program must describe its administrative structure and identify key personnel within the context of the program and school, college, and institution.

• **Governance:** The program must describe the role of faculty, staff, and students in both program and institutional governance structures. The program must describe the relationship of these structures to the governance structures of the academic unit and the institution.

[X] Demonstrated

2018 Team Assessment: The SoA described the administrative hierarchy and identified many of the individuals, committees and organizations that make up the team. This included the way in which the SoA fits in the overall university administration, its position within the CFA, as well as a description of the elements of the governance of the SoA program administratively, and programmatically.

CONDITIONS FOR ACCREDITATION

PART TWO (II): EDUCATIONAL OUTCOMES AND CURRICULUM

Part Two (II): Section 1 – Student Performance – Educational Realms and Student Performance Criteria

II.1.1 Student Performance Criteria: The SPC are organized into realms to more easily understand the relationships between each criterion.

Realm A: Critical Thinking and Representation: Graduates from NAAB-accredited programs must be able to build abstract relationships and understand the impact of ideas based on the study and analysis of multiple theoretical, social, political, economic, cultural, and environmental contexts. Graduates must also be able to use a diverse range of skills to think about and convey architectural ideas, including writing, investigating, speaking, drawing, and modeling.

Student learning aspirations for this realm include

- Being broadly educated.
- Valuing lifelong inquisitiveness.
- Communicating graphically in a range of media.
- Assessing evidence.
- Comprehending people, place, and context.
- Recognizing the disparate needs of client, community, and society.

A.1 Professional Communication Skills: *Ability* to write and speak effectively and use representational media appropriate for both within the profession and with the public.

[X] Met

2018 Team Assessment: Evidence of writing was found in Course 48-240 History Survey of World Architecture & Urbanism, 48-241 Modern Architecture, as well as, 48-025/026 First Year Seminar: Architecture Editions I & II.

Use of various representational media were found in all studios particularly in 48-100, and 48-105 Architecture Design Studios Foundation I & Foundation II, as well as 48-300 & 48-305 Architecture Design Studio Integration I & II.

During the discussions with undergraduate students, it was clear that they have had practice speaking in public forums and are educated in communicating articulately in front of a group of peers.

A.2 Design Thinking Skills: *Ability* to raise clear and precise questions, use abstract ideas to interpret information, consider diverse points of view, reach well-reasoned conclusions, and test alternative outcomes against relevant criteria and standards.

[X] Met

2018 Team Assessment: Evidence of students' achievement was found in 48-100, and 48-105 Architecture Design Studios Foundation I & Foundation II.

Evidence of student ability in Design Thinking Skills was identified in student work for ARCH 48-105 Architecture Design Studio: Foundation II and ARCH 48-200 Architecture Design Studio: Elaboration I as well as in other courses. In addition to the evidence in ARCH 48-105 and ARCH 48-200, syllabi, assignments, and resources for other studios and courses demonstrated that this is addressed by faculty and demonstrated by students on a consistent level throughout the program.

A.3 **Investigative Skills:** *Ability* to gather, assess, record, and comparatively evaluate relevant information and performance in order to support conclusions related to a specific project or assignment.

[X] Met

2018 Team Assessment: Evidence of student achievement was found in Courses 48-240 History Survey of World Architecture & Urbanism, 48-241 Modern Architecture, as well as, 48-116 Building Physics, ES I: Climate & Energy, SE II Design Integration of Active Systems and 48-100, Architecture Design Studio: Foundation I.

A.4 **Architectural Design Skills:** *Ability* to effectively use basic formal, organizational, and environmental principles and the capacity of each to inform two- and three-dimensional design.

[X] Met

2018 Team Assessment: Evidence of student achievement of ability in Architectural Design Skills was identified in student work for ARCH 48-200 Architecture Design Studio: Elaboration I, ARCH 205 Architecture Design Studio: Elaboration II, ARCH 48-300 Architecture Design Studio: Integration I as well as other courses. In addition to the evidence in ARCH 200 and ARCH 205, syllabi, assignments, and resources for other studios and courses demonstrated that this is addressed by faculty and demonstrated by students on a consistent level throughout the program.

A.5 **Ordering Systems:** *Ability* to apply the fundamentals of both natural and formal ordering systems and the capacity of each to inform two- and three-dimensional design.

[X] Met

2018 Team Assessment: ARCH 48-121/126 show that students demonstrated ability to use drawing techniques (perspective, isometric, chiaroscuro, contour, negative space) as representation. Students created 2D and 3D representations from reality (figures, skeletons, interiors, etc.) from photos and by diagramming in their sketchbook various case study projects, thumbnail sketch plans, sections and analysis drawings.

The results of learning those abilities are demonstrated in 48-200 where project conceptualization, visualizations and explanation are shown in the student projects. Ordering structural ideas also appear in the “grow” projects for the design of portable greenhouses. Formal partis are diagrammed both as free hand sketches and graphic diagrams. A hybrid of analog and digital representations occurs in all the presentations. Natural ordering ideas of light, air, circulation is shown along with formal geometric ordering concepts (orthogonal, shifted, hexagonal, etc.) in both schematic drawings and models.

A.6 **Use of Precedents:** *Ability* to examine and comprehend the fundamental principles present in relevant precedents and to make informed choices about the incorporation of such principles into architecture and urban design projects.

[X] Met

2018 Team Assessment: Evidence of Student achievement was found in Course 48-250. Case Studies in Architecture & Cities, as well as, studio 48-300 Architecture Design Studio. In addition, other examples of student work reflected an overall understanding of precedent. This was evident in the variety of design responses as well as thorough analysis of site conditions and existing context.

A.7 **History and Culture:** *Understanding* of the parallel and divergent histories of architecture and the cultural norms of a variety of indigenous, vernacular, local, and regional settings in terms of their political, economic, social, ecological, and technological factors.

[X] Not Met

2018 Team Assessment: The program identified two courses in the SPC Matrix and course binders for evidence of achievement of student understanding of A.7 History and Culture; ARCH 48-240 Historical Survey of World Architecture and Urbanism and ARCH 48-241 Modern Architecture.

The course outline in the syllabus for ARCH 48-240 Historical Survey of World Architecture identified 24 course meeting days with specific topics. Of these, the subject for only five or six course days were identified for non-European or non-US architecture subjects (i.e., two course days for Islam (shrines and mosques), one for the Indian subcontinent (Hindu and Buddhist temples), one for China and Japan (Imperial cities and religious traditions), one for Central America (Mesoamerican pyramids), and one for Ancient Egypt (this was for only one syllabus). There was no indication that indigenous, vernacular, local, or settings were covered in this course. Samples of student work were limited to several different exams that were similar in the terms of the types of buildings covered and type of information requested. Although these demonstrated more variety than the subjects identified in the course outline, they did not address indigenous, vernacular, local, and settings. Although the course description described a variety of factors (i.e. technological, religious, social, cultural, economic, and political), the student work and syllabus do not demonstrate that this SPC was met in this course.

The course outline in the syllabus for ARCH 48-241 Modern Architecture: Historical Survey of World Architecture identified 36 course meeting days with specific topics. None of these include topics that were clearly identifiable as indigenous, vernacular, or local settings. Information provided in the Topic, assignments, due dates, and readings was more specific; however, only two course days were identified for non-European or non-US architecture subjects (i.e., one course day for colonial and regional modernism (India and Brazil) and one for tropical modernism and the Third World (Brazil and Africa). Student work was limited to an examination and reading essays, which did not provide evidence of student achievement of understanding of indigenous, vernacular, local, and regional settings.

A.8 **Cultural Diversity and Social Equity:** *Understanding* of the diverse needs, values, behavioral norms, physical abilities, and social and spatial patterns that characterize different cultures and individuals and the responsibility of the architect to ensure equity of access to sites, buildings, and structures.

[X] Met

2018 Team Assessment: ARCH 48-240 & ARCH 48-241 both indicate that students gain an understanding of Cultural Diversity and Social Equity (Non-Equity). Through reading materials related to exam responses and the faculty comments, it is clear that the students are gaining an understanding of the Cultural and Social context of architecture. The very broad survey course materials reveal that the examinations are not solely about names and dates of the buildings but also about the myriad of cultural issues that shape architects and ultimately the concepts of their designs.

Additionally, 48-381 Explicitly states the Cultural and Social Position of Architecture. Students in their course work explained projects through a structure of “Responsibilities” or “Obligations” to the Project, the Client, the Environment, the Profession, The Public, etc. taken out of an ethical positioning.

The mix of international and students from all over the United States indicates that students can influence the multi-cultural background.

Realm A. General Team Commentary: The variety of courses and studios in which student works are demonstrated reveal ability and understanding in all but one SPC in Realm A: Critical Thinking and

Representation. This is the evidence of the program's strength, which was also stated in students' comments about the value and strength of the fundamental skills they receive in foundation year and the benefit that its related studios have provided them to advance in their upcoming studio sequence and other courses. The visiting team noted a chain of valuable reflections of this strong foundation in the high quality of the students' demonstrated design and critical thinking evidences, the wide scope of projects, and students' positive attitude toward their academic work, their professional advancement, and even in their community service engagements.

Realm B: Building Practices, Technical Skills, and Knowledge: Graduates from NAAB-accredited programs must be able to comprehend the technical aspects of design, systems, and materials, and be able to apply that comprehension to architectural solutions. In addition, the impact of such decisions on the environment must be well considered.

Student learning aspirations for this realm include

- Creating building designs with well-integrated systems.
- Comprehending constructability.
- Integrating the principles of environmental stewardship.
- Conveying technical information accurately.

B.1 **Pre-Design:** *Ability* to prepare a comprehensive program for an architectural project that includes an assessment of client and user needs; an inventory of spaces and their requirements; an analysis of site conditions (including existing buildings); a review of the relevant building codes and standards, including relevant sustainability requirements, and an assessment of their implications for the project; and a definition of site selection and design assessment criteria.

[X] Not Met

2018 Team Assessment: The program identified two courses in the SPC Matrix and course binders for evidence of achievement of student understanding of B.1 Pre-Design; ARCH 48-305 Architecture Design Studio: Integration II and ARCH 48-380 Real Estate Design Development.

The syllabi, assignments, and student works for ARCH 48-305 Architecture Design Studio: Integration II did not provide evidence of student ability to prepare a comprehensive program for an architectural project that includes an assessment of client and user needs and an inventory of spaces and their requirements.

In the review of the samples of course syllabi and assignments for ARCH 48-380 H 48-305 Architecture Design Studio: Integration II and 48-380 Real Estate Design Development and student work there was no evidence of achievement of student ability to prepare a comprehensive program.

Although students' works demonstrated an ability to prepare a review of relevant building codes, students' works in totality did not demonstrate ability to respond to requirements of the Americans with Disabilities Act (ADA). Course syllabi and student projects did not demonstrate an ability to design to meet accessibility requirements. The visiting team noted that the lack of evidence of work that reflected ability to design in response to ADA requirements combined with the lack of evidence of students' ability to prepare programs warranted Not Met for this SPC.

B.2 **Site Design:** *Ability* to respond to site characteristics, including urban context and developmental patterning, historical fabric, soil, topography, ecology, climate, and building orientation, in the development of a project design.

[X] Met

2018 Team Assessment: Evidence of student achievement was found in 48-300 Architecture Design Studio: Integration I, 48-315 ES I: Climate & Energy.

Particularly strong evidence occurs in student work posted for 48-200 Architecture Design Studio: Elaboration; 48-300 Architecture Design Studio: Integration; 48-400/500 ASOS and the Urban Design Build Studio; all address specifically in background diagrams and text urban context and developmental patterning, historical fabric, soil, topography, ecology, climate, and building orientation, in the development of a project design.

B.3 **Codes and Regulations:** *Ability* to design sites, facilities, and systems that are responsive to relevant codes and regulations, and include the principles of life-safety and accessibility standards.

[X] Not Met

2018 Team Assessment: The samples of course syllabi and assignments for ARCH 48-305 Architecture Design Studio: Integration II that were included in the course binder demonstrated evidence of analysis of site conditions, review of zoning and site development codes and regulations, and review of sustainability requirements.

While life safety codes especially in the areas of egress and building assemblies are discussed in some depth in 48-215 Materials and Assembly, there is very little evidence of incorporation of this knowledge into the building designs developed in the studio classes.

Accessibility requirements are not addressed or incorporated in course syllabi or in student work.

Only UDBS has a project that demonstrated the skills to design for accessibility as an element. This is not a studio that is required for all students and so all students are not learning ADA accessibility and demonstrating that knowledge in their work.

B.4 **Technical Documentation:** *Ability* to make technically clear drawings, prepare outline specifications, and construct models illustrating and identifying the assembly of materials, systems, and components appropriate for a building design.

[X] Not Met

2018 Team Assessment: Extensive evidence of student ability begins with the Green House drawings for the grow studio, 48_200. Evidence Continues with Materials and Assembly, 48-215 (considered by the students to be one of the most rigorous courses they take.); Pamphlets for 48_381 Ethics & Professional Practice; 48_355 Integration II Student work (through wall sections and building sections; Contract Documents for the Urban Design Studio, as well as Detailing in the ASOS Projects; particularly the Timber Studio; Steam Box & Mies Re-considered.

The team did not find any evidence of instructions and demonstration of students' ability to prepare outline specifications.

B.5 **Structural Systems:** *Ability* to demonstrate the basic principles of structural systems and their ability to withstand gravitational, seismic, and lateral forces, as well as the selection and application of the appropriate structural system.

[X] Met

2018 Team Assessment: Evidence of ability for incorporating structural systems and application of appropriate structural system for gravitational and lateral load is demonstrated in the course 48-305 Architecture Design Studio: Integration II. Understanding level of the load transmission for gravity, lateral and seismic is revealed in course 48-324 Statics / Structures.

B.6 **Environmental Systems:** *Ability* to demonstrate the principles of environmental systems' design, how design criteria can vary by geographic region, and the tools used for performance assessment. This demonstration must include active and passive heating and cooling, solar geometry, daylighting, natural ventilation, indoor air quality, solar systems, lighting systems, and acoustics.

[X] Met

2018 Team Assessment: Courses 48-116, 48-300, and 48-315/ 48-635 demonstrate understanding and analysis of active and passive systems including heating and cooling, solar geometry, daylighting, natural ventilation, indoor air quality, solar systems, and lighting systems. The only lacking element is acoustical analysis and understanding.

48-315 Climate & Energy & 48-312 Design of Integrated Building Systems demonstrate knowledge of and the ability to use the tools used for performance assessment. Exhibited are an understanding and application of active and passive heating and cooling, solar geometry, daylighting, natural ventilation, indoor air quality, solar systems, lighting systems, Ability is exhibited, in sample quizzes. Application of the Knowledge is shown in 48_300, 48_305 Integrations I & II. Ability is also demonstrated in ASOS studios, and the Urban Design Build Studio.

48-410 Studio utilized acoustic and other environmental systems in building design.

B.7 **Building Envelope Systems and Assemblies:** *Understanding* of the basic principles involved in the appropriate selection and application of building envelope systems relative to fundamental performance, aesthetics, moisture transfer, durability, and energy and material resources.

[X] Met

2018 Team Assessment: Course 48-215 Materials & Assembly exhibited an understanding of building envelope systems relative to fundamental performance, aesthetics, moisture transfer, durability, and energy and material resources in sample quizzes. Application of the knowledge (ability) is shown in 48-300, 48-305 Integrations I & II. Ability is also demonstrated in ASOS studios, and the Urban Design Build Studio.

Evidence of student achievements were demonstrated in course 48-305 Architecture Design Studio: Integration II.

B.8 **Building Materials and Assemblies:** *Understanding* of the basic principles used in the appropriate selection of interior and exterior construction materials, finishes, products, components, and assemblies based on their inherent performance, including environmental impact and reuse.

[X] Met

2018 Team Assessment: Evidence of student achievements of understanding and knowledge of the *materials* and *assemblies* is demonstrated in course 48-305 Architecture Design Studio: Integration II, and 48-215 Materials & Assembly.

B.9 **Building Service Systems:** *Understanding* of the basic principles and appropriate application and performance of building service systems, including lighting, mechanical, plumbing, electrical, communication, vertical transportation, security, and fire protection systems.

[X] Met

2018 Team Assessment: The program provided sufficient evidence of student achievement of understanding of building materials and assemblies in ARCH 48-432 ES II: Design Integration of Active Systems in all areas identified in SPC B.9 except communication, security, and fire protection systems.

The evidence of student achievement of understanding of the basic principles of lighting, mechanical, plumbing, electrical, and vertical transportation systems was sufficient and well documented in ARCH 48-432 Environment II: Advanced Building System Integration and Mechanical Systems.

The Visiting Team noted the student work in studio projects demonstrated an appropriate level of understanding and ability of technical issues such as building service systems, materials and methods, and structural systems at all levels of the program.

B.10 Financial Considerations: *Understanding* of the fundamentals of building costs, which must include project financing methods and feasibility, construction cost estimating, construction scheduling, operational costs, and life-cycle costs.

[X] Met

2018 Team Assessment: Evidence of student achievement of understanding of B.10 Financial Considerations in ARCH 48-380

Realm B. General Team Commentary: The variety and quality of student works demonstrated achievement of understanding and ability in many of the SPC in Realm B. It also demonstrated a high level of understanding and ability of students to synthesize complex systems.

The team observed that student work demonstrated a consistently high level of proficiency in the following Student Performance Criterion and noted that they were met with distinction in SPCs A.6 Environmental System, A.7 Building Envelope Systems and Assemblies, A.8 Building Materials & Assemblies.

On the other hand, the limited extent and variety of student works related to some SPC in the team room exhibits and in the binders did not demonstrate student achievement in three SPC. The critical role of these individual elements to overall SPC led the visiting team to determine that these SPC were not met. The team noted that these are essential for a professional degree program, particularly within Carnegie Mellon University.

Realm C: Integrated Architectural Solutions: Graduates from NAAB-accredited programs must be able to demonstrate that they have the ability to synthesize a wide range of variables into an integrated design solution.

Student learning aspirations in this realm include:

- Comprehending the importance of research pursuits to inform the design process.
- Evaluating options and reconciling the implications of design decisions across systems and scales.
- Synthesizing variables from diverse and complex systems into an integrated architectural solution.
- Responding to environmental stewardship goals across multiple systems for an integrated solution.

C.1 Research: *Understanding* of the theoretical and applied research methodologies and practices used during the design process.

[X] Met

2018 Team Assessment: The program identified two courses and one studio in the SPC Matrix for evidence of student achievement of understanding of C.1 Research; ARCH 48-240 Historical Survey of World Architecture and Urbanism, ARCH 48-241 Modern Architecture, and ARCH 48-300 Architecture Design Studio: Elaboration I.

48-100 Foundation I, 48-105 Foundation II, 48-300 Architectural Design Studio: Integration I, include evidences of research methodologies.

C.2 **Integrated Evaluations and Decision-Making Design Process:** *Ability* to demonstrate the skills associated with making integrated decisions across multiple systems and variables in the completion of a design project. This demonstration includes problem identification, setting evaluative criteria, analyzing solutions, and predicting the effectiveness of implementation.

[X] Met

2018 Team Assessment: Evidence of student achievement at the prescribed level was found in 48-300 Architecture Design Studio: Integration I, as well as, 48-432 ES II: Design Integration of Active Systems.

C.3 **Integrative Design:** *Ability* to make design decisions within a complex architectural project while demonstrating broad integration and consideration of environmental stewardship, technical documentation, accessibility, site conditions, life safety, environmental systems, structural systems, and building envelope systems and assemblies.

[X] Met

2018 Team Assessment: Evidence of student achievement at the prescribed level was found in 48-300 Architecture Design Studio: Integration I, as well as, 48-432 ES II: Design Integration of Active Systems.

Realm C. General Team Commentary: The level and quality of the work of undergraduate students as demonstrated in studios 300, 305 and beyond warrants that as graduates of the CMU they have acquired the ability to synthesize a wide range of variables into an integrated design solution. The Team observed that student work demonstrated a consistently high level of proficiency in the following Student Performance Criterion and noted that they were met with distinction in SPCs C.2 and C.3. Students work reveals a process of evaluating options, and implications of design decisions, as well as synthesis of variables from diverse and complex systems into an architectural solution. Students work is inherently responding to environmental stewardship goals as an integrated solution.

Realm D: Professional Practice: Graduates from NAAB-accredited programs must understand business principles for the practice of architecture, including management, advocacy, and the need to act legally, ethically, and critically for the good of the client, society, and the public.

Student learning aspirations for this realm include:

- Comprehending the business of architecture and construction.
- Discerning the valuable roles and key players in related disciplines.
- Understanding a professional code of ethics, as well as legal and professional responsibilities.

D.1 **Stakeholder Roles in Architecture:** *Understanding* of the relationships among key stakeholders in the design process—client, contractor, architect, user groups, local community—the architect's role to reconcile stakeholders' needs.

[X] Met

2018 Team Assessment: Evidence that material was presented to the students occurs in Lecture 1 & Lecture 4. The evidence of understand of the roles of key stakeholders and the architect demonstrate understanding through detailed student presentation booklets prepared for 48_381 Ethics and Practice. Evidence also occurs in the demonstrated results achieved by students in the Urban Design Build Studio, which requires students to document workflow management, project work flow management and project team coordination as shown in student presentation booklets.

Advance Synthesis Options Studios evidence this in different ways, depending on the particular project type. See Ephemeral; Work Space 4.0; Living Space; Rails to Sails; Multiple Grounds; Steam Box; Timber Studio; Mies Reconsidered.

D.2 **Project Management:** *Understanding* of the methods for selecting consultants and assembling teams; identifying work plans, project schedules, and time requirements; and recommending project delivery methods.

[X] Met

2018 Team Assessment: Evidence of student achievements were demonstrated in course 48-380, Real Estate Design Development and 48-381, Ethics & Practice

Evidence that material was presented to the students occurs in Lecture #4. Evidence of Organizational Structure, Approval Process, Design Team Structure, Implementation Process and others demonstrate understanding through detailed student presentation booklets prepared for 48_381. Evidence also occurs in the demonstrated results achieved by students in the Urban Design Build Studio, which requires students to document workflow management, project work flow management and, project team coordination in student presentation booklets.

D.3 **Business Practices:** *Understanding* of the basic principles of a firm's business practices, including financial management and business planning, marketing, organization, and entrepreneurship.

[X] Met

2018 Team Assessment: Evidence of student understanding of firm's organization and business practices were demonstrated in course 48-380, Real Estate Design Development and 48-381, Ethics & Practice

Evidence that material was presented to the students occurs in Lecture 9. Evidence of the understanding of business practice organizational structures is demonstrated both in detailed pamphlets prepared by the students for 48_481 and through submitted quiz results from 48_481.

D.4 **Legal Responsibilities:** *Understanding* of the architect's responsibility to the public and the client as determined by regulations and legal considerations involving the practice of architecture and professional service contracts.

[X] Met

2018 Team Assessment: Evidence of student understanding of the regulatory and legal responsibilities which influence the practice of architecture were demonstrated in courses 48-380, Real Estate Design Development and 48-381/383, Ethics & Practice.

D.5 **Professional Ethics:** *Understanding* of the ethical issues involved in the exercise of professional judgment in architectural design and practice and understanding the role of the NCARB Rules of Conduct and the AIA Code of Ethics in defining professional conduct.

[X] Met

2018 Team Assessment: Evidence of student understanding of ethical issues involved in practice as well as the guidelines established by AIA and NCARB were demonstrated in course 48-381, Ethics & Practice.

Realm D. General Team Commentary: Student understanding of the regulatory, legal and business issues that affect and guide the professional practice of architecture are demonstrated in students' research on these issues and their demonstration of understanding how to use and interpret the contracts and regulations related to the profession. Practicing Architects in design studio work to bring actual practice processes and inculcate professionalism into the studio conduct. Additionally, this understanding is expanded through the practical application of these ideas in the various design and construction labs and in hands-on activities. The E&P and REDD classes use the projects in design studio to apply the ideas and concepts discussed in class. adding realism to the information.

Part Two (II): Section 2 – Curricular Framework

II.2.1 Institutional Accreditation

For a professional degree program in architecture to be accredited by the NAAB, the institution must meet one of the following criteria:

1. The institution offering the accredited degree program must be or be part of an institution accredited by one of the following U.S. regional institutional accrediting agencies for higher education: the Southern Association of Colleges and Schools (SACS); the Middle States Association of Colleges and Schools (MSACS); the New England Association of Schools and Colleges (NEASC); the North Central Association of Colleges and Schools (NCACS); the Northwest Commission on Colleges and Universities (NWCCU); or the Western Association of Schools and Colleges (WASC).
2. Institutions located outside the United States and not accredited by a U.S. regional accrediting agency may pursue candidacy and accreditation of a professional degree program in architecture under the following circumstances:
    a. The institution has explicit written permission from all applicable national education authorities in that program's country or region.
    b. At least one of the agencies granting permission has a system of institutional quality assurance and review which the institution is subject to and which includes periodic evaluation.

[X] Met

2018 Team Assessment: The institution has written documentation from the Middle State Commission on Higher Education (MSCHE).

II.2.2 Professional Degrees and Curriculum: The NAAB accredits the following professional degree programs with the following titles: the Bachelor of Architecture (B. Arch.), the Master of Architecture (M. Arch.), and the Doctor of Architecture (D. Arch.). The curricular requirements for awarding these degrees must include professional studies, general studies, and optional studies.

The B. Arch., M. Arch., and/or D. Arch. are titles used exclusively with NAAB-accredited professional degree programs. The B. Arch., M. Arch., and/or D. Arch. are recognized by the public as accredited degrees and therefore should not be used by non-accredited programs.

Therefore, any institution that uses the degree title B. Arch., M. Arch., or D. Arch. for a non-accredited degree program must change the title. Programs must initiate the appropriate institutional processes for changing the titles of these non-accredited programs by June 30, 2018.

The number of credit hours for each degree is specified in the *2014 NAAB Conditions for Accreditation*. All accredited program must conform to the minimum credit hour requirements:

[X] Met

2018 Team Assessment: The School of Architecture is in conformance with the requirement to use degree titles as specified by the NAAB; the program offers two professional architecture degrees, a Bachelor of Architecture (B.Arch.) and a Master of Architecture (M.Arch.). Other degree programs currently offered by the School of Architecture use appropriate designations (e.g., Bachelor of Arts in Architecture (B.A.), Master of Advanced Architectural Design (MAAD), Master of Science (M.S.) or Doctor of Philosophy (Ph.D.) in Architecture-Engineering-Construction Management (AECM), or in Building Performance and Diagnostics (BPD), and in Computational Design (CD), Master of Science in Sustainable Design (MSSD), and Master of Urban Design (MUD). The School of Architecture also clearly distinguishes between degrees, degree levels, and degree programs. Communication of this information was observed to be consistent in both print and digital media.

Part Two (II): Section 3 – Evaluation of Preparatory Education

The program must demonstrate that it has a thorough and equitable process for evaluating the preparatory or preprofessional education of individuals admitted to the NAAB-accredited degree program.

- Programs must document their processes for evaluating a student's prior academic course work related to satisfying NAAB student performance criteria when a student is admitted to the professional degree program.
- In the event a program relies on the preparatory educational experience to ensure that admitted students have met certain SPC, the program must demonstrate it has established standards for ensuring these SPC are met and for determining whether any gaps exist.
- The program must demonstrate that the evaluation of baccalaureate-degree or associate-degree content is clearly articulated in the admissions process, and that the evaluation process and its implications for the length of a professional degree program can be understood by a candidate before accepting the offer of admission. See also Condition II.4.6.

[X] Met

2018 Team Assessment: Student applications and supporting materials for the B.Arch. degree program are reviewed by the university admissions office with proper documentation. There is no pre-professional education accepted for transfer students. All students are admitted to the program with the stipulation to take their professional required courses at the School of Architecture, which by default incorporates all the NAAB SPC requirements.

Part Two (II): Section 4 – Public Information

The NAAB expects programs to be transparent and accountable in the information provided to students, faculty, and the public. As a result, the following seven conditions require all NAAB-accredited programs to make certain information publicly available online.

II.4.1 Statement on NAAB-Accredited Degrees:

All institutions offering a NAAB-accredited degree program or any candidacy program must include the *exact language* found in the *NAAB Conditions for Accreditation*, Appendix 1, in catalogs and promotional media.

[X] Met

2018 Team Assessment: The statement on NAAB-accredited degree programs is available on the CMU School of Architecture website at https://soa.cmu.edu/accreditation

II.4.2 Access to NAAB Conditions and Procedures:

The program must make the following documents electronically available to all students, faculty, and the public:

[X] Met

2018 Team Assessment: The following documents can be found on the SoA website at https://soa.cmu.edu/accreditation:

The 2014 NAAB Conditions for Accreditation

The NAAB Procedures for Accreditation (edition currently in effect)

II.4.3 Access to Career Development Information:

The program must demonstrate that students and graduates have access to career development and placement services that assist them in developing, evaluating, and implementing career, education, and employment plans.

[X] Met

2018 Team Assessment: In discussions and meetings with students, the Visiting Team noted sufficient evidence that students receive assistance in developing, evaluating, and implementing career, education, and employment plans. The availability and accessibility of faculty as well as the low student-instructor ratio of the studios and the size of the School underscored the close relationship between faculty and students and their role in advising students on career preparation and development ARCH 48-381 also has an exercise where each student outlines his or her potential career as exhibited in posted examples. CMU also sponsors a career fair, which is well attended by regional and national firms.

II.4.4 Public Access to APRs and VTRs:

In order to promote transparency in the process of accreditation in architecture education, the program is required to make the following documents electronically available to the public:

- All Interim Progress Reports (and narrative Annual Reports submitted 2009-2012).
- All NAAB Responses to Interim Progress Reports (and NAAB Responses to narrative Annual Reports submitted 2009-2012).
- The most recent decision letter from the NAAB.
- The most recent APR. [1]
- The final edition of the most recent Visiting Team Report, including attachments and addenda.

[X] Met

2018 Team Assessment: The public access is covered through this link on the SoA web site: https://soa.cmu.edu/accreditation/

II.4.5 ARE Pass Rates:

NCARB publishes pass rates for each section of the Architect Registration Examination by institution. This information is considered useful to prospective students as part of their planning for higher/post-secondary education in architecture. Therefore, programs are required to make this information available to current and prospective students and the public by linking their websites to the results.

[X] Met

2018 Team Assessment: The SoA website has a link to the NCARB website where this information can be found.

II.4.6 Admissions and Advising:

The program must publicly document all policies and procedures that govern how applicants to the accredited program are evaluated for admission. These procedures must include first-time, first-year students as well as transfers within and outside the institution.

This documentation must include the following:

- Application forms and instructions.

- Admissions requirements, admissions decision procedures, including policies and processes for evaluation of transcripts and portfolios (where required), and decisions regarding remediation and advanced standing.
- Forms and process for the evaluation of preprofessional degree content.
- Requirements and forms for applying for financial aid and scholarships.
- Student diversity initiatives.

[X] Met

2018 Team Assessment: Information currently provided on the School of Architecture's website at https://soa.cmu.edu/undergraduate-admissions/ clearly outlined the degrees offered and distinction between undergraduate degrees, the admission process, the application process, the portfolio submission requirements and process, deadlines, and the way to track the application and admission process and resources for additional information. The website page was sufficiently linked with other pages to ensure that students are able to find additional information.

Information about remediation and advanced standing, evaluation of preprofessional degree content, financial aid application process, and student diversity initiatives was not immediately available without starting an application; however, this information is addressed by the application process and by advisors.

II.4.7 Student Financial Information:

- The program must demonstrate that students have access to information and advice for making decisions regarding financial aid.
- The program must demonstrate that students have access to an initial estimate for all tuition, fees, books, general supplies, and specialized materials that may be required during the full course of study for completing the NAAB-accredited degree program.

[X] Met

2018 Team Assessment: The University has listed financial aid options and advice at https://www.cmu.edu/sfs/ . These options include payment options, financial planning, financial aid packages options, loans, and scholarships.

CMU offers tuition estimates for degree paths including estimates for off-campus, commuter, and on-campus living. These estimates are broken down into categories of expenses that the students will incur, including but not limited to, room and board, food, and transportation. CMU's scholarships are provided both need based and merit based providing financial opportunities for students who are unable to afford CMU and for those students that are performing at a high academic level.

PART THREE (III): ANNUAL AND INTERIM REPORTS

III.1 Annual Statistical Reports: The program is required to submit Annual Statistical Reports in the format required by the *NAAB Procedures for Accreditation*.

The program must certify that all statistical data it submits to the NAAB has been verified by the institution and is consistent with institutional reports to national and regional agencies, including the Integrated Postsecondary Education Data System of the National Center for Education Statistics.

[X] Met

2018 Team Assessment: The program included in the APR a letter from Melissa L. Baker, Assistant Director, Institutional Research and Analysis, Carnegie Mellon University, dated March 16, 2017, which verified that statistical information submitted to the BAAN is consistent with institutional reports and reporting to national and regional agencies.

III.2 Interim Progress Reports: The program must submit Interim Progress Reports to the NAAB (see Section 10, *NAAB Procedures for Accreditation,* 2015 Edition).

[X] Met

2018 Team Assessment: The program has submitted interim reports to the NAAB. The Team received from the NAAB copies of interim reports that the School had submitted to the NAAB

IV. Appendices:

Appendix 1. Conditions Met with Distinction

The Team observed that student work demonstrated a consistently high level of proficiency in the following Student Performance Criterion and noted that they were met with distinction:

B.6 Environmental Systems

B.7 Building Envelope Systems and Assemblies

B.8 Building Materials and Assemblies

C.2 Integrated Evaluations & Decision-Making Design

C.3 Integrative Design

Appendix 2. Team SPC Matrix

The team is required to complete an SPC matrix that identifies the course(s) in which student work was found that demonstrated the program's compliance with Part II, Section 1.

The program is required to provide the team with a blank matrix that identifies courses by number and title on the y axis and the NAAB SPC on the x axis. This matrix is to be completed in Excel and converted to Adobe PDF and then added to the final VTR.

Bachelor of Architecture | Blank SPC Matrix | 12 March 2018

Carnegie Mellon University		Academic Units	A.01 Professional Communication Skills	A.02 Design Thinking Skills	A.03 Investigative Skills	A.04 Architectural Design Skills	A.05 Ordering Systems Skills	A.06 Use of Precedents	A.07 History and Global Culture	A.08 Cultural Diversity and Social Equity	B.01 Pre-Design	B.02 Site Design	B.03 Codes and Regulations	B.04 Technical Documentation	B.05 Structural Systems	B.06 Environmental Systems	B.07 Building Envelope Systems and Assemblies	B.08 Building Materials and Assemblies	B.09 Building Service Systems	B.10 Financial Considerations	C.01 Research	C.02 Integrated Evaluations & Decision Making Design Process	C.03 Integrative Design	D.01 Stakeholder Roles in Architecture	D.02 Project Management	D.03 Business Practices	D.04 Legal Responsibilities	D.05 Professional Conduct
	Ability (A)/Understanding (U)		A	A	A	A	A	A	U	U	A	A	A	A	A	A	A	U	U	U	U	A	A	A	U	U	U	U
	Required Studio Courses																											
48-100	Architecture Design Studio: Foundation I	12	A.01	A.02	A.03																							
48-105	Architecture Design Studio: Foundation II	12	A.01	A.02																								
48-200	Architecture Design Studio: Elaboration I	18		A.02		A.04	A.05					B.02		B.04														
48-205	Architecture Design Studio: Elaboration II	18				A.04																						
48-300	Architecture Design Studio: Integration I	18	A.01			A.04		A.06				B.02					B.07				C.01	C.02	C.03					
48-305	Architecture Design Studio: Integration II	18	A.01								B.01		B.03		B.05	B.06	B.07											
48-400/500	ASO Studio I/II	18										B.02						B.08										
48-410/510	ASO Studio II/IV	18																										
48-509	B.Arch Thesis/ Independent Project	18																										
48-519	B.Arch Thesis/ Independent Project	18																										
	Required Media Courses																											
48-120/125	Digital Media I & 2	12																										
48-121/126	Drawing I & II	12					A.05																					
	Required History/Theory Courses																											
48-240	Historical Survey of World Arch & Urbanism	9	A.01		A.03				A.07	A.08											C.01							
48-241	Modern Architecture	9	A.01		A.03				A.07	A.08											C.01							
48-3xx	Architectural History Selective	9																										
	Required Environmental Science Courses																											
48-116	Building Physics	9			A.03											B.06												
48-315	ES I: Climate & Energy	9														B.06												
48-432	ES II: Design Integration of Active Systems	9																	B.09			C.02	C.03					
	Required Building Technology Courses																											
48-215	Materials & Assembly	9									B.01		B.03	B.04			B.07	B.08										
48-324	Statics/Structures	9																										
	Required Professional Practice Courses																											
48-025/026	First Year Seminar: Architecture Editions I & II	6	A.01																									
48-250	Case Studies in Architecture & Cities	9						A.06																				
48-380	Real Estate Design Development	6									B.01									B.10					D.02	D.03	D.04	
48-381	Ethics & Practice	12								A.08				B.04						B.10				D.01	D.02	D.03	D.04	D.01

Appendix 3. The Visiting Team

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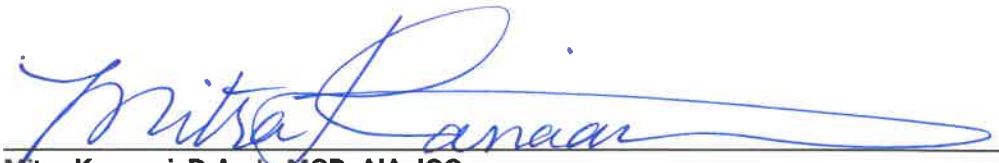
V. Report Signatures

Respectfully Submitted,



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