National Architectural Accrediting Board, Inc.

Architecture Program Report

Carnegie Mellon University
School of Architecture
Master of Architecture (M.Arch) Program

7 September, 2022

NAAB

Architecture Program Report (APR)

2020 Conditions for Accreditation
2020 Procedures for Accreditation

Institution	**Carnegie Mellon University**
Name of Academic Unit	School of Architecture
Degree(s) *(check all that apply)* **Track(s)** *(Please include all tracks offered by the program under the respective degree, including total number of credits. Examples:* *150 semester undergraduate credit hours* *Undergraduate degree with architecture major + 60 graduate semester credit hours* *Undergraduate degree with non-architecture major + 90 graduate semester credit hours)*	☐ Bachelor of Architecture Track: ☒ Master of Architecture Track: Undergrad Arch. major + 60 units Track: ☐ Doctor of Architecture Track: Track:
Application for Accreditation	**First Term of Continuing Accreditation**
Year of Previous Visit	2019
Current Term of Accreditation *(refer to most recent decision letter)*	Initial Accreditation (Three-Year Term)
Program Administrator	Sarosh Anklesaria
Chief Administrator for the academic unit in which the program is located *(e.g., dean or department chair)*	Omar Khan, Head
Chief Academic Officer of the Institution	James Garrett, Provost
President of the Institution	Farnham Jahanian, President
Individual submitting the APR	Omar Khan
Name and email address of individual to whom questions should be directed	Omar Khan okhan1@cmu.edu

Submission Requirements:

- The APR must be submitted as one PDF document, with supporting materials
- The APR must not exceed 20 MB and 150 pages
- The APR template document shall not be reformatted

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INTRODUCTION

Progress since the Previous Visit (limit 5 pages)

In this Introduction to the APR, the program must document all actions taken since the previous visit to address Conditions Not Met and Causes of Concern cited in the most recent VTR.

The APR must include the exact text quoted from the previous VTR, as well as the summary of activities.

Program Response:

2019 Team Assessment:
A.7 History and Culture: Evidence of student achievement at the prescribed level was not found in student work prepared for Architectural Theory (48-634). The syllabus for Modern Architecture (48-633) [sic] covers the required material, but the course is not yet offered. Several courses taught in the B.Arch program are offered to M.Arch students as electives, but no student work was provided to demonstrate student achievement.

Summary of Actions taken since 2019 NAAB Visit

In response to this assessment, we have developed a more rigorous "Evaluation of Preparatory Education" to assess our students' previous history/theory courses, and ensure that those who require additional coursework enroll in the 48-641 Modern Architecture and Theory course. During the application-admissions process our assessment of admitted students confirmed that all students arrive with several architectural, art, and cultural history courses, though these vary quite widely in scope and depth of understanding. Most, including international students, focused on canonical and European traditions. All did study global content as well as older or ancient traditions. International students all also covered aspects of vernacular architectures often pertaining to their region or country.

As a result of this evaluation during the admissions process, the cohort of students entering in 2021 and 2022 were all offered the choice to Opt-out of the 48-641 Modern Architecture and Theory course by applying through the new M.Arch Canvas page. This is a centralized canvas website two which all M.Arch students are enrolled on admission, and through which we have put into place a rigorous system for documenting evidence pertaining to all Opt-out applications. Each student fills out a form listing previous coursework and submits extensive PDF files of evidence—syllabi and class handouts, as well as their class notes, papers, and exams. This detailed evidence of previous education is collected and stored onto the M.Arch Canvas website, and reviewed by the Track Chair and concerned instructor. In assessing the evidence files submitted by students to Opt Out of 48-641 Modern Architecture and Theory, we look not just for course titles in the transcript, but seek to be sure every student has covered the canonical works of modern architecture and global architecture across a broad range of historical traditions, types, etc. We assessed the syllabi and submitted coursework to be sure that the previous courses covered aspects of the vernacular and the global and included critical reflection on this work in terms of politics, gender, race, colonialism, etc. For more on this process, see the "Not Met" section on Evaluation of Preparatory education, as well as 4.3 Evaluation of Preparatory Education.

As a result of the Admissions, Enrollment, and Opt-Out assessment process, six M.Arch students enrolled in 2021 were required (or volunteered) to take the 48-641 Modern Architecture and Theory course to enrich their understanding. Four additional students were asked to take a 3-unit version of the course that required them to attend lectures and submit their notes for 13 lectures focused on:
1) Expanded methods and theories of history covering terms like modernity, historiography, vernacular, canon, and decolonization that were usually missing from their undergrad courses.
2) A suite of at least 7 lectures on global, colonial, and post-colonial 20th-century architecture to ensure a more up-to-date understanding of architectural history that was provided at their undergrad institutions.

Given the disciplinary critiques in recent years of the bias in most traditional history surveys, as well as the fact that the NAAB 2020 conditions have shifted the emphasis from "History & Culture" in the 2014

Conditions, to “History & Theory,” the 48-641 Modern Architecture has undergone considerable revision since 2019. For more on these revisions, see the section **PC.4 History & Theory**.

2019 Team Assessment:
B.9 Building Service Systems: Complete student achievement at the prescribed level was not found in Courses 48647 - Materials & Assemblies, and 48-655 - ESII: Design Integration of Active Systems. Missing evidence included communication, vertical transportation, security, and fire protection systems

Summary of Actions taken since 2019 NAAB Visit:
Since our initial accreditation in 2019, we have worked continuously to differentiate and separate the M.Arch curriculum from B.Arch courses in order to acknowledge that M.Arch students bring substantial and diverse previous education, and far more experience than the CMU undergraduate students. We also acknowledge that some M.Arch students need substantial reinforcement in certain areas of education, for example: M.Arch education for international students requires an emphasis on design culture and construction practices particular to the United States.

One significant effort in separating the B.Arch and the M.Arch was to pull the M.Arch students out of the undergrad 48-215 Materials & Assemblies course, and have them instead take a new, graduate level course called 48-647 Materiality & Construction Systems course that acknowledges the different level of the M.Arch students, and brings a more intense focus on sustainability, systems integration, and bio building materials, etc. Although this course does not cover the systems listed above, it does provide a new focus on building and material systems, and is closely linked to the M.Arch Praxis-2 studio, allowing more rigorous integration of systems in the design process.

Another significant change is that we have separated the 1st year M.Arch studios from the B.Arch program. Until recently, the first year M.Arch studios were separate sections of the coordinated 3rd year undergraduate studios (48-300 & 48-305). As stand-alone studios, the reconfigured 48-630 Praxis-1 Worldmaking and 48-640 Praxis-2 Worldshaping studios allow us to work much more specifically on “Materials," “Synthesis,” and “Integration,” but also to make connections to co-requisite course like 48-647 Materiality & Construction System as well as 48-655 Environmental Systems-2: Building Systems and Integration. Both courses now build directly on the students' projects from Praxis-2 studio to integrate construction assemblies, technical knowledge and active systems directly into the Praxis-2 studio projects.

The new 2020 Conditions no longer list specific technologies that schools must address, though the intent to be professional and thorough and to integrate the systems, surely remains. This particular condition has been superseded by the new, broader 2020 NAAB Conditions for Accreditation.

See also **SC.4 Technical Knowledge**, and **SC.6 Building Integration.**

2019 Team Assessment:
C.3 Integrative Design: Evidence of student achievement at the prescribed level was not found in student work prepared for 48-630 UBDS I and II. Specifically the team did not find clear evidence of accessibility, life safety, and environmental system in the student work provided.

Summary of Actions taken since 2019 NAAB Visit
We no longer offer the Urban Design Build Studio (UDBS) sequence of courses for the M.Arch, making the work much more similar across each cohort of students. In the first cohort of M.Arch graduates, those who were evaluated in the first NAAB accreditation in 2019, students were allowed to choose one of two different studio sequences through the program: 1) a 4-semester sequence of UDBS Design-Build studios, OR 2) two studios called Integration 1&2 which were separate sections of the undergrad 48-300 and 48-305 studios, and then any two Advanced Synthesis Option Studios (also referred to in this document as “ASOS studios"). Both of these two very different paths were structured to satisfy all NAAB criteria, though in very different ways. This “Not Met” from the previous VTR identifies deficiencies in the UDBS path. The UDBS path is no longer offered at CMU, and UDBS Director John Folan left CMU soon after that, in 2020.

The Integration-ASOS path was further revised to the current Praxis-1 & 2 studios offered in the first year, followed by ASOS studios in the second year. The first year 48-630 Praxis-1 Worldmaking and 48-640 Praxis-2 Worldshaping studios are now completely separate and different from the 3rd year undergrad studios, focusing more on Design Ethics and on System Integration. The close relationship of Praxis-1 & 2 Studios to the M.Arch specific 48-647 Materiality & Construction Systems course, as well as the improved connection of 48-655 Environmental Systems-2: Building Systems and Integration, helps ensure that systems integration is covered.

The current focus of 48-655 Environmental Systems-2: Building Systems and Integration is described in SC.3, SC.4 and SC.6. Since 2019, the primary change in that course is that coverage of specialty systems primarily handled by consultants in design (e.g. signal systems and building transportation) has been replaced with an increased emphasis on passive and active systems integration, also relating to effective design responses to climate change.

See also **SC.4 Technical Knowledge**, and **SC.6 Building Integration**.

2019 Team Assessment: Part Two (II): Section 3 – Evaluation of Preparatory Education
To date, admission to the program is only available to advanced standing students. As such, all students are evaluated for advanced standing through a review of their transcripts, portfolio, and professional expertise. The evaluation of the baccalaureate degree is part of the admission process. Students may opt-out of courses that they can submit substantial proof of equivalency for evaluation by the Track Chair and the course professor. There was not sufficient evidence found of the admission process accounting for the course equivalents of 48-633 [sic] Modern Architecture and 48-663 Architectural History Selective that were identified in the SPC Matrix as satisfying SPC A.07 History and Global Culture. While these courses are identified as part of the first year of a three-year program of study and as yet, have not been taught, they represent substantial content relevant to SPC A.07.

Summary of Actions taken since 2019 NAAB Visit:
The M.Arch admissions process has been substantially strengthened since 2019, in particular our evaluation of previous education. We have overhauled our website to be sure all potential applicants clearly understand the need to have previous experience in architecture, and that the evaluation of this past experience would be part of the application process to our 2-year program. Whereas early in the program we had quite a few students applying without enough background coursework, we now seem to have much fewer students applying without sufficient previous education in all areas.

In 2019 we have revised our online Slideroom application to include an entire new section called “M.Arch Evaluation of Previous Coursework” that asks applicants to self-identify all previous coursework and professional experience in 6 categories:
1) Architectural History and/or Modern Architecture
2) Construction, Materials, and/or Assembly
3) Environmental Science and/or Systems
4) Professional Practice
5) Structures & Statics
6) General Studies

Each category includes a brief description to help students understand what kinds of studies might be included.

For every enrolled student, we document the courses they list here and cross-reference it to their transcript to ensure all met minimal requirements architectural history and global and diverse cultures. This assessment is a binary “Met / Not Met” designation, and does not include quantitative or qualitative evaluation. We have begun to undertake a similarly rigorous evaluation of previous education in History and Theory for the cohort beginning in Fall 2022.

In our last APR and accreditation visit in 2019, we presented a curriculum for a 3-year M.Arch program, but presented only the last two years of student work and were subsequently approved for a 2-year M.Arch. As a result, we have changed our curriculum chart to show clearly a 2-year program. Since all students arrive with previous experience in architectural history, the only requirement in our two-year program is for 48-641 Modern Architecture and Theory. There is no longer a requirement for “Architectural History Selective.” For specifics on Opting Out of the 48-641 Modern Architecture and Theory, please see above for our response to the related “Not Met” criteria for the former criteria A.7 History & Culture, as well as section **PC.4 History & Theory**.

See also **4.3 Evaluation of Preparatory Education** for a more detailed narrative.

Program Changes

Further, if the Accreditation Conditions have changed since the previous visit, the APR must include a brief description of changes made to the program as a result of changes in the Conditions.

This section is limited to 5 pages, total.

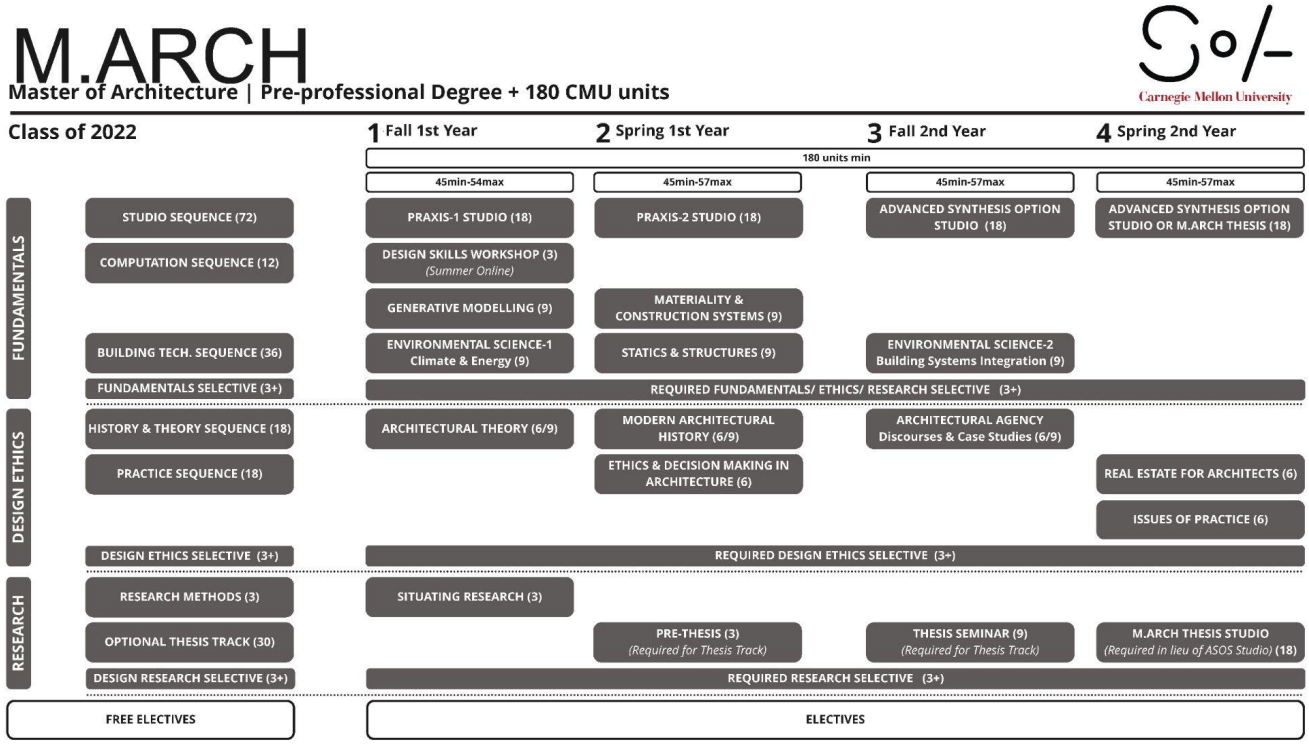
Program Response:

The NAAB 2020 conditions were published soon after our initial accreditation in 2019, and just before the pandemic and the reverberations of the Black Lives Matter movement and the global push for social justice hit our campus. In 2020 we hired a new Head of the School of Architecture at Carnegie Mellon University, Omar Khan, the first outside head of the school in 30 years. Together, these prompted reflection and real change in the overall School and as well as the M.Arch program.

A major change to the program due to the changes in accreditation conditions relates to the program's planning and assessment. The increased emphasis by NAAB on self-assessment, as well as our own desire for constant improvement, has led the program to initiate assessment at three distinct tiers:

Tier 1: External Program Level Assessment
Tier 2: Internal Program Level Assessment
Tier 3: Course level Assessment

These assessment tiers do not include the Curricular Committee or the Program Track Chair who are tasked with taking assessment results and recommendations across the tiers, and making changes to the program, curriculum, and courses. The assessment section of each of the Program Criteria and Student Criteria outlined in Chapter 3 of this document will make reference to this three-tiered assessment strategy. For a detailed narrative of our assessment system, as well as an overview of the frequency and current status of the various assessment efforts see **5.2 Planning and Assessment, M.Arch Assessment Strategy.** This APR uses examples from prior, recent and ongoing assessment efforts across these three tiers, to make the case for a rigorous and evolving assessment of the program—its mission, goals and objectives, shared values, curriculum, program policies, as well as key NAAB Program and Student Criteria. Full reports will be provided to the NAAB team during the online visit in Spring 2023.



CMU SoA M.Arch Curriculum Chart, 2022

Summary of Curricular Changes

The most recent Curriculum Chart for the Incoming Class of 2022 (Fall 2022 - Spring 2024) is outlined above. Note that Carnegie Mellon University uses a particular “unit” system of allocating course credits, in which, for the average student, one unit represents one work-hour of time per week. Three units are the equivalent of one traditional semester credit, so our 180-unit M.Arch is the equivalent of a 60-credit two-year program elsewhere.

The following text describes a few highlights of the current curriculum, and changes to the program's curriculum since the last accreditation. These have been driven by the many structural changes to the program, described previously, but also by the revised 2020 NAAB Conditions for Accreditation that encourage schools to pursue unique strengths and methods of pedagogy, in line with their background and strengths. In terms of broad strategy our curricular changes include:

a) The current curriculum (Incoming Class of 2022) aligns closely with the Pedagogies 2020 conversations at CMU SoA to offer courses in three simultaneous tracks: **Design Fundamentals, Design Ethics, and Design Research**. Each track has various course sequences that relate to a suite of offered courses regarding a broad subject:

    Design Fundamentals Track: Design Studio | Computation | Building Technology
    Design Ethics Track: History & Theory | Practice
    Design Research Track: Research Methods | Thesis Track

b) Based on the Pedagogies 2020 conversations we have found new alignments within the curriculum to require all students to take at least three selectives of their choice (min. 3 units per selective) at any point during their four semesters. Out of the three selectives, at least one must be in Design Ethics and one in Design Research.

c) We have increased curricular separations between the M.Arch and the B.Arch programs, offering required courses that are dedicated only to the M.Arch program (or in some cases offered only to graduate students). The following courses are either new or have been overhauled entirely since the previous accreditation to reflect this:

    48-630 Praxis-1 Worldmaking Studio
    48-640 Praxis-2 Worldshaping Studio
    48-647 Materiality and Construction Systems
    48-620 Situating Research
    48-6XX Architectural Agency: Discourses & Case Studies (Forthcoming Fall 2023)

d) We have moved toward a 6-unit default course (instead of the traditional 9), which allows for additional courses to be offered and greater flexibility and choice. Our studios remain at an 18-unit default weight.

e) Opt-outs: The documentation of course Opt-outs has been strengthened significantly, and only selected courses are allowed for Opt-outs. (See **4.3 Evaluation of Previous Education**)

Design Fundamentals Track

- **Design Studio Sequence:**
  48-630 Praxis-1 Worldmaking Studio
  48-640 Praxis-2 Worldshaping Studio
  48-650 ASOS Studio-2 / Thesis

  The Praxis-1 & 2 studio sequence has been revised entirely, to work closely together in the first year of the program. Being core first year experiences, Praxis-1 & 2 are situated in the Design Fundamentals sequence, but also offer important lessons in Design Ethics. Praxis-1 introduces students to the broad architectural concepts, emerging discourses, and related vocabularies regarding Design Ethics—the entanglements of ecological challenges with questions of social

justice, variously called Design for Transitions or Transition Discourses. It also considers the synthesis of these with questions of labor, materiality, tectonics, architectural representation and narrative. Praxis-2 develops these themes further in the context of Building Integration, with a focus on mass timber as a tectonic and material system, an emphasis on building and structural systems, building envelope and assemblies and environmental control systems through a rigorous, empirical, and interactive design process.

- **Building Technology Sequence:**
  48-635 Environmental Systems-1: Climate and Energy
  48-647 Materiality & Construction Systems
  48-655 Environmental Systems-2: Building Systems and Integration
  48-637 Statics & Structures

  A new course 48-647 Materiality and Construction Systems has replaced the previous Material and Assemblies course, and is now taught exclusively to M.Arch students. Starting Fall 2022, 48-655 Environmental Systems-2: Building Systems and Integration will work directly with Praxis-2 projects toward building integration. Building Integration has been significantly strengthened and now operates across a suite of three related courses: 48-640 Praxis-2 World Shaping Studio + 48-647 Materiality and Construction Systems + 48-655 Enviro-2 Design Integration of Active Building Systems. See **SC.6 Building Integration** for more detailed discussion.

- **Computation Sequence:**
  48-689 Design Skills Workshop (summer course)
  48-783 Generative Modeling

  Note that in addition to these core courses, computation is addressed in various other courses and also across the Design Fundamentals, Design Ethics, and Design Research Selectives.

- **Design Fundamentals Selective:**
  Students must take three selectives during the program out of which at least one must be in Design Ethics and one in Design Research. The Design Fundamentals selective is optional.

Design Ethics Track

- **History and Theory Sequence**
  48-634 Architectural Theory & Contemporary Issues
  48-641 Modern Architecture & Theory
  48-6XX Architectural Agency: Discourses & Case Studies (Forthcoming Fall 2023)

  A new course 48-6XX Architectural Agency: Discourses & Case Studies (Forthcoming Fall 2023) has been added to relate to questions of Design Ethics, and contemporary questions of theory and praxis.To accommodate this course, the History and Theory sequence of courses has been strengthened to the following courses for 6 units (as a default) or 9 units (offered for additional coursework):

- **Practice Sequence**
  48-648 Ethics and Decision Making in Architecture
  48-658 Real Estate for Architects
  48-649 Issues of Practice

  48-658 Real Estate for Architects is now exclusively for architecture students. It has been moved to the last semester to align with the course 48-649 Issues of Practice. The course 48-648 Ethics and Decision Making has been moved to semester 2 to build on the theme of Design Ethics. At the time of the previous accreditation we had two larger courses (Real Estate Design and Development (6-9 units), and Ethics & Practice (12 units), that have now been reconfigured into the three courses described above, each of 6 units.

As an alternative to 48-658 Real Estate for Architects, students may choose to take the 9-12 unit fall semester course 48-725 Graduate Real Estate Development in place of the spring 6-unit Real Estate for Architects. The graduate course is taught for a broad spectrum of architecture, urban design, public policy and business school graduate students, with more business and real world development practice.

- **Design Ethics Selective**
  One Design Ethics selective is required during any of the four semesters of the program.

Design Research Track:

- **Design Research Methods**
  48-620 Situating Research is a new course required of all students in the graduate school. It introduces students to research methods and outlines key areas of research across CMU SoA.

- **Thesis Sequence:**
  48-644 M.Arch Pre-Thesis
  48-625 M.Arch Thesis Seminar
  48-650 Thesis Studio
  The Thesis Sequence is optional and requires additional courses to buttress the final "48-650 Thesis." Students need to "declare" their intention to follow a Thesis Sequence, when entering the second semester of the program.

- **Design Research Selective**
  One Design Research Selective is required during any of the four semesters of the program.

A full list of Design Fundamentals, Design Ethics, and Design Research Selectives for the current semester is available on our website here: https://soa.cmu.edu/courses

Note regarding 2-year program:
Although not necessarily a change to the program due to the new 2020 Conditions, it is important to acknowledge that in our last APR and accreditation visit in 2019, we presented a curriculum for a 3-year M.Arch program. Based on the advice of former NAAB administrators, and recognizing that NAAB's previous 2014 Conditions claimed to be "outcome based," we presented only coursework from the last two years of the student work, with the intent to develop the first-year studios after receiving the initial accreditation. The Visiting Team and the NAAB Board accredited us only for a 2-year M.Arch, and requested that we represent our program as a 2-year program on our website and all aspects of our program. We made these changes immediately upon receiving our Initial Accreditation in 2019, and have developed this APR for the 2023 visit to represent our on-going efforts to build a great 2-year program.

There are currently no plans or intentions of developing a 3-year program at CMU.

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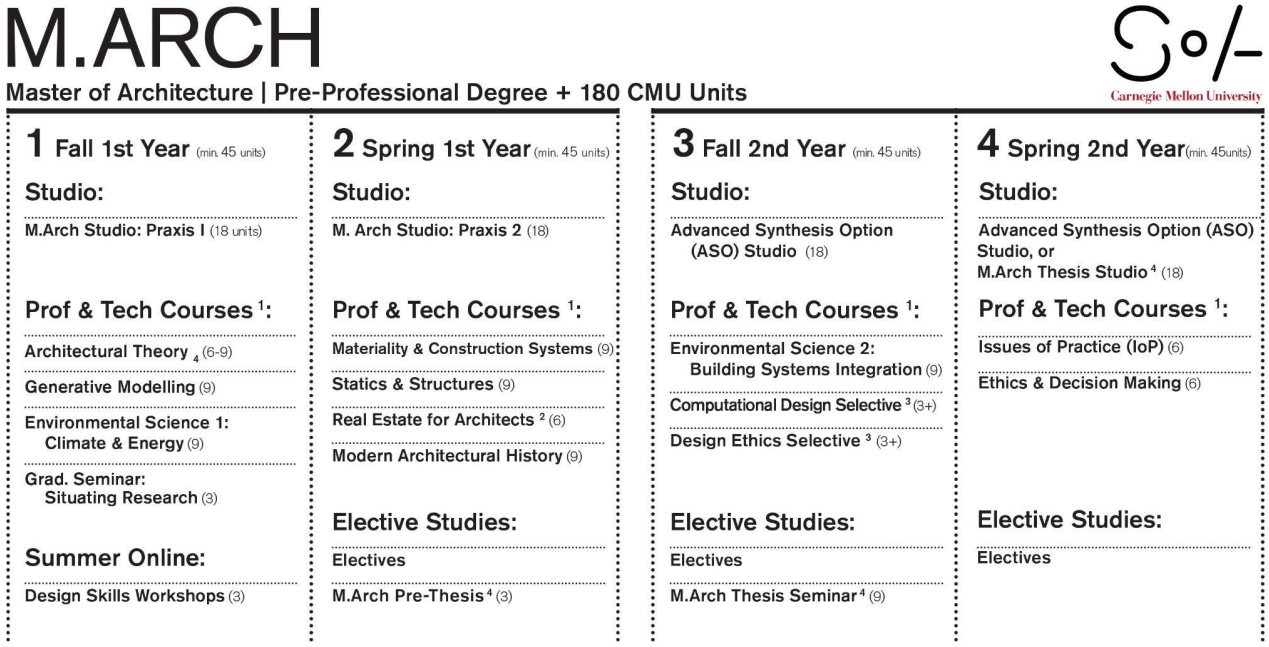
Note regarding curricular charts:
The most recent curricular chart (for the incoming class of 2022) is the basis for this APR, and has been described above.

Because the curricular chart is a document that evolves and is improved each year, the current second year class (incoming class of 2021) has used a slightly different curricular chart that did not make explicit the three tracks and various sequences described above. For purposes of transparency we are including below, this older **curricular chart for the incoming class of 2021**.

This distinction has also been made explicit on our website.



CMU SoA M.Arch Curriculum Chart, 2021

NAAB

NARRATIVE TEMPLATE

1—Context and Mission

To help the NAAB and the visiting team understand the specific circumstances of the school, the program must describe the following:

The institutional context and geographic setting (public or private, urban or rural, size, etc.), and how the program's mission and culture influence its architecture pedagogy and impact its development. Programs that exist within a larger educational institution must also describe the mission of the college or university and how that shapes or influences the program.

Programs must specify their delivery format (virtual/on-campus).

Program Response:

Carnegie Mellon University (CMU)

Carnegie Mellon University is a private, global research university with its main campus located in Pittsburgh, Pennsylvania. It has satellite campuses in Silicon Valley, Rwanda, Qatar and Australia and many institutional partnerships across the globe. CMU was founded by industrialist and philanthropist Andrew Carnegie, who donated the funds to create Carnegie Technical Schools in 1900 in Pittsburgh, Pennsylvania. In 1912, the schools, including the School of Architecture, became the Carnegie Institute of Technology, highly regarded for both the arts and technology. A merger with the Mellon Institute—the nation's first major research institute—created Carnegie Mellon University in 1967. Today, CMU is a national research university of about 15,818 students and 5,000 faculty, research, and administrative staff.

The School of Architecture (SoA) is one of five schools within Carnegie Mellon University's College of Fine Arts (CFA), alongside the schools of Art, Design, Drama, and Music. Likewise, the CFA is one of seven colleges and schools at Carnegie Mellon University (CMU) alongside the College of Engineering, the Dietrich College of Humanities and Social Sciences, the Mellon College of Science, the Tepper School of Business, the School of Computer Science, and the Heinz College of Information Systems and Public Policy. CMU is an international leader in technological fields such as computer science, robotics, and engineering. From its inception it has placed a strong emphasis on the applied and practical arts and trades, as well as the fine arts. Its position of leadership in both the arts and technology is unique within higher education.

CMU's vision is to have a "transformative impact on society through continual innovation in education, research, creativity, and entrepreneurship." Its mission emphasizes "a transformative educational experience for students focused on deep disciplinary knowledge; problem solving; leadership, communication, and interpersonal skills; and personal health and well-being." The values that it emphasizes are dedication, collaboration, creativity, empathy and compassion, inclusion, integrity, and sustainability. As an internationally recognized tier-one research university it supports highly ranked innovative research programs and values itself as a global leader with an entrepreneurial ethos, bringing groundbreaking ideas to market and creating successful start-up businesses.

The College of Fine Arts (CFA)

The College of Fine Arts (CFA) was founded in 1905, and was the first comprehensive arts learning institution in the United States. Today it is a unique constellation of internationally top-ranked conservatory schools in the arts embedded within a tier-one research university. The five schools are committed to community engagement, supportive of creative risk-taking, and actively embracing diversity. The pedagogy across the college is built on the principles of "thinking through doing" and "learning through doing" in studio and conservatory-based environments, and respect for tradition while encouraging innovation.

The CFA is internationally renowned for its unique multidisciplinary capabilities. Its distinctive pedagogical approaches play a vital role in melding the exceptional capabilities of a great research university with the concerns of society and culture. The college shares numerous research projects, interdisciplinary centers, and educational programs with other units across the university, with SoA professors and students participating actively in all of them:

The Miller Institute of Contemporary art (ICA) and their gallery is Carnegie Mellon University's gallery and institute providing transformative experiences with contemporary art through exhibitions, conversation, and exchange in a free and open public space. See https://miller-ica.cmu.edu/

The Integrative Design, Arts and Technology Network (IDeATe) connects diverse strengths across CMU to advance education, research, and creative practice in domains that merge technology and arts expertise. IDeATe trains students to be excellent in one area of technology or arts and to collaborate within diverse cohorts of technology and arts experts. IDeATe offers minors and courses in Game Design, Animation & Special Effects, Media Design, Sonic Arts, Design for Learning, Innovation & Entrepreneurship, Intelligent Environments, Physical Computing, and Soft Technologies. Courses are focused on hands-on collaborative learning and are structured to combine students from many different disciplines. The curriculum is being developed and delivered by 65 faculty across 15 different academic units of CMU, and being delivered at the new IDEATE collaborative making facility housed at the central Hunt Library. Courses taught by SoA faculty include: 62-150 IDeATe Portal: Introduction to Mediascapes, 48-528 IDeATe: Responsive Mobile Environments, 99-362 IDeATe: Intelligent Learning Spaces, 48-734 IDeaTe: Possibilistic Design. See https://ideate.cmu.edu/

The Frank-Ratchye STUDIO for Creative Inquiry at Carnegie Mellon University is a flexible laboratory for atypical, anti-disciplinary, and inter-institutional research at the intersections of arts, science, technology and culture. Through research, residency, and public programming, the STUDIO provides opportunities for learning, dialogue and production that lead to innovative breakthroughs, new policies, and the redefinition of the role of artists in a quickly changing world. Institutionally, the STUDIO resists easy definition. The STUDIO fulfills its mission in six distinct ways: 1) The STUDIO provides administrative, logistical and technical support for faculty-led arts research initiatives, including assistance with fundraising, grant-writing, travel, payroll, purchasing, contracting, reporting, fiscal management and forecasting, event planning, and much more; 2) Frank-Ratchye Further Fund (FRFF), an endowment to encourage the creation of innovative projects by the faculty, students and staff of CMU; 3) Sylvia and David Steiner Speaker Series brings creative practitioners who push boundaries, defy definition, and demonstrate excellence in all aspects of the arts, to the campus for deep engagement with our students and faculty; 4) Educational Programs; 5) Creatives-in-Residence Program; 6) Interdisciplinary Advocacy; 7) A Collaborative and Accessible Workspace.

The BXA intercollege degree programs offer interdisciplinary bachelor's degrees that combine studies in the fine arts with work in the humanities, sciences, or computer science. Interdisciplinarity, a core value for the CFA, and is evident in individual exploration and scholarship of our students and faculty. It is also encouraged between the schools and the university. The goal of the Bachelor of Computer Science and Arts (BCSA), the Bachelor of Engineering Studies and Arts (BESA), the Bachelor of Humanities and Arts (BHA), the Bachelor of Science and Arts (BSA) and the additional major in Engineering and Arts (EA), housed under the BXA Intercollege Degree Programs, is to allow a select group of students who demonstrate interest and accomplishment in the fine arts and computer science, engineering, humanities, social sciences or natural sciences to explore beyond the traditional academic major, or integrate more than one field of study across disciplines. These programs foster the creativity of students who explore innovative approaches to the academic environments of two colleges and disparate areas of interest. By merging the components into an interdisciplinary or multidisciplinary study, a unique, complex product is born. BXA students produce new information, challenging questions and innovative theory. BXA students are models of independence, motivation and well-rounded scholarship as humanists, scientists, and artists at the same time.

School of Architecture (CMU SoA)

SoA offers fourteen undergraduate, graduate, and doctoral degree programs with about 450 students, 69 faculty (13 tenured, 4 tenure-track, 4 teaching-track, 19 special-track, 29 adjunct, 38 full time, and 31 part time) and 15 staff.

The SoA offers two baccalaureate degree programs: the 5-year, professional, NAAB accredited Bachelor of Architecture (B.Arch), and the 4-year Bachelor of Arts in Architecture (B.A.), with about 260 students combined. Both programs begin with the same studio-based curriculum in the first year, but then begin to diverge in terms of opportunities and outcomes. The B.Arch requires 10 studios and an extensive set of required technical courses, while the B.A. requires a minimum of 4 studios and fewer technical courses, all of which can be spread out over the four years of the program, and thus allow students to explore different opportunities in their studies. Undergraduate students are admitted to the SoA without a declared degree program. By the end of the second year, students must select either the B.A. or the B.Arch degree program. The student's Academic Advisor, faculty, and Head provide mentoring and information to guide the student in selecting their degree option. The SoA's Accelerated Master's Program (AMP) offers baccalaureate students the opportunity to expedite their completion of a Master's degree, saving both time and money, and allowing them to hit the job market with specialized knowledge and two CMU degrees. (AMP is currently not an available option for the M.Arch program.) The BXA programs discussed above take advantage of SoA courses, but the students and program are not technically part of the SoA.

In addition to the two year, professional, NAAB accredited **Master of Architecture (M.Arch)** program, the SoA graduate school offers six post-professional master's programs, with a total of about 180 students:

Master of Urban Design (MUD), a program that prepares graduates for careers using design to critically address environmental, economic, social, and cultural issues affecting the contemporary metropolis.

Master of Advanced Architectural Design (MAAD), a postgraduate, studio-based program that engages emerging methods of design and fabrication through architectural design to speculate upon future modes of architectural practice, enhanced construction methods, and material culture within the built environment.

Master of Science in Sustainable Design (MSSD), a post-professional research-based graduate program focused on enabling deep expertise, critical thinking, and investigation of innovative sustainable strategies for the design of the built environment.

Master of Science in Building Performance and Diagnostics (MSBPD), a program intended for practitioners, researchers, and educators in architecture and the building industry who wish to be leaders in advanced building technologies and their performance.

Master of Science in Computational Design (MSCD), a program designed primarily for practitioners in the building industry who wish to broaden their knowledge about state-of-the-art computer approaches and applications to the architectural and building sciences and for individuals who wish to pursue research careers in these areas.

Master of Science in Architecture, Engineering and Construction Management (MSAECM) which is jointly administered with the Department of Civil Engineering and Environmental Science to prepare building-delivery professionals for careers in capital project delivery dealing with the entire life-cycle of capital projects, from pre-design to design, construction, commissioning, operation, and maintenance stages.

The SoA also offers a **Doctorate of Design (DDS)** for mid and advanced career professionals, and four research-based PhD programs in Architecture, with a total of about 20 students: the **PhD in Architecture (PhDA)**; the **PhD in Building Performance and Diagnostics (PhDBPD)**; the **PhD in Computational Design (PhDCD)**; and the **PhD in Architecture, Engineering and Construction Management (PhDAECM)**.

CMU's and CFA's institutional focus on multi and interdisciplinary education, an embrace of technological innovation as a basis for addressing the big challenges in society, and a focus on global engagement influence the SoA's mission and pedagogy. Our mission:

> *The Carnegie Mellon School of Architecture educates students in the discipline of architecture, emphasizing the role of creativity in architectural design; understanding architecture's historical, social, and environmental contexts; critically engaging technology in architectural innovation; and working ethically to achieve social progress and justice in the built environment. We aim to produce discipline-defining designers and thinkers in diverse global contexts. This world-class architecture education is enhanced by our position within one of the world's leading research and entrepreneurship institutions, and by the fundamental premise that architectural excellence demands both rigorous training in fundamentals and the development of unique specializations. Students may extend their core knowledge either through concentration in architecture subdisciplines like urban design, sustainable design or computational design, or through interdisciplinary interaction with CMU's other renowned programs in the sciences, humanities, business and engineering. Though every SoA student graduates with intensive architecture knowledge, no two graduates leave with the same education. In the twenty-first century, few architecture problems are straightforward. SoA graduates excel in the roles architects have performed for centuries—and in new roles catalyzed by the depth and breadth of their education—to create and execute innovative solutions to a wide range of emerging global challenges.*

In 2020, with the arrival of new head of school Omar Khan, the school embarked on a strategic planning process titled **Pedagogies 2020**. Its scope was to review the school's mission, values and programs and to develop an actionable vision that can address some of the significant challenges facing architecture and the built environment in the 21st century. Three global challenges were identified—climate change, artificial intelligence, and social justice—which the school and CMU were uniquely well placed to address. The school has an established reputation in the productive role that technology plays in the art and design of architecture. Its pioneering work in sustainability, building science and computation has distinguished it from its peers. Likewise, its seminal work in participatory and community engaged design has laid the foundations for the values we ascribe to architecture: that, above all, it must be in the public interest and accessible to all.

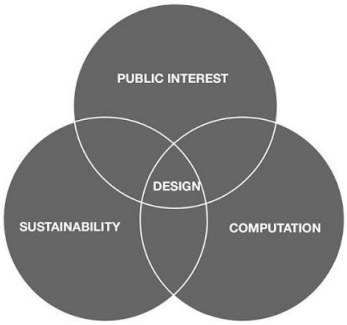
Omar Khan, Head, SoA joined CMU from the Department of Architecture at the University at Buffalo (UB), where he served as department chair for seven years. During his tenure as chair, the department's reputation grew in response to his pedagogical innovations, especially in design-build experiential learning and research-focused graduate education. His efforts also led to the largest increase of sponsored research at the department. Khan's research and creative activities span architecture, installation/performance art, and digital design and fabrication. At the University at Buffalo, Khan co-directed the Center for Architecture and Situated Technologies (CAST) and was an editor of the Situated Technologies Pamphlet Series. CAST's research focuses on pervasive computing technologies as they intersect with architecture. He also was a co-director of the Sustainable Manufacturing and Advanced Robotics Technology (SMART) Community of Excellence.

The actionable part of Pedagogies 2020 was the establishment of three pedagogical foci: Design Fundamentals, Design Research and Design Ethics. All degree programs engage these topics in their coursework, not necessarily in equal measure but with an understanding that as a school composed of fourteen undergraduate, graduate and doctoral degrees, these pedagogies provide opportunities for faculty and intellectual overlaps between the programs. While the Master of Architecture program's mission is to teach students to become professional architects, its pedagogy and vision is influenced by the other programs housed in the SoA's Graduate School. The description of the M.Arch programs goals, mission and expected outcomes demonstrates how larger school goals are integrated into the individual program. See **5.2.1 Planning and Assessment, Multi-year Strategic Objectives,** for further elaboration and details.

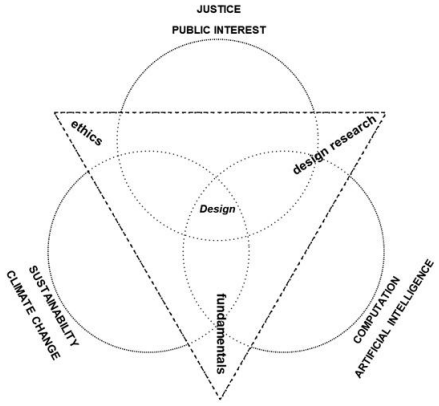
Upon his arrival in the summer of 2020, the new Head Omar Khan designated three fundamental global Challenges on which the SoA could have great impact given its context, background and strengths: *climate change; artificial intelligence, and social justice*. CMU's School of Architecture was uniquely situated to take on these challenges, given its long history of participatory design and community engagement, the university's global leadership in computation and robotics, and the school's long history of research and innovation in the fields of building performance and sustainability.

Khan then organized a year of stocktaking and strategic planning in order to start discussions with faculty, staff, and students across all the fourteen programs on how our school could address these three challenges. This work was divided into three organizing pedagogies that underscore all of our teaching: Fundamentals, Research and Ethics (called Race and Inclusion during the strategic planning). See Pedagogies Diagram below. Pedagogy was understood not just as the content of what is taught, but a three-fold effort that encompasses the inspiration and mentoring that must accompany successful pedagogy, as well as the care and wellness that must form the foundation for learning.

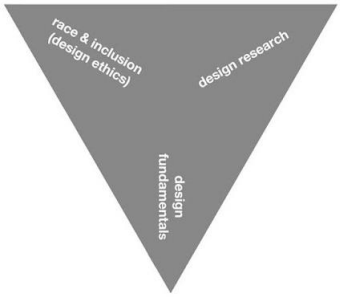
The Pedagogies 2020 discussions helped set priorities and ways to think across some of the silos and old habits or practice in the SoA. They led to the appointment of three Associate Heads (Design Fundamentals, Design Ethics, and Design Research) to spearhead efforts across the fourteen programs as well as three faculty pedagogy committees to help assess and reform our courses: Computation & Representation; Architectural Technologies and Building Sciences; and History, Urbanism & Practice. The Pedagogies, Associate Heads, and Committees have collaborated to align the school around existing strengths and also position it at the forefront of dynamic new challenges facing the discipline, the profession, the community, and the globe. These strategic variations and slippages between the trios of global challenges, pedagogy discussions, Associate Heads, and curricular discussions create a structure that allows us to undo and bridge across some of the silos and structural divides in the School, including the separation of graduate and undergraduate programs, the studio-based and research based programs, the more humanistic and technical courses and research.



SoA academic Programs focus on three strategic strengths, all centered around design



The overlap of the programs and pedagogies allows for the bridging gaps and silos to help connect efforts across the SoA, as well as define the revisions of the M.Arch.



Three Pedagogies helped organize a year of stocktaking and strategic planning, as well as the appointment of three Associate Heads to lead efforts in these areas.

M.Arch Program at CMU SoA

CMU's graduate-level architectural design education goes back to at least 1919. CMU offered a NAAB-accredited M.Arch from 1970-1991, and graduated nearly 200 students. When it was reactivated in 2017, the M.Arch degree was still on the books at the CMU registrar's office, though we were eager to acknowledge the vastly changed professional and educational landscape, to create a program built on

tradition, but working with today's resources, and fully future-oriented in its conception. A large motivation for creating a new M.Arch program was to build a graduate-level professional architectural design program at the intersection of the interdisciplinary mix of programs in SoA, bringing graduate-level students with diverse previous experience from other universities into our architectural design studios, which had previously been focused on the B.Arch.

Planning for the new M.Arch, including CMU's internal process to create new programs, and the first stages of the NAAB accreditation process took place between 2007 and 2017, and were led by Kai Gutschow and the former Head Steven Lee. SoA received written approval from NAAB that the program was "eligible for candidacy" on 16 August 2016. We submitted the Architecture Program Report for the 2018 NAAB Visit for Initial Candidacy in the fall of 2017, and admitted the inaugural class of 18 students for the Fall 2017 semester. In March 2018, we combined a NAAB reaccreditation process for SoA's B.Arch with the NAAB Initial Candidacy visit for the M.Arch, resulting in an eight-year term for the B.Arch, and candidacy status for the M.Arch. The accreditation visit for the M.Arch Initial Accreditation occurred in Sept. 2019, and the NAAB Board's letter granting initial accreditation for a two-year program was issued in May 2020. Although enrollment decreased slightly during the COVID pandemic, there are currently 50 students enrolled in CMU's M.Arch program.

As mentioned above, when Omar Khan became Head of CMU SoA in 2020, he initiated a strategic planning process of the whole school, Pedagogies 2020 which directly affected the M.Arch Program's Planning Vision and Goals. After a year of stock-taking, Sarosh Anklesaria became Track Chair of the M.Arch program in the summer of 2021 to build on some of this strategic reorganization and planning.

Sarosh Anklesaria joined CMU SoA in Fall 2020 as the T. David Fitz-Gibbon Professor of Architecture. Anklesaria has taught architecture at The Yale School of Architecture, The School of Architecture at Taliesin, Cornell University, The Pratt Institute, Syracuse University, and CEPT University in India. His recent work and scholarship has been supported by the Richard Rogers Fellowship from the Harvard Graduate School of Design, the Art Omi Residency, the Taliesin Fellowship, and was published in the Venice Biennale How will we live together (2021). Anklesaria has also worked extensively as a practicing architectural designer—with Diller Scofidio + Renfro (New York City), with Herzog & de Meuron (Basel) and with Sangath, the office of B.V. Doshi (Ahmedabad).

Anklesaria shifted the program from its initial emphasis on a more general professional education built on the foundations of the existing B.Arch, towards a greater separation from the B.Arch, a focus on Design Ethics, an emphasis on emerging disciplinary discourse and a continued integration with the other research-based masters programs at CMU SoA. This entailed redefining the M.Arch Program Goals and Outcomes as well as organizing the M.Arch curriculum along the three Pedagogies Tracks.

See **Introduction, Program Changes**, for a more detailed overview of changes to the program and the curriculum as a result of this shift of emphasis

M.Arch Program Goals

> The program educates students to become next generation leaders in the praxis of architecture and its related careers through a collaborative, studio-based education that centers design, technology and research.
>
> The program addresses the grand challenges of our time through an understanding of Design Ethics at the intersections of social equity, technology, and climate change.
>
> It trains students to demonstrate a solid intellectual base in Design Thinking by participating in advanced and emerging discourses in the discipline.

M.Arch Program Outcomes

At the successful completion of this program students will be able to…

Demonstrate Core Professional Competencies
Apply the knowledge gained in the program to engage in the practice of architecture in its various multivalent capacities, including a path toward professional licensure in the United States.

Define, conceptualize, represent, and communicate design solutions that encompass multiple social, political, and ecological challenges, that are meaningful contributions to the built environment.

Generate integrated design solutions through a multidimensional process (research, prototyping, interaction, evaluation, redesign), that promote an understanding of design as the primary means of synthesizing many forms of expertise and knowledge.

Solve complex problems through the use of advanced, future-oriented, computational design techniques in the design process.

Describe the role of architecture in working with community groups, diverse stakeholders, and divergent cultural perspectives through participatory design practices (e.g., acknowledging the impacts of regional geography, complex histories). This includes an understanding of the Greater Pittsburgh and the Appalachian region, as a geography for study considering its complex histories, layered challenges, and potentials for design and research.

Understand architecture as an Ethical Praxis that considers the grand challenges of our time
Apply specific skills in Design Ethics toward addressing the grand challenges of our time at the intersections of Social Equity, Technology, and Climate change.

Advocate and adopt core design values for buildings including but not limited to Care Repair & Maintenance, Adaptive Reuse, Biomaterials, Decarbonization, Urban Informatics, Participatory Practices, Design for Disassembly, and combating Obsolescence in the built environment.

Describe transdisciplinary, creative, and scholarly nature of Design Research at Carnegie Mellon through collaborations with related subdisciplines with the Graduate programs at the School of Architecture, or through interdisciplinary interaction with CMU's renowned programs in the sciences, humanities, business, and engineering.

Demonstrate Global Disciplinary Knowledge and Critical Thinking
Demonstrate critical thinking by participating in advanced and emerging discourse within the discipline through design, representation, oral, and written skills.

Demonstrate a solid intellectual base in the history and theory of architecture, including the parallel and divergent histories of indigenous, vernacular, regional, nonwestern cultures.

Understand, use, and critique architectural precedents in advancing Global Disciplinary knowledge.

Geographic Context: Relationship to Pittsburgh and Southwest Pennsylvania
Our geographical context in the city of Pittsburgh, the American steel city and a model of post-industrialism, plays a significant role in our teaching. The unique geology and topography of the city provides model sites for architectural projects. Formed by three rivers, the desiccated plateau presents a stunning hill topography where neighborhoods connect to one another through bridges. The city boasts four hundred and forty-six bridges, the largest number of any American city. Also, the history of American industrialization, specifically the steel industry, is well represented in the urban landscape: the incredible

growth and heroic architecture that resulted from it, and the dire environmental consequences from the brownfield sites and polluted waterways that it has left behind. In addition, Pittsburgh also exhibits the consequences of ill-conceived urban renewal projects that redlined and segregated communities of color. It provides a complex context from which students can learn and also speculate on better solutions for the future.

One of the goals of the M.Arch is to improve the architectural culture in the region around southwest Pennsylvania and the City of Pittsburgh. The M.Arch program makes it possible for more people to study architecture at the highest level here in Pittsburgh and then stay on to contribute to the revitalization of the region. We regularly have applicants and student enrollments from the University of Pittsburgh, and we have seen many inquiries from prospective architectural designers working in local offices who want a professional degree.

The impact and reputation of CMU's SoA is related to its ability to motivate sophisticated student work, both design and research, and to innovate, both pedagogically and technically. Attracting excellent new and diverse graduate level students to the design program will further raise the profile of the school and Carnegie Mellon University. The M.Arch program helps improve SoA's overall visibility, stature, competitiveness, and rankings, in the educational and professional communities, in the Pittsburgh region and around the world, particularly at the graduate level. We are eager to strengthen studio and design culture by attracting top quality students from other domestic and international backgrounds, to foster a unique identity for the M.Arch program within the graduate programs at CMU SoA.

SoA's long standing community and outreach programs include the Center for Architecture Explorations (CAE), SoA's Pre-College Architecture Program, the summer camps at the Carnegie Museum of Art (CMoA), the Osher Academy of Lifelong Learning, and the Urban Design Regional Employment Action for Minorities (UDream) program have long reached out to the city and region. In Pittsburgh, faculty and specific programs maintain close connections to the AIA Pittsburgh, the Heinz Architectural Center at the Carnegie Museum of Art (CMoA), the University of Pittsburgh's Department of History of Art & Architecture, including their Architectural Studies programs (B.A. and B.S.), the Mattress Factory, Pittsburgh's Department of City Planning, the Heinz Endowments, the R.K.Mellon Endowments, the Master Builders Association, the Trade Institute of Pittsburgh, the Energy Innovation Center (EIC), the Green Building Alliance, Phipps Conservatory, and others. See Shared Value Lifelong Learning below for more on these programs.

The program's role in and relationship to its academic context and university community, including how the program benefits–and benefits from–its institutional setting and how the program as a unit and/or its individual faculty members participate in university-wide initiatives and the university's academic plan. Also describe how the program, as a unit, develops multidisciplinary relationships and leverages unique opportunities in the institution and the community.

Program Response:

The School of Architecture (SoA) embraces its institutional context through the relationship it has built over time with departments and institutes at CMU. We pride ourselves on being an interdisciplinary school where opportunities to collaborate across campus are sought and encouraged. Our fourteen degree programs and our faculty's research contribute to and take advantage of CMU's excellence in sustainability, computation, advanced manufacturing, public policy and urban mobility.

With the arrival of the new head of school Omar Khan in the summer of 2020, the school has committed its pedagogy across all its programs to address three grand societal challenges: *climate change*, *artificial intelligence* and *social justice*. These align with areas of excellence at CMU that include energy and environmental research, artificial intelligence and robotics, human computer interaction, information systems, and public policy. We also find strong alignment with programs in the Schools of Design, Art and Drama, whose faculty collaborate with ours in research and teaching. SoA's design and science degrees provide a unique opportunity for us to engage other departments on campus through student advisement, especially at thesis, and through coursework.

SoA graduate students can work towards a specialized concentration or second degree by strategically using electives to enroll in courses associated with other programs. For example, M.Arch students are eligible for a **Graduate Advanced Master's Program (GAMP)**, which allows them to apply up to 48 units from their first SoA M.Arch curriculum to another SoA master's degree. This allows M.Arch students to graduate with a special concentration or another degree, save a semester of time and tuition, and enter the job market with a unique skill set.

The faculty through its teaching and research is also actively involved in interdisciplinary opportunities offered at CMU. Based on past research our faculty has collaborated with the Scott Institute for Energy Innovation, Manufacturing Futures Institute, Center for the Arts in Society, Mobility 21 and the Human-Computer Interaction Institute. In addition, we have had faculty with joint appointments in the Department of Civil Engineering and Environmental Science (Irving Oppenheim) and the Heinz College of Information Systems and Management (Kristen Kurland).

The ways in which the program encourages students and faculty to learn both inside and outside the classroom through individual and collective opportunities (e.g., field trips, participation in professional societies and organizations, honor societies, and other program-specific or campus-wide and community-wide activities).

Program Response:

SoA counts itself in a short list of schools of architecture that have both undergraduate and graduate NAAB-accredited degrees plus MS and PhD degrees. As such the school itself provides rich opportunities for faculty and students to engage in the intellectual explorations of the different programs. The M.Arch students take classes with students from the other 6 master's programs, share a student lounge, visit each other's reviews, etc. The goal is to form a single graduate school, to break down boundaries between programs, to take advantage of shared interests and kill sets. Most professors are easily available to students, in studios, with open-door policies for their offices, and the open layout of the Intelligent Workplace (IW).

One vehicle for shared learning is our public programs. These include lectures, symposia and panels organized centrally by school and also other degree programs like the Master of Science in Sustainable Design and the Master of Science in Computational Design. Students and faculty are exposed through the annual series to experts and luminaries across multiple fields that engage the built environment. Special provisions are made for students to meet with invited lecturers and also organize the Q&A sessions at the lectures.

Travel is another important vehicle for faculty and students to directly experience architecture in its context. All degree programs are encouraged and provided funds to support student and faculty travel as part of coursework. Because of the COVID pandemic, travel in the last two years has been limited but we have been able to take trips to New York and Boston in the last year. In addition, students can apply for a travel grant through the Gindroz Prize for Summer Travel and Study in Europe. While this is a competitive prize it provides enough funds for travel, hotel and food for a 1-month stay. This year a M.Arch student was the recipient of the Gindroz Prize for a summer study trip to Portugal.

The CMU chapter of the American Institute of Architecture Students (AIAS) creates a connection between students and the professional and academic world of architecture by offering members a diverse set of events and experiences including firm visits, local and national networking opportunities, and community service build initiatives. The current CMU AIAS President is an M.Arch student (M.Arch Graduating Class of '23), who served as the Graduate Student Liaison for AIAS (2021-22) and also received a scholarship at the national level as part of the AIAS CRIT Scholar program. CRIT Scholar is a research-based fellowship program funded by the AIA in partnership with several prominent architecture firms. The program aims to support student research and serves as an exclusive opportunity for students to receive further guidance in their own research. The long-term objective is to encourage students to be actively

involved in furthering architectural innovation in support of the design profession through mentored research projects embedded in academia and practice.

The school also supports independent research projects initiated by faculty and students. There are two endowed funds dedicated to this. The Isabel Sophia Liceaga Discretionary Fund supports faculty-led projects that critically engage students and advance the mission and reputation of the School of Architecture, and the Ferguson Jacobs Prize in Architecture that alternates between faculty and students and supports projects that explore the classical tradition as vital knowledge to an architect's education, practice, and scholarship, or to individual apprenticeships and internships with a classical focus.

Finally there are three student groups, the American Institute of Architecture Students (AIAS), the National Organization of Minority Architecture Students (NOMAS) and SoA's Inter•punct that provide students with extracurricular and professional development opportunities. AIAS and NOMAS provide regular mentorship opportunities with Pittsburgh based chapters of those organizations. (https://soa.cmu.edu/student-organizations). Inter•punct (https://interpunct.pub/info) is a student group founded in 2011 that is "a platform for ideas, theory, and discourse - sometimes about architecture and sometimes at its periphery." The group produces a quarterly magazine and events that challenge the status quo and promote discourse.

Programs should specify their delivery format (virtual/on-campus) and whether that is a hallmark of their program or a response to the current COVID pandemic.

All classes and studios in the SoA are in-person, except a few classes where pedagogically it is seen as an advantage to be "Remote Only," either synchronous or asynchronous. There are no "hybrid" classes. The university administration is intent on projecting the huge benefits of in-person education on CMU's main campus as well as other campuses around the world.

Summary Statement of 1 – Context and Mission

This paragraph will be included in the VTR; limit to maximum 250 words.

Program Response:

The CMU School of Architecture (SoA) provides undergraduate, graduate and doctoral degrees in architecture, urban design, sustainable design, computational design and engineering & construction management. It has organized its pedagogy to address three grand challenges confronting contemporary society: *climate change, artificial intelligence and social justice*. The school benefits from being housed in CMU's College of Fine Arts with sister schools of art, design, drama and music. It also draws intellectual support from being part of an internationally recognized tier one research university. Finally, its geographic location in Pittsburgh provides unique opportunities to address problems associated with post-industrial cities.

The M.Arch program, one of seven Master's-level degrees at the SoA, educates students to become next generation leaders in the praxis of architecture and its related careers through a collaborative, studio-based education that centers design, technology and research. The program addresses the grand challenges of our time through an understanding of Design Ethics at the intersections of Social Equity, Technology, and Climate change. It trains students to demonstrate a solid intellectual base in Design Thinking by participating in advanced and emerging discourses in the discipline.

2—Shared Values of the Discipline and Profession

The program must report on how it responds to the following values, all of which affect the education and development of architects. The response to each value must also identify how the program will continue to address these values as part of its long-range planning. These values are foundational, not exhaustive.

Design
Architects design better, safer, more equitable, resilient, and sustainable built environments. Design thinking and integrated design solutions are hallmarks of architecture education, the discipline, and the profession.

Program Response:

SoA understands design as a third culture for producing knowledge. Like the other two prominent cultures of knowledge production—sciences and humanities—design has its own distinct concerns, methods, and values. The school has made design pedagogy a central focus of its mission and has organized all its programs around three pedagogical frameworks—Design Fundamentals, Design Research and Design Ethics.

Design Fundamentals introduces students to the discipline's intellectual traditions, its unique modes of thought, and the tools and protocols of its inner workings. It aims to outline the concerns, methods, and competencies fundamental to the education of an architect and seeks to expand, contextualize, and reposition its references.

Design Research confronts architecture's disciplinary tensions between the domains of art/humanities and applied science. This productive conflict between the projective creativity of the arts and the analytical and deductive modalities of the sciences is a defining hallmark of the discipline. In addition its own methods that involve modeling, pattern-formation and synthesis provide a useful third way that is an asset in the contemporary research landscape, where interdisciplinary teams of varied expertise must communicate across multiple epistemological frameworks.

Design Ethics seeks to address the role architecture can play in creating more equitable, inclusive, and just communities at every scale: in our school, at CMU, in Pittsburgh neighborhoods, the region, and around the globe. Our internal focus is on improving school culture, refining our curriculum, and expanding our research projects towards greater emphasis on diversity, equity, and inclusion. Our external focus is to strengthen our relationships within Pittsburgh, and society at large, and work to educate leaders in the architecture profession and the adjacent fields that co-create, administer, and inhabit our built environment, as we collectively face intense ethical, social, economic, and ecological challenges.

While professional education leading to licensure is the goal of its B.Arch and M.Arch programs, the school is committed to the broad study of design across its Bachelor of Arts, Master of Science and Doctoral programs. This provides students multiple avenues through which they can develop design competencies and follow different careers. Our alumni flourish in professions across AEC, tech, education, entertainment and government.

Following the pedagogies conversations in the past year the M.Arch program has recalibrated its goals and learning outcomes, to include Design Ethics as a central tenant in its mission to train architects for leadership roles in architecture and related fields. For more on Design Ethics and its integration into the revised M.Arch curriculum see **PC.2 Design.**

Environmental Stewardship and Professional Responsibility
Architects are responsible for the impact of their work on the natural world and on public health, safety, and welfare. As professionals and designers of the built environment, we embrace these responsibilities and act ethically to accomplish them.

Program Response:

CMU SoA has been a world leader in research, teaching, and practicing sustainable design in architecture and urbanism around the world since the 1970s. "Sustainability" was our passion and expertise long before it became a buzzword. We see architecture's complex relationship to energy, natural resources, the environment, and the people and species that use architecture as perhaps the single most important issue facing our planet and civilization. Our design studios, at both the graduate and undergraduate levels, all understand sustainability as a basic premise for all building and planning, and are eager to promote and support innovation and speculation in the field.

We have two graduate programs focused on teaching sustainable design principles, the Master of Science in Sustainable Design and the Master of Science and PhD in Building Performance and Diagnostics. Graduate students in our sustainability-focused programs (MSSD,MSBPD,PHDBPD) work side-by-side in the Robert L. Preger Intelligent Workplace, benefitting from one another's experiences. Alumni of these programs are some of the leaders in the building industry when it comes to sustainable design. The school also hosts the Center for Building Performance and Diagnostics (CBPD), a member of the Advanced Building Systems Integration Consortium (ABSIC). ABSIC is a university - industry - government partnership to pursue research, demonstration, and development towards improving the quality and performance of commercial buildings and building systems. Over the past 30 years, 50 building industries and 10 government agencies have joined with the CBPD to advance building systems and systems integration for environmental sustainability, human health and productivity, and organizational flexibility and performance.

The SoA has also highlighted climate change, artificial intelligence, and social justice as interlocking grand societal challenges around which to focus the school's pedagogies- teaching, research, governance and conduct. CMU and SoA are uniquely positioned to address these connected challenges, understanding that smart systems and a deep commitment to social justice are at the core of the environmental challenges that lie ahead to address climate change. The pedagogies have motivated the development of new coursework in design ethics, materials systems, environmental simulation, site planning and accessibility. In addition, a strong focus on climate has been placed in our public programs. This allows us to engage luminaries, educators and activists working on climate issues through extracurricular workshops and lectures. Finally, the Master of Architecture program has adopted Design Ethics as a critical focus in its mission. This is pervasive through its curricular offerings and studios.

Equity, Diversity, and Inclusion
Architects commit to equity and inclusion in the environments we design, the policies we adopt, the words we speak, the actions we take, and the respectful learning, teaching, and working environments we create. Architects seek fairness, diversity, and social justice in the profession and in society and support a range of pathways for students seeking access to an architecture education.

Program Response

Social Justice, Design Ethics, Diversity Equity and Inclusion (DEI) are at the core of much of the work that the SoA has undertaken in the past few years since the new Head Omar Khan suggested in 2020 Social Justice as one of the three grand challenges that the SoA was uniquely positioned to address. Much of this work is led by the new Associate Head of Design Ethics (Kai Gutschow, PhD), and a new Director of DEI (Erica Cochran Hameen, PhD), both of whom were appointed in July 2021, though this work has involved the effort of the entire school: students, faculty, and staff. The resulting web of DEI-related actions and intentions form a complex and continuously evolving culture and set of values. We are fond of saying: "DEI work is never done," and "DEI values must be infused in everything we do, both curricular, and extra curricular".

In this report we have broken this complex web of efforts down into four sections aligning with the APR's narrative template, as follows:

In the following section, **Shared Values: Equity, Diversity, and Inclusion,** we outline the various commitments, policies and actions that guide the creation of positive values at CMU, SoA, and the M.Arch program.

In **PC.7 Learning & Teaching Culture** we outline how the SoA fosters and *ensures a positive and respectful departmental culture that promotes DEI values and encourages optimism, respect, sharing, engagement, and innovation* among its faculty, students, administration, and staff.

In **PC.8 Social Equity & Inclusion** we outline how the SoA furthers and deepens students' *understanding of diverse cultural and social contexts and helps them translate that understanding into built environments that equitably support and include people of different backgrounds, resources, and abilities*.

In **5.5 Resources, Social Equity, Diversity & Inclusion** wel expand on *SoA's commitment to diversity and inclusion* among current and prospective faculty, staff, and students and h*ow this commitment is reflected in the distribution of its human, physical, and financial resources*.

CMU Commitment & Values

The SoA's value, policies, actions, support systems, and distribution of resources related to Equity, Diversity, and Inclusion are nested into the larger university's as well as the CFA's values, programs, and efforts.

In 2020, CMU President Jahanian committed to promoting a diverse, equitable, and inclusive teaching and learning culture in three broad areas of impact: (1) Commitments to the CMU Community; (2) Commitments to the Expansion of Knowledge and Expertise at CMU; and (3) Commitments to Engagement and Economic Empowerment for the Broader Community. The primary commitments were:

- We commit to engage every member of the CMU community in working together to build and sustain an inclusive culture that promotes equity for all and is intolerant of racism, discrimination, and bias.
- We commit to recruit and develop a student body that truly represents the vibrant diversity of our nation and the world, where all Black and marginalized students feel supported throughout their education and experience.
- We commit to recruit, retain and develop Black and underrepresented faculty and staff and to provide all of our employees with an environment that fosters their collective success.
- We commit to build greater trust, understanding and transparency between the CMU community and the CMU Police.
- We commit to grow our leadership in the study of racism and systemic injustice, for the purpose of influencing public policy and developing meaningful interventions.
- We commit to partnering with our community to develop positive social innovations that expand access, opportunity and economic empowerment in the Pittsburgh region and reverse the trends of racial injustice and inequality.

The University followed up these commitments by creating a new position of Associate Vice Provost for DEI at the university level, and hired Dr. Wanda Heading-Grant to lead the university efforts (www.cmu.edu/diversity/). She has written: "*The echoes of oppression and privilege still exist throughout higher education, but by focusing on diversity, equity and inclusion we can create a space where all people feel a sense of belonging. CMU has committed to intentionally fostering a community that holds space, where all voices are heard and respected. By working in close concert with colleagues throughout the university, our office strives to enact real and lasting changes in how CMU addresses racism, classism, sexism and the language of othering as it exists across our campus community.*" In order to enable scaffolded and collaborative work across all parts of the university, Dr. Heading-Grant motivated the appointment of Assistant Deans for DEI in all seven CMU colleges, including in the CFA. In the CFA

the position is held by Valeria Martinez, who has worked on creating a unified approach to DEI amongst very different cultures in the various schools of art.

A centerpiece of the university's DEI efforts is the **Center for Student Diversity and Inclusion (CSDI)** that actively cultivates a strong, diverse and inclusive community capable of living out these values and advancing research, creativity, learning and development that changes the world. The Center offers resources to enhance an inclusive and transformative student experience in dimensions such as access, success, campus climate and intergroup dialogue. Additionally, the Center supports and connects historically underrepresented students and those who are first in their family to attend college in a setting where students' differences and talents are appreciated and reinforced. This is a physical location where the students can meet, as well as a series of programs and resources for the students. Students in the M.Arch program have reported a very nurturing and safe atmosphere in the CSDI where they have gotten support and made friendships. (www.cmu.edu/student-diversity/).

In April 2021, the university also announced the creation of the **Center for Shared Prosperity (CSP)** funded by the Heinz Endowments to support new models of collaboration between the university and community members and to promote economic empowerment and address inequities in Pittsburgh Region (csppgh.squarespace.com/). The goal is to challenge the traditional university notion of "expertise" on topics such as education, housing and health, by utilizing a community centric model for action that breaks down barriers for entry and engagement. Several SoA faculty members have interacted with, and received funding from the CSP. For example the project *Past Harms, Future Visions* emerged from a Spring 2021 Master of Urban Design studio by Nida Rehman. The project and website platform emerged in collaboration with North Braddock Residents For Our Future and showcases efforts to advocate for environmental and community health in Braddock and North Braddock, PA. The project was supported by the SoA's Isabel Liceaga Grant as well as support from the Center for Shared Prosperity and Imagining America, Leading and Learning Initiative.

CFA Commitment & Values:

As part of a top-down scaffolding of efforts throughout the university, the College of Fine Arts (CFA) college and Dean have made a renewed commitment to focus attention and care on matters of Diversity, Equity and Inclusion, which are critical and essential to the academic excellence we foster within the College of Fine Arts. We understand and believe in the importance of tending to diversity and fostering an inclusive community—one that is equitable and accessible to all our members. In January 2021, after a national level search, Valeria J. Martinez was appointed as the assistant dean for diversity, equity and inclusion within Carnegie Mellon University's College of Fine Arts (CFA). Martinez comes to Carnegie Mellon from Cornell University, where she taught online courses in ethnicity, diversity and gender studies. Prior to that, she was a national training specialist with The Posse Foundation, where she provided training for internal and external audiences, designed curriculum and mentored staff, among other key responsibilities. Along with her staff, Martinez is responsible for all manner of programming, including bias training for faculty and staff, a revamped bias reporting system that integrates with university systems and resources, day-long off-campus retreats for CFA Leadership, and for all CFA faculty and staff in August 2022 focused on DEI, but also a continuous series of workshops, lectures, orientation activities, social opportunities, etc. (www.cmu.edu/cfa/dei/index).

SoA Commitment & Values

The School of Architecture promotes the study of architecture and the built environment that addresses the needs of all people, regardless of race, ethnicity, gender, and economic status. We aim to be inclusive of all, with intentional mindfulness in recognizing the voices and work of our Black, Indigenous, People of Color (BIPOC) and underrepresented minorities (URM) students, faculty, and staff.

We encourage our students and faculty to participate in active dialogue on race and inclusion through local, regional, and national organizations that aim to expand diversity in the architectural profession. We aim to build upon our school's legacy in social interest design across all three areas of our school's educational expertise: computational design, sustainable design, and community-engaged design.

The school is developing pathways through our undergraduate, graduate, and doctorate programs for students of all identities, including recruitment, mentoring, and placement in industry and academia. We are committed to a design pedagogy that embraces civil rights, non-discrimination, anti-racism, and intersectionality to expand our curriculum and include non-western traditions and issues of social and environmental justice.

The SoA recognizes that DEI work is on-going and collaborative, that it is entangled in a nested series of contexts: work in the classroom is affected by our non-academic behaviors; efforts in the M.Arch program relate to efforts in the B.Arch as well as other SoA grad programs; programs in the SoA are affected by the CFA and CMU DEI policies and support systems; CMU interacts with our surrounding neighborhoods, the City of Pittsburgh and the region. As a global institution we also have responsibilities that go much further with respect to diversity, equity, and inclusion. See: https://soa.cmu.edu/diversity-equity-inclusion

SoA History of Community Engagement & Public Interest Design

The CMU School of Architecture has a rich and long history of working on DEI related issues, and today's efforts build on these rich legacies. Through the leadership of David Lewis and his idea of the "Urban Laboratory" started in 1964, CMU helped initiate the practice of "participatory design" education whereby students and faculty engage with local communities to work on issues brought forth by the community.

The Master of Urban Design (MUD) and its emphasis on "Commoning" is a continuation of this legacy. The term *commoning* describes the collaborative processes surrounding the (re)production of material and immaterial common goods, through collectivized spatial practices that reconsider ownership, production and rights. Several M.Arch students have chosen to do their ASOS-Thesis studios in the MUD thesis track and it is part of the Design Ethics focus of the School.

The first class of M.Arch students had access to the Urban Design Build Studio (UDBS) for the entire two years of the M.Arch. The UDBS focused on the concept of "Public Interest Design," one of the core strengths of the SoA. At the core of this philosophy is a belief that architects must serve the interests of the general public, the local community, and the specific clients and users of the project, and furthermore that the design process must include them as well as other major stakeholders in identifying problems and needs, in proposing new solutions and working out compromises in the decision-making process, and where possible, be involved in the implementation and even construction of the architectural or urban project. Only through this participatory process will the public interest truly be served. Through the UDBS, M.Arch students had extensive engagement with local tradesmen, residents and community leaders, often from disenfranchised communities, as well as local non-profits supporting various programs in these communities. Students focused on economic and social sustainability, on reuse of materials, on energy saving systems, and a general ethos of resilience, sustainability, and long-term "payback" for the community members. Although the UDBS program is not currently active because the primary faculty member left CMU, M.Arch students still have access to "Design Build Studios" through the ASOS program. The interactions with the community were greatly curtailed during the COVID pandemic, and even the most recent studio built on campus for pragmatic reasons.

Architecture professors, including David Lewis, also were involved in CMU's Mellon-funded School for Urban and Public Affairs (SUPA), today part of Heinz College of Information Systems and Public Policy. SUPA was founded in 1969 in part on the belief that racial equality could be fostered through public policy. True to that ideal, an early achievement of SUPA was gains in minority representation at CMU. In 1976, Ebony Magazine featured SUPA, remarking on the school's proportion of African American students and mission to train "inner-city problem solvers" (www.heinz.cmu.edu/about/history).

In the early 2000s, building on the legacy of David Lewis, the Heinz Endowments helped fund SoA's **Urban Design Regional Employment Action for Minorities Program (UDream)**, a competitive academic and job placement program to bring promising recent graduates of architecture, urban design, and urban planning programs, especially underrepresented Black, Indigenous and People of Color (BIPOC) students from Historically Black Colleges and Universities (HBCUs), to Pittsburgh for additional

academic training and professional internships to increase their marketability and connect them with employment opportunities. The primary aim of the UDream program was to increase professional diversity in the fields of architecture and urban design, in Pittsburgh and across the nation. With the efforts of Erica Cochran Hameen, UDream helped inspire the establishment of the Pittsburgh NOMA chapter and the NOMA Pipeline project. The original program which was initiated in 2008 and ran from 2009 to 2018. Through the recent efforts of Erica Cochran to reimagine and expand the program, the Heinz Endowment has renewed their support for this program through 2024. While the primary goal remains to increase professional diversity in the fields of architecture and urban design, the reimagined program will be more self-sustaining in terms of funding (especially more SoA and CMU support), will broaden the students included in UDream from the former focus only on recent graduates for HBCU architecture programs, to undergraduate and graduate BIPOC students from schools all over the country, as well as integrate UDream with other life-long learning programs in the “pipeline” from K-12 to college and grad school, professional opportunities, and even retirement learning. Most recently UDream was the subject of “Resolution 21-3” at the AIA 2021 Annual Meeting, promoting the funding and replication of these efforts focusing on expanding the professional readiness and opportunities of BIPOC students at other schools nationwide (https://soa.cmu.edu/udream).

SoA Recent Self-Assessment and Achievements

In the last several years, SoA has completed an extensive self-evaluation leading to expanded practices and pedagogy, and a renewed commitment to DEI. These efforts have impacted the entire SoA community as well as the M.Arch program and students.

In the summer of 2020, the SoA’s NOMAS chapter led a series of town halls and meetings that led to them issuing a series of 30+ “action items” that they presented to the SoA to address issues of DEI. An M.Arch student was among the student leaders of this effort. These “Action Items” included short, medium, and long term goals, from a display case for their student work, to mentoring and support programs for BIPOC and underrepresented students, to demands to broaden the representation of the invited critics, guest lectures, visiting, adjunct, and full-time faculty. These efforts to “lead a revolution” garnered national attention in Architect Magazine (June 11, 2021). https://tinyurl.com/4kx9av3n

In Fall 2020, as part of his first actions as new Head of School, Omar Khan, laid out “Social Justice” as one of three “grand challenges” that architects and the SoA were uniquely poised to address. Khan then helped launch the “Pedagogies 2020” initiatives, including the “Race & Inclusion” pedagogy. These pedagogies involved several months of “Stocktaking,” each Pedagogy committee meeting with many different constituent groups to understand matters of concern, and proposed actions. The “Race & Inclusion” Pedagogy was to *“address the role architecture can play in creating more equitable, inclusive, and just communities at every scale: in our School, at CMU, in Pittsburgh neighborhoods, the region, and the world. Our internal focus is on improving our school culture, refining our curriculum, and expanding our research projects to greater inclusion. Our external focus is to strengthen our relationships within Pittsburgh and in society at large as we collectively face intense ethical, social, economic, and ecological challenges." (*https://soa.cmu.edu/race-inclusion*).* This “Race & Inclusion” pedagogy has now evolved into the Design Ethics emphasis throughout the school.

Through this Pedagogies planning process, three Associate Heads were appointed for the first time, each charged with helping lead efforts that crossed boundaries of grad and undergrad, design and research, humanities and technical / scientific activities. The Associate Head of Design Ethics, as well as the new Director of DEI), and a DEI Committee were tasked with focusing on issues of diversity, equity, and inclusion. The Associate Heads and Director of DEI meet 2x/week all year to discuss all manner of administrative and academic issues, including issues of DEI.

In addition, three curricular stream committees were formed, including one for Design Ethics, which the committee renamed “History, Urbanism & Practice” to better acknowledge the disciplines involved. This committee is in charge of assessing the humanities parts of the SoA curricula, including courses on Design Ethics, which often deal very closely with issues of diversity, equity and inclusion. They also help assess the professional practice courses associated with the M.Arch, including 48-648 Ethics and

Decision Making in Architecture, 48-658 Real Estate for Architects, 48-649 Issues of Practice. For more on these courses see **PC.8 Social Equity & Inclusion**.

In May 2022, the SoA DEI Committee organized and conducted an all-day staff/faculty retreat with approximately 40 SoA faculty and staff in attendance. The purpose of this retreat was to build community and to go deeper on SoA's diversity, equity and inclusion efforts. Specifically, the SoA DEI committee, with the support of CMU's Eberly Center for Teaching Excellence & Educational Innovation, led the retreat in order to evaluate and share ideas around our teaching and assessment of student work, to become more inclusive and supportive of diverse learners. We discussed our shared current and aspirational values including our school culture and how we hope our students intersect with the profession. We also discussed critical issues of mental and physical wellness for students, staff and faculty. Finally, we brainstormed about ways to decolonize our language, move away from traditional meritocracy, and embrace diversity and inclusivity in tangible ways. The results of the retreat were published in Summer 2022 and are the basis for continuing discussions for self-evaluation and improvement.

Addressing the Cost of Education & Equity

One of the most important efforts undertaken by the SoA in the last two years has been an attempt to address the high cost of education for our students at our very expensive private university, as well as questions of equity in salaries for our faculty and staff. An integral part of DEI is making our programs more affordable for more people. At CMU, undergraduate tuition is set by the university, the admissions office and the financial aid office, so all we can do is attempt to limit in-class and activity costs. However, at CMU each department can set their own graduate tuition rates. The SoA has deliberately set its graduate tuition to be substantially lower than many of our private school competitors, and even many prestigious public schools both as a way to attract and recruit students, but also to send a message about the effort to offer lower tuition. That said, we are beginning a discussion about whether to move towards a model of higher baseline tuition in the grad programs that can be afforded by some, but to offset that with higher scholarships and other financial aid. While CMU's comparatively small endowment does not allow us to extend "full-ride" financial offers, and we often lose students to schools offering better funding, the low starting tuition does project an attitude about keeping costs down for all.

The 2-year M.Arch program provides a more affordable and quicker path to a master's degree and to licensure for students from 4-year programs than many of our competitor schools, who often demand three years or more of M.Arch study. If attending a cheaper college, including international schools, the 4+2 plan can be cheaper than the 5-year B.Arch at an expensive school like CMU. Anecdotal evidence from the student survey indicates that the shorter timespan was one of the factors that convinced students to attend CMU.

We have recently begun to address the cost of education for African Americans, American Indians, and Hispanic Americans students through the **National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc. (GEM),** a nonprofit organization formed to help assist underrepresented groups at the masters and doctoral levels in engineering and the physical sciences. CMU SoA supports the GEM Fellowship by offering GEM recipients additional funding to help defray the overall cost of our graduate and post graduate programs. Students apply both to the GEM scholarship program as well as SoA. The application fees for the SoA graduate programs are waived for GEM candidates. In the 2022 admissions, we will be welcoming our first GEM scholar into our M.Arch program. See: https://soa.cmu.edu/gem

Other efforts to reduce costs in the SoA include: 1) The creation of the Jacobs Fund explicitly for student support such as hiring tutors, paying for expensive school trips and supplies, lending out laptops to those in need, etc. The Fund was created by SoA alum Paul Jacobs and his family. 2) Subsidizing first year studio tool kits for undergraduates. 3) Departmental allocations to subsidize studio trips for every year, including the M.Arch program. 4) Creating scholarships for underrepresented minorities to attend our Pre-College program, especially from the Pittsburgh region. 5) Increasing the allocations for scholarships offered to incoming masters students in all programs, including the M.Arch, as well evaluating scholarships for continuing master's students after their first year to acknowledge changes in need-based

funding, as well as additional merit-based funding. 6) Increasing number of student awards, including the David Lewis Scholarship to fund community-based projects. 7) Reforming the student hiring system, including the requirement to list all student jobs on Handshake for transparency, creating a system where students have more agency in who they work for (especially if they have multiple job offers). We have also increased the salaries for student hires, and implemented a more equitable policy where students with more experience, expertise and responsibility are paid slightly more to acknowledge their added experience. 8) The university Provost has worked to make the funding of PhD students for PhD students more equitable across the university to combat the higher level of funding that is often available in the STEM fields. SoA Phd students now all receive full tuition scholarships, as well as a stipend to support living expenses.

For more on how the SoA fosters and *ensures a positive and respectful departmental culture that promotes DEI values and encourages optimism, respect, sharing, engagement, and innovation* among its faculty, students, administration, and staff, see **PC.7 Learning & Teaching Culture**. For more on how the SoA furthers and deepens students' *understanding of diverse cultural and social contexts and helps them translate that understanding into built environments that equitably support and include people of different backgrounds, resources, and abilities*, see **PC.8 Social Equity & Inclusion**. For more on *SoA's commitment to diversity and inclusion* among current and prospective faculty, staff, and students and h*ow this commitment is reflected in the distribution of its human, physical, and financial resources*., see In **5.5. Social Equity, Diversity & Inclusion**.

Knowledge and Innovation
Architects create and disseminate knowledge focused on design and the built environment in response to ever-changing conditions. New knowledge advances architecture as a cultural force, drives innovation, and prompts the continuous improvement of the discipline.

Program Response:

Pittsburgh has been a center of research and innovation throughout its history. It played a dominant role in shaping the technology, manufacturing, materials, and energy of the 20th-century. After a steep downturn in the 1970s, Pittsburgh has come back as a major hub of innovation and learning, led by the “eds & meds" focus of the major universities, CMU and the University of Pittsburgh, as well as the many high-tech and biomedical employers and the spin-offs they have created.

CMU has been a birthplace of innovation throughout its 122-year history. CMU is the only school founded in the United States by industrialist and philanthropist Andrew Carnegie, who donated the funds to create Carnegie Technical Schools in 1900 in Pittsburgh in order to train the next generation of engineers and technical specialists, including architects. In 1912, the schools, including the School of Architecture, became the Carnegie Institute of Technology, highly regarded for both the arts and technology. A merger with the Mellon Institute–the nation’s first major research institute–created Carnegie Mellon University in 1967.

Today, CMU is a top-ranked R1 Research University according to the Carnegie Classification. It is a global leader bringing groundbreaking ideas to market and creating successful start-up businesses. CMU faculty members are renowned for working closely with students to solve major scientific, technological, and societal challenges. The University puts a strong emphasis on creating things—from art to robots, and architecture. This is made clear through CMU’s mission statement: “*Carnegie Mellon University will have a transformative impact on society through continual innovation in education, research, creativity, and entrepreneurship.*”

In July 2022, Forbes Magazine recognized CMU as the best university for tech transfer. Many of our M.Arch students, as well as SoA grad students more generally, choose CMU in order to be part of this culture.

The CMU School of Architecture has been a leader in understanding architecture not only as a form of professional practice, but also as a site of research to generate new knowledge and innovation. The SoA

has some of the oldest graduate programs in computational design, sustainability, and urbanism. The ethos of research has at times outweighed the ethos of design, certainly when it comes to faculty work, tenure, publishing, grants, and specialty institutes.

For the first 60 years of its existence, CMU's architectural education focused primarily on professional practice, a combination of Polytechnic and Beaux-Arts training based on the observation of human behavior and needs in relation to the built and natural environment. The appointment of Charles M. Eastman in 1967 as Assistant Professor of Architecture and Computer Design, however, marked exciting new departmental directions for the School. Eastman developed a Ph.D. program in the new science of Computer-Aided Design, and the appointment of Volker Hartkopf in 1972 as Assistant Professor of Architecture broadened the graduate program with an M.S. and a Ph.D. offering in Building Science. Since this time, scientific and technical research has been at the center of the SoA's mission and identity. The succession of department heads from 1979 to 2004 have made strategic hires in these areas that have securely established the SoA's research reputation. Much of the research was housed in the new Robert L. Preger Intelligent Workplace (IW), a living laboratory dedicated to advancing innovations in building enclosure, mechanical, electrical, telecommunications, and interior systems, as well as their integration for individual productivity, organizational adaptability, human comfort and health, and the highest level of environmental sustainability. Together the research programs, faculty, graduate students, and facilities have raised the status and reputation of the CMU SoA, especially in the areas of computational design, sustainable design, high performance buildings and construction management as they can be applied to global practice, business, and academic research. SoA PhD graduates have gone on to become leaders in academia and industries around the world.

By the late 1990s, the SoA grad programs were defined primarily through their emphasis on research and innovation, while design and professional practice was often seen as relegated to the undergraduate B.Arch. Since the early 2000s, heads of the school have worked to balance design and research, across both graduate and undergraduate levels. New centers like the Design Fabrication Lab (dFab) were used by both designers and researchers to advance their fields. The position of Studio Professor was invented to go alongside the Research Professor (who often did not teach). The emphasis on making as a kind of research was realized in the Computational Design Lab (CoDe), but also the Urban Design Build Studio (UDBS), which focused on Public Interest Design and direct student engagement with the community in developing real projects.

The M.Arch program was conceived as another step in creating a better balance of design and research in the SoA by creating a graduate counterpart to the B.Arch, but also by bringing more research into the studio. The M.Arch is now the biggest of the three studio-based graduate programs, alongside the much older Master of Urban Design (MUD) and the very small Master of Advanced Architecture (MAAD). All three combine design and research, though in different ways. MAAD students are part of the Advanced Synthesis Option studios (ASOS) in their first year, and then are required to do a year-long research project or Thesis, often based around computation. The MUD students focus on practice and researching the theory of Commoning for both years. M.Arch students are able to participate in MUD's year-long final research studio that culminates in a Thesis project focused on Commoning. M.Arch also students conduct extensive research in their Praxis-1 & 2 and ASOS studios, and the optional M.Arch Thesis projects are as much about research as design. It is worth noting that the Advanced Synthesis Option Studios (ASOS) are vertically-integrated advanced studios that encourage interdisciplinary collaboration with a focus on design-as-research. Each year the school develops the ASOS studios around a specific theme that brings together specific faculty research interests and opportunities with students projects. The ASOS theme also mirrors that of the Public Programs to build momentum on a range of connected topics across the course of the academic year.

The recent appointment of Joshua Bard to the new position of Associate Head of Design Research has given further emphasis to the integration of design and research. Bard has been tasked with reducing the "silos" of the various graduate programs and encouraging more interaction, including the integration of design and research. He will be working to create a consortium of industry partners that will allow SoA to collaborate and transfer knowledge and innovation to industry.

Leadership, Collaboration, and Community Engagement
Architects practice design as a collaborative, inclusive, creative, and empathetic enterprise with other disciplines, the communities we serve, and the clients for whom we work.

Program Response:
Collaboration, and with it the opportunity for leadership, but also the importance of being a responsible partner or teammate, are at the very core of the new M.Arch, the SoA, and more generally across CMU. The larger ethos of sustainability and Design Ethics that permeates our school encourages students to understand all things as part of larger systems and ecologies that are interdependent, and thus the architect or any one person or group as just one of many participants in a larger process of enacting change, at any scale. The university's strong culture of interdisciplinary thinking, communal inquiry, and collaborative research across the disciplines foregrounds these values from the top down. As a school, and especially in the small M.Arch program, we value initiative in our students, and strive to create opportunities for them to shape their own education, both individually, and through collaboration, to become leaders in their careers and community. SoA students lead and organize strong chapters of the AIAS, as well as NOMAS. The AIA awards the Alpha Rho Chi medal for student highest level of leadership.

At both the undergraduate and graduate levels, students are encouraged to pursue courses in other departments, promote interdisciplinary agendas, collaborate in joint research projects, seek outside advising, etc. The M.Arch curriculum and program explicitly promotes M.Arch students taking courses and engaging with other STEM-based graduate programs in the SoA to develop expertise in addition to the professional degree. The relatively small size of the SoA, as well as the M.Arch, allow students direct access to leading experts in the field and all the advanced facilities, as well as a great deal of latitude in determining their education.

We see the architectural studio not just as a place, or a course, but also a collaborative way of learning and thinking. Studio renovations over the past 15 years have continued to work towards ever more open and flexible planning that promotes interactivity between studios, students, and instructors. We have phased out separate computer clusters in order to integrate that work flow more seamlessly into the studio culture. Although the academy has often foregrounded the experience of the individual learner, and the master-apprentice model of studio education has long been a staple of architectural education, SoA aims to move towards other more collaborative models of learning and teaching, practicing and researching. Nearly every studio contains group projects, as well as individual ones. Although it is often difficult for students, an explicit part of the pedagogy includes collaborating in the design process, effectively achieving commonly held goals, conflict resolution, sharing work, responsibility, and success. An embrace of diverse viewpoints and community engagement is an explicit part of several studios and courses.

The collaborative team approach also extends to teaching: the Core studios, including the "Praxis-1&2 studios of the M.Arch, are team-taught, with no separate smaller studio sections in ways that allow students to recognize both leadership and shared values and ideas in their teaching and learning. .

Financially and administratively, CMU strives to promote a "bottom up" approach to initiating projects and developing leadership in specific, strategic areas of focus. The administrative and financial structures of the university grant great autonomy to the Head of SoA about programs and financing, allowing faculty of the School to initiate many new projects, often including students. The university provides small grant programs for undergraduates and graduate students to initiate both individual and collaborative research and educational projects, including Graduate Small project Help (GuSH) Research Grant, Graduate Student Conference Funds, student taught courses (StuCo), and university-wide student-run interdisciplinary events such as "Lunar Gala" fashion and design show. Architecture students are included in many aspects of the administration and business of the school. They are part of the admissions process, and through the "Graduate Student Advisory Council" (GSAC) have direct access to the Head, demonstrate both leadership and collaboration as we work together to improve the SoA, or enable all

SoA has a long and rich history of engaging with the community. Beginning in 1964, the School of Architecture pioneered the Urban Laboratory concept and the practice of participatory design, wherein students and faculty work in the field and engage with citizens on neighborhood revitalization projects. Although the Master of Urban Design (MUD) program is the explicit legacy of this early work, the ethos of community-minded design has become pervasive in the SoA. New SoA Head Omar Khan set “social justice” for the community as one of the three grand challenges SoA students and faculty would tackle. The new Associate Head of Design Ethics helps curate and maintain a suite of courses focused around community and DEI. A new PhD in Architecture program focusing on urbanism, social justice, and design ethic launches in Fall 2022, joining the more science and technology based PhD-CD in computational design and the PhD-BPD in building performance, as well as a Doctor of Design program. A Community Engagement Committee has been established to set up a code of ethics and best practices for the community engagement efforts of SoA studios, classes, students and professors, to assure that we act professionally, that we do not work in extractive ways, that we make longer term commitments to neighborhoods.

Community engagement begins in the first semester for the M.Arch program, in the Praxis 1 studio, which focuses on “Worldmaking” in the Pittsburgh neighborhood of Homewood. Students engage community members to understand local practices and find ways to partner with the community, seeking to be listener, collaborator, and leader.

Lifelong Learning
Architects value educational breadth and depth, including a thorough understanding of the discipline’s body of knowledge, histories and theories, and architecture’s role in cultural, social, environmental, economic, and built contexts. The practice of architecture demands lifelong learning, which is a shared responsibility between academic and practice settings.

Program Response:

CMU’s School of Architecture offers a very wide range of academic programs and activities that engage and model lifelong learning, teaching architecture along the whole “pipeline” from childhood through university, to career and retirement. But lifelong learning is not just programs for all ages, it is also a philosophy rooted in constant curiosity and interdisciplinary thinking, a drive for innovation and rethinking existing problems, solutions, and practices, for challenging the orthodoxy and establishment in the constant quest to improve the future.

Our **K-12 outreach programs**, led by Jenna Kappelt, allow undergrad and grad students to work with local students in schools, museums, and camps to engage them in architecture and broader issues about the build and natural environments, as well as art and design. CMU’s Leonard Gelfand Center for Service Learning and Outreach helps centralize, fund, and promote many efforts from across the campus, and helps make connections for architecture’s efforts to the wider community. See: https://www.cmu.edu/gelfand/.

Our **pre-college program** attracts high school students in a 4 or 6-week program that simulates the studio design process, and offers them introductions to some of the design tools and systems used by architects. We had over 50 students in-person in the studios in the summer of 2022 after going all online for several summers. Pre-College is both a recruiting tool for our undergrads, and a teaching opportunity for students, including those in the M.Arch.
https://www.cmu.edu/pre-college/academic-programs/architecture.html

Six nonprofits in Pittsburgh have partnered to create the **Architecture Learning Network** (ALN) provides K-12 architectural outreach and educational programs in which our M.Arch students can participate as teachers and mentors. The partners are CMU’s School of Architecture, ACE (Architecture - Construction - Engineering) National Mentor Program, Assemble, Carnegie Museum of Art, Fallingwater, and Pittsburgh History and Landmarks Foundation. The Architecture Learning Network (ALN) offers support for students in architecture education programs, as they become active, thoughtful citizens in their communities.

Funded in part by Remake Learning Pathways grant, and from The Sprout Fund.
https://www.alnpgh.org/aln-organizations

There is also collaboration with the **University of Pittsburgh's Architectural Studies department**, and its "Experiencing Architecture" summer camp that seeks to create a pathway for well-prepared students of diverse backgrounds and experiences to enter college and pursue majors in fields like architecture, art, design, and urban studies. https://www.arch.pitt.edu/experiencing-architecture . See also Context & Mission above.

The SoA provides architectural education to non architecture majors at CMU through electives, a series of minors for undergrads, the popular **48-095 Spatial Concepts for Non-Architecture Majors**, as well as the CFA-run BXA intercollege degree programs. The Urban Design Regional Employment Action for Minorities Program (UDream) at CMU SoA is an academic and job placement program to bring promising recent graduates of architecture, urban design, and urban planning programs, especially underrepresented minoritized (URM) and Black, Indigenous and People of Color (BIPOC) students from HBCU's, to Pittsburgh for the summer to help them transition to the profession through a mentoring and various courses.

SoA encourages and helps facilitate connections to Pittsburgh's local professional architecture community, and promotes the professionals coming back to mentor and give back to students to ensure a continuity of efforts and lifelong learning. These efforts include formal institutions such as AIAS and their relation to AIA; NOMAS and their relation to the Pittsburgh NOMA chapter; YAF (Young Architect's Forum) https://aiapgh.org/aia-community/yaf/. Kristen Frambes serves as the Director for Alumni and Professional Relationships at CMU SoA, and helps make connections from CMU students to our global alumni base, particularly for networking, career opportunities, and lifelong learning. Kristen is the career development point of contact for the SoA. Students and alumni can turn to her as a resource for internship and job searches, available opportunities, and networking and building relationships with SoA alumni and alumni firms. Kristen also administers the Opportunity Knocks newsletter with job and internship opportunities for current students and alumni.

The **SoA's Public Programs** events are eligible for AIA Continuing Education Units; with that possibility, the SoA's Public Programs are part of nurturing architectural discourse and imagination at every level and help connect our students with professionals in the field. There have been discussions of starting to run a series of courses for the professional community, especially in sustainability, in real estate, GIS, research for architects, etc. The CMU School of Design offers a suite of courses to professionals and the public on "Design Thinking," and CMU's Tepper School of Business offers courses to professionals on business and management.

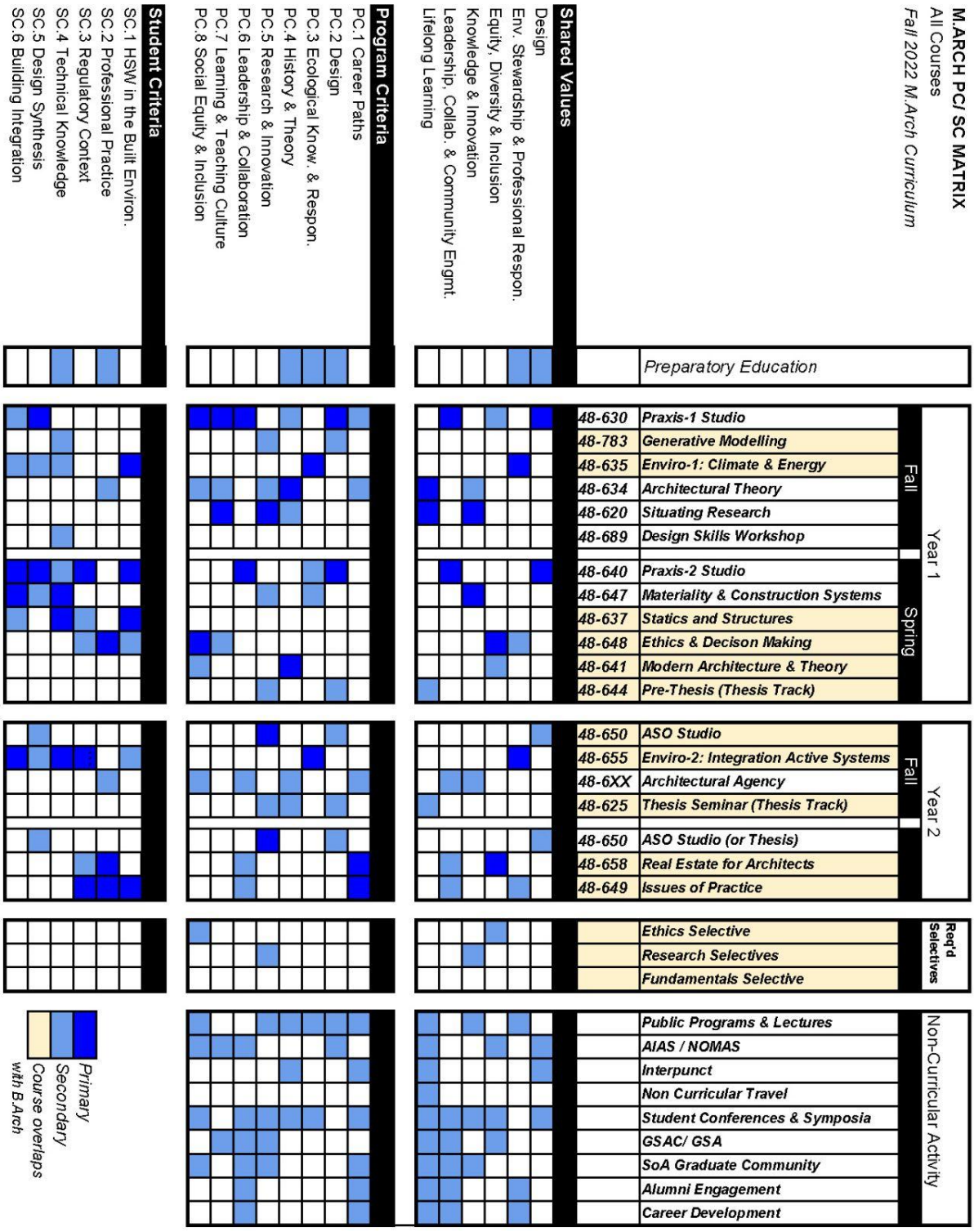
SoA grads help lead the AIA Pittsburgh's **Young Architects Forum (YAF),** which seeks to support and encourage young professionals in the field of architecture to obtain their license, become more involved with career development opportunities, and engage allied professionals through collaboration. The YAF helps its members and colleagues meet these requirements by offering educational and professional support. the Architectural Experience Program (AXP), and pass the Architect Registration Exam (ARE). YAF members continuously seek out new and fresh ideas and the energy and resources to implement them, and have fun doing so. YAF also collaborates with SoA's NOMAS and AIAS student clubs to arrange portfolio reviews, mid-semester crits of studio work, etc. They also offer tours of construction sites, networking and social events, lectures and courses to educate and engage in lifelong learning, etc.

Finally, the **Osher Lifelong Learning Institute** at Carnegie Mellon University (CMU) offers its members rich opportunities to increase their knowledge, enhance their skills, interact with their peers, and increase their social and cultural awareness about architecture, planning, cities and content closely aligned with SoA values and mission. There is a similar Osher program at the neighboring University of Pittsburgh as well as 120 other colleges and universities across the country. Osher provides its members with a wide range of courses taught by members, volunteers, faculty from CMU and other regional colleges and universities, and representatives from community organizations, all eager to share their expertise and engage in dialogue with their peers. Several SoA faculty as well as architecture professionals from the

community teach at Osher. After a two-year hiatus during the pandemic, Osher is back in person with courses in Fall 2022 that include: “Contemporary Asian Architects 1 - China,” “Learning From The Past And Building the Future At CMU,” “Blueprint For Better: The Value Of Good Design,” “Pittsburgh In The Gilded Age,” “Who Knew? Curious Pittsburgh Pieces and Places,” “Pittsburgh’s Mid-20th Century Rebirth,” “The Art Of Shadows,” “Walking Historical Mt. Washington,” and others.
See https://www.cmu.edu/osher/.

3—Program and Student Criteria

These criteria seek to evaluate the outcomes of architecture programs and student work within their unique institutional, regional, national, international, and professional contexts, while encouraging innovative approaches to architecture education and professional preparation.



3.1 Program Criteria (PC)

A program must demonstrate how its curriculum, structure, and other experiences address the following criteria.

PC.1 Career Paths

—How the program ensures that students understand the paths to becoming licensed as an architect in the United States and the range of available career opportunities that utilize the discipline's skills and knowledge.

Program Response:

CMU and the SoA have been educating architects for the profession for over a hundred years, and remain committed to doing so. Training the next generation of professionals for industry and practice was at the heart of Andrew Carnegie's vision for the university, and continues to be central to the mission of SoA and CMU more generally. Both seek to have a real, transformative impact on society through continual innovation and the solutions of real problems in education, research, creativity, and entrepreneurship. The M.Arch program was created in part to strengthen the professional architecture community in the region and the city, to encourage and enable more people from the area to study architecture, and by educating older, master's level students, have a better chance of retaining them in Pittsburgh. The local AIA has been an enthusiastic supporter of the new degree.

Training students to become next generation leaders in architecture, including a path toward architectural licensure, is one of the core goals and desired outcomes of the M.Arch program. Furthermore, as a professional program nested within a major R1 research university, we see the M.Arch curriculum as a vehicle for expanding the discipline's skills and knowledge to address the grand challenges of our time. We believe the next generation of architects are already inventing their own methods and career paths to further disciplinary knowledge and praxis.

The program delivers an understanding of the paths toward architecture licensure primarily through 48-649 Issues of Practice and 48-658 Real Estate for Architects. This experience is scaffolded by 48-648 Ethics and Decision Making, a course that trains students to recognize and mediate ethical dilemmas and decision-making processes that govern architectural practice. Additionally, 48-634 Architectural Theory, 48-630 Praxis-1 World Making Studio and the forthcoming course 48-### Architectural Agency - Discourses and Case Studies further expand the normative definitions of architecture praxis to demonstrate emerging and alternative ways of considering the praxis of architecture while building upon critical relationships between praxis and theory.

NCARB Licensing Advisor

As of Fall 2022, Jenna Kappelt, Assoc. AIA, serves as the NCARB Licensing Advisor. She is also the staff advisor for the school's chapters of the American Institute of Architecture Students (AIAS) and the National Organization of Minority Architects Students (NOMAS). She provides guidance to students interested in beginning or continuing the path to professional architecture licensure. Students are encouraged to start their NCARB record prior to graduation, begin the Architectural Experience Program (AXP), and learn about the Architect Registration Exam. This position was previously held by Alexis McCune Secosky, who now serves as the Director of Recruitment and Enrollment.

Students learn about the path to licensure in the following ways:

1. A presentation about architecture licensure is made to graduate students at orientation.
2. Formal presentations each academic year about AXP and the ARE are open to all students in the School of Architecture.
3. Weekly Architect Licensing Advising open office hours are available for students to ask questions about licensure, AXP, and/or the ARE.
4. Communication about licensure and changes to AXP and the ARE are conveyed through newsletters.

Although the SoA's curriculum does not include internships as an academic requirement, we strongly encourage our students to engage in paid summer internships before graduation. Most of our students gain internship experience during the summer between their two years. Many students, particularly those from India, already have extensive practice experience as part of their undergraduate degree. SoA discourages students from interning during the school year, as we feel strongly that CMU and SoA provide a range of resources, dialogues, opportunities in research, teaching, further coursework, and colleagues that cannot easily be assembled after graduation. We believe the M.Arch exposes students to and prepares them for a wide variety of careers and professions that are often hard to see when entering a specialized career path like architecture.

48-649 Issues of Practice
The course offers a comprehensive understanding of architecture practice and exposes students to a variety of practice types in the profession today. From a career paths standpoint, it exposes students to key aspects of running an architectural firm including design and construction contracts, drawings, specifications, and correspondence. Additionally, it also introduces students to good practices in the profession and key concepts like the Standard of Care. Students develop an understanding of the foundational aspects of running an architectural practice—such as business development, staff training, and time management—but also of broader economic, cultural, and political contexts in which architecture is created. Students engage with panels of small, medium, and large firm practitioners as well as engineering consultants, constructors, and other professionals that together form the design and construction team. The goal for this engagement is two-fold; first to learn the specific knowledge and skills the team members bring, and second to understand the importance of project collaboration. Students study how owner expectations and field conditions affect design solutions. The course makes the student aware of the importance of licensure and its value, and potential necessity, in various forms of practice. Students develop a detailed understanding of NCARB’s licensure path and the Architectural Experience Program (AXP). The course also provides a preliminary introduction to students regarding alternative career paths that allow them to use knowledge and creative skills gained in their time at the School of Architecture.

The instructor for this course, **Stuart Coppedge, FAIA**, was hired in Fall 2021. He replaced former AIA President Bill Bates, who taught the course for a year. (Bates continues to serve actively as faculty at CMU SoA). Coppedge is a registered architect, Fellow of the American Institute of Architects and a long-time and current practitioner and former firm principal. He brings first-hand knowledge of the business of architecture to the SoA’s Issues of Practice course. He understands how a firm is run influences the quality of work, the happiness and productivity of its employees, and their collective community influence. He understands the complexities of practice and the interdependence of the various players and has worked within design-bid-build, design-build and construction-manager-at-risk delivery methods as well as gaining exposure to multi-party contract integrated project delivery (IPD). He has edited numerous design contracts, has extensive professional liability training, and has sealed contract documents on projects of many sizes and types, giving him a clear understanding of the relationship between contracts, drawings, specifications, and correspondence.

48-658 Real Estate for Architects
The course explores key economic, legal, and social theories that have led to the financial, government, and regulatory frameworks, and business practices that influence development decisions and which ground the practice of architecture within the real estate industry. The focus is on development practices in the United States that may be applicable to other market-based economies, with some examples from other countries and cultures. Students develop an understanding of the complex forces that shape architectural practice and its relationship to land, zoning and real estate. Doing so allows them to define and describe the activities and responsibilities across the development cycle and among participants. Students are able to develop the skills to evaluate real world projects from multiple perspectives using quantitative as well as qualitative metrics such as financial feasibility, economic and environmental impact, risk and reward, and social equity outcomes.

The instructor of this course, **Tamara Dudukovich** was hired in Fall 2021 to bring specific expertise to CMU SoA at the intersections of Urbanism, Real Estate and Public Policy. She has extensive experience

in transformative neighborhood revitalization efforts, working in both the nonprofit and private sectors to source, structure, and deliver complex real estate developments that expand affordability, opportunity, and inclusivity. As an independent consultant based in Pittsburgh, PA, Tamara Dudukovich provides contract and advisory services that leverage knowledge and expertise derived from her 25+ years as a developer, lender, and investor. She holds a Master of Public Policy degree from the University of Chicago with a concentration in urban development. Tamara is a full member of the Urban Land Institute, serving on the national Affordable & Workforce Housing Council and as immediate past Chair for the ULI Pittsburgh District Council.

Supplementary Courses

48-634 Architectural Theory & Contemporary Issues
The 48-634 Architectural Theory course is framed as a vehicle to explore the most important issues facing architecture today: in the profession, in academia, and in the community. The course explores texts that define and differentiate the traditional architecture profession from a host of alternative ways to practice architecture, as well as to use architectural thinking and skills to change the world. The first half of the semester looks primarily at social, cultural and political issues in which the architect is engaged. In week 5 students consider questions like *“Can we explore alternative modes of practice, as well as activism on issues such as labor unions …"*

48-630 Praxis-1 Studio
The introductory Praxis-1 studio demonstrates the relationships between Design Ethics, Architectural Design and socio-ecological issues to instill in students a strong understanding of how their projects can have agency in the context of neighborhoods and communities. In doing so the studio connects the praxis of architecture to rich emergent discourses on Transition Design and Agency. Students analyze, participate and actively engage with an area of Pittsburgh that has suffered from decades of structural policy failures and neglect. Through engagements with local community leaders, local businesses and residents, as well as an analysis of emergent ecological conditions in the area, student projects demonstrate how architectural agency can be collectively deployed for real-world change using the discipline's skills and knowledge. For more on Praxis-1 see **PC.2 Design**

48-786 Portfolio and Resume Prep (Optional: Fundamentals Selective)
Based on feedback from students and faculty across SoA regarding job-readiness and development of student portfolios at the time of graduation, an additional course 48-786 Portfolio and Resume Prep has been added as an optional Fundamentals Selective to the curriculum starting Fall 2022.

Non Curricular Experiences

Career Development & Career Fairs
The Career and Professional Development Center (CPDC) is Carnegie Mellon University’s centralized career services center providing a comprehensive range of services, programs and materials focusing on career exploration and decision making, professional development, experiential learning and employment assistance to meet today’s evolving workplace and student goals of finding satisfying work.
https://www.cmu.edu/career/index.html

As of Fall 2022, there are at least 12 different career fairs that happen across the university. These present a host of opportunities and ways for students to imagine using their skills in the architecture profession, but also other industries and careers, including software and computer hardware development, manufacturing, construction, etc. Graduate students attended these career fairs to use their architectural training to find non-traditional forms of employment in industries outside of architecture, especially in areas at the intersections of architecture and technology. Popular fairs outside of Interchange and the CAOC (both described below) that graduate Architecture students attend include: the UX/UI Virtual Career Fair, the Energy Virtual Career Fair, the STEM Career Fair, Encompass Fall and Spring, SPARK (for start-ups and emerging companies), the International Opportunities Fair, and the Engineering Virtual Career Fair (fall and spring).

A list of Fall 2022 Career fairs at CMU can be found here:
https://www.cmu.edu/career/employers/calendar.html

Interchange
Interchange is an exclusive career fair offered to undergraduate and graduate SoA students each February that offers architecture firms an opportunity to meet students and explore their work in the students' own studio spaces. It is co-sponsored by the CMU SoA and the Career and Professional Development Center (CPDC). While all students in SoA are invited to participate in Interchange, there is special emphasis placed on our soon-to-be graduating students seeking full-time employment. Interchange's format of employers visiting students in their school-designated space, as opposed to a neutral space or the employers' own space, is an attempt to facilitate greater student and employer interactions. It provides an accessible space for students to discuss their work, as well as their long-term and short-term career goals. Interchange is co-planned and co-facilitated by the SoA Career Consultant, Caedyn Busch and the SoA Director of Outreach, Jenna Kappelt.
https://interchange.soa.cmu.edu/

Creative Arts Opportunities Conference (CAOC)
Interchange is offered as an event tied to the Creative Arts Opportunities Conference, in which large firms like Gensler, Perkins Eastman, AECOM Tishman, and Strada, as well as small firms like LS3P, IKM, and GWWO have the opportunity to 'table' in a more standard form of a career fair. Oftentimes, the firms attending Interchange will also attend the CAOC, which means that students will have multiple opportunities to speak to them, or provide greater exposure to see all the firms attending the events.

Career Consultant
Prior to Interchange and the CAOC, as well as the approximately 12 other industry-specific career fairs that the CPDC offers to students in all departments, the CPDC's designated Career Consultant provides both one-on-one and group preparation sessions to strengthen students' resumes, portfolios, elevator pitches, and presentation skills. These personalized sessions provide opportunities for students seeking both architecture-related positions as well as other careers, to ask specific questions pertaining to their industries of interest.

Caedyn Busche, M.Ed. acts as the current Career Consultant for all students in the School of Architecture, as well as the Schools of Design, Art, and the interdisciplinary arts-aligned intercollege program. Busche’s career advising philosophy is built on helping students to foster their creative passions, visions, and spontaneity, while also helping them navigate a prospective career path in the creative industries.

Director of Outreach
The School of Architecture has a dedicated staff member to foster networking and practice intentional outreach to various architecture firms in order to establish connections with architectural professionals throughout the United States and internationally. **Jenna Wizzard Kappelt, M.Sc., Assoc. AIA** works to foster relationships with firms to allow for greater accessibility of student-to-architect relationships both during students' time at Carnegie Mellon, as well as post-graduation. Kappelt also provides opportunities for SoA alumni to interface with current students, allowing for possible mentorship relationships to come to fruition.

CMU-AIAS American Institute of Architecture Students (AIAS)
The CMU chapter of the American Institute of Architecture Students (AIAS) creates a connection between students and the professional and academic world of architecture by offering members a diverse set of events and experiences including firm visits, local and national networking opportunities, and community service build initiatives. The current CMU AIAS President is an M.Arch student (M.Arch Graduating Class of '23), served as the Graduate Student Liaison for AIAS (2021-22) and also received a scholarship at the national level as part of the AIAS CRIT Scholar program. See: https://www.aiascmu.org/

For more on CMU-AIAS see **PC.7 Learning and Teaching Culture, Non Curricular Experiences.**

"Opportunity Knocks" Newsletter
The SoA publishes a biweekly (fall semester) or weekly (spring semester) email newsletter for SoA students to receive information about professional development opportunities, employment opportunities, fellowships, scholarships, and design competitions. This newsletter is sent only to CMU students, and contains opportunities that are forwarded directly to the SoA.

M.Arch is a STEM-Eligible Degree
Due to the technical nature of the SoA's graduate programs, all of our graduate programs, including the M.Arch, have been assigned STEM CIP (Science, Technology, Engineering, and Mathematics, Classification of Instructional Programs) codes by the U.S. Department of Education. This means that in addition to one year of Optional Practical Training (OPT) after graduation, M.Arch students on an F1 visa may apply for a 24-month STEM OPT extension following graduation. All SoA STEM-designated degree programs are characterized by a rigorous, research-based pedagogy with emphases on computational design, building science, industry, and/or practice.

Student Employment
M.Arch students are able to work as research assistants to SoA faculty, exposing them not just to academic careers, but also to industry partners and the opportunities for career paths in these other industries.

During the summer most students find employment working as architectural interns in offices across the country as well as TA/RAs within the university. International students need to register for **48-695 Internship Course (Summer).** Since the M.Arch program does NOT require an internship for graduation, international students must qualify for a Comprehensive Practical Training required for students on an F-1 visa. All international M.Arch students enroll in a 3-unit, 48-695 "Internship" course alongside their employment during the summer semester.

At the end of this course, students turn in: 1) A Course Log: listing hours and categories of activity they have been engaged in that relate to The Architects' Handbook of Professional Practice, NCARB's AXP Guidelines, as well as the AIA, "Architects' Scope and Responsibility Matrix Exhibit;"
2) Course-specific required readings on alternate architecture paths; and 3) a Reflexive Essay of 1000 words that reflects critically and constructively on the firm they worked for, on contemporary methods of architectural practice and the profession, as well as the social, cultural, business, environmental, community, and equity systems and values with which these are intertwined.

Although SoA does not offer a guaranteed job placement program, the SoA has created a series of arrangements with prestigious firms such as SOM, KPF, Payette and others to take one or more current CMU students for summer internships, which often translate into employment after graduation. In recent years nearly all grads have been able to find employment readily in the profession of the area of their choice.

Alumni Engagement
Kristen Frambes serves as the Director for Alumni and Professional Relationships at CMU SoA. Kristen works with alumni to establish internships, networking and mentoring opportunities. Students and alumni can turn to her as a resource for building relationships with SoA alumni and alumni firms. Frambes also administers the Opportunity Knocks newsletter with job and internship opportunities for current students and alumni.

There has been a concerted effort since the first class of M.Arch students arrived in 2017 to build a class spirit, to develop the cohort of a graduating class, and then to have them mentor the next incoming class, and to have that continue into the career advising and job networking phase. Ideally a student should be able to look to the students ahead of them for the best ways to find a job. This process was radically interrupted during the COVID pandemic, where students could not meet each other as easily, and class sizes were reduced. With both the class entering in 2021 and 2022 being about 20-25 students, we feel we have a much better opportunity to foster this peer-to-peer, but also young alumni engagement.

During graduation events in May 2022, we hosted a small reunion event for M.Arch students from previous years. Most of the students who stayed in Pittsburgh attended, and we even had some come from out of town (Milwaukee, Oklahoma City, Columbus, etc.)

UDream Program
The SoA's Urban Design Regional Employment Action for Minorities Program (UDream), is a competitive academic and job placement program to bring promising recent graduates of architecture, urban design, and urban planning programs, especially underrepresented and BIPOC students from HBCU's, to Pittsburgh for additional academic training and professional internships to increase their marketability and connect them with employment opportunities. The primary aim of the UDream program is to increase professional diversity in the fields of architecture and urban design, in Pittsburgh and across the nation. See also **Shared Values: Equity, Diversity, and Inclusion** above.

Field Trips to Architecture Firms
In Feb. 2022, first and second year M.Arch students were offered a partially funded trip to New York City. The trip included visits to a range of large and medium sized architecture firms including – SHoP Architects, Ennead Architects and WSP (formerly formerly WSP|Parsons Brinckerhoff and Parsons Brinckerhoff).

While field trips were curtailed in the pandemic years, we resumed these in 2022 and aim to continue them in the future. Students visit both small and large firms, getting a sense of how various firms operate at various scales. They meet and converse with architects, owners, employees and interns at various firms, offering unique perspectives into the industry as well as networking opportunities with potential future employers. Students are exposed to multiple ideologies that underlie different professional practices.

SoA Grad School Context
The M.Arch program is one of seven grad programs in the School of Architecture, all of which are considered post-professional. They attract both professional architects, as well as applicants from other fields, including industry, academia, engineering, planning, government, regulatory agencies, etc. Graduates from these programs go on to work in architecture firms of all sizes, but also the construction industry, building management, real estate, manufacturing, computer industry, animation studios, and more.

SoA Public Programs
Finally SoA's Public programs expose students directly to a broad range of career paths through an ongoing series of events during the course of the year with architects, artists, scholars, and emerging designers and professionals across various disciplines. See **PC.2 Design, Non-Curricular Experiences** for a description of Public Programs as well as Non-Curricular Experiences for PC.3, PC.4, PC.5 and PC.8.

Assessment

The program's assessment of PC.1 Career Paths is based on a three-tiered process of assessment that includes 1) External Program Level Assessment 2) Internal Program Level Assessment 3) Course level Assessment all of which are conducted on a recurring basis. The curriculum committee takes feedback from these various modes of assessment to review changes at the curricular level. For additional information regarding the process of assessment see 5.2 Planning and Assessment: M.Arch Assessment Strategy in this report. A few examples of assessment related to PC.1 Career Paths include:

Our Tier 1 (external, program level) assessment, **The External Assessment Report 2021-22,** includes an assessment of curricular interests in ensuring that students gain knowledge regarding the practice of architecture in its various multivalent capacities, including a path toward professional licensure in the United States. For example, the External Assessment Report 2021-22 acknowledged the "*wide range of profession-related courses represented in both required and elective courses. Eg: technology, computation, real estate, electives available through the School's MS programs on building performance,*

Computation…" The report also underscored the value of including other ways of practicing architecture within the Issues of Practice syllabus: "*Subjects include: a) New Forms of Practice, 7 Alternative Career Paths for Architects, Three Ways Architects Can Manage Risk. b) Assignment to interview a professional for a paper or podcasts."*

Our Tier 2 (internal, program-level) **End of Year Student Survey 2021-22** indicates that students would like greater support with career development. To quote one student: *"More architecture firms in career fairs, more career fairs in general"*. To quote another *"Get a wider variety of companies to interact with the school and students, for example many of the ones during the career fair were very corporate and not a sufficient representation of the different types of places to work"* . There was also a validation of a few initiatives already organized at the program level *"last semester's trip to NYC firms was a great idea".*

Changes since last Accreditation

The new M.Arch Canvas Portal provides an "Internship Career CPT" Resource page where all resources regarding CPT/ Internships Job opportunities and NCARB AXP Guidelines are consolidated.

Based on the End of Year Report, students have asked for greater career development initiatives from the program, particularly regarding placement. To this end, the school has appointed Jenna Kappelt as advisor for CMU SoA Career Development.

Forthcoming Changes: **New course: 48-6XX Architectural Agency: Discourses & Case Studies** where students will understand alternative modes of architectural practice.

Forthcoming Changes: **Updates to the 48-649 Issues of Practice syllabus**- The course will use student design projects as models to apply marketing proposals, contracts, risk assessments, etc. as “real world” exercises. Additionally the course will include a class visit to a significant construction site with a discussion of safety, logistics, means and methods, etc.

PC.2 Design
—How the program instills in students the role of the design process in shaping the built environment and conveys the methods by which design processes integrate multiple factors, in different settings and scales of development, from buildings to cities

Program Response:

The SoA M.Arch program was created as part of a larger effort to make design more central to the mission of the School of Architecture particularly the graduate program. The M.Arch program positions design at the forefront of its core mission in training architects to become leaders in the practice of architecture. This includes: a) the ability to define, conceptualize and conceive design solutions that encompass multiple social, political and ecological challenges that are meaningful contributions to the built environment; b) the ability to generate integrated design solutions through a multidimensional process (research, prototyping, interaction, evaluation, redesign), that promote an understanding of design as the primary means of synthesizing many forms of expertise and knowledge; c) the ability to solve complex problems through the use of advanced, future-oriented, computational design techniques in the design process; and d) a studio culture that promotes speculation, critical thinking and research as intrinsic to architectural thinking.

The M.Arch locates Design Ethics as a central tenet in its mission of training architects to become leaders in architecture and related fields. If design is a broad framework that entails a form of expertise and various forms of disciplinary and interdisciplinary intelligence, Design Ethics problematizes architectural design to consider questions of architectural ethics as these intersect with core notions of professional conduct and the building of architecture. In recent years, there has been a major realignment of pedagogy toward questions of ethics, driven by the pressing socio-planetary challenges of our time that affect and are affected by the built environment. Design Ethics references a discursive set of values that drive architectural thinking at the intersection of these challenges — Care, Repair & Maintenance, Adaptive

Reuse, Embodied Energy, Biomaterials, Design for Disassembly, Urban Informatics, Obsolescence and Participatory Practices are a few examples of the broad array of topics included in questions of Design Ethics.

Since all students joining the program have a significant background in architectural design (see **4.3. Evaluation of Preparatory Education**), we are able to presume a certain level of design competency in the very first semester. The first year Design Studio sequence Praxis-1 (semester1) and Praxis-2 (semester2) is a mandatory sequence for all students and sets up the core Design Skills required in the program—Praxis-1 introduces the entanglements between architectural design thinking, agency and questions of Design Ethics, as these affect form, material, tectonics and participatory practices. Praxis-2 follows this by furthering questions of Design Ethics as they relate to building performance, embodied energy, and data driven design.

The second year offers students greater agency in their choice of design studios. In the third semester, all students take an Advanced Synthesis Option Studio (ASOS) from a list of diverse studio options that further specific Design Research agendas. In the fourth and last semester of the course, students are allowed to choose between an ASOS or a Design Thesis. Students electing to follow the Thesis track are expected to declare this in their second semester which enables them to take the Thesis Prep and Thesis Seminar courses in the second and third semesters respectively, leading up to Design Thesis in the fourth semester. This ensures that students are equipped with the requisite design research skills to take on a Design Thesis in their fourth semester of study. Also in the second year, students have the option of taking a two semester Design-Research studio "Commoning the City", which is required for Master of Urban Design Students, but an optional alternative ASOS path for M.Arch students.

48-630 Praxis1 Worldmaking Studio
Praxis 1 considers architecture as a broad framework for Worldmaking across political, social, and ecological contexts. It unpacks architecture's entanglement with historical worldviews of extraction and capital to serve as a broad introduction to Design Ethics. The studio introduces a range of emergent, transformative, and critical modes of praxis that operate across scales and temporal dimensions, connecting formal, disciplinary questions to socio-ecological paradigms. These include, but are not limited to—practices of construction that invert labor and material extraction considering circular thinking, urban waste, design for deconstruction; adaptive reuse that foregrounds the creative repurposing of existing buildings to acknowledge embodied and operational energy; forms of participatory politics considering architecture as a temporal device that acknowledges and actively deploys the agency of its users; or practices of synanthropism that actively enhance urban and periurban biodiversity through hybrid assemblages of buildings, landscapes, and ecological habitats.

48-640 Praxis-2 Worldshaping Studio
Praxis-2 emphasizes architectural design with a focus on methods of construction and performance evaluation. Praxis 2 continues the lessons learned in Praxis-1 but shifts the focus to explore the role that tectonic cultures and their associated modes of architectural expression play in shaping the world. This is accomplished through a nonlinear, multi-scalar, iterative design process. Working in teams, students analyze an urban and cultural context in order to develop a program that hybridizes housing with other uses; design detailed architectural assemblies attuned to methods of construction, craft and labor practices; consider the role of structural configurations in organizing the spatial distribution of occupancies; design architectural envelopes that regulate and respond to thermal, acoustic and visual performances. Design skills are further honed through the introduction of a range of technologies and data driven analysis techniques such as daylighting, solar radiation simulations and Virtual Reality (VR) for designing architectural spaces that respect the natural environment and engage human perception. Lessons learned in related courses like Enviro-1 are further reinforced through the application of knowledge to the design process.

While Praxis-1 introduces mass timber to consider questions embodied energy and their concomitant carbon cultures, Praxis-2 develops the tectonic capacities of the material and its associated building technology related issues (fire safety, structural performance, etc.). The broad ideas of Design Ethics

learned in Praxis-1 are reinforced in Praxis-2 through building specific precedent studies dealing with the ethics of construction.

Supplementary Courses

48-650 Advanced Synthesis Option Studio
The ASOS encourages the integration and exchange of ideas of students from various design programs at the highest levels. The ASOS includes graduate students from the M.Arch and MAAD programs, as well as upper-level B.Arch students.

48-650 Design Thesis Studio (Thesis Track)
In the fourth semester of the program students have the option to take a Design Thesis instead of a second ASOS studio. Students electing to do a Design Thesis must declare to do so and be on a "Thesis Track" starting from their second semester at the school. The thesis track is a suite of courses to ensure a rigorous conceptual and research phase in semesters 2 and 3, that lead up to a Design Thesis in semester 4:

48-644 M.Arch Pre-Thesis (Semester 2)
48-625 M.Arch Thesis Seminar (Semester 3)
48-650 Thesis Studio (Semester 4)

CMU SoA Thesis Show (Thesis Track)
M.Arch students who elect to do a thesis project participate in all aspects of the curation, design, and production of the annual SoA Thesis Show alongside the thesis coordinator faculty. The show displays thesis projects from across the SoA's M.Arch, B.Arch, and MAAD programs. The exhibition requires students to consider how to translate their design and research to be viewed by a wide audience. Students use the gallery exhibition to present their work for final reviews and discussions as well.

48-677 ULI Hines Competition (optional)
In January of each year, M.Arch students have the opportunity to participate in a course based on the annual Urban Land Institute (ULI) Hines competition. This is an intensive North American urban planning and real estate competition. Students join multidisciplinary teams of five graduate students and have two weeks to produce a comprehensive design proposal including drawings, narrative, spreadsheets and presentation in response to a brief regarding an actual site under consideration for redevelopment. Cross-disciplinary teams typically include SoA students from Urban Design and AECM, as well as students from other colleges on campus from Public Policy and Business and gives our students an opportunity to work closely with graduate students from other disciplines.

Non Curricular Experiences

M.Arch Teaching Fellowship
The M.Arch teaching fellowship offers a unique opportunity for M.Arch students to co-teach foundation level design studios at the undergraduate level — B.Arch/ BA programs. This allows students with career ambitions in academia to partake in teaching at the school. The program Track Chair makes recommendations to the Associate Head of Design Research based on student performance and aptitude for a Teaching Fellowship.

SoA Public programs
The SoA Public Programs is the platform through which the school organizes invited guest lectures and events often in connection to specific interdisciplinary themes. The program exposes all CMU SoA students to a broad, diverse and intersectional range of scholars, theorists and practitioners at CMU SoA. The SoA's Public Programs are organized by **Sarah Rafson** who serves as the Curator of Public Programs.

The Carnegie Mellon SoA Public Programs bring together diverse voices to reflect on pressing issues in the field. The lineup explicitly includes practitioners with different perspectives on architectural theory and

practice. Lectures give unique insight into the process behind design and theoretical practices; as part of our event organizing we prioritize involving students in leading the Q&A afterwards.

The 2021–2022 school year has been a time of significant shifts in the way the SoA organizes its public-facing events. We have broadened what for many years was the school's "Lecture Series," into a lineup of "Public Programs." With that change, the SoA now hosts a range of lectures, workshops, discussions, and screenings under themes that bring together unexpected perspectives to tackle big ideas and design work at multiple scales. The program's change is not merely in the array of events, but also in their planning; Public Programs is a collaboration with a committee of faculty, staff, and students who help ensure the events we organize reflect the interests of the whole school. These changes broaden who we see and how we see each other as part of a dynamic, innovative, and inspiring architectural community. Events are eligible for AIA Continuing Education Units; with that possibility, the SoA's Public Programs are part of nurturing architectural discourse and imagination at every level and help connect our students with professionals in the field.

A few examples of recent Public Program events that relate to Design include:

Film Screenings:
Butohouse, Directed By Ila Bêka And Louise Lemoine
Koolhaas Houselife Directed By Ila Bêka And Louise Lemoine

Symposia And Workshops:
Reframing Utopias: Inquiry, Evolution, And The Ethics Of Practice Paul Lewis + Steve Kieran
Olalekan Jeyifous: A Reconstructed World, With Jackie Joseph Paul Mcfarland
World (re)making The Future Life Of Sacred Spaces: Remaking Community Legacies
Zoe Zenghelis, Roundtable Discussion: In Conversation: Zoe Zenghelis With Zoe Zenghelis, Theodossis Issaias, Hamed Khosravi, And Sarah Akigbogun
Reframing Utopias: Inquiry, Evolution, And The Ethics Of Practice Paul Lewis + Steve Kieran

Lectures:
Marina Tabassum
Jackie Joseph Paul Mcfarland
Brian Mcgrath
Tommy Cheemou Yang
Felix Heisel
Pascale Sablan
Paul Lewis
Steve Kieran
Marshall Brown
Shawn Rickenbacker
Maria Lisogorskaya
Sarosh Anklesaria

For a complete archive of all Public Program Events see: https://soa.cmu.edu/events-archive
For current events see: https://soa.cmu.edu/public-programs

EX-CHANGE + SoA Exhibition
The CMU SoA hosts an annual showcase of student work, EX-CHANGE. Since the first iteration in 2017, EX-CHANGE celebrates projects from first year through PhD programs through an exhibition, publication, and series of events. The exhibition is designed every year by teams led by SoA alumni paired with graphic designers, and produced along with a team of SoA students who get first-hand experience in curating an exhibition, editing a book, and designing a cohesive exhibition project.

The 2022 edition will take place in the Great Hall of the College of Fine Arts on view from August 29–September 11, 2022. The exhibition, designed by means+methods led by Aviva Rubin (B.Arch 2007)

and Carolynn Karp will be followed by a catalog designed by Group Project (Jimmy Liu and Ryan Menefee (DC ’08, HNZ ’09)) that launches on September 9, 2022.

On Friday September 9, 2022 from 4:30–8:30pm, the SoA will host a welcome back celebration in the College of Fine Arts Great Hall, featuring tours of the exhibition, remarks by the design teams, and a chance to pick up a copy of the catalog.

The 2022 EX-CHANGE offers a comprehensive look at the SoA’s student work using the lens of the three challenges the SoA addresses: artificial intelligence, social justice, and climate change. A salon-style gallery of projects connects a custom-built display in the Great Hall to the architecture studios located on the second floor of the building.

Inter•punct
Inter•punct (https://interpunct.pub/info) is a student group founded in 2011 that is “a platform for ideas, theory, and discourse - sometimes about architecture and sometimes at its periphery.“ The group produces a quarterly magazine and events that challenge the status quo and promote discourse. Through Inter•punct students have interviewed noted architects and scholars such as Bernard Tschumi, Neil Denari, Jose Oubrierie, Snohetta founder Craig Dykers, Yasmeen Lari, Reiser & Umemoto, Sou Fujimoto, Vishaan Chakrabarti, Aaron Betsky, and Dora Epstein Jones; as well as alumni and faculty members including Aviva Ruben, Vivian Loftness, Tommy Yang among others.

AIAS / NOMAS / Freedom by Design
In 2020, the Carnegie Mellon Freedom By Design chapter was awarded a 2020 NOMA-NAACP-SEED Award for Design Excellence in Justice, Equity, Diversity and Inclusion for the Weatherization Kit Project. While M.Arch students were not directly part of this endeavor, we surely expect that there will be more student interest and participation with NOMAS and Freedom by Design in the forthcoming semesters. Starting this Fall semester, an M.Arch student will now be the President of CMU AIAS.

Assessment

The Tier 1 (external, program level) **External Assessment Report 2021-22** validates the core ambitions and objectives of the Praxis-1 & 2 studios in the context of Design, *"Praxis-1: World-making is an exemplary entry-level studio: a synopsis of the M.Arch’s pedagogical goals and curriculum that puts design tools and skills to work on relevant contemporary questions, introducing students to innovative, up-to-date design tactics and practices. Key to its success in this ambitious endeavor is the engagement of Pittsburgh–a rich resource of relevant real-world challenges of post industrial contexts. The city is a powerful asset to CMU’s M.Arch in giving concrete figuration to the complex dilemmas confronting the discipline: from environmental degradation to systemic injustice; from material, energy and resource depletion, to economic and political limits. Praxis 1 also engages Pittsburgh’s rich sociocultural history and diversity as resources for an expanded understanding of architectural work–and works. Guided by the studio’s project prompts and pedagogical themes (Frames and Tools), students practice design not as an object production, but as a material, spatial, and relational construct that engages “temporality; maintenance/care; urban effect; community support.” As with Praxis 2, team-work displaces the author/origin model of design in favor of collaboration and dialogue-- both amongst students, and between the studio, diverse contributing faculty, and communities themselves.*

Praxis-2: World Building is similarly innovative and forward-looking in grafting integrative design instruction with broader questions and tactics about building, site, economics, resources, energy, and environment. Students are tasked not only to think of form and space in material and tectonic terms, but also to understand materiality “as a complex flow of labor practices, carbon cultures, and ecological entanglements.” The studio is well coordinated in the curriculum: taught in parallel with the two building technology courses, while following up on Generative Modeling through its use of building simulation and feedback loops in the design process. Current student work demonstrates admirable innovation despite a loaded pedagogical agenda that included housing design. The same loaded agenda may have limited the students’ ability to develop the rich urbanism of their project interiors beyond the building envelope–a limit

perhaps unfairly exaggerated by the beautifully detailed sections against the stark apron of empty, gray ground outside."

Praxis1 & 2 sequence is "exceptionally strong in first two semesters… the studios are 'integrative' at multiple scales; assignments framed to address different and potentially non-aligning constituencies & factors (community, economic & material, urban history...) builds in ethics & awareness of impact of design, positive contributions, but also negative effects, past or potential"

The Tier 2 (internal, program-level) **End of Year M.Arch Student Survey 2021-22** indicates students believe that the program has a strong engagement with Design Ethics. The survey asked the following question: *"DESIGN ETHICS: In your experience so far, does the program engage with Design Ethics -- ideas of World-building/ World-shaping, Care, Repair, Maintenance, Design for disassembly, Obsolescence, Biomaterials, Embodied Energy and Climate Resilience. Has the program thus far equipped you to be critical thinkers, to consider/ question how architectural agency can be deployed outside of neoliberal modes of architectural production?".* 17 out of 19 students (89.5%) indicated that they believed the program achieved this on a scale of 4 or above, where 5 indicates "accomplishes very well" and 1 indicates does not accomplish. To quote one student, *"I think I have found a niche of discussion based courses through more diverse and socially oriented courses that offer the kind of education I expected from graduate school. Overall, I feel challenged in ways that I did not in undergrad."*

Changes Since last Accreditation

First Year Praxis-1 & 2 Studio Sequence
During the last accreditation cycle, students were given a choice of two very different sequences for studios through the program: a) a four semester Urban Design Build Studio sequence that took up the entire two years of the M.Arch program's studio experience OR b) two studios called Integration1 & 2 followed by two ASOS studios of the students' choice. The UDBS sequence has since been phased out. The Integration 1 & 2 studios were initially part of separate sections of the undergraduate studios, with similar studio problems. These have been overhauled completely into the current Praxis 1 & 2 studio sequence, with the goal of complete separation between undergraduate and graduate design studios. Furthermore Praxis-1 and 2 pedagogies now align closely with the Design Ethics agenda of the M.Arch program. While Praxis-1 offers a broad overview of Design Ethics, Praxis-2 demonstrates its Integration with data based performative design and Building Integration in particular.

New Curator of SoA Public Programs
In August 2021, after a national search, **Sarah Rafson** was appointed the New Curator of Public Programs at CMU SoA. Rafson is an architecture writer, editor, and curator. She is the founder of Point Line Projects, an editorial and curatorial agency. Rafson is tasked with organizing the school's annual public programs, including our lectures and exhibitions, in collaboration with a school committee composed of faculty, staff, and students. She is also the editor of EX-CHANGE, the school's annual publication of student work, and organizes its exhibitions. In these roles, Rafson provides the SoA with the ability to bring important voices in architecture to the school and also disseminate our students' work to the public.

This is a role that faces in two directions—outward as it circulates the SoA's research and accomplishments more widely, and inward as it fosters a sense of connection among the vast array of activities taking place within the school's walls. In that sense, Rafson's role as curator of public programs provides a vehicle to highlight the school's dynamic energy while also thinking critically about who the "public" is for our programming. How might our programs be opportunities to both speak and listen?

Forthcoming: An **M.Arch Symposium** is to be organized by students and faculty mentors during the 2022-23 year.

Design Ethics Selective:
At the time of the previous accreditation, the curriculum was not organized according to the various tracks for Design Fundamentals, Design Ethics and Design Research. Based on the Pedagogies 2020

conversations we have found new alignments with the curriculum to require all students to take at least three selectives of their choice (min. 3 units per selective) at any point during their four semesters. Out of the three selectives at least one must be in Design Ethics and one in Design Research. The Design Ethics Selectives offered this Fall 2022 include:

48-371: City & Suburb: Housing in America after 1850
Instructor: Diane Shaw

48-560/48-750: Histories of Urban Design
Instructor: Diane Shaw

48-699 A2: Design Ethics: Environmental Racism, Injustice, & Unfreedom: Lessons for Architects and Designers
Instructor: Nida Rehman

48-367: Material Histories
Instructor: Francesca Torello

48-313/48-613: The City Unsettled: An Ecological Ethnographical Approach in Situating Architecture and Urbanism
Instructor: Tommy Yang

48-554/48-701: Making Up Nature- From The Picturesque to the Hyper-natural
Instructor: Laura Garófalo

48-409/48-709: History and Future of Interaction Design
Instructor: Paul Pangaro

PC.3 Ecological Knowledge and Responsibility
—How the program instills in students a holistic understanding of the dynamic between built and natural environments, enabling future architects to mitigate climate change responsibly by leveraging ecological, advanced building performance, adaptation, and resilience principles in their work and advocacy activities

Program Response:

CMU SoA has a long tradition of environmental stewardship that goes back over four decades with well established, globally reputed programs in Building Performance and Diagnostics (MSBPD/ PhD-BPD) and Sustainable Design (MSSD). These programs have generated cutting edge research in the areas of sustainability and building performance design. (For more on the School's values related to Ecological Knowledge see **Shared Values: Environmental Stewardship and Professional Responsibility.**) The M.Arch program greatly benefits from its intersectional position in this rich ecosystem of programs. Courses in sustainability, ecological knowledge and responsibility are taught by distinguished faculty who lead advanced research at the post professional level.

With the 2020 Pedagogies stock-taking, *climate change* has become one of three challenges (*artificial intelligence* and *social justice* being the others) around which the school's pedagogies are to be focussed. We believe that architects of the future will have to contend with both a dramatic increase in effects of climate related disasters, as well as a demonstrable commitment to building a carbon neutral/ carbon negative future. This prodigious task will have to be met with an understanding of the socio-cultural impacts of building as it relates to locally pertinent questions of labor, equity and place. The M.Arch program attracts both domestic and international students and this rich mix of students generates a program with a heightened awareness that while climate change is a global problem, the tools, tactics and strategies deployed to combat it are inherently contextual and local. The varying distribution of natural resources, human populations and wealth around the globe imply that designers must have the ability to consider sustainability through entanglements of geopolitics and place.

For the M.Arch program Ecological Knowledge and Environmental Stewardship is taught across the entire curriculum through a range of diverse courses. A sequence of two Enviro courses taught in the first and third semesters—48-635 Environmental Systems-1: Climate and Energy (semester1) followed by 48-655 Environmental Systems-2: Building Systems and Integration—establishes a baseline of knowledge that moves from an understanding of passive principles of ecological design in residential construction to engagements with active systems in commercial buildings. Although the courses focus on the United States as the primary site for building investigations, they also use non-US contexts such as UN's Sustainable Development Goals to establish the overall ethos of sustainable thinking.

48-635 Environmental Systems-1: Climate and Energy
Enviro-1 introduces architectural design responses for energy conservation and natural conditioning, human comfort, and the site-specific dynamics of climate. Students combine an understanding of the basic laws of comfort and heat flow with the variables of local climate to create energy design guidelines for their own work. State of the art building energy conservation and passive heating and cooling technologies are presented in lectures and supported by readings and assignments. An overview of world energy consumption in buildings and energy design standards is illustrated by lectures on building energy conservation successes, and emerging demands for a broader, socially inclusive definition of sustainability. To stress the significance of architectural design decision-making on energy consumption and comfort, full design specifications and calculations are completed by students for a residential-scale building.

48-655 Environmental Systems-2: Building Systems and Integration
The course emphasizes active systems and the role of design integration where architects have a major design role. The syllabus primarily addresses buildings and design within the United States, while considering how performance definitions and sustainable strategies may change in other countries where climate, natural resources, population density and a host of other differences may impact the built environment and design approaches. The course delivers knowledge of basic strategies for commercial building envelope design, approaches in the latest US energy code, zero energy guidance and metered successes. Students also gain an introductory knowledge about envelope design for sea level rise and flooding, drawing on published guidance. Additionally, students develop a familiarity with US building codes, how they’re structured and key sections for architects.

Supplementary Courses

48-640 Praxis-2 World Shaping Studio
The Praxis 2 studio is co-led by building scientist **Azadeh Sawyer**, PhD, who joined SOA in 2020. Sawyer’s research and pedagogical interests lie in the intersection of design, architectural technology, daylighting, human perception and wellbeing. In the past five years, she has focused on the influence of façade design and lighting on the subjective impression and satisfaction of occupants and the power of curating light and shadows to evoke emotions and alter experiences. Her research and teaching goals are to go beyond creating energy efficient environments to design holistic spaces that support users’ psychological and physiological well being. The objective is to find ways to enhance the experience of users through the integration of design, technology and building science. In her teaching of the first year M.Arch studio, she brings great expertise in modeling environmental effects, and working through an interactive design process that weaves environmental thinking and psychology into the building design.

48-647 Materiality and Construction Systems
Students develop an understanding of the carbon footprint and embodied energy considerations of materials and systems of construction and emerging methods of carbon neutral/negative methods of construction. Case study presentations consider the impact of environmental and ecological considerations and ambitions upon the various scales of design (siting, materials, enclosure, etc.) as well as the perceived environmental impact of the building through its embodied energy/carbon as well as its operational energy. The course embraces an expanded notion of sustainable thinking that problematizes labor and extraction in the context of construction systems. The course introduces traditions of building and material cultures from across the world. In doing so, it expands students' understanding of materiality

beyond a strictly western lens and directs attention to methods of building that are more aware of the legacy of extractive construction practices upon the planet and its citizens.

Non Curricular Experiences

RA/ TAships
Second Year M.Arch students/ students who have successfully demonstrated completing equivalent courses in their undergraduate education, can be Teaching Assistants for the Enviro-1 course taught by Vivian Loftness.

Robert L. Preger Intelligent Workplace (IW), a living laboratory dedicated to advancing innovations in building enclosure, mechanical, electrical, telecommunications, and interior systems, as well as their integration for individual productivity, organizational adaptability, human comfort and health, as well as the highest level of environmental sustainability. The IW houses many of the other faculty and PhD students from the SoA programs in building technology and sustainability. It is easily accessible to M.Arch, and a place where they can see some of the latest environmental technologies working in place.

Case Studies in Pittsburgh: Pittsburgh is home to some of the most advanced buildings in the world for environmental technology and sustainability. Students can easily visit and learn from some buildings close to campus such as the Center for Sustainable Landscapes at the Phipps Conservatory and Botanical Gardens, a WELL Platinum Pilot Certified Project. as well as the Frick Environmental Center, a certified Living Building that has achieved Leadership in Energy and Environmental Design (LEED) Platinum. These buildings are also regularly cited in the Enviro 1 and Enviro 2 classes.

SoA Public Programs
A few examples of recent Public Program events that relate to Ecological knowledge and Responsibility include:

Symposia and Workshops:
Olalekan Jeyifous: A Reconstructed World, With Jackie Joseph Paul Mcfarland
Of More Than Human With
Joyce Hwang, Living Among Pests
Rachel Strickland, The Social Lives Of Urban Trees: An Experimental Video Project
John Soluri, Birth Places And Biosecurity In Patagonia
Romita Ray, Spatializing The Tea Plant

Lectures:
Felix Heisel Care For Materials, Buildings And The Planet: Towards Circular Construction
Tommy Cheemou Yang, Da-me To Bastards: Architectural Space As Matrix Of Care
Steve Kieran, Kieran Timberlake
Jorge Otero-pailos

See also **PC.2 Design: Non Curricular Experiences**.

Assessment

A few examples of Assessment related to PC.3 Ecological Knowledge include:

The Tier 1 External Assessment Report mentions that 48-635 Environmental Systems-1: Climate and Energy *"adapted course materials for global contexts and changing futures"*. The notion that Ecological knowledge in architecture is specific and nuanced to local climate, culture, and place has been an important thrust of the program at large, especially when understanding the impact of technology on climate and ecology.

Although the new course 48-647 Materiality and Construction Systems has been listed as a supplementary course, the External Assessment found significant contributions towards Ecological

knowledge—*"introduction to components & assemblies as an issue of performance, but also of "environmental impact & reuse"; materials & construction systems discussed in relation to "carbon footprint & embodied energy"; includes "emerging methods of carbon neutral/negative methods of construction."*

Changes since last Accreditation

The Praxis 1 and Praxis 2 studios were separated from the 3rd year undergraduate studios, allowing them to develop environmental thinking more closely tied to the Design Ethics emphasis of the M.Arch program.

Beginning in Fall 2022, **48-655 Environmental Systems-2: Building Systems and Integration** will take student projects from the Praxis 2 studio the previous spring, and further develop the active environmental building systems, allowing students to take their own designs further than is possible in a single semester. See also **SC.6 Building Integration**.

Forthcoming: The curricular committee will be looking more closely at the Enviro 1 & 2 sequence since both courses are currently required for M.Arch students and are also required—with different expectations—for the undergraduate B.Arch curriculum. The M.Arch program has pursued a curricular agenda of greater separation between the M.Arch and B.Arch programs, with courses tailored specifically for each. This has been done successfully with the studio sequence (overhauling the Praxis-1 & 2 sequence), the Building construction courses, (the new course 48-647 Materiality and Construction Systems) and with the History and Theory Sequence (now 3 courses of 6 units each, with a 9 unit option). There has been a shift across CMU SoA curricula, to allow for more courses with 6 units instead of the current 9. This facilitates a greater diversity of topics addressed across courses, while also allowing for flexibility within the curriculum.

PC.4 History and Theory
—How the program ensures that students understand the histories and theories of architecture and urbanism, framed by diverse social, cultural, economic, and political forces, nationally and globally.

Program Response:

We see architecture as a centuries-long global discourse about how humans relate to their built and natural environments. History and theory are essential in order to understand these entangled dialogues. Architecture as a discipline has a unique relationship to its own past, both the built precedents and the ideas, constraints, and representations that inspired the works. Although a culture of innovation and technological advances certainly permeates the field, we believe that architecture builds its ideas on the shoulders and precedents of what came before in a very different way than the sciences and technology that dominates at CMU. Although architects surely value creativity and individual expression as much as any of the other arts in CFA, architecture is more constrained than most of the arts, bound by things like cost, gravity, client demands, regulatory agencies, but also precedent. The enormous psychic value that people place in their homes and buildings, makes radical change perhaps harder in architecture than in other arts and technologies. As a result, we believe history and theory must remain central to architectural education.

Two key courses define the Primary History and Theory Sequence:

48-634 Architectural Theory & Contemporary Issues
Architectural Theory is one of the portal courses in the first semester for new M.Arch students. It helps introduce new students to the most important ideas being discussed in architecture, and in the SoA in particular. It explores the most important theories, issues, and ideas being discussed in architecture today. Theory is framed not primarily as a design principle, or as a critical and philosophical framing device, but rather as a way to investigate the dominant forces and paradigms engaging architecture today, in the academy, the profession, and the community. Architecture is considered as both material technology and social agenda, a driver of inequality but also potentially a social justice machine, a

high-tech, economic, ecological, and political change-agent. The focus is on discourses, processes, and contexts, rather than on the latest buildings or architects. The seminar examines a different theme each week, with topics that vary annually to acknowledge the dynamic nature of the profession, environment, and global contexts. The course is part of the SoA's and the M.Arch program's efforts to center the agendas of social justice and design ethics in architectural education and pedagogy. This course is required of all incoming M.Arch students, and is open to undergrads by permission of the instructor. The work of the seminar focuses on readings, weekly presentations and discussions about the sources. For additional units, students may elect to do a research paper on a theoretical aspect of architecture that connects to the co-requisite course "Situating Research" and might lead to a thesis or grant proposal.

48-641 Modern Architecture & Theory
This history course surveys modern architecture and theory of the 20th century from around the world. It is the second of a two-semester global survey that serves both as a historical foundation for disciplinary specialization, and as an introduction to architectural history. We begin the course by defining terms such as history, theory, and criticism, as well as modern, modernity, and modernism in architecture. We look briefly at the bias embedded in most current textbooks and in terms like "evolution" and "Non-Western." We problematize canon formation and ideas of progress, we'll ask who gets left out of histories, and probe the legacy of colonialism, globalization, and social inequity in modern architecture. After briefly identifying architecture's role in some of the most important challenges facing the world today, this survey works backward in time towards the beginning of the 20th century. Along the way we will explore major movements of the Euro-American avant-garde and the "heroes" of modernism, but also other responses to modernity, including vernacular, popular, tropical, and even anti-architecture, and their relation to contexts such as the Cold War, the Third World, Global Socialism, Postcolonialism, and Postmodernism. We will highlight the role of experimentation and provocation, but also of tradition and timeless ideals in different cultures, and how they each intersect with the demands of function and technology as well as social and political imperatives. Emphasis throughout the course will be placed on the relationship of buildings to the more general cultural, intellectual, and historical circumstances in which they were created, as well as changing interpretations of the past over time. Work for the course falls into four categories: 1) Active listening & note-taking in lectures (some pre-recorded); 2) Reading, both original documents from the period, and more recent critical reflections on the work; 3) Writing a series of 2pp. "reading reports" and participating actively in smaller discussions about these readings; 4) A semester-long, carefully curated research project on "Non-Canonical" buildings from the 20th-century.

Supplementary Courses

48-620 Situating Research
The Situating Research course in the first semester offers brief insights into a variety of ways of doing research, and invites various kinds of researchers to the class to discuss their interests, including historians and more theoretical or speculatively oriented researchers. The instructor has a PhD in Geography and foregrounds several kinds of interdisciplinary thinking, many of which interweave history with other disciplines.

48-630 Praxis-1 Studio
The Praxis 1 studio, the first studio in the 2-year M.Arch, helps introduce incoming M.Arch students to the main themes of the M.Arch program, including the turn to Design Ethics. The studio focuses on the underserved Pittsburgh community of Homewood and surrounds, so that all students understand the local Pittsburgh contexts, especially neighborhoods that have long suffered from structural neglect and inequity. The studio unpacks architecture's entanglement with historical worldviews of extraction and capital to serve as a broad introduction to Design Ethics. Understanding the historical context is seen as key to design work.

48-625 Thesis Seminar (Thesis Track)
The optional three-course Thesis Track offers M.Arch students opportunities to invent and carry out independent design-research projects, which almost always include extensive precedent study and historical research.

New Forthcoming Course: **48-XXX Architectural Agency: Discourses and Case Studies**
This course will build on the 48-634 Architectural Theory course, examining historical precedents and case studies of architecture projects that operate outside of the normative modes of client driven practice, and foreground innovative ways in which the architectural brief and project are conceived to consider architectures of empowerment and change.

History Selectives
The SoA offers a variety of architectural history courses that M.Arch students can take, including 48-750: Histories of Urban Design, 48-371: City & Suburb: Housing in America after 1850, and 48-367: Material Histories. The History Department at CMU offers several courses on the history of Pittsburgh, industrialization, etc. Pittsburgh offers an incredible array of opportunities for a study of architectural history. This relates both to the Urban History (see "Context and Mission: Geographic Context: Relationship to Pittsburgh and Southwest Pennsylvania") as well as to the rich legacy of built architecture in the region. All CMU students, including the M.Arch, have access to taking courses at any of the other colleges and universities in Pittsburgh through the Pittsburgh Council on Higher Education (PCHE, https://pche-pa.org/), including high-ranking architectural history and urban history courses at University of Pittsburgh.

Non Curricular Experiences

Inter•punct
Inter•punct is a platform for ideas, theory, and discourse—sometimes about architecture and sometimes at its periphery. The group was founded by students at Carnegie Mellon University in 2011. This past school year (2021-22), the group has released three issues of its magazine—on Climate, Worldbuilding, and Race.

SoA Public Programs
A few recent examples of Public Program events that relate to History and Theory include:

Film Screenings:
Koolhaas Houselife By Ila Bêka And Louise Lemoine
Gehry's Vertigo By Ila Bêka And Louise Lemoine

Symposia And Workshops:
Reframing Utopias: Power And Politics, Visionary And Phenomenological
with Maria Lisogorskaya & Marshall Brown

Lectures:
Zoe Zenghelis Roundtable Discussion: In Conversation: Zoe Zenghelis
with Zoe Zenghelis, Theodossis Issaias, Hamed Khosravi, And Sarah Akigbogun
Sarah Lewis
Mabel O. Wilson
Michael Stone-Richards

Remaking Cities Institute (RCI)
An urban design research center based in the School of Architecture, the RCI aims to promote an improved quality of life in cities and towns through academic, applied and action research into place-making and community redevelopment. As is implied in its name, the RCI is deeply interested in the history and existing industrial, urban, and architectural infrastructure of Pittsburgh and its region, with preservation often connected to efforts to modernize and improve the region. The RCI expands the regional and global impact of the School of Architecture's Urban Laboratory studio and Master of Urban Design (MUD) program by fostering multi-sector collaboration between faculty, researchers, professionals and community organizations. With the AIA, the RCI recently co-hosted the Remaking Cities Congress, a working meeting of 300 urban-design delegates from around the world.

Heinz Architectural Center in the Carnegie Museum of Art
In addition to founding and funding the university, Andrew Carnegie commissioned the world-class Carnegie Institute nearby, which students can visit easily and free of charge. It includes the main City library, a world-class music hall, large lecture halls that frequently host architectural speakers, a natural history museum, and the world class Carnegie Museum of Art with its famous “Carnegie International" biennial, the oldest biennial in the US and one of the first to promote modern art. Inside the CMoA in the Heinz Architectural Center, established in 1990 with a generous gift from Mrs. Henry J. Heinz II, to enhance the appreciation and understanding of architecture and the built environment through exhibitions, lectures, charettes, symposia, and other forms of public engagement. Its collection of nearly 6,000 objects includes drawings, models, photographs, artifacts, games, ephemera, and the world’s third-largest collection of plaster architectural casts. The Center presents three exhibitions each year and is the site of summer architecture camps organized jointly by the museum’s education department and the Carnegie Mellon School of Architecture. Long-time Heinz Center curator Raymond Ryan is a frequent guest at our reviews, and gives tours of the exhibits he organizes. Newly hired curator Theodossis Issaias recently created an exhibit and a series of public events that were attended by SoA students and faculty around the important (but overlooked) artist Zoe Zenghelis, a founding partner of OMA. Issaisis is teaching an Advanced Architecture Option Studio (ASOS) this Fall 2022 titled “Beside* Glitter Spaces of Queer Solidarity and Love.”

University of Pittsburgh’s History of Art & Architecture Department
The Department of History of Art and Architecture at the University of Pittsburgh explores the objects, spaces, and environments that shape our world. Based in the Frick Fine Arts Building, their graduate and undergraduate programs span art history, architectural studies, and museum studies. The department is also the home of the **U.Pitt Architectural Studies Program**, which offers a 4-year B.A. in Architectural Studies libeal arts degree, and a B.S. in Architecture pre-professional degree. The department’s approach to research is rigorously grounded in historical evidence and in close engagement with actual objects of study. The department includes numerous architectural historians teaching and advising student work on a wide range of architectural and cultural history from undergrad through the PhD. SoA faculty have occasionally served as outside advisors for PhD dissertations in architectural history. CMU students may register for courses through the Pittsburgh Council of Higher Education (PCHE) exchange program. Resources and opportunities regularly used by CMU SoA students and faculty include a robust lecture series, the University of Pittsburgh's University Art Museum, and the world-class Frick Fine Arts library, including a very large architecture collection which is easy to access from CMU’s campus. U.Pitt and CMU students are able

Pittsburgh History & Landmarks Foundation (PHLF)
PHLF is a nonprofit organization founded in 1964 to support the preservation of historic buildings and neighborhoods in Pittsburgh. PHLF is known around the country,and indeed the world, as a pioneer in preservation, reuse, and adaptation of buildings, all values which are making a comeback in architecture. In 1966, PHLF established the Revolving Fund for Preservation with a $100,000 grant from the Sarah Scaife Foundation. PHLF used the grant to purchase, restore and renovate historic inner-city properties primarily in the North Side and South Side neighborhoods of Pittsburgh, which were rented or sold to low- and moderate-income families. The relationship between SoA and PHLF has varied over the years, from providing a book prize for the best student architectural history paper, to supporting SoA’s K-12 programming, to offering lectures and tours of the city.

Preservation Pittsburgh
Preservation Pittsburgh is a non-profit advocacy group dedicated to preserving our region's historic, architectural, cultural, and environmental heritage. We seek to assist individuals and organizations in preserving the integrity of the architecture and physical surroundings they value and to further public policy in preservation. Their primary goal is to promote the importance of preservation issues in the deliberations and decisions of public officials, private groups, developers and the general public.

Pittsburgh Modern Committee
The Pittsburgh Modern Committee of Preservation Pittsburgh surveys our region’s 20th-century modern and postmodern architecture, design, and public art (circa 1945-1970s) as a groundwork for preservation

in collaboration with community members and the City of Pittsburgh. Their mission is to engage public awareness of local modernist design and related community experiences through documentation, public programming, education, and advocacy - and together explore its significance and potential to be reinvigorated and relevant throughout Pittsburgh's diverse neighborhoods.

SAH Conference & Docomomo
Pittsburgh's impressive post-war historical buildings have drawn the attention of scholars from around the world, as well as organizations like the Society of Architectural History, which had its annual conference in Pittsburgh in 2005 and more recently in April 2022. Docomomo, the international organization focused on preserving modern architecture, commissions articles and tours of Pittsburgh's post-war modern architecture.

Pittsburgh Buildings & Context: Students also have access to important examples of modern architecture on and near campus, including houses by Robert Venturi, Richard Meier, Hugh Newell Jacobson, and F.L. Wright apprentice Cornelia Brierly. Wright's Fallingwater, arguably the most famous modern house in the world, is a bit more than an hour away, and students have frequent opportunities to visit these via field trips and study tours often related to course work or Non Curricular Experiences.

Assessment

A few examples of assessment related to PC.4 History and Theory include:

The Tier 1 (external, program level) **external assessor** noted that the criteria for PC were "e*xplicitly addressed in Architectural Theory, and Modern Architectural History courses*", but also saw evidence of history and theory in Generative Modelling's emphasis on the historical design process, and in Materiality and Construction Systems as it explored "*building as a process & cultural artifact,*" and course material "*spanning the vernacular to the digital*." The external examiner also noted that: "*For accreditation, documentation of global content (traditions and practices) might be more explicit in history/theory courses*," and that a major future opportunity was to: "*Amplify electives or modules on the history, cultures and politics of technology*."

The Tier 2 (internal, program-level) **End of Year student survey** showed that more than 80% of the students felt the Architectural Theory course delivered "Very Well" or "Well." In class student surveys that mixed undergrads and grads suggested that slightly less than half the students felt the course could be taught remotely. The class was often divided on what it wanted. Most students appreciated the global content; some felt there was too much emphasis on colonialism, and others sought even more content on African American architects.

As part of our admissions process, we ask every applicant to list the history and theory courses they took as undergraduates, and can confirm that every enrolled student had at least three previous history courses as undergraduates. A more detailed description of all previous course work is obtained through a survey at the beginning of the program in the 49-634 Architectural Theory course. Any student who wished to Opt Out of 48-641 Must submit syllabus and coursework from these history courses in order to assess the extent to which they fulfill the diversity criteria of SoA and NAAB.

The Tier 3 (internal, course-level) **instructor assessment** revealed an ongoing effort to balance the Canon with more Non-Western and Non-Canonical examples, the difficulty of teaching "the basics" alongside more global and less well-known precedents. Questions are being asked to what extent the M.Arch graduate students need a different introduction to Modern Architecture than the second year undergraduates sitting in the same lecture course. The undergraduates often have very little experience or understanding of the rich history of architecture around the world at that point. Graduate students all have a pre-professional undergraduate degree and the requisite references to historical precedents, they tend to be older, with more international schooling and travel experience, including detailed courses on the history of their country of origins, and they have often worked in more contexts. Questions are also being asked to what extent that the discipline of "history" itself is a European and colonial construct to legitimize concepts such as "development" and "progress" and "evolution" towards preset and biased

standards, a discipline that that too often ignores “prehistoric” or “primitive” or popular and vernacular cultures and expertise about buildings. It is impossible to cover it all, and to satisfy everyone; so the instructor and program are challenged to choose a balance.

Much of the assessment for the history & theory sequence comes from interacting with **other historians and theory professors in other schools**, from attending symposia and annual conferences, and regularly reading the newest journals and books for how the fields of history and theory are changing. The changes in the last few years have been profound. In recent Theory symposia at Cooper Union, UPenn, and the New York Architectural League, it is clear that the definition of “theory” is changing away from its 1990s ideas of French critical theory towards a more expansive set of definitions that include much inter-disciplinary thinking and research. While the annual Society of Architectural Historians conference has remained more old-school, efforts such as the Aggregate Architectural History Collaborative, E-Flux-Architecture’s “History / Theory" publications, the Vernacular Architecture Forum, the European Architectural History Network (EAHN), and many organizations involved in studying the post-colonial history of Africa and Asia provide much new material and many new ways of understanding the modern architecture of the Global South.

Changes since last Accreditation

The 2019 NAAB VTR judged the history offering as “Not Met,” primarily because no M.Arch students had taken history courses, because all had been able to Opt Out. This spurred substantial rethinking and redesign of the history-theory sequence. The most global change comes from the widespread critiques of the discipline in recent years regarding the bias in most traditional history surveys. As a result, we continue to expand the canon and ensure students are more aware of the impact of colonialism around the world, as well as the systemic racism that underlies much of the modern architecture in this country (e.g. housing & suburbia). This is reinforced in studios, in the 48-634 Architectural Theory and 48-648 Ethics & Decision Making courses required of all M.Arch, as well as in 48-641 Modern Architecture. Our large cohort of international students all have previous coursework in their local or regional architectural traditions, as well as courses that covered the canon of western architectural history, including the modern masters. Through collaboration in the studio, we also ensure that these students share their global knowledge with domestic students. Students who attended US colleges all have surveys of architectural history that included both global and modern content, as is common in most US schools of architecture.

48-634 Architectural Theory & Contemporary Issues
With the addition of the required **48-620 Situating Research** course for 3 units, the architectural theory course was reduced from 9 to 6 units. The research project, a critical analysis of an important artifact of theory, was made optional; students could elect to do a research project for 3 extra units, if their course loading allowed. The weekly topics and specific readings change every year to acknowledge changing discourse in the profession and global scene, to reflect guest speakers in the SoA public programs, as well as to acknowledge changes internal to the SoA, such as the turn to focus on three grand challenges (climate change, artificial intelligence, and social justice). The most significant topic changes were the addition of readings about race and gender bias in the profession, as well as about the concepts of “Care” and Design Ethics. The content of social and political issues expanded to cover about half the semester, while the technology subjects were reduced slightly. As the class grew bigger, the instructor implemented a Canvas “Discussion Board” where students were required to write a brief reflection on the readings, and then also comment on the reflections of 2-3 peers. These proved to be short but spirited exchanges of ideas and theories.

48-641 Modern Architecture & Theory
In response to the 2019 VTR, the Opt-Out process for architectural history was made much more rigorous, and for the first time some M.Arch students were required to take the course to make up for the lack of a rigorous course in their previous education. (See "4.3 Evaluation of Preparatory Education.") Depending on their previous background, M.Arch students are able to take the 48-641 Modern Architecture course for 6 units or 9 units. The 9-unit course, which is required of all undergraduate B.Arch students, demands that students complete scaffolded research projects about architecture in the Global

South. This change was largely motivated by the desire to eliminate “high stakes" exams in favor of a carefully-curated, multi-step research project to “expand and decolonize the canon of modern architecture in place of mid-term and final exams. Since M.Arch students had opportunities to do research in **48-620 Situating Research** and in **48-634 Architectural Theory**, they could elect not to do the research project in 48-641 Modern Architecture, and receive only 6 (of 9) units for the course. The course calendar was flipped chronologically to begin with a look at present circumstances, including the issues in the news, and then works "backwards" to find important connections. The course has been revised to open with a series of 6-8 lectures and in-class discussions on "methods,” "theories" and explanations of concepts about terms such as modernity, history, colonialism, DEI, etc. In addition to these lectures, we greatly expanded the "Postwar" section of the course, and emphasized the increasing diversity of ideas across the globe

Forthcoming New Course: **48-xxx Architecture Agency**:
The course expands the History & Theory sequence into the 2nd year, and will provide students with an understanding of the discursive role of architectural theory in both fostering and resisting architectural imaginaries of the neoliberal production of space. The course will also consider agency simultaneously through historical and contemporary forms of praxis as well as theories that inform them. In addition to facilitating the addition of this third required course added to the History & Theory sequence, the number of units for all history and theory courses has been reduced to 6 (with an option for 9 units), to maintain the required 180 units required for graduation.

PC.5 Research and Innovation
—How the program prepares students to engage and participate in architectural research to test and evaluate innovations in the field.

Program Response:
Being an R1 research university, research and innovation are imbued into the very heart of the CMU community, its interests and its investigations, and exist in various courses at CMU across the breadth of the curriculum. The introductory course **48-620 Situating Research**, exposes students to various research methods, initiatives and agendas at CMU SoA and the university at large.

Recently, the design studio has increasingly become the site of research in its own right, through modes of design research that generate, synthesize and reconstruct forms of knowledge. The idea that research is intrinsic to knowledge creation for and within architectural design is explored through the **48-650 The Advanced Synthesis Option Studios (ASOS).**

48-620 Situating Research
The course introduces incoming graduate students to a range of research approaches through introductions to and conversations with School of Architecture faculty, PhD researchers, and other invited guests. The course helps students develop an understanding of the varied modalities of architectural research, while creating opportunities for cohort building, social exchange, and exposure to faculty activity particularly within the areas of climate change and sustainability, social and spatial justice, and design computation and artificial intelligence. The course is structured into three modules—Contexts, Epistemologies, and Futures. Over the course of the semester the course hosts a series of cross-disciplinary discussion panels through which students engage invited guests about a broad range of issues, frameworks, and methods including building and geo-spatial analysis, fieldwork, prototyping, research and scholarly ethics, archival methods and textual analysis, automation, human-machine interaction, systems analysis, social justice, building performance and diagnostics, commoning, data analysis and visualization, design-build, curatorial practices, public interest design, and more. These conversations provide a springboard for students to start situating themselves and their work within the landscape of architectural research and scholarship at CMU and beyond.

48-650 The Advanced Synthesis Option Studios (ASOS)
The Advanced Synthesis Option Studios (ASOS) are vertically-integrated advanced studios that encourage interdisciplinary collaboration from the arts and technology, research and design, large scale urban and ecological thinking, to detailed investigations of materials, fabrication strategies, and form

strategies. From a design research standpoint, the ASOS are essential to the CMU SoA experience. The studios are a set of advanced studios offered every semester on various diverse topics chosen by studio faculty based on their research and design interests. Topics vary from year to year, and are constantly evolving to keep pace with the rapidly changing profession and global scene. All ASOS studios are built on specific agenda set by the instructors and embed diverse modes of design research. An ASOS booklet is created each year listing the likely topics of ASOS studios for the next two years. Since not every studio is available every semester, strategic planning is necessary on the part of students. Students may focus or specialize on particular themes such as robotics, urbanism, or sustainable systems for several semesters, or they may connect different studios to satisfy more diverse interests. Often global studios include travel abroad to visit a site.

Supplementary Courses

48-644 PreThesis / 48-625 Thesis Seminar / 48-650 Thesis Studio
The optional Thesis sequence provides M.Arch students the chance to propose, research and design an independent research-by-design project. Students are free to choose their topics from any aspect of the discipline of architecture, though all must combine research and design. Topics have varied from more pragmatic designs of buildings to more speculative design of virtual worlds. Thesis has always been optional in CMU's M.Arch program. Participation varies from year-to-year with sometimes only a single M.Arch student electing to do Thesis, to the current 2nd year M.Arch class where nearly half the class may do Thesis. Students who seek to do a Thesis must take a sequence of three courses after the 48-620 Situating Research course. This sequence scaffolds the development of a proposal, the research, and the independent studio work in their final semester. The M.Arch Thesis sequence works alongside a similar set of courses for the 4th and 5th year B.Arch students.

This decision to make Thesis optional was made after many years of experimenting with Thesis in various formats, including for a few years required for all in the undergraduate studios. National trends in architecture education seem to have made studio education more research oriented, and many schools abandoned Thesis for various reasons. All M.Arch students who hope to do Thesis are urged to take the 3-unit 48-644 PreThesis course in the spring of their first year to help them narrow their focus and develop a proposal. Ideally this would allow travel or research or reading during the summer. If students choose to continue towards a Thesis, they are required to take the 9-unit 48-625 Thesis Seminar in the Fall of their second year. This course helps shape their research and produces a detailed syllabus with learning objectives, proposed research plans, and deliverables for their final semester 48-650 Thesis Studio. Throughout the

Both **48-634 Architectural Theory** and **48-641 Modern Architecture** courses offer optional opportunities for research projects. The 6-unit, first-semester 48-634 Architectural Theory course allows students to add an additional three units for doing a carefully scaffolded research project about an "artifact" of architectural theory that results in a critical analysis of a piece of theory. The 6-unit 48-641 Modern Architecture course offers a similar 3-unit extension to do a scaffolded research project about a "Non-Western" piece of architecture of their choice in the Global South.

48-711 Paradigms of Research in Architecture.
This course is required for several of the research-based master's programs in SoA, including MSBPD and MSSD, and is open to M.Arch students. The course challenges the false dichotomy between research and design and provides an introduction to a wide range of research strategies including Experimental, Simulation, Qualitative, Correlational, Interpretive-historical, Logical Argumentation, Case Study, and Mixed Methods as feedstock for understanding robust published research and for developing an independent architectural research proposal. Throughout the semester guest lectures are offered by faculty who share their expertise, successful research strategies and methods, results of their current and past research, and innovative ideas for future research.

Non Curricular Experiences

Research Assistantships
M.Arch students are able to apply to work as Research Assistants to faculty in the SoA; although not every M.Arch student chooses to work, every M.Arch has the right to work up to 67 hrs/semester

SoA Public Programs
A few recent examples of Public Program events that relate to Research and Innovation include:

Symposia and Workshops:
Architectural Ceramic Assemblies Workshop 2022
A Tinkerer's Guide to the AI Galaxy: Machine-Learning with Lucas Ochoa & Gautam Bose

Lectures:
Jordan Geiger
Felix Heisel

See also **Shared Values: Research & Innovation**, and **PC.2 Design: Non Curricular Experiences**.

Assessment

A few examples of Assessment related to PC.5 Research and Innovation include:

The Tier 1 (external, program-level) **External Assessment Report 2021-22** suggests that Situating Research has been a constructive addition to the required M.Arch courses, *"The first-semester Situating Research course is a commendable introduction to CMU's M.Arch in making architectural agency a question for inquiry from the start, and in presenting design research as a rich, multi-avenue endeavor through the themes of Contexts, Epistemologies and Futures. As a required course for all SoA graduate students, it creates a rich peer community while giving orientation to the wealth of design research, resources, faculty, and opportunities at CMU for M.Archs to enrich or focus their professional studies.*

It also recommends greater flexibility in the time students have (currently the first semester) before they announce their preference for a "Thesis Track" in lieu of a fourth ASOS studio in the fourth semester: "*The Pre-Thesis course material is rich and interesting. As a requirement for the thesis option in a two-year program, it seems generous. The course's relation to Situating Research and Thesis Seminar could be made clearer. Its placement in the curriculum could also be reviewed, as there were many comments in the student meeting about the implausibility of committing to the thesis track after only one semester in the program (Appendix B: Meeting with Students)."* This sentiment was also revealed through the Tier 2 (internal, program-level) **End of Year Student Survey 2021-22**

Changes since last Accreditation

Emerging from the Pedagogies 2020 conversations, CMU SoA has put into place a new position of Associate Head of Design Research (Joshua Bard) that helps coordinate research efforts in SoA with those of the university. The position plans to work on creating more relationships with industry, including professional architectural firms, manufacturing, etc. (See also "Shared Values: Knowledge and Innovation.")

Starting Fall 2021 **48-620 Situating Research** was added as a new required course in the M.Arch Curriculum to give incoming graduate students an overview of the various modalities of architectural research. Additionally the goal was to introduce students to the rich ecology of research carried out by faculty and PhD researchers across CMU SoA's graduate programs and the university at large.

A required **48-XXX Design Research Selective** (min 3 units) was added to the revised curriculum (M.Arch curriculum for the Incoming Class of 2021). Design Research Selectives allow students to choose from a set of predefined courses offered each semester relating to the subject of Design

Research. M.Arch students are required to take one Design Research selective during any of the four semesters of the graduate program. Courses offered in the Fall '22 semester include:

48-531/48-771: Fabricating Customization: Prototype
Instructor: Jeremy Ficca

48-749: Special Topics In Computational Design: Rethinking Automation In Arch.
Instructor: Daniel Cardoso Llach

48-763: Protean Systems: Sustainable Solutions for Uncertain Futures
Instructor: Joshua Lee

The course **48-634 Architectural Theory** is now offered for a flexible set of 6 units (taken as a default) or 9 units. Students taking the course for an additional 3 units are required to take a semester long "Research Project" as part of the course.

Students taking **48-641 Modern Architecture** for the full 9 units (instead of the normative 6) now do a research project on “Non-Western Architecture.” All students hear extensively about the research process for that in class lectures.

Forthcoming: **Thesis Track:** The curricular committee will be considering changes to the Thesis Track considering the External Assessment Report and student requests for not committing to the "Thesis Track" immediately after the first semester, instead to allow for more time in making this choice.

PC.6 Leadership and Collaboration
—How the program ensures that students understand approaches to leadership in multidisciplinary teams, diverse stakeholder constituents, and dynamic physical and social contexts, and learn how to apply effective collaboration skills to solve complex problems.

Program Response:

Approaches to leadership and collaboration are ensured at almost every stage of the curriculum and are intrinsic to the Praxis-1 & 2 studio sequence. By its very nature our first year architecture studios are collaborative spaces where students learn to work in design teams. The program considers this to be an essential and necessary skill that is most obviously translated to architectural practice today, but also to various related disciplines where leadership and collaboration are so essential in the contemporary workspace to solve complex problems. See also “Shared Values: Leadership, Collaboration and Community Engagement.”

48-630 Praxis-1 Worldmaking studio
The Praxis-1 studio uses the rich and diverse urban context of Pittsburgh to expose students to the complex entanglements between questions of urban renewal, ecology and race. The studio provides students with a broad outlook at the forces that shape local communities and neighborhoods. In particular the studio investigates Pittsburgh's historic industrial and transportation corridor running through the East End between Homewood and Point Breeze North. Communities in the area have faced years of structural neglect and current challenges include inequitable distribution of resources and gentrification. The studio harnesses the expansive discourse around "Just Transitions" and "Designs for Transitions" to build an intellectual framework for leadership and action. The course ensures students understand leadership and collaboration at multiple levels. Students interact with leaders within local community groups. The initial analysis of the site is done in groups of four, in a process through which students find suitable sites and fellow collaborators to develop projects in further detail, in groups of two. Through the process students also understand collaborative relationships in the context of real-world clients and diverse stakeholders. Doing so advances valuable skills in leadership—learning processes through which architects frame, define and pitch projects in collaboration with community partners.

48-640 Praxis-2 Studio
The Praxis-2 curriculum serves to simultaneously prepare students for the dynamic collaborative environment of practice while also ensuring that each individual student develops core competencies and demonstrates a thorough facility with the principles and techniques of material assembly, envelope performance, and human occupancy. While students work in small project teams of 3-4 students which vary across five assignments, the sequence of assignments oscillates between individual components and group-wide synthesis, placing emphasis on the design process over a final design outcome.

During the early conceptual development phase of the project, individual students are asked to experiment with incident solar radiation analysis to generate, analyze, and iterate massing concepts. These individual studies are then combined into a group-wide approach to massing. Later in the process, individual students develop envelope assembly details for a group-wide schematic design. Teams had the opportunity to meet with external experts in adjacent disciplines (lighting, structure, MEP), each member organizing the integration of an expert's advice, with the whole team continually coordinating the whole, simulating a consultant model in practice. Each team member chooses a facade type, joint, or corner; the team must then, through an iterative feedback process, develop overall wall sections and envelope strategies that integrate each individual component into a comprehensive whole. This process capitalizes on the multiplying effect that collaboration enables when exposing students to methods and material conditions. The duration of time afforded by group work also allowed for a prolonged development process for assembly details, building a depth of familiarity with the subject matter often unattained in individual work.

Supplementary Courses

48-658 Real Estate for Architects
The course fosters leadership and collaboration in a number of ways. It uses The Urban Land Institute's (ULI) Urban Plan as a model that strives to achieve sustainability and equity by an understanding of competing, often contradictory factors pertaining to equity and development. This is done through an in-class simulation of the ULI Urban Plan, where different groups of students work collaboratively by "acting out" various design development scenarios. This role play simulation emphasizes collaborative nature of development where different perspectives and approaches need to be considered. Students are able to understand the role of leadership and collaboration by taking on the roles of different stakeholders and professional participants.

48-649 Issues of Practice
Students engage with panels of small, medium, and large firm practitioners as well as engineering consultants, constructors, and other professionals that together form the design and construction team. The goal for this engagement is two-fold; first to learn the specific knowledge and skills the team members bring, and second to understand the importance of project collaboration.

Non Curricular Experiences

Career development/ Alumni Engagement
Jenna Kappelt, Assoc. AIA, serves as the NCARB Licensing Advisor and also the school's outreach for career development and internships. She is also the staff advisor for the school's chapters of the American Institute of Architecture Students (AIAS) and the National Organization of Minority Architects Students (NOMAS). She will partner up with Kristen Frambes who serves as the Director for Alumni and Professional Relationships at CMU SoA. Kristen builds relationships with alumni and other professional practices to create mentorship and employment opportunities. She also administers the Opportunity Knocks newsletter with job and internship opportunities for current students and alumni.

CMU NOMAS
The CMU SoA National Organization of Minority Architecture Students chapter builds mentorship opportunities for students' involvement with the NOMA Pittsburgh's professional chapter. It inculcates leadership and mentorship opportunities among underrepresented minorities (URM) and Black, Indigenous and People of Color (BIPOC) students and upholds a safe space to discuss the intersection of

issues related to architecture and the minority experience. While current involvement from M.Arch students is scant, the M.Arch program seeks to build greater participation with CMU SoA NOMAS. This is evidenced by the 2022 M.Arch End of Year Survey which demonstrates that at least half of those who took the survey are interested in working with NOMAS. See:
https://www.noma.net/nomas-chapters/carnegie-mellon-university/
https://www.instagram.com/cmu.nomas/?hl=en
https://www.facebook.com/cmu.nomas/

CMU-AIAS
The CMU chapter of the American Institute of Architecture Students (AIAS) creates a connection between students and the professional and academic world of architecture by offering members a diverse set of events and experiences including firm visits, local and national networking opportunities, and community service build initiatives many of which inculcate a spirit of leadership and collaboration. The current CMU AIAS President is an M.Arch student (M.Arch Graduating Class of '23), who served as the Graduate Student Liaison for AIAS (2021-22) and also received a scholarship at the national level as part of the AIAS CRIT Scholar program.

The organization supplements the learning and teaching at CMU by introducing students to varied perspectives through conferences, trips, and various related events. The organization encourages students to develop their own voice in dialogue with others in the field by providing an opportunity to develop a professional and academic network with the support of their fellow students. In addition students benefit from numerous other services, subscriptions, and discount opportunities that enrich student experiences at the school.

A few recent events include HUB Hangouts with the AIAS where members meet monthly to discuss chapter progress, receive updates from AIAS National and engage with other chapters in the Northeast; General Info Session and Bingo Night; Mentorship Event with NOMAS and Inter•punct ; EPiC & AIA Pittsburgh Info Session; SoA Sustainability Panel; Midterm Stress Relief: DIY Stress Balls; FORUM Chicago (virtual); Young Architects Forum (YAF) Portfolio Review; Sponsored Catering for the SoA lecture series; Council of Presidents Meeting for AIAS National and Elections for 2022-23 School year

Assessment:

A few examples of Assessment related to PC.6 Leadership and Collaboration are:

The Tier 2 (internal, program-level) **End of Year Survey 2021-22** offered some insightful feedback on the topic of Group work for both Praxis-1 & 2 Studios:

> *"I felt (that) while it was great to learn from working with peers, individual studio work was lacking and students would end up strengthening the skills they were already strong in rather than being pushed to do something more unfamiliar to them."*
>
> *"I think group work is excellent and necessary. Work is becoming increasingly cross-collaborative and our education should reflect that. I feel many students haven't developed healthy workload and coping strategies which puts a strain on group work, but that's really the only way to instill positive workload and life balance, scheduling, discipline, etc."*
>
> *"I like the first two studio's being group work, as you can accomplish more than in an individual project, and you learn how to work with others to produce a project that is not only one person's, but is greater than the sum of the people contributing."*
>
> *"While I can appreciate the lessons learned from working with a team and its application to the field, it is hard to feel complete ownership and pride in a project when working in groups. I often felt like my ideas became someone else's idea or vice versa which was discouraging."*

Changes since last Accreditation:

The Praxis-1 & 2 Studio Sequence has been overhauled completely since the last accreditation to emphasize connected learning and teaching objectives, with a distinct emphasis on Leadership (students interact with community members and understand the role of the architect in building teams and alliances across multiple stakeholders) and Collaboration (students work extensively in teams in both studio projects and teamwork is considered to be an essential learning skill for both studios).

Changes to Praxis-1 & 2 regarding group work: Both Praxis-1 & 2 studios are reflecting more closely on assignments related to group work and especially regarding the documentation of specific individual tasks within the student group. This will also allow for a more nuanced differentiation of individual work within group work and related grades. This has been driven in part by the internal assessment of group work in the context of studios and also partly due to NAAB related requirements for documentation of individual contributions to group projects (for SC.5 & 6).

The Tier 3 (course level) Assessment for Praxis-2 outlines the following forthcoming changes to the syllabus, *"Moving forward, the course will seek to better clarify and elaborate on individual performance within the team context. We plan to implement additions to our assignments that ask students to articulate their team dynamics and individual roles in written and visual form. This task will give us more insight into individual performance but also ask students to contemplate and practice team management more explicitly."*

Forthcoming course: **48-6XX Architectural Agency: Discourses & Case Studies** teaches other ways of considering architectural practice, with a focus on the capacity of architect as a change maker emphasizing agency in architecture and its capacity for socio-ecological transformations. Through case studies students study not only the material, tectonic and spatial attributes of projects, but also the manner in which architects develop projects through leadership and collaboration, through substantive reinterpretations of given programs; or new ways of funding and collaborating to allow the architect to become an instigator for a project.

PC.7 Learning and Teaching Culture
—How the program fosters and ensures a positive and respectful environment that encourages optimism, respect, sharing, engagement, and innovation among its faculty, students, administration, and staff.

Program Response:

The Learning and Teaching Culture of the relatively new M.Arch program is necessarily inter-connected with the learning culture of the professional B.Arch program, as well as with the SoA graduate school and its many programs more broadly. We believe a learning and teaching culture is enacted and transmitted to the students as much in classes as in the general values, behaviors, and expectations that are delivered to students through syllabi, orientation sessions, handbooks, extra-curricular activities, and above all modeling good behavior. The culture for students is dependent on the culture set by the SoA for teachers, the culture and conditions of employment, the collegiality of faculty and staff, the attention to fairness and wellness, creating opportunities for all, etc. Together we all, student, faculty, and staff, seek a culture that promotes the values of collaboration, speculation, critical thinking, and research that lead to innovative architectural solutions within the built environment. We seek to value diversity, equity, and inclusion, but also values of fairness, transparency, support, and wellness for all.

University Culture

All SoA students are expected to follow and adhere to the standards and policies of the larger university. These are laid out succinctly in the CMU's "2025 Strategic Plan" which states: "*the university is committed to cultivating an active, technology-enhanced, 'know how to learn' environment where each individual can grow and thrive…. We will remain dedicated to nurturing student, faculty, and staff growth in key areas such as deep disciplinary knowledge; leadership, communications, and interpersonal skills; as well as physical and emotional well-being. We will continue our focus on attracting a diverse and inclusive*

community of students, faculty, staff, and alumni willing to cross academic boundaries in a culture where innovation, entrepreneurial thinking, and action are valued and fostered."

CMU is committed to cultivating an environment that supports the personal and intellectual growth of each student by promoting our traditions of innovation, leadership, responsibility to society, learning, dedication, commitment to quality and commitment to each other. CMU's student handbook The WORD, published by the Division of Student Affairs, articulates the rights and responsibilities afforded to and expected of each member of our community. It provides a list and explanation of university-wide policies students are expected to uphold and the process by which violations will be addressed. This handbook contains the "Carnegie Mellon Code" that establishes the larger context of Learning and Teaching Culture at CMU as a whole and within the SoA Graduate programs (https://www.cmu.edu/student-affairs/theword/code/). It states:

a) Standards of personal ethical and moral conduct within the university: *"Students at Carnegie Mellon, because they are members of an academic community dedicated to the achievement of excellence, are expected to meet the highest standards of personal, ethical and moral conduct possible. These standards require personal integrity, a commitment to honesty without compromise, as well as truth without equivocation and a willingness to place the good of the community above the good of the self. Obligations once undertaken must be met, commitments kept."*

b) The ethics of participating in a larger community: *"As members of the Carnegie Mellon community, individuals are expected to uphold the standards of the community in addition to holding others accountable for said standards. It is rare that the life of a student in an academic community can be so private that it will not affect the community as a whole or that the above standards do not apply".*

c) The role of a Learning and Teaching Culture that fosters the enhancement of knowledge and creativity: *"The discovery, advancement and communication of knowledge are not possible without a commitment to these standards. Creativity cannot exist without acknowledgment of the creativity of others. New knowledge cannot be developed without credit for prior knowledge. Without the ability to trust that these principles will be observed, an academic community cannot exist. The commitment of its faculty, staff and students to these standards contributes to the high respect in which the Carnegie Mellon degree is held. Students must not destroy that respect by their failure to meet these standards. Students who cannot meet them should voluntarily withdraw from the University."*

A subset of the university's standards and policies related to conduct, ethics, and values, are those that relate to **Diversity, Equity and Inclusion (DEI).** The university's new Associate Provost for DEI has been instrumental in building a rigorous, scaffolded, and inter-connected system of DEI-related commitments and policies, and opportunities at every level of the university, from the President's office, through the 7 CMU colleges, and the many departments and units on campus. The SoA is committed to developing a DEI Policy, but is working at the same time with the other four schools in the CFA, where a DEI Policy is also in the process of being created by the Assistant Dean of DEI, whose policy will guide that of SoA. A similar process is happening with the 7 Associate Deans of CMU's 7 colleges, who are working with the Associate Provost of DEI. The President, the Associate Provost, the CFA, and the SoA all have "Statements of Commitments" to support the values of DEI and work on these issues.

Building a Positive SoA Culture

We strive to create a friendly, respectful, collaborative, and professional relationship across the entire community, from students to faculty to staff, outside guests, and community members. The culture of the M.Arch program has been guided by the "Studio Culture Policy" that was most recently updated in 2019, just before the pandemic. This policy sought to build a strong community that is inherently unique to the architecture studio environment. The policy was drafted by the Executive Board of the Carnegie Mellon chapter of American Institute of Architecture Students (AIAS) in collaboration with the (former) SoA Head and the AIAS staff advisor. They had also been responsible for assessing and updating the policy annually, in collaboration with the Student Advisory Council (SAC), the Graduate Student Advisor Council (GSAC). (See https://tinyurl.com/43vdvbye.)

In the SoA's existing "Studio Culture Policy" and in general expectations for a positive culture throughout the SoA, we maintain the philosophy that "professionalism" should be embodied by faculty, staff, and students and demonstrated in the work exhibited. The SoA realizes that the studio is a "melting pot" of sorts that contains these interactions and their outcomes. Therefore, as a premise for deriving the guidelines for studio culture, we embrace the idea of professionalism as means to instill positive and productive relationships between all parties present in architectural education. Under the heading of professionalism, the SoA supports the following core values that further emphasize the importance of collaborative engagement, critical interaction, and decision making within the studio environment:

a) Critical Practice: *Innovate, question, reevaluate, and redefine in order to push forward thinking in the study and practice of architecture*.
b) Process/Product: *Demonstrate the ability to actively participate in the studio by creating work that challenges oneself in his/her specific skill-set level. Contribute – to the best of one's abilities – a product that is well-developed based on the conceptual objectives assigned.*
c) Critique: *Promote constant interaction between students and faculty in the critical discussion of both precedent study and student. Engage in public discourse about architecture whether it be at a personal final critique, a gallery showing, or a town hall meeting.*
d) Engagement: *Understand and be committed to studio content, and take advantage of resources. Work to achieve personal and academic goals in an effort to learn more from your work and that of your peers. Be present at every studio session as attendance and attentiveness are essential to success.*
e) Communication: *Voice suggestions, concerns, and opinions frequently. Have the judgment to understand on what level to communicate with peers and colleagues in all areas of architectural learning.*
f) Respect: *Be respectful of others - their ideas, work and philosophies. Embrace the diversity of our community with regard to: race, color, national origin, sex, handicap or disability, age, sexual orientation, gender identity, religion, creed, ancestry, belief, veteran status, or genetic information.*
g) Integrity: *Commitment to honesty without compromise, as well as truth without equivocation and a willingness to place the good of the community above the good of the self. Obligations, once undertaken, must be met and commitments kept. Official policies on academic integrity, including cheating and plagiarism are outlined in The Word.* (See: https://www.cmu.edu/student-affairs/theword/)

Keeping in mind the overarching theme of professionalism, the existing Studio Culture Policy sets forth in great detail the guidelines for the development of the curriculum, the grading policy, the crit and review policy, and the responsibility of the design process. It also sets forth expectations for professional student-faculty interactions, student-student interactions, as well as expectations about the conduct in various SoA facilities.

The policy is made available to all students, faculty, and staff in the various student handbooks, and on the SoA website, and the new M.Arch Canvas page of resources. M.Arch students have been introduced to the SCP during August orientation and encouraged to suggest revisions. Further responsibilities for developing a positive learning culture in the SoA are discussed in the first semester **48-630 Praxis-1 Studio**, the **48-620 Situating Research** course, as well as the **48-634 Architectural Theory** course. B.Arch students are introduced to the School's policy on studio culture during orientation and in the first semester seminar as a part of the review of SoA policies. In 1st year seminar students are quizzed on policies including the studio culture policy.

Due to CMU going remote during the pandemic in Spring 2020, the arrival of a new Head in August 2020, and the need for stocktaking through the Pedagogies 2020 process (2020-21), as well as the challenges of coming back to in-person instruction last year (2021-22), the SoA has not updated its Studio Culture Policy since 2019. We realize that NAAB's 2020 Conditions call for a Learning & Teaching Culture Policy in every accredited program, and have begun the process of drafting a policy in Fall 2022.

A revision or complete transformation of this existing "Studio Culture Policy" into the inaugural "Learning & Teaching Culture Policy" (LTCP) will be communally and collaboratively developed in the 2022-23 school year. The new Associate Head of Design Ethics has been tasked with organizing the process in Fall 2022. The policy will be first drafted with the AIAS Executive Board, then discussed and vetted with the entire

student body, as well as the entire faculty and the staff. We have always encouraged M.Arch students to join AIAS and to run for elected AIAS office so their voices can be heard in this process. Although we have had limited success in the past with this effort, this coming 2022-23 year the President of SoA's AIAS is expected to be an M.Arch student, and thus provides a great opportunity for the M.Arch students to contribute to the new "Learning & Teaching Culture Policy."

Both the NAAB and the AIAS believe that a healthy school culture should not be a narrow list of demands or expectations for one class or one type of learning, or focused on particular faculty or students. Rather, it should be a collective agreement between all members of a school to prioritize shared *values* and methods of behaving in the school community. It should stipulate how the program fosters and ensures a positive and respectful environment that encourages optimism, respect, sharing, engagement, and innovation among its faculty, students, administration, and staff.

The new LTCP is to be a living document, maintained by a Committee of faculty, students, and administrators, and designed to guide our learning community toward an ethical environment that productively educates and champions healthy, capable, and intelligent students and faculty. This goal can only be achieved by working together as an entire team and as committed members of this school. By nature of the institution and the object of our studies, we are all always learning and practicing how to operate and function to the best of our abilities.

Since many programs in the SoA do not feature studios, and since most courses and studios in the SoA integrate students from various programs, often with varied requirements, including both grad and undergrad, the "Learning & Teaching Culture Policy" that we will create in Fall 2022 must apply not just to studios, but to the entire School of Architecture, both undergrad and graduate. The LCTP should guide the culture of the whole School of Architecture.

Syllabus Standards
In addition to the new LTCP being developed, one of the primary ways the SoA promotes a professional, supportive and respectful culture is through "SoA Syllabus Standards" (https://tinyurl.com/2p88y92p) that have been developed by the Associate Head of Design Ethics over the past two years. We feel the syllabus is not just a tool to transmit the facts of the academic work and requirements, but a contract with students to outline the culture, expectations, and values that will guide the work. In addition to the standard course description, assignments, due dates, and grading policies, all SoA syllabi must include such things as a Diversity Statement, a Wellness Statement, a list of all anticipated costs, lists of the most important support resources, including academic and personal (accomodations, diversity center, Academic Success Center, etc.). We strongly suggest a set of Community Guidelines to guide discussions, as well as a Land Acknowledgement statement. The SoA administration collects all syllabi from all faculty for all courses at the beginning of every term, and makes them accessible to all faculty. These serve as a copy of record for possible grievances, a chance for faculty to learn best practices from each other. The syllabi are also assessed against a checklist of required content in order to measure the improvement of SoA's syllabi against the standards. See more below under Assessment.

Primary Courses

Although a positive learning and teaching culture is a pervasive effort of the SoA community and is delivered to students through orientation sessions, handbooks, and above all modeling good behavior in both academic and extra-curricular engagements, there are two particular courses that act as primary vehicles for communicating and reinforcing our expectations:

48-620 Situating Research
The course offers a broad introduction to the Learning and Teaching culture at CMU SoA with an introduction to SoA faculty, researchers, and other invited guests who talk about their ongoing research, considering the breadth and depth of disciplinary, interdisciplinary, and extra-disciplinary paradigms within architectural studies.

48-630 The Praxis-1 Worldmaking Studio

Since this is the first studio taken by students in the M.Arch program, the course uses this opportunity to cultivate the larger ethics of Learning and Teaching Culture at the school and the university at large. The syllabus explicitly lists the Carnegie Mellon Code outlined above. The Praxis-1 Studio also serves as an introductory course to issues of Design Ethics. In doing so it acknowledges that architectural agency and concomitant questions of Design Ethics can only be fostered when there exists an open respectful, antiracist, inclusive and intersectional space within the studio. The studio syllabus lays out a detailed policy regarding this. Furthermore, one to one meetings between faculty and students take place three times during the semester to ensure students are committed, engaged and that student voices are respected and heard.

Supplementary Courses

48-634 Architectural Theory
Architectural Theory is a portal course for the M.Arch program, taught by the founding Track Chair of the M.Arch and the current Associate Head of Design Ethics, to help introduce the new M.Arch students to the theories, ideas, and learning culture of SoA. The course opens with an intro to Design Ethics, and how that ought to permeate every course of the program, but also our behavior and culture outside the classroom. Students see how ideas about “Theory” change over time, from the Critical Theory that accompanied the end of the Cold War, to the emphasis on pragmatism and globalism that rose in the early 2000s, to the emphasis on topics such as race, gender, inequality, and colonialism after the recession in 2008, the political divisions in this country, as well as causes like BLM, #MeToo, Critical Race Theory, climate change, etc. The ideas and events of the world, how people behave and the general culture are always reflected in the ever-changing theories of architecture.

48-648 Ethics and Decision Making
Ethics and decision making is ultimately about each individual’s standards and conduct. This course addresses the fundamental question of *why* the student might want to be ethical, and how their personal and professional conduct affects the lives of those around them. Despite the size of the course, small group discussions, sharing stories and humor, help to create a “safe” environment in which students can share their experiences and points of view. With regard to most sensitive issues, such as political beliefs, anonymous all-class surveys and individual anonymous statements are shared with the class so students can learn how their peers feel about issues in a non-threatening way. Creating a welcoming and “safe” class environment is essential to genuine conversation.

Non Curricular Experiences

M.Arch Cohort of Students
One of the original motivations for creating a new M.Arch degree program in 2015-17, was to bring a greater diversity of students from outside of CMU and integrate them into our studio cultures, which had been dominated by the 5-year B.Arch program. It is in large part for the sake of seeking these diverse voices and diverse backgrounds from outside that we do not usually enroll our own undergraduate students in the M.Arch. M.Arch students from other universities, both domestic and international, bring a wealth of diverse design cultures and experiences to the school and this great diversity enriches the creative life of the School of Architecture as a whole.

New M.Arch Canvas Website
A new M.Arch Canvas website has been developed as a consolidated, one stop platform for M.Arch related resources. The recent 2021-22 End of Year Student Survey indicates that it has been a well-used resource by the M.Arch students.

M.Arch Teaching Fellowship
The M.Arch teaching fellowship offers a unique opportunity for M.Arch students to co-teach foundation level design studios at the undergraduate level — B.Arch/ BA programs in the second year of their studies. This allows students with ambitions in academia to partake in teaching at the school. The M.Arch program Track Chair makes recommendations to the Associate Head of Design Research based on

student performance and aptitude for a Teaching Fellowship. This Fall 2022, four second year M.Arch students have been awarded teaching fellowships to teach first year undergraduate studio.

M.Arch TA / RAship
Every M.Arch student has the opportunity to be a Teaching Assistant or a Research Assistant with faculty of their choice. The TA/ RA time is limited to 6-10 hours per week and students typically do one TA or RAship a semester. These are incredible opportunities for students to align their interests with teaching and/or research by individual faculty at the school.

Graduate Student Advisory Committee (GSAC)
Graduate Student Advisory Committee (GSAC), consists of student representatives from each of the Graduate programs at CMU SoA. GSAC meets regularly with the Head and staff to discuss issues of concern to the students, including feedback on instructors, courses, facilities and other academic and non-academic opportunities.

Graduate Student Assembly (GSA)
Graduate Student Assembly (GSA) consists of one/two representatives from all departments at CMU, and is the branch of student government that represents all graduate students at Carnegie Mellon. Funding for the GSA comes from graduate students' student activities fees. The GSA's primary functions include organizing social events throughout the year, advocating on issues important to graduate students, providing funding for graduate organizations and professional development.

CMU-AIAS
The AIAS is an important student organization that helps support students in their search for careers, but also as a social outlet, to offer other modes of learning and teaching outside of the curriculum. The AIAS is represented on the Student Advisory Council (SAC), and can bring issues or concerns straight to Head and Associate Heads in bi-weekly meetings.

Student Learning and Support Systems

In graduate student orientation, faculty and staff outline the expectations and opportunities of the SoA curricula, but also the support services that are accessible through faculty and staff, SoA advising and mentoring programs, and especially university led support services. Learning culture policies are reinforced to all students through various non-academic programmatic offerings in the SoA, including individual and group academic advising sessions for all current students, clubs such as AIAS and NOMAS, the student advisory councils (GSAC and SAC), social events, semester town meetings, and special topic sessions as needed. Participation and engagement in these sessions are measured and evaluated to continually improve performance, delivery, and opportunities.

Although graduate students in the M.Arch are expected to have more previous experience managing the opportunities and stresses of university life than 1st year undergraduates, we do recognize that CMU's high-level academics pose challenges for some incoming students from other schools, both domestic and international. Through the summer course **48-689 Design Skills Workshop** (DSW), the graduate orientation in August, and the portal **48-634 Architectural Theory** course, and the **48-630 Praxis 1** studio required for all students, we introduce all M.Arch students to SoA expectations and the many resources of the university, including advising and support services. All CMU students have access to the learning and support services listed below. CMU and SoA provide a wide range of support systems for students on all manner of issues. These are laid out and explained in the student handbooks, as well as the new M.Arch Canvas page. They include:

Student Academic Success Center
Many of the academic support services provided by the university have recently been consolidated in the "Student Academic Success Center" (https://www.cmu.edu/student-success/index.html). The center works to support student success by providing academic coaching, subject-specific tutoring, effective communication strategies (e.g. writing help), accommodations for students with disabilities, and language support for multilingual learners including:

1) Supplemental Instruction that utilizes peer-assisted study sessions.
2) Peer Tutoring appointments are offered in a one-on-one and small group format to students from any discipline who need assistance with a course that may not be supported by our other services.
3) Academic Coaching to provide holistic one-on-one peer support and group workshops to help students find and implement their conditions for success.
4) "Just in Time" Workshops to partner with instructors and departments to identify skills or concepts that would benefit from supplemental offerings (workshops, boot camps) to support students
5) Study Partners: Support for students to create and benefit from their own study groups: Language and 6) Cross-Cultural Support to allow international students and non-native speaker to hone their language and cross-cultural skills for academic and professional success.
7) Communication Support (formerly GCC): trained consultants who are ready to help students with any kind of written, verbal, or visual project

Counseling and Psychological Services (CaPS)
Counseling and Psychological Services (CaPS) provides a safe, confidential environment for students to talk about personal and academic concerns. All students currently enrolled at the Pittsburgh campus are eligible for services at CaPS at no additional cost to them, and all services are confidential. CAPS provides consultation services for faculty, staff, and family members who are concerned about a student or have questions. See https://www.cmu.edu/counseling/

Office of International Education (OIE)
OIE is the liaison to the University for all non-immigrant students and scholars, as well the repository for study abroad opportunities and advisement. OIE provides many services including: advising on personal, immigration, study abroad, academic, and social and acculturation issues; presenting programs of interest such as international career workshops, tax workshops, and cross cultural and immigration workshops; international education and statistics on international students in the United States; posting pertinent information to students through email and the OIE website, and conducting orientation and pre-departure programs. See: https://www.cmu.edu/oie/

Office of Disability Resources
The Office of Disability Resources has a continued mission to provide physical, digital, and programmatic access to ensure that students with disabilities have equal access to their educational experience. The Office works to ensure that qualified individuals receive reasonable accommodations as guaranteed by the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973. See: http://www.cmu.edu/education-office/disability-resources/.

Reducing cost of attendance:
As discussed extensively in **Shared Values: Social Equity & Inclusion**, the SoA has worked extensively in the past two years on reducing the cost of education for students. Although all students benefit from lower costs, the SoA has emphasized the role of social equity, seeking to be sure that those with the most need are able to find support.

GEM program
The National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc. (GEM), a nonprofit organization formed to help assist underrepresented groups (African Americans, American Indians, and Hispanic Americans) at the masters and doctoral levels in engineering and the physical sciences. CMU SoA supports the GEM Fellowship by offering GEM recipients additional funding to help defray the overall cost of our graduate and post graduate programs. Students apply both to the GEM scholarship program as well as SoA. The application fees for the Carnegie Mellon School of Architecture graduate programs waived for GEM candidates. The M.Arch welcomed its first fully funded M.Arch students in Fall 2022. See also **Shared Values: Equity, Diversity, and Inclusion** above.

UDream Program
The SoA's Urban Design Regional Employment Action for Minorities Program (UDream), is a competitive academic and job placement program to bring promising recent graduates of architecture, urban design, and urban planning programs, especially underrepresented and BIPOC students from HBCU's, to

Pittsburgh for additional academic training and professional internships to increase their marketability and connect them with employment opportunities. The primary aim of the UDream program is to increase professional diversity in the fields of architecture and urban design, in Pittsburgh and across the nation. See also **Shared Values: Equity, Diversity, and Inclusion** above.

Faculty Teaching and Support Systems

The new Head Omar Khan has worked hard since his arrival in 2020 to bring more transparency and fairness to the faculty culture. Khan has created a new and multi-layered administrative structure that seeks to “flatten” and distribute more widely the decision-making and responsibilities among the faculty. He created three new Associate Head positions and a Director of DEI to distribute the top administrative responsibilities, but also to make more collective decisions. Many new faculty committees were created: some “Working Committees” for deliberation and assessment, other “Executive Committees” for making decisions. Though faculty have commented on the many committees, a spreadsheet visible to all attempted to clarify how committee assignments were spread fairly among the faculty. This has been a major change in the faculty culture, a sense of transparency and greater fairness, even if it is more work at times.

The faculty course loading remains much the same as in the previous Head, but the pandemic has exacerbated issues of stress, fatigue, and real anxiety about “too much” to do. Although we have a high faculty-student ratio, most positions may be “over-specified”: if a faculty member gets sick, has a child, drops out, or wants to try something new, there are no back-ups. The administration is often scrambling at the last minute to find instructors, with Pittsburgh’s labor market often unable to provide adequate personnel. There is little resiliency in the faculty loading system. Unlike other departments at CMU and at other universities, SoA did not offer any sabbaticals for faculty in order to do research, explore new directions, or regenerate. The first exception in many years was made recently in order to allow a faculty member to take a Fulbright grant. A new policy is being drawn that will allow faculty the ability to take a professional leave for a semester (full pay) or a year (half pay) based on a credible opportunity that will promote their research/scholarship or creative activity. This surely will improve productivity, culture, and morale over time.

Khan has also attempted to reorganize and systematize the work of the staff, which often influences faculty. Much work is done each summer to create staff schedules and calendars of deadlines, and to correlate each staff members’ contributions. In the last two years, two key staff members have greatly reduced their hours, and several others have retired or left. This has added to the workload, stress and anxiety of many staff members, and left some of the graduate administration work underserved, with faculty needing to pick up the loose ends. Students have often had to wait long periods to have questions answered or registration procedures taken care of. The M.Arch external examiner emphasized this point in her review (see Assessment below). In response, new staff hires were made this year for Graduate Advising, Marketing and Outreach and Assistant Shop Manager. These should address many of the concerns expressed by students.

Faculty are now informed about the SoA budget and the financial resources and flows annually in November. Khan has attempted to bring more systematic order to job titles and fairness to the salary structures. He has worked to raise the pay of adjunct instructors as well as full-time and non-tenure track faculty. The university froze all pay during the pandemic, and at the same time the SoA revoked the small but symbolically important annual stipends that had been in place for all full-time faculty to be spent on books, supplies, research, and other work expenses. These have not yet come back, likely affecting the research productivity of some faculty. Furthermore, there were no end-of-year performance reviews, or opportunities to let the administration know about success and aspirations, and as a result there was no way for faculty to know how their salary raises were justified.

Faculty mentoring has long been a subject of discussion and debate in the SoA: some feel faculty should just know what to do and be given the freedom to do as they feel right; others seek a more nurturing environment in which coaching and mentoring is more built into everyone's job. Over the years many tenure-track faculty have often advocated for more transparency in the long 9-year tenure process. While

faculty are clearly expected to work on teaching, research, and service, the balance of these three remains undefined. Some faculty volunteer or are asked to do more service than others, sometimes to the detriment of their research or teaching. Others focus on research or teaching and do less service. Although the opportunities for growth and advancement at CMU may feel enormous on paper, there is little support in finding the path forward. This is perhaps most extreme in the tenured faculty, where many Associate Professors are “stuck” without a clear, supported path forward. In Fall 2022 there will be 9 Associate Professors, and only 2.5 full Professors, who received their promotions many years ago, and the Head.

Eberly Center for Teaching Excellence and Educational Innovation
The Eberly Center brings pedagogical and technological issues together to support Carnegie Mellon faculty and graduate students in their roles as educators. As experienced teachers, Eberly staff know how complex and challenging teaching can be, and as teaching researchers and consultants, they know the latest research on learning and how to apply it to help you find ways to be more effective and efficient. Among the services they provide: **Teaching Consultations**: Meet 1-on-1 with an Eberly colleague for help with any aspect of teaching and learning, including designing new courses, and redesigning existing ones. **Educational Technology**: Explore effective and innovative strategies for teaching with technology. **Workshops & Special Interest Groups**: Learn about research-based teaching strategies and discuss teaching with faculty colleagues. **Teaching Observations:** Receive confidential feedback on your teaching and what transpires in your classroom. **Learning Data Services**: Get assistance in collecting, analyzing, and interpreting learning data for your course or program. **Early Course Feedback Focus Groups**: Gather detailed feedback on your students' learning experiences via a brief group interview with students during class. The Eberly offers consulting on all matters of assessment, from a special problem in a course, to developing assessment goals, strategies and metrics, to helping assess entire programs. During and after the pandemic, the Eberly Center was instrumental in helping faculty transition to online teaching tools, and in reshaping their teaching to acknowledge the new conditions. Eberly workshops and websites such as “How to Center DEI in Teaching” and how to teach to diverse learners have been widely cited in the SoA, including in the Syllabus Standards. See https://www.cmu.edu/teaching/index.html.

Vice Provost for Faculty
One of the primary sources of support for CMU faculty is the office of the Vice Provost for Faculty, Molly Steenson, an architectural historian by training who moved from the CMU School of Design into administration. Her office provides faculty members at all stages in their careers with the tools and opportunities needed to succeed and flourish. They offer new faculty orientations, professional development seminars, and workshops, boot camps and webinars for faculty development through the National Center for Faculty Diversity and Development and Academic Impressions. The office also manages a mentoring program is to enhance success, promote general satisfaction and community among the faculty, and a platform for faculty to form affinity groups for support and collaboration.

Human Resources
The university supports and affirms its faculty and staff members in many ways, from our commitment to providing a welcoming environment to our comprehensive assistance programs, including Development Resources, Civility, Care & Inclusion training, Care Resources, Counseling, Family & Child Care Resources, LGBTQ+ campus and community resources

Faculty Retreat 2022
In May 2022, the SoA conducted an all-day staff/faculty retreat with approximately 40 faculty and staff in attendance. The purpose of this retreat was to build community and to go deeper on SoA’s diversity, equity and inclusion efforts. Specifically, the SoA DEI committee, with the support of our CMU Eberly Teaching Center, led the retreat in order to evaluate and share ideas around our teaching and assessment of student work, to become more inclusive and supportive of diverse learners. We discussed our shared current and aspirational values including our school culture and how we hope our students intersect with the profession. We also discussed critical issues of mental and physical wellness for students, staff and faculty. Finally, we brainstormed about ways to decolonize our language, move away from traditional meritocracy, and embrace diversity and inclusivity in tangible ways. The results of the

retreat were published in Summer 2022 and are the basis for continuing discussions for self-evaluation and improvement.

Assessment

A few examples of Assessment related to PC.7 Learning and Teaching Culture are:

Informal assessment of the overall SoA learning and teaching culture is provided by the Student Advisory Council (SAC) and the Graduate Student Advisory Council (GSAC) which are responsible for surveying the students and providing feedback to the administration. They meet with the administration at least once a month, and have expressed concerns about subjects such as the cost of materials, tools and trips.

As noted above in **Shared Values: Design**, students believe that the program has a strong engagement with Design Ethic: 89.5% of students indicated that they believed the program achieved this on a scale of 4 or above, where 5 indicates "accomplishes very well" and 1 indicates does not accomplish. To quote one student, *"I think I have found a niche of discussion based courses through more diverse and socially oriented courses that offer the kind of education I expected from graduate school. Overall, I feel challenged in ways that I did not in undergrad."*

The Tier 1 external assessor commented on positive teaching in several areas. She notes, for example, a "*Nuanced presentation of technology beyond skill-building*" in technical courses, and that History & Theory courses are "*framed as tools, materials for making the relation between practice and contexts a critical question to be continually engaged*."

Regarding Faculty support, the external examiner notes: "*The M.Arch seems very under-supported administratively, especially during this critical early phase wherein coordination, curricular monitoring/feedback/refinement, student advising and recruitment/promotion are both more time-intensive and intertwined, having potentially strong impact on the program's establishment and renown amongst established peers. A survey of administrative support for programs of similar length is recommended for assessing appropriate additional support.*" She continues: "*Support for faculty research was also unclear, given the added student load and the interest in cross-program interaction. This seems particularly important for CMU given the foundational role of Design Research in the M.Arch curriculum, in the School of Architecture's Pedagogies 2020 strategic plan, and for the CMU 'brand' more generally."*

Changes since last Accreditation

Developing the learning and teaching culture at CMU SoA is a constant work in progress. Most of the changes since 2019 are changes in degree, revisions, expansions and upgrades, rather than completely new policies, support systems, etc. The pandemic has made us all much more profoundly aware of the school culture we care about: having so much of it revoked in March 2020, then working hard to rebuild a virtual and online culture, and since Fall 2021 rebuilding under very different conditions a culture that many newer students never knew. We are constantly assessing and asking how we can improve. A few examples:

As discussed above, the SoA has developed new Syllabus Standards to improve syllabi for all courses so that they are more transparent about expectations as well as assessment and grading, but also lay out the resources and support that students need to thrive and excel.

As discussed in Shared Values: Equity, Diversity, and Inclusion, the SoA has made a concerted effort to reduce the cost of education for all students, including increased scholarships for M.Arch students.

As described above, the SoA recently created a new program of 1st Year Teaching Fellows, which provides 2nd year M.Arch students with an opportunity to co-teach the first year undergraduates.

Forthcoming: As discussed above, the new Learning and Teaching Culture Policy is being written in Fall 2022.

For more on the various DEI commitments, policies and actions that guide the creation of positive values at CMU, SoA, and the M.Arch, see **Shared Values: Equity, Diversity, and Inclusion** above. For more on how the SoA furthers and deepens students' *understanding of diverse cultural and social contexts and helps them translate that understanding into built environments that equitably support and include people of different backgrounds, resources, and abilities*, see the next section, **PC.8 Social Equity & Inclusion**. For more on *SoA's commitment to diversity and inclusion* among current and prospective faculty, staff, and students and h*ow this commitment is reflected in the distribution of its human, physical, and financial resources*, see **5.5, Social Equity, Diversity & Inclusion.**

PC.8 Social Equity and Inclusion
—How the program furthers and deepens students' understanding of diverse cultural and social contexts and helps them translate that understanding into built environments that equitably support and include people of different backgrounds, resources, and abilities.

Program Response:

Closely related to policies and aspirations for a positive learning and teaching culture in the SoA, especially in relation to DEI, is the work to deepen student understanding of how the values of social equity and inclusion can be manifested in the profession and in the built environments worked on by architects and lived in by the community. This work falls largely under the umbrella of Design Ethics, which we seek to infuse in every aspect of our culture and our teaching, and is at the heart of the work we are doing to address the three grand interconnected challenges of *climate change, artificial intelligence*, and *social justice*. We seek to inspire our students to become leaders and innovators in all three of these challenging areas, with the goal of making a better, more just world for all. The primary courses where content about Social Equity and Inclusion are transmitted include:

48-648 Ethics and Decision Making
The first half of this course presents the context in which architectural ethics and decision making takes place. In the discussion of economic and political systems, the question of distribution of key resources across populations is discussed; in this context, students learn that all four major world resources (land, money, labor, goods) relate directly to architecture and its practice. Political discussion also includes how architecture might support (or undermine) government values such as maintaining societal order or provide publicly used infrastructure. Students also learn about various forms of justice (e.g. distributive, procedural, restorative) including “spatial” justice. The connection between social justice and environmental issues is discussed at length including historic and current connections between race/class/colonial status and access to clean land, water and air. Finally, representation in the profession is addressed through historical statistics, as well as scrutiny of the students’ own favorite architects as well as Pritzker Prize winners.

48-630 Praxis-1 Worldmaking Studio
The studio, required of all incoming M.Arch students in their first semester, is strategically focused on the underserved Pittsburgh community of Homewood and surrounds, an area that has had a long history of racial segregation with Black communites to the north separated from the more resource rich, white neighborhood to the south. Through the lens of Homewood, students are exposed to wider systems of spatial segregation and structural racism that have been endemic to cities in the US. Through interviews with various community members, visits to local businesses and site analysis, students understand how local community members and businesses offer modes of resistance and transformation. This is further reinforced through readings on Transition Design and case studies on Worldmaking, students study the role of architecture and the built environment at the socio-ecological concerns. Through an iterative, collaborative process, students speculate on how their proposals can play a transformative role in promoting emancipatory futures specific to local sites and communities.

Supplementary Courses

48-641 Modern Architecture & Theory
The Modern Architecture course helps students understand a broad and diverse range of contexts and their architectures around the world, and across the 20th-century. The course goes beyond the heroic canon of modernist masterpieces that are the subject of many textbooks and many of the history courses in the previous education of our students. It approaches questions of social equity in two ways: 1) it seeks to teach a more diverse range of architects, buildings, techniques, and places, to broaden the scope of inquiry to be more global, to include locations that are outside of the Euro-American "center," and to represent the work of more diverse people, especially women and under-represented minorities; 2) it seeks to question the role of history in shaping the future, how history and theory classes can be used to question the traditional power alignments and the biases that have constructed both the physical environments we live in and the intellectual arguments about it. We seek to teach students to question previous narratives, to read between the lines, to look to the margins, to look for more equitable systems of making architecture than are usually recorded in history textbooks.

48-634 Architectural Theory & Contemporary Issues
This seminar is focused on introducing incoming M.arch students to the most important theories, issues, and ideas being discussed in architecture today, especially at CMU, with most related to the three grand challenges set out by the Head, and the larger topic of Design Ethics that is increasingly the focus of the M.Arch program. Theory is framed not primarily as design principle, or as a critical and philosophical framing device, but rather as a way to investigate the dominant forces and paradigms engaging architecture today, in the academy, the profession, and the community. Architecture is considered as both material technology and social agenda, a driver of inequality but also potentially a social justice machine, a high-tech, economic, ecological, and political change-agent. The focus is on discourses, processes, and contexts, rather than on the latest buildings or architects

48-XXX Ethics Selective
Every M.Arch student is required to take at least one Design Ethics selective from the list of courses listed under that category every semester on the SoA courses webpage (https://soa.cmu.edu/courses).

M.Arch Pedagogy Related to DEI, Social Justice & Design Ethics

The Master of Architecture program has adopted Design Ethics as a critical focus in its mission. This is pervasive through its curricular offerings and studios. The new Track Chair shifted the program from its initial emphasis on a more general professional education built on the foundations of the existing B.Arch, towards a greater separation from the B.Arch, a greater focus on Design Ethics, as well as a continued integration with the other research-based masters program in the SoA. As defined through the Pedagogies process, as well as the varied efforts led by the Associate of Head of Design Ethics, Design Ethics seeks to address the role architecture can play in creating more equitable, inclusive, and just communities at every scale: in our school, at CMU, in Pittsburgh neighborhoods, the region, and around the globe. Our internal focus is on improving school culture, refining our curriculum, and expanding our research projects towards greater emphasis on diversity, equity, and inclusion. Our external focus is to strengthen our relationships within Pittsburgh and society at large, and work to educate leaders in the architecture profession and the adjacent fields that co-create, administer, and inhabit our built environment, as we collectively face intense ethical, social, economic, and ecological challenges.

The updated M.Arch program defines its mission as training architects to become leaders in architecture and related fields. If design is a broad framework that entails a form of expertise and various forms of disciplinary and interdisciplinary intelligence, Design Ethics problematizes architectural design to consider emergent questions of architectural ethics as these intersect with core notions of design, including Diversity, Equity, and Inclusion (DEI). In recent years, there has been a major realignment of pedagogy toward questions of Design Ethics, driven by the pressing socio-planetary challenges of our time that affect and are affected by the built environment. Design Ethics references a discursive set of values that drive architectural thinking at the intersection of these challenges — Care Repair & Maintenance, Adaptive Reuse, Embodied Energy, Biomaterials, Design for Disassembly, Urban Informatics,

Obsolescence and Participatory Practices are a few examples of the broad array of topics included in questions of Design Ethics.

Non Curricular Experiences

CMU NOMAS
The CMU SoA National Organization of Minority Architects chapter strives to foster leadership, communication, cooperation, solidarity and fellowship among minority students in the School of Architecture at Carnegie Mellon University. The organization builds mentorship opportunities for students' involvement with the NOMA Pittsburgh's professional chapter. It upholds a safe space to discuss the intersection of issues related to architecture and the minority experience. While currently scant, the M.Arch program seeks to build greater participation with CMU SoA NOMAS. This is evidenced by the 2022 M.Arch End of Year Survey which demonstrates that at least half of those who took the survey are interested in working with NOMAS.
https://www.noma.net/nomas-chapters/carnegie-mellon-university/
https://www.instagram.com/cmu.nomas/?hl=en
https://www.facebook.com/cmu.nomas/

SoA Public Programs
A few recent examples of Public Program events that relate to Social Equity and Innovation include:

Symposia and Workshops:
Olalekan Jeyifous: A Reconstructed World, with Jackie Joseph Paul Mcfarland
Monuments Of Everyday Practice: Living Memorials To Gandhi with Sarosh Anklesaria
Sarah Akigbogun Homescapes—cities, Color, Belonging
(un)learning Privilege And Power: A Teach-in And Workshop
Rebecca Gates, Listening Site-specific Workshop
Reframing Utopias: Power and Politics, Visionary and Phenomenological
with Maria Lisogorskaya & Marshall Brown

Lectures:
Olalekan Jeyifous
Marina Tabassum
Jackie Joseph Paul Mcfarland
Karina Ricks
Brian Mcgrath
Tommy Cheemou Yang
Michael Stone-richards
Mabel O. Wilson
Marshall Brown
Pascale Sablan
Toni Griffin
Sarosh Anklesaria

See also **Shared Values: Research & Innovation**, and **PC.2 Design: Non Curricular Experiences**.

Faculty Retreat 2022
Social Equity and Inclusion was a major focus for the 2022 Faculty Retreat. Specifically, the SoA DEI committee, with the support of our CMU's Eberly Center for Teaching Excellence & Educational Innovation, led the retreat in order to evaluate and share ideas around our teaching and assessment of student work, to become more inclusive and supportive of diverse learners. Notably the faculty brainstormed about ways to decolonize our language, move away from traditional meritocracy, and embrace diversity and inclusivity in tangible ways. The results of the retreat were published in Summer 2022 and are the basis for continuing discussions for self-evaluation and improvement specifically in areas related to teaching and DEI.

Assessment

A few examples of Assessment related to PC.8 Social Equity and Inclusion:

The Tier 2 (internal, program-level) **2021-22 End of Year student survey** was carried out with a particular emphasis on Student Wellness and questions related to DEI. The survey demonstrates that 90% of all respondents either "Agreed" or "Strongly Agreed" with the statement: "*I feel that CMU's School of Architecture has a strong commitment to supporting Diversity, Equity, and Inclusion (DEI) efforts".*

The survey also demonstrates that 95% of respondents either "Agreed" or "Strongly Agreed" with the statement: "*Reflecting on the past year, I feel as though CMU's School of Architecture is a welcoming place for everyone".*

However, specific comments demonstrate there is still a very large scope for improvement, especially regarding questions of affordability, *"The student body (also) seems to be far more affluent than would be expected by a university pushing for a wide range of experiences to add to the discourse. The overall homogeneity of student backgrounds and interests really seems to hinder DEI efforts.*

Changes since last Accreditation

Since 2019, nearly every course, activity, group, and policy at SoA has changed in varying degree to address the urgent societal issues of social justice through values of diversity, equity and inclusion (DEI). Changes have been motivated by large societal agendas, political events, the pandemic, social activism such as #MeToo, Black Lives Matter and many others that brought attention in the entire profession to the lack of representation of women and under-represented minorities in architecture and other biases and inequities. Many of the changes in courses since the last accreditation are described in the PC / SC "Changes Since the last Accreditation" sections of this APR above, and below. Some examples include: 2) Since the arrival of the new Head Omar Khan in 2020, the SoA has focused on three interrelated challenges of *climate change, artificial intelligence, and social justice*. All three connect to issues of social equity, diversity, and inclusion. Through the Design Ethics pedagogy, SoA is committed to weaving Design Ethics into all aspects of the SoA programs and curriculum. 2) The M.Arch program has pivoted its mission to focus on creating leadership in the area of Design Ethics, with an emphasis on Social Justice and greater study of the Global South; 3) The Praxis-1 and Praxis-2 studios, required of all 1st year M.Arch, are structures around concepts of Design Ethics, working with the community in disenfranchised neighborhoods in Pittsburgh to address issues or equity and inclusion; 4) the Modern Architecture and other history courses in SoA have diversified the content of their teaching to reflect more diverse histories, begun to decolonize the emphasis on the Euro-American architects and sources, and questions how past histories have reinforced bias accounts and narratives; 5) the Real Estate and Ethics courses have focused more attention on inequality in our cities, profession, and business practices, emphasized causes like Redlining, highway development, biased appraisal practices, and racial disparities in "common public goods", and in turn putting more emphasis on issues such as affordable housing, community development, commoning, and other strategies.

Forthcoming course: **48-6XX Architectural Agency: Discourses & Case Studies** teaches other ways of considering architectural practice, with a focus on the capacity of architect as a change maker emphasizing agency in architecture and its capacity for socio-ecological transformations. Through case studies students study not only the material, tectonic and spatial attributes of projects, but also the manner in which architects develop projects through leadership and collaboration, through substantive reinterpretations of given programs; or new ways of funding and collaborating to allow the architect to become an instigator for a project.

For more on the various commitments, policies and actions that guide the creation of positive values at CMU, SoA, and the M.Arch, see **Shared Values: Equity, Diversity, and Inclusion** above. For more on how the SoA fosters and *ensures a positive and respectful departmental culture that promotes DEI values and encourages optimism, respect, sharing, engagement, and innovation* among its faculty, students, administration, and staff, see the previous section **PC.7 Learning & Teaching Culture**.For more on

SoA's commitment to diversity and inclusion among current and prospective faculty, staff, and students and h*ow this commitment is reflected in the distribution of its human, physical, and financial resources*., see In **5.5. Social Equity, Diversity & Inclusion**.

3.2 Student Criteria (SC)
Student Learning Objectives and Outcomes: A program must demonstrate how it addresses the following criteria through program curricula and other experiences, with an emphasis on the articulation of learning objectives and assessment.

SC.1 Health, Safety and Welfare in the Built Environment
—How the program ensures that students understand the impact of the built environment on human health, safety, and welfare at multiple scales, from buildings to cities.

Program Response:
The program addresses Health Safety and Welfare in the Built Environment through multiple courses across the M.Arch curriculum that cover a diverse range of content. These include courses in professional practice, environmental systems, structures, ethics. These lessons are reinforced in the design studios where the impact of HSW on design considerations is further developed. It is worth nothing that while the professional and pedagogical impetus on Health and Safety must include a basic understanding of building codes that govern the safety of buildings and the health of the inhabitants, the notion of "welfare" expands this scope to include the built environment as a whole and encompasses issues of climate change, material extraction and social justice—questions of Design Ethics, including and beyond the scales of the building.

48-635 Environmental Systems-1 Climate and Energy in Buildings
This course considers architectural design responses for human health and comfort through an understanding of energy conservation, natural conditioning and the site-specific dynamics of climate. Students study basic strategies governing human comfort, health and wellbeing, and combine these with studies of heat flow with the variables of local climate, to create energy design guidelines for their own work. Students compile a professional energy consultant's report, designing the most viable energy conservation retrofit measures for their client from siting, massing, organization, enclosure detailing, opening control, to passive system integration and management. Health and welfare are directly addressed since this course has a distinct emphasis on climate and biophilic design, as well as the conditions of passive systems that affect human health.

48-637 Statics and Structures
The course addresses safety through a fundamental understanding of structural behavior and the laws governing statics including gravitational, seismic, and lateral forces. Additionally the course teaches the application of appropriate building codes pertaining to the design and safety of structures in the United States. It also addresses essential NCARB-related topics for architecture licensure as these relate to structural design.

48-640 Praxis-2 Worldshaping Studio
The course investigates the question of health, safety, and wellbeing in the context of a design problem focusing on building integration. Students consider manifold questions concerning HSW through the design of a complex housing program combined with public programming. This includes Health—issues of daylighting, air quality, biophilic design; Life Safety—considerations include Structural design, fire-resistive construction, means of egress, and circulation through a comprehensive regulatory analysis of necessary building code and zoning compliance; and Welfare—public programming, low carbon design, low embodied energy construction, design for disassembly, circular thinking.

48-649 Issues of Practice
The course delivers a fundamental understanding of contracts and agreements as well as building codes and their relationship to legal and fiduciary issues governing Health Safety and Welfare in the built environment. The course also addresses questions of environmental stewardship and welfare. For

example, invited guests lecturers for Spring 2022 included George Rieke, AIA, STANTEC, Chair AIA Pittsburgh COTE and Peter Jefferson, PE, Principal, BranchPattern.

Supplementary Courses

Additionally, the notion that the built environment impacts Health, Safety and Welfare at a multitude of scales and in various contexts is further reinforced in the following courses: **48-655 Environmental Systems-2 Design Integration of Active Building Systems—**Health and Safety is addressed through comprehensive understanding of the design and regulations concerning Active Building Systems. Topics covered include the design of HVAC systems for commercial buildings, approaches to the latest US energy code, healthful energy effective building ventilation, key health aspects of outdoor air to consider regarding ventilation strategy, basic air filtration, energy recovery & air distribution in code-based ventilation systems as well as building envelope design for sea level rise and flooding. **48-648 Ethics and Decision Making in Architecture**—the course addresses health and wellbeing in praxis through lectures, assignments and exercises that explore the notion of care and duty as well as larger socio-ecological consequences of architectural practice.

Courses & Materials in Evidence

48-635 Environmental Systems-1 Climate and Energy in Buildings
48-637 Statics and Structures
48-640 Praxis-2 Worldshaping Studio
48-649 Issues of Practice

Assessment

The program's assessment of SC.1 Health, Safety and Welfare in the Built Environment is based on a three-tiered process of assessment that includes 1) External Program Level Assessment 2) Internal Program Level Assessment 3) Course level Assessment all of which are conducted on a recurring basis. The curriculum committee takes feedback from these various modes of assessment to review changes at the curricular level. For additional information regarding the process of assessment see **5.2 Planning and Assessment: M.Arch Assessment Strategy** in this report. A few examples of Assessment related to SC.1 Health, Safety and Welfare in the Built Environment:

The Tier 2 (internal program-level) **End of the Year Student Survey 2021-22,** suggests that 87% of respondents who took the 48-635 Environmental Systems-1 feel it “Delivers very well” or “Delivers Well” on its Learning Objectives. 86% of respondents who took the 48-637 Statics and Structures course feel it “Delivers very well” or “Delivers Well” on its Learning Objectives. Likewise, 87% of respondents who took Praxis-2 believe it delivered on its Learning Objectives.

At the time of writing this report, The Internal Assessment Committee is in the process of undertaking a comprehensive and detailed review of SC.1 Health, Safety and Welfare based on Course materials and samples of student work.

Changes since last accreditation

Forthcoming: New instructor for **48-637 Statics and Structures**
In June 2022, Irving Oppenheim, who taught 48-637 Statics and Structures retired after 50 years of service. Oppenheim was a joint faculty member in Civil and Environmental Engineering (CEE) and the School of Architecture (SoA). At the time of writing this APR, the school is conducting an open search for an Assistant or Associate Professor of Architectural Structures. The position is closely aligned with our MS AECM and PhD-AECM programs, which are jointly offered with the Department of Civil and Environmental Engineering (CEE). Inherently interdisciplinary, the position offers opportunities for collaboration across the School of Architecture’s three focus areas—sustainability, urbanism, and computation. We expect the new hire will teach courses in structures and statice to M.Arch students, and

help organize the teaching and learning around this area for future development, including the emphasis on health, safety, and welfare.

Forthcoming: A large part of the SC.1 HSW criteria are addressed in the **Building Technology Sequence**, which is part of the Design Fundamentals Track of the updated Fall 2022 curriculum (see Program Changes: Curriculum Chart for Incoming Class of 2022), which includes Structures and the two Environmental Systems courses. Over the past two years substantive changes have been made to the History & Theory, Practice, and Research Methods Tracks. In the coming academic year, the curriculum committee will be taking up the Building Technology Sequence as part of the forthcoming review of the curriculum. Currently 48-635 Environmental Systems-1, 48-655 Environmental Systems-2 and 48-637 Statics and Structures, are offered also to B.Arch students. The curriculum committee will consider greater separation between undergraduate and graduate courses with further alignments towards curricular sequences within the M.Arch Program.

SC.2 Professional Practice
—How the program ensures that students understand professional ethics, the regulatory requirements, the fundamental business processes relevant to architecture practice in the United States, and the forces influencing change in these subjects.

Program Response:

As outlined in Chapter 1, Context and Mission, the M.Arch program's mission is to educate students to become next generation leaders in the practice of architecture and its related careers. This means students will apply knowledge gained in the program to engage in the practice of architecture, in its various multivalent capacities including a path toward licensure in the United States. The understanding of professional ethics, regulatory requirements and fundamental business processes relevant to practice in the United States is delivered by the suite of three courses **48-649 Issues of Practice, 48-648 Ethics & Decision Making and 48-658 Real Estate for Architects** within the curriculum.

48-649 Issues of Practice
The course explores the interdependence of design and construction contracts, drawings, specifications, and correspondence and introduces the concept of the Standard of Care. It addresses key elements of success such as business development, staff training, and time management. The course aims to introduce the economic, cultural, and political contexts in which architecture is created. To reflect the pedagogical priorities of the school and the realities of 21st century practice, social justice related issues such the architect’s professional and ethical responsibilities to the client, community and employees are examined and provide an underlying theme for the course. Students engage with panels of small, medium, and large firm practitioners as well as engineering consultants, constructors, and other professionals that together form the design and construction team. The goal for this engagement is two-fold; first to learn the specific knowledge and skills the team members bring, and second to understand the importance of project collaboration. Students study how owner expectations and field conditions affect design solutions. The course helps to make students aware of the importance of licensure and its value, and potential necessity, in various forms of practice. Students develop a detailed understanding of NCARB’s licensure path and the Architectural Experience Program (AXP). The course also provides a preliminary introduction to students regarding alternative career paths that allow them to use knowledge and creative skills gained in their time in the School of Architecture. The course aligns with the "Professional Ethics and Real Estate" course to provide a comprehensive exploration into the broad profession of architecture and in coordination with concurrent architecture studios so that the students can consider their studio projects from a practitioner’s business perspective and bring “real world” considerations to the design process.

48-648 Ethics & Decision Making in Architecture
This course trains architects to recognize and evaluate Ethical situations as these arise in real life modalities of architectural practice. It offers a unique bridge between the theoretical and the practical. The course covers traditional ethical constructs, such as utilitarianism and care ethics, and discusses the complex context in which contemporary architecture is practiced, including capitalism, historic

discrimination, globalization and climate change. In the first part of the course, students are asked to consider current controversial situations in architecture such as the use of public money to create projects that might cause gentrification. The second part of the course leaves the theoretical and goes deep into the AIA Code of Ethics and Professional Conduct and the potential conflicts inherent in the architect's myriad obligations. Students discuss and evaluate common problems of practice such as harassment or taking credit for the ideas of others. Obligations to the health and safety of building occupants and the public are also covered. In the past, guest speakers have included a representative of the Green Building Alliance educating students about the architect's role as an environmental advocate within the architect/client relationship, a lawyer speaking about the difference between the law and ethics, and a computational design faculty person speaking about the ethics and privacy issues related to the Internet of Things (IoT) devices architects are expected to specify in buildings. The course serves as the starting point for the M.Arch program's emphasis on Design Ethics. If the Praxis-1 & 2 sequence of studios understands ethics with a primary focus on the architecture "project" and its associated material, extractive, and performative considerations, Ethics and Decision Making focuses on "Practice" and attributes related to the professional practice of architecture. In order to bridge the gap between the studio sequence and this course, as their final assignment, students complete a written ethical assessment of their current studio project or a project from their prior work experience.

48-658 Real Estate for Architects
This course provides insights about the place of real estate in economy and society and the role of the architectural profession and professional practice as it connects with issues of land, development and Real Estate. The course considers the interdisciplinary nature of real estate to draw broadly from concepts in business, economics, political science, and other social studies. Through assignments that include simulated development scenarios, monitoring the advancement of real-world development projects in real-time, and case studies, students develop an understanding of key stakeholders and their associated activities and responsibilities across the development cycle of a project. They apply common real estate financing terms and concepts to their understanding of the project and learn to differentiate between property types. They also develop a broad grasp of market factors affecting development cycles, particularly supply/demand, cost and resource constraints, and capital availability. The course also delivers simple financial models to understand the interplay between capital budgets, operating statements, and financial structures. Students evaluate real estate projects from multiple perspectives, using quantitative as well as qualitative metrics such as financial feasibility, economic and environmental impact, risk and reward, and social equity outcomes.

Supplementary Courses

There has been an increasing trend in the profession and the discipline to define new modes of praxis for architecture that go beyond the traditional, normative modes of client-driven practice both within and outside of the United States. This entails decentering the Eurocentric view of the architectural subject to consider other contexts, geographies and subjects that frame the site of architectural practice. This is addressed through various courses including the Design Studios. It is also addressed in **48-634 Architectural Theory and Contemporary Issues**—an important portal course for all M.Arch students to expand their ideas about architecture, the profession, the discipline, and related fields, as well as the forthcoming course **48-XXX Architectural Agency: Discourses & Case Studies**—the course considers various new and emerging forms of discourse and praxis that move beyond a client-driven approach to practice. Through various case studies students study how architectural agency can be deployed to reinvent or upend the brief, site program or financial underpinnings of the project. Agency here is defined as architecture's capacity for substantive social and ecological transformations.

Courses & Materials in Evidence:

48-649 Issues of Practice
48-648 Ethics & Decision Making in Architecture
48-658 Real Estate for Architects

Assessment

A few examples of Assessment related to SC.2 Professional Practice:

The Tier 2 (internal program-level) **End of the Year Student Survey 2021-22,** reveals that students want a more direct connection between the agendas of the curriculum regarding professional practice and the skills necessary to accomplish these. To the question *"In your experience so far, does the program equip you with the skills necessary to accomplish your evolving career objectives and goals, to help you become leaders in the profession?"* 56% of respondents felt the program equipped them to do this "well" or "very well". 29% of respondents felt the program equipped them to do this "somewhat well" and 14% felt it did not equip them with necessary skills to accomplish their evolving career objectives and goals.

To quote one student from the survey, *"I feel the school does a comprehensive job at introducing us to new concepts, architects, projects, etc in order to expand our own internal rolodex of ideas to pull from when confronted with a new challenge."* Feedback from students also asked for *"more job related events…" , "more courses devoted to practice…" and "more mentorship and one on one sessions with faculty…."*

To address some of these concerns, the school has put into place a new NCARB Licensing Advisor Jenna Kappelt, Assoc. AIA, who will serve as the licensing advisor for the school's chapter of the American Institute of Architecture Students (AIAS). See PC1 Career Paths for further details regarding this.

The Pedagogies 2020 conversations within and across faculty and the student body support some of the findings of the student survey assessment. During the pedagogies conversations across faculty and students, it was determined that the school needs to offer courses that expand upon the traditional, normative modes of practice to consider new, emerging forms of praxis, that situate architectural agency in the pressing socio-ecological questions of our time. To this end a new required course **48-XXX Architectural Agency: Discourses & Case Studies** has been developed to be taught in the third semester of the curriculum (to be introduced in the Fall 2023 semester).

Changes since last accreditation

The course 48-658 Real Estate for Architects has been moved to the fourth semester to allow for closer synergies with 48-649 Issues of Practice, that is taught concurrently. This also allows for 48-648 Ethics & Decision Making in Architecture to be taught in the second semester alongside Praxis-2 to reinforce the emphasis on Design Ethics that is part of the Praxis-1 & 2 studio sequence.

New instructor: **48-649 Issues of Practice** has a new instructor: Stuart Coppedge. As a registered architect and practitioner, he combines his own and guest lecturers' professional experience with the school's pedagogical priorities. The class aligns with the Professional Ethics and Real Estate courses to provide a comprehensive exploration into the broad profession of architecture and in coordination with the students' concurrent architecture studios so that the students can consider their studio projects from a practitioner's business perspective and bring "real world" considerations to their design process. (See **PC.1 Career Paths** for a more detailed description of Stuart Coppedge's background.)

New instructor: **48-658 Real Estate for Architects** has a new instructor: Tamara Dudukovich. Dudukovich has extensive experience in transformative neighborhood revitalization in nonprofit and private sectors. Her focus for the course has been to expand affordability, opportunity and inclusivity and teach new, more inclusionary models of Real Estate finance and development. (see **PC.1 Career Paths** for a more detailed description of Tamara Dudukovich's background)

Forthcoming: The new **48-XXX Architectural Agency: Discourses & Case Studies** course considers tactics, strategies, manifestos, and actions deployed by architects to resist, upend, destabilize or reinvent normative mechanisms of architectural production. It will consider recent trends that demonstrate the emergence of new modes of conceiving the architectural project and its concomitant processes; of reinventing the brief, site, program, material or tectonic capabilities of the project using architectural

agency. The course unpacks new ways of conceiving and practicing an architecture of empowerment and spatial agency across diverse geographies and cultures, including but not limited to practices within the United States. Instead of studying architectural precedents focusing on one single building, students will consider *Case Studies* that consider architectural practice as a body of work that demonstrates other ways of conceiving and considering "practice".

SC.3 Regulatory Context
—How the program ensures that students understand the fundamental principles of life safety, land use, and current laws and regulations that apply to buildings and sites in the United States, and the evaluative process architects use to comply with those laws and regulations as part of a project.

Program Response:

The program ensures that Regulatory Context regarding fundamental principles that govern principles of life safety and land use, and its associated laws and regulations are delivered through the Praxis-2, Enviro-2 and Issues of Practices Courses. Additional courses in Structures, Environmental Systems and Real Estate deliver a wide array of knowledge related to Regulatory Context as these relate to buildings and issues of life safety and land use. While the program understands the need for specialized course content specific to Regulatory Contexts, we believe that this knowledge is scaffolded through iterative learning in Design Studios—this is most addressed through the Praxis-2 studio that emphasizes Building Integration.

48-649 Issues of Practice
This course develops in students a fundamental understanding of the Regulatory Context governing the built environment from the standpoint of professional practice and licensure in the United States. They understand these through a range of topics including Contracts, Standard of Care, Risk Management, Project Planning and Management, as well as Building Codes and Regulations.

48-655 Environmental Systems-2 Design Integration of Active Building Systems
This course delivers content regarding high performance strategies for cooling and heating of buildings that can be integrated with high-performance envelope design. This is facilitated through an understanding of US building code as it relates to Thermal Comfort, Heating Ventilation and Air Conditioning. The course also develops a fundamental understanding of the US building code, how it is structured and key sections for architects.

48-640 Praxis-2 World Shaping Studio
In the Praxis-2 studio laws and regulations governing land use and life safety for buildings in the United States are understood in the context of a design studio. Students learn how the design process incorporates a range of diverse Regulatory contexts, through various phases of design ranging from but not limited to zoning and land use regulations (use classifications, FAR, setbacks, height and area limitations); life safety regulations governing fire-resistive construction, means of egress, and circulation; design, selection and integration of appropriate heating and cooling systems based on building occupancy and loads; and high-performance building envelope design.

Supplementary Courses

An understanding of Regulatory Content is scaffolded across various additional courses in the curriculum:

48-658 Real Estate for Architects includes an examination of the origins and implications of land-use and building regulations on real estate developments in terms of equity, environmental impact, and financial viability. The roles of responsibilities of architects in relation to zoning and building codes, governmental approvals, and participatory processes are explored.

48-648 Ethics and Decision Making in Architecture discusses the AIA general standards for ethics as they relate to competency, integrity and professionalism. Additionally, this course includes one class

session devoted to the ethical obligations to the health and safety of occupants in compliance with existing international, state and local building codes.

48-637 Statics and Structures introduces topics regarding structural behavior and safety and this knowledge is of seminal importance in covering critical NCARB related topics for Architecture Licensure in the United States.

Courses & Materials in Evidence

48-649 Issues of Practice
48-655 Environmental Systems-2 Design Integration of Active Building Systems
48-640 Praxis-2 World Shaping Studio

Assessment

A few examples of Assessment related to SC.3 Regulatory Context:

The Tier 2 (internal program-level) **End of the Year Student Survey 2021-22** indicates that 86% of respondents who took the Praxis-2 course feel it “Delivers very well” or “Delivers Well" upon the curricular objectives of the studio, several of which relate directly to Regulatory Context.

At the time of writing this report, the Internal Assessment committee is in the process of evaluating the primary courses responsible for delivering Regulatory Context. Preliminary feedback indicates that *"Overall, there was sufficient evidence that these issues had been addressed including an overall understanding of basic regulatory issues through the inclusion of ramps, two means of egress, documentation of the R-value of envelope assemblies, etc.. This suggests that knowledge of these issues was likely gained through sources other than those documented in the course materials, such feedback provided during studio critiques and knowledge from other courses was brought to bear on studio projects*."

Changes since last Accreditation

Starting Fall 2022, to scaffold and reinforce lessons learned students are taking their studio projects from the 48-640 Praxis-2 World Shaping Studio (Spring '22) to develop further in the 48-655 Environmental Systems-2 Design Integration of Active Building Systems (Fall '22) course. This allows students to understand how different regimes of regulations (from building setbacks, to fire exits and HVAC systems) can have manifold effects on the same project. (See also SC.6 Building Integration).

Forthcoming: The Tier 3 course level assessment for 48-649 Issues of Practice demonstrates that the instructor will be developing the course towards further alignments with a) Ethics and decision making in architecture b) Real Estate for Architects, which is now a course that will be taught concurrently in the fourth semester and c) Design Studio projects by students so that they can consider the practitioner’s business perspective and bring “real world” considerations to their design process.

SC.4 Technical Knowledge
—How the program ensures that students understand the established and emerging systems, technologies, and assemblies of building construction, and the methods and criteria architects use to assess those technologies against the design, economics, and performance objectives of projects.

Program Response:

The program delivers technical knowledge regarding building systems and construction technology through a suite of courses regarding structures, materials and construction assemblies, and environmental performance. The second semester delivers this content intensively through two courses that are taught concurrently with Building integration Praxis-2 Studio—**48-647 Materiality and Construction Systems** and **48-637 Statics and Structures.** Additionally, a suite of two Environmental

Systems courses deliver technical knowledge regarding Environmental performance in building performance and enclosure design—**48-635 Environmental Systems-1 Climate and Energy in Buildings** in the first semester, followed by **48-655 Environmental Systems-2 Design Integration of Active Building Systems** in the third semester.

48-647 Materiality and Construction Systems
This course introduces students to contemporary methods of construction and draws attention to the materialization of architectural intent. It foregrounds the historical, technological, and conceptual basis of construction systems to understand building as process and cultural artifact. The course provides an overview of established and emerging construction systems to reveal how and why building processes are utilized. Technical knowledge regarding materials and methods of construction is positioned as both constraints and affordances, each with distinct spatial, structural, environmental, economic, and aesthetic concerns. Through lectures, readings, and detailed analysis, students learn about the construction of fundamental architectural conditions, including foundations, walls, frames, envelopes, and roofs. Production methods, spanning the vernacular to the digital, introduce cultures of building and design for manufacturing considerations. The course strikes a balance between delivering foundational knowledge of materials and methods of construction while introducing advanced methods and topics. While it assumes little prior knowledge in the subject, foundational content is covered at a rapid pace to ensure there is sufficient time to introduce more advanced course material. Students undertake various case studies across diverse construction logics and cultures to understand components and assemblies, which then culminate in a detailed wall section of their developing Praxis-2 studio project.

48-637 Statics & Structures
The course examines structural types, structural behavior, material behavior, and construction constraints that underlie the structural design of buildings, with an emphasis on cohesive three dimensional visual and data driven three-dimensional understanding of structural behavior. While the primary emphasis on "orthogonal structures" covers the basis for normative steel and concrete construction, the course also investigates the design of “geometric structures” including membranes, cable nets, and shells as well as masonry dome and other "form finding structures". A foundational grasp of Statics underlies all topics in structures, and ranges from theory to an empirical understanding. Case studies and structural investigations are based on both physical and mathematical principles that emerge from statics (a comprehension of principles governing forces, torque, moments and other related forces). This knowledge is of seminal importance in covering critical NCARB related topics for Architecture Licensure in the United States.

48-655 Environmental Systems-2 Design Integration of Active Building Systems
The course delivers technical literacy about building energy and carbon emissions with an emphasis on active building systems. Students also gain knowledge about building envelope design including design for sea level rise and flooding. Students understand the methods and criteria used to access technologies related to active heating and cooling systems especially pertaining to commercial construction. Additionally other active systems are also addressed such as lighting power, water heating, air distribution, as well as an understanding of grid optimized buildings.

Databases and case studies of metered commercial building performance, with a focus on Zero Energy and Passive House design, are largely the basis for the technologies and systems on which the class now focuses, although for each system type, the general introduction includes common strategies addressed in the building codes and used in current construction. For lighting, the focus is primarily on luminaire level lighting controls (LLCs) since their use in the integration of daylighting with LEDs increases the likelihood that anticipated savings from daylighting and user visual comfort will be achieved. Equipment specifications for LEDs and case studies of LLCs are used in lecture and assignments to illuminate and help students quantify the benefits of these approaches, which can outstrip code-allowed LPDs even in the most recent codes. For heating, cooling and ventilation, beyond the case studies, students are introduced to the Air Conditioning, Heating, and Refrigeration Institute (AHRI) database as a tool to explore available equipment efficiencies compared to code-based efficiencies. This provides a means for our students in assignments and in practice to engage in project team discussions of active systems choices. Similarly, a simple Dedicated Outdoor Air System (DOAS) / Energy Recovery Ventilator (ERV)

software is introduced to help students understand the benefits of energy recovery. A mini-split heat pump and ERV without their external housings are presented in class as physical tools to help students visualize their operation. Understanding commercial Heat Pump systems and equipment (distributed loops, Variable Refrigerant Flows (VRFs), heat recovery chillers, Heat Pump (HP) water heaters) is emphasized since they predominate in current high-performance design and offer excellent efficiency, minimal spatial requirements, zoning flexibility, greatly reduced energy, carbon and water consumption and offer continual performance improvements largely driven by international demand.

Supplementary Courses

In addition to the courses listed above, Technical Knowledge is also addressed in the following courses:

48-635 Environmental Systems-1 Climate and Energy in Buildings introduces architectural design responses for energy conservation and natural conditioning, human comfort, and the site-specific dynamics of climate. Students develop an understanding of climate differences around the world and setting design priorities. This is done by expanding on the Climate Consultant software that uses Energy plus Weather data (EPW files) to add proficiencies in design for comfort, carbon and climate impact using the COVE and Center for the Built Environments "climate tools". Additional technical knowledge is honed through real world case studies where students collect and analyze data from existing buildings to identify and propose comfort, energy, carbon and cost related reductions. This entails developing a competence regarding key aspects that govern building climate models and building energy related calculations and retrofits.

48-640 Praxis-2 Worldshaping Studio is the second semester studio course where technical knowledge pertaining to structural systems, building envelopes and assemblies, life safety systems, as well as building performance regarding energy and environmental control systems is integrated into a cohesive architectural project. For a more detailed description of 48-640 Praxis-2 see PC.1 and SC.1, SC.3, SC.5 & SC.6.

48-783 Generative Modeling introduces students to the fundamentals of generative modeling using computer aided design as practiced in the field of architecture. Such technical knowledge forms an essential set of skills that have multivalent applications, particularly in the increasingly complex realm of emerging architectural fabrication—both in the studio and in industry. Students develop technical knowledge regarding algorithmic problem solving for design constraints encountered in architecture. Emphasis is placed on careful consideration of digital mediums and developing a sense of craft related to digital modeling. The course explores the relationship of parametric workflows to design thinking and situates contemporary trends in a broader framework of computational design.

48-689 Design Skills Workshop (DSW) is a summer course for incoming SoA graduate students to establish a baseline of technical skills appropriate to the expectations of the design culture at SoA. A set of increasingly complex design exercises are organized around a series of workshops, assignments, and tutorials on digital design skills delivered remotely.

Courses & Materials in Evidence

48-647 Materials and Construction Systems
48-637 Statics and Structures
48-655 Environmental Systems-2 Design Integration of Active Building Systems

Assessment

A few examples of Assessment related to SC.4 Technical Knowledge:

At the time of writing this report, The Tier 2 (internal. program-level) The Internal Assessment Committee is in the process of undertaking a comprehensive and detailed review of SC.4 Technical knowledge based on Course materials and samples of student work.

End of the Year Student Survey 2021-22 indicates that students have a positive review of the new course 48-647 Materiality and Construction Systems. 70% of respondents believe the course "Delivers Well" or "Very Well"and 30% believe it "Delivers for the most part" the learning objectives of the course. An anonymous student quote offered the following assessment of 48-647 Materiality and Construction Systems, which is taught concurrently with the Praxis-2 studio, *"I loved the synergy between Materiality and Construction Systems and the Praxis-2 studio course. I feel like I learned so much about how a building actually comes together, as I never had the exposure to the more technical side of architecture prior to CMU. I consider the knowledge I have gained from these two courses to be some of the most valuable things I have learned in my first year at CMU."*

Changes since last Accreditation

New Course: **48-647 Materiality and Construction Systems** has been developed exclusively for M.Arch students. It replaced the previous course Materials and Assembly, which was taught to both undergraduate and graduate students. Delivering course content specific to advanced graduate level students allows for MCS to address emerging topics in the field.

Forthcoming: New faculty Search for 48-637 Statics and Structures: The new faculty search for Statics and Structures allows for a significant opportunity to reorient the course toward cutting edge, emerging questions related to architecture and structures. In addition to teaching M.Arch students the position is also closely aligned with Masters of Science and PhD programs in Advanced-Engineering-Construction Management (MS AECM and PhD. AECM) which are jointly offered with the Department of Civil and Environmental Engineering (CEE). Current research between the SoA and CEE includes 3D scanning, BIM integration, robotic fabrication and construction, and construction material circularity. In addition to these areas, it is likely that research focused on one or more of the following areas will be woven into the 48-647 Statics and Structures Course: Research on bio-based and/or non-traditional materials in developing countries, transformable structures, dynamic facades, and/or design for disassembly.

SC.5 Design Synthesis
—How the program ensures that students develop the ability to make design decisions within architectural projects while demonstrating synthesis of user requirements, regulatory requirements, site conditions, and accessible design, and consideration of the measurable environmental impacts of their design decisions.

Program Response:

The school considers Design Synthesis to be a form of architectural knowledge through which divergent and often contradictory conditions—site conditions, programs, community requirements, regulatory, performance and ecological issues related to design—are "synthesized" into a cohesive and coherent work of architecture. Design studios become the primary vehicle for students to demonstrate expertise in Design Synthesis skills, but this learning is also buttressed by affiliated courses in Environmental Systems, Structures and Building Construction. The two first year core studios Praxis-1 and Praxis-2 are guided by a team of course instructors who bring diverse, multidisciplinary modes of knowledge and instruction to the studio.

48-630 Praxis-1 Worldmaking Studio
In the Praxis-1 Worldmaking Studio Design Synthesis is addressed through a series of distinct, yet incremental exercises that introduce complex and inter-related concepts in a phased manner. The first exercise entails documentation, research and analysis of the territory which is not a particular parcel of land, but an intersection of two neighborhoods marked by historical issues of segregation and structural racism. Through a multiscalar analysis students understand the complex, layered nature of the site and its concomitant historical social and ecological forces. By doing so they take a position regarding the contexts, the neighborhood/s and its people. This is followed by an exercise related to Worldmaking Frameworks and Tools. Students study "Worldmaking frameworks"—emergent and multidisciplinary concepts related to Just Transitions/ Degrowth/ Maintenance & Care/ Commoning; and "Worldmaking

Tools", a diverse set of architectural tactics—Design for Disassembly, Adaptive Reuse, Timber Tectonics, Biomaterials, Synanthropism, Design for Biodiversity, Temporal and Multigenerational design. Students synthesize these broad frameworks, tactics and site analysis to identify specific sites and propose related programs for an emergent architectural intervention. Doing so allows students to problematize the terms "user" and "user requirements", and the role of architectural agency in addressing the question of synthesis. The concept of an "architectural primitive" is harnessed to synthesize various organizational systems, structural, tectonic, material and ecological, through the use of advanced computational design. The term "primitive" describes an abstract, conceptual architectural system with geometric capacities that could be used to describe structural, tectonic, material and/or organizational systems. Regulatory frameworks are considered as integral to the development of concepts. Throughout the process, students work in groups to develop the ability to make design decisions collaboratively within their projects.

48-640 Praxis-2 Worldshaping Studio
Students are introduced to Kenneth Frampton's trio of design forces: typo, topo, and techne (program, site, and tectonics) as an intellectual framework for understanding architecture as a mediation of disparate forces and inherently a process of multiparameter optimization. Praxis studio develops Design Synthesis through a series of exercises that synthesize multiple scales and knowledge systems to produce a coherent work of design. Exercises move serially from Site Analysis focusing on climatological simulation, historical data collection, site information, ecological data, code analysis and regulatory requirements; to Precedent Study on topics such as Design for Disassembly, Material Salvage, Carbon Sequestration, Phytoremediation, Stormwater Peak-shaving, Robotic Fabrication or Additive Manufacturing, Bio-restorative Design, Building as Power Plant, Regionally Specific Craft and/or Material Cultures; to Massing Studies & Concept Development based on user requirements, solar radiation analysis, structure, circulation, materiality, unit modules and transparency vs. porosity; and Envelope Development (identifying different wall types, materials, compositional effects and solar response). Through this discursive process students develop a detailed comprehension of the site conditions and regulatory requirements, that are then folded into their massing and concept studies. Additionally, each project has a distinctive and unique public component which emerges from site analysis and design research. The design of the building envelope emerges with case studies of envelope systems followed by simulation analyses of lighting conditions that comply with current lighting standards and laboratory testing of solar radiation to understand the measurable impacts of design decisions and develop a feedback loop that directly affects design. The results of all the analyses and accessible design considerations are further synthesized into the design process.

Supplementary Courses

The notion that design is an act of synthetic thinking enabling a complex and often divergent constellation of factors to coalesce into a design proposition, is further reinforced in the following courses: **48-650 Advanced Synthesis Option Studio** — "Synthesis" is in the very name of these studio courses, where interdisciplinary collaboration from the arts and technology, research and design, large scale urban and ecological thinking, to detailed investigations of materials, fabrication strategies, and form strategies is emphasized. Both Enviro courses, **48-635 Environmental Systems-1: Climate and Energy** and **48-655 Environmental Systems-2: Building Systems and Integration,** offer lessons in synthetic thinking – considering passive systems in the case of Enviro-1 and active building systems in the case of Enviro-2.

Courses & Materials in Evidence

48-630 Praxis-1 Worldmaking Studio
48-640 Praxis-2 Worldshaping Studio

Assessment

A few examples of Assessment related to SC.5 Design Synthesis include:

The Tier 2 (internal. program-level) **End of the Year Student Survey 2021-22** indicates that the new Praxis-1 & 2 studio sequence seems to work well as a set of two related studios that reinforce and build

upon the lessons each studio offers; as suggested by this anonymous student quote, *"Relationship of praxis 1 being open ended and praxis 2 being more focused also worked well, to make sure students first know how to think expansively about their work, then to be able to focus into the detail level of a project."*

As a Tier 3 (internal, course-level) assessment, faculty review the work of every student at various stages in the semester including midterm as well as after the final review. Comments and feedback from co-instructors, TAs, consultants (in case of Praxis-2) are woven into this assessment. Additionally various in person interviews are conducted with students to get feedback from students regarding the content, delivery and pedagogy of the courses.

The Tier 2 (internal. program-level) **Internal Committee Report 2021-22** offers the following assessment for SC.5 Design Synthesis:

> *"NAAB requirement SC.5 Design Synthesis specifically calls on students to demonstrate "synthesis of user requirements, regulatory requirements, site conditions, and accessible design and consideration of the measurable environmental impacts of design decisions." With this task in mind, our review focused on looking for evidence of these issues in the Praxis 1 and Praxis 2 course materials and student work, including the syllabi, lectures, readings and student documentation.*
>
> *In broad terms, both studio courses, Praxis 1 and 2, outline an ambitious agenda that requires students to consider and ultimately to synthesize a wide range of issues, information, concepts and knowledge over the course of the semester. These issues include social justice and ecological systems (Praxis 1) and "cultural and historical flows" (Praxis 2). In addition, a similarly broad range of working methods and learning objectives help to facilitate the student synthesis of material. Further, the term Design Synthesis is referred to and reinforced in the course materials to varying degrees in Praxis 1 and 2. In Praxis 1, the terms "Design Synthesis" and "synthesis" are integrated in the course materials in the context of numerous reviews. These terms are also mentioned in both courses in the grading rubric. By reinforcing the concept of synthesis in the course materials, it is embedded into the process and students develop greater familiarity with the concept.*
>
> *Regarding the synthesis of specific issues such as user requirements that are outlined in SC.5, there is evidence that these issues are introduced and discussed. In regards to "user requirements" the term is defined very broadly in both studio courses. Initially, students are challenged to define the term "user." Praxis 1 references "the hopes and aspirations of communities often spanning generations" and identifies both residents and non-residents of Homewood" while it cites new uses that "have … begun to repopulate the industrial corridor." Praxis 2 asks the question "How can we imagine and intervene in the user profile … of a commercial core in a mid-sized American city? What does it mean to think of downtown as a neighborhood, as having inhabitants and community?" The program specifically refers to users as "A mixed-income housing community." Specific exercises are assigned that help students to define the user requirements including Praxis 1 "Exercise 1: Documentation, Research and Analysis" and Praxis 2 "1.2 Data Collection" that includes research into the demographic data of the neighborhood. In both courses, as users and uses are further defined, the students develop a building program in response to their needs and prepare diagrams of the program organization. Recommendation: Develop parameters within which students work to define users, user requirements and uses that anticipate occupancy designations.*
>
> *The issue "regulatory requirements" is introduced in exercises in the beginning of both courses. This occurs during the Documentation, Research and Analysis phases in Exercise 1 (Praxis 1) and 1.2 Data Collection (Praxis 2). Praxis 1 provides references to Pittsburgh resources including the Pittsburgh Zoning Code, Zoning and Parcel Map whereas Praxis 2 includes a group Code Analysis that asks students to "Perform an analysis of City of Pittsburgh Zoning and Building Codes to identify land development constraints and life safety and building service requirements for the site and project." However, the results of these assignments and the extent to which these*

issues were discussed is not immediately clear. In both courses, the projects' mixed use occupancies operate within a challenging regulatory context. The complexity of adaptive reuse structures further adds to the regulatory challenges posed in Praxis 1.

Further, there was no specific mention in the course materials of "accessible design" except in the broad sense of working within the context of social equity and design ethics (Praxis 1). Supporting course materials, i.e. readings, provide an opportunity to provide additional material about regulatory requirements. The Praxis 1 optional reading, "Maintenance and Care: A working guide to the repair of rust, dust, cracks and corrupted code in our cities, our homes and our social relations" by Shannon Mattern is a good example of a reading that provides an opportunity to discuss the challenges inherent in code issues…. Recommendation: Introduce additional exercises mid-way through the semester that address regulatory requirements. Discuss the regulatory challenges inherent in combining different uses in a building (existing and new).

The Tier 3 Course level Assessment for 48-640 Praxis-2 indicates that *"...the team of faculty hopes to better integrate issues of equity and sustainability into envelope technologies and techniques as well as integrate other means of assessing building performance through the use of digital energy simulation, or other advanced tools such as augmented reality (AR). We see the purpose of the course not only as building familiarity with current disciplinary best practices, but also in beginning to speculate about the future evolution of issues of carbon neutral construction, high performance design, as well participatory design and building science communication. We hope to continue to make progress in these categories."*

Changes since last accreditation

New Design Studio Sequence, Praxis-1 & 2: As mentioned in PC.1 Design, the entire sequence of Design Studios has been significantly overhauled from the previous accreditation visit. At the time of the previous accreditation the first year offered two very different experiences for Design studios, with the Integration-1 & 2 sequence of studios offered as an option alongside the Urban Design Build Studio (UDBS). These generated variegated sets of experiences for students, leading to different levels of "synthesis" across the two options. The current curriculum develops the first-year studio sequence as a required set of two studios between Praxis-1 and Praxis-2. The content and pedagogy of the two studios is coordinated closely to allow for "Design Synthesis" to be honed across both semesters. Various levels of assessment across both Tiers 1, 2 & 3 indicate that this has been a largely successful and commendable effort.

Based on the recommendations of the Internal Committee Report, the Praxis-1 studio has made substantive changes to its Fall 2022 syllabus, to make explicit the Regulatory contexts regarding accessible design and discuss regulatory challenges inherent in combining different uses in a building. Early in the semester, as part of the site research, students also undertake an analysis of current zoning issues that govern various sites of interest and consider the various inherent limitations and opportunities offered by these.

SC.6 Building Integration
—How the program ensures that students develop the ability to make design decisions within architectural projects while demonstrating integration of building structural systems, envelope systems and assemblies, environmental control systems, life safety systems, and the measurable outcomes of building performance.

Program Response:

The Building Integration suite of courses commence in the second semester with the **48-640 Praxis-2 World Shaping studio** being the primary means through which students develop expertise in Building Integration. This learning is buttressed with the **48-647 Materiality and Construction Systems** course that is taught concurrently in the same semester. Following this the **48-655 Enviro-2 Design Integration of Active Building Systems** course takes design work from Praxis-2 to further integrate active mechanical systems into the Praxis-2 Projects.

48-640 Praxis-2 Worldshaping Studio
The Praxis-2 Studio is situated in the context of a hybrid housing program in Pittsburgh that seeks to embed ancillary public programs into a mixed-income housing community. The students select symbiotic functions to help produce a more productive, equitable, and sustainable pattern of habitation by critically examining the site and cultural context and by examining contemporary trends in remote work, wellness, and equity. The studio adopts mass timber as a material for investigations into building tectonics considering glulam, Cross Laminated Timber, Nail Laminated Timber, Laminated Veneer Lumber and other mass timber assemblies as a basis for architectural and structural design, as well as a primary material for Building Envelope Design. Doing so further reinforces lessons learnt in the Praxis-1 studio where mass timber and issues of embodied energy are considered more broadly in the development and articulation of the design projects. An understanding of building code regulations articulates the development of the design considering—building envelope and site setbacks, occupancy classification and use, environmental control systems and life safety systems including vertical circulation, egress and fire safety. Students attended seven specific and hands-on workshops on topics including: Mass Timber, Solar Radiation, structural organization and loads, HVAC systems and integration, Daylight and Electric lighting, Materiality and Labor Practices, and Bird-Friendly Facade Design. Each workshop was led by an invited expert. Students had the opportunity to attend the lectures and meet with each of the experts to go over their studio design.

Students also develop detailed analysis of solar orientation, heat gain and radiation studies through the use of advanced simulation tools and virtual reality technology that closely engages human perception. These data driven studies are then used to generate an interactive feedback loop that directly influences the design of the built volume—its orientation, massing, fenestration and envelope design and assembly. Praxis-2 comprehensively integrates concepts and design solutions with more precision and greater detail than done in previous studios and courses. The design methodology of the studio thus equips students to generate an integrated design solution through the synthesis of various complex building contexts and systems.

48-647 Materiality and Construction Systems
Students develop an understanding of Building Materials and Assemblies, Building Envelope Systems and Assemblies, and of contemporary techniques of onsite and offsite manufacturing and the digital methods of fabrication used in the AEC industries. Students also develop an understanding of embodied energy and carbon footprints in the consideration of materials and systems of construction as well as emerging methods for carbon neutral and carbon negative methods of construction. The lectures in this course introduce students to a history of global vernacular building materials and assembly techniques.

Since this course is taught concurrently with Praxis-2, the culminating exercise of the course is coordinated with the required design studio. Through the exercise students generate a detailed composite wall section, elevation, and isolated plan of their studio project to be presented in the Praxis-2 final review. This assignment requires students to delineate building structure and envelope and the passive strategies implemented at the building enclosure. It ensures that students are able to hone expertise in Building Integration through learning experiences that are reinforced across the two courses.

48-655 Environmental Systems-2 Design Integration of Active Building Systems
To support more meaningful opportunities to explore design integration, 48-640 Praxis-2 World Shaping Studio projects from the Spring 2022 semester will be the basis for their active systems integration final project in 48-655. As mentioned previously, the focus in Environmental Systems 2 is on the systems and topics that architects control or strongly influence and that have most impact on climate change and the use of energy and water: the site and commercial envelope and their integration with lighting, ventilation, heating, cooling, water supply and hot water heating. Students apply material from class lectures, homework assignments and metered case studies to develop passive/active systems integration for lighting, ventilation, heating, cooling, water supply and hot water systems in their studio project designs. Students are expected to choose and size specific active systems equipment and to compare its performance to current International Code Council (ICC) requirements, to show the systems' layout within

the building, and to discuss how the passive and active aspects of the design result in a high-performance, comfortable and durable building. The tools students use in this work are ones that they can continue to use in architectural practice.

Supplementary Courses

Additionally, the notion that design decisions within architectural projects need an integrated approach and are the result of complex often contradictory forces acting upon the design and technical resolution of buildings is already introduced in the **Praxis-1 Design Studio** and in ASOS studios that students take in their third and fourth semesters. This is also addressed in courses like **48-635 Environmental Systems-I: Climate and Energy in Buildings**, taught in the first semester in conjunction with Praxis-1 and **48-637 Statics & Structures** which is taught in conjunction with the Praxis-2 studio in the second semester.

Courses & Materials in Evidence

48-640 Praxis-2 World Shaping Studio
48-647 Materiality and Construction Systems
48-655 Environment-2 Design Integration of Active Building Systems

Assessment

A few examples of Assessment related to SC.6 Building Integration:

The Tier 2 (internal. program-level) Internal Committee Report 2021-22 offers the following assessment for SC.6 Building Integration:

> *"A review of the Fall 2021- Spring 2022 student work reflects a clear trajectory of systems understanding and the compounding effects of Praxis-1 and Praxis-2 Studios. The skills developed in Praxis-1 initiate a strong sense of spatial organization, environmental integration and material selection. These elements become the foundation for Praxis-2 which helps the students hone a holistic approach to building design and construction definition. It is evident that alignment of the concurrent course in Materiality and Construction Systems enhances the students' abilities to define, analyze and execute a well conceived structure that adequately addresses issues pertaining to SC.6 Building Integration. The team collaboration required of these two Praxis Studios introduces the student to the reality of shared responsibilities and decision-making which will be essential as they enter the profession."*

The Tier 2 (internal. program-level) **End of the Year Student Survey 2021-22** indicates that the new course **48-647 Materiality and Construction Systems** worked well to deliver content that complemented the Building Integration sequence with the Praxis-2 Studio. An anonymous student quote from the survey said, *"I loved the synergy between Materials and Assembly (Materiality and Construction Systems) and the Praxis II studio course. I feel like I learned so much about how a building actually comes together, as I never had the exposure to the more technical side of architecture prior to CMU. I consider the knowledge I have gained from these two courses to be some of the most valuable things I have learned in my first year at CMU..."*

The Tier 3 (internal, course-level) assessment, faculty review the work of every student at various stages in the semester including midterm as well as after the final review. Comments and feedback from co-instructors, TAs, consultants (in case of Praxis-2) are woven into this assessment. Additionally various in person interviews are conducted with students to get feedback from students regarding the content, delivery and pedagogy of the courses.

The Tier 3 course level assessment for Praxis-2 indicates that further pedagogical clarifications are forthcoming regarding individual performance versus group work, *" Moving forward, the course will seek to better clarify and elaborate on individual performance within the team context. Additionally, the team of*

faculty hopes to better integrate issues of equity and sustainability into envelope technologies and techniques as well as integrate other means of assessing building performance through the use of digital energy simulation, or other advanced tools such as augmented reality (AR)."

Changes since last Accreditation

As mentioned in **PC.1 Design**, the entire sequence of Design Studios has been significantly overhauled from the previous accreditation visit. While Building integration was previously delivered across two very different streams—four semester UDBS studios OR two semester sequence of integration 1 and 2 studios—it is now administered primarily through the **48-640 Praxis-2 Worldshaping Studio** and further buttressed by related coursework in **48-655 Environment-II Design Integration of Active Building Systems** and **48-647 Materials and Construction Systems**.

The new **48-647 Materials and Construction Systems** course has been designed specifically for the M.Arch graduate program to work closely with the content and delivery of Praxis-2. It offers an overview of basic normative construction assemblies as well as next generation advanced construction assemblies that consider embodied energy, low zero or carbon negative construction.

Based on faculty and student assessment of the **48-655 Enviro-2 Design Integration of Active Building Systems** course, starting this Fall' 22, the course is using designs developed in Praxis-2 to further Building Integration of active systems. This demonstrates an important alliance in the M.Arch curriculum where student experience is scaffolded through an extension of the Building Integration sequence across two semesters.

4—Curricular Framework

This condition addresses the institution's regional accreditation and the program's degree nomenclature, credit-hour and curricular requirements, and the process used to evaluate student preparatory work.

4.1 Institutional Accreditation

The APR must include a copy of the most recent letter from the regional accrediting commission/agency regarding the institution's term of accreditation.

Program Response:

Middle States Commission on Higher Education (MSCHE) Accreditation Statement:

MSCHE
MIDDLE STATES COMMISSION ON HIGHER EDUCATION
1007 North Orange Street
4th Floor, MB #166
Wilmington, DE 19801
www.msche.org
Follow us: @mscheorg

STATEMENT OF ACCREDITATION STATUS

The Statement of Accreditation Status (SAS) is the official statement of the Middle States Commission on Higher Education (MSCHE) about each institution's current accreditation status and scope of accreditation. The SAS also provides a brief history of the actions taken by the Commission.

Institution:	**CARNEGIE MELLON UNIVERSITY**	Pittsburgh, PA
Address:	5000 Forbes Avenue Pittsburgh, PA 15213	
Phone:	(412) 268-2000	
URL:	www.cmu.edu	
Accreditation Liaison Officer (ALO):	Ms. Lisa Krieg	
Commission Staff Liaison:	Dr. Anne Wahl, Vice President	

CARNEGIE MELLON UNIVERSITY

CEO: Dr. Farnam Jahanian, President

Accreditation Liaison Officer: Ms. Lisa Krieg

Commission Staff Liaison: Dr. Anne Wahl, Vice President

Carnegie Classification: Doctoral Universities: Very High Research Activity » Four-year, large, highly residential

Control: Private (Non-Profit)

Former Name(s): Carnegie Institute of Technology (7/1/1967)

Phase: Accredited

Status: Accreditation Reaffirmed

Accreditation Granted: 1921

Last Reaffirmation: 2018

Next Self-Study Evaluation: 2026-2027

Next Mid-Point Peer Review: 2023

Full letter here: (https://www.msche.org/institution/0476/)

The Middle States Commission on Higher Education (MSCHE) is one of seven institutional accrediting organizations in the United States and is recognized by the U.S. Secretary of Education and the Council for Higher Education Accreditation (CHEA). MSCHE accreditation applies to an institution as a whole rather than the specific programs within an institution. MSCHE does not approve or accredit individual programs. The MSCHE accreditation review cycle is continuous and accreditation does not expire. Each institution is reevaluated and monitored on a regular and consistent basis in accordance with the institution's assigned accreditation review cycle and Commission policy and procedures. An institution maintains its accreditation unless it is voluntarily surrendered or withdrawn by the Commission for cause, after the institution has been afforded due process. The institution's current accreditation phase and accreditation status are displayed on the institution's listing in the Institution Directory and in the Statement of Accreditation Status (SAS).

4.2 Professional Degrees and Curriculum
The NAAB accredits 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.

4.2.1 Professional Studies. Courses with architectural content required of all students in the NAAB-accredited program are the core of a professional degree program that leads to licensure. Knowledge from these courses is used to satisfy Condition 3—Program and Student Criteria. The degree program has the flexibility to add additional professional studies courses to address its mission or institutional context. In its documentation, the program must clearly indicate which professional courses are required for all students.

Programs must include a link to the documentation that contains professional courses that are required for all students.

Program Response:

See **4.2.5 Master of Architecture** for full program description below.

Also, for a public documentation of professional courses required for all M.Arch students see https://soa.cmu.edu/march > Program Curriculum.

For Curriculum Chart Class of 2021 see:
https://soa.cmu.edu/s/MARCH_curriculum_2021115.pdf

For Curriculum Chart Class of 2022 see:
https://soa.cmu.edu/s/MARCH_curriculum_Classof22_20220617-4.pdf

4.2.2 General Studies. An important component of architecture education, general studies provide basic knowledge and methodologies of the humanities, fine arts, mathematics, natural sciences, and social sciences. Programs must document how students earning an accredited degree achieve a broad, interdisciplinary understanding of human knowledge. In most cases, the general studies requirement can be satisfied by the general education program of an institution's baccalaureate degree. Graduate programs must describe and document the criteria and process used to evaluate applicants' prior academic experience relative to this requirement. Programs accepting transfers from other institutions must document the criteria and process used to ensure that the general education requirement was covered at another institution.

Programs must state the minimum number of credits for general education required by their institution and the minimum number of credits for general education required by their institutional regional accreditor.

Program Response:

General Studies requirements are met through the students previous education, and the pre-professional degree programs they attended. The exact number of General Studies units varies based on their pre-professional degree program. The SoA M.Arch program clearly documents that all incoming students fulfill General Studies requirements within their pre-professional Degree. See **4.3 Evaluation of Preparatory Education** below.

See also **4.2.5 Master of Architecture** below for how General Studies fits in the full program description.

4.2.3 Optional Studies. All professional degree programs must provide sufficient flexibility in the curriculum to allow students to develop additional expertise, either by taking additional courses offered in other academic units or departments, or by taking courses offered within the department offering the accredited program but outside the required professional studies curriculum. These courses may be configured in a variety of curricular structures, including elective offerings, concentrations, certificate programs, and minors.

The program must describe what options they provide to students to pursue optional studies both within and outside of the Department of Architecture.

Program Response:

Optional Studies Courses (Selectives + Electives)	**Min. CMU Units**	**Min. Credit hours**
48-XXX Design Fundamentals Selective****	3	1
XX-XXX Electives	15	5
Total Min. Optional Studies Units/ Credits	**18**	**6**

While **Electives** are courses that may be chosen across any school or department within CMU, **Selectives** in the M.Arch program are more specific courses that are to be chosen from predesignated lists of courses at SoA within each of the three streams: Design Ethics, Design Fundamentals, and Design Research. See https://soa.cmu.edu/courses.

Students are required to take a minimum of three selectives.. At least one of the three selectives must be in Design Research and one in Design Ethics.

See also **4.2.5 Master of Architecture** below for how Optional Studies fits in the full program description.

NAAB-accredited professional degree programs have the exclusive right to use the B. Arch., M. Arch., and/or D. Arch. titles, which are recognized by the public as accredited degrees and therefore may not be used by non-accredited programs.

Programs must list all degree programs, if any, offered in the same administrative unit as the accredited architecture degree program, especially pre-professional degrees in architecture and post-professional degrees.

Program Response:

NAAB Accredited Professional Degree Programs:

Master of Architecture (M.Arch)
Bachelor of Architecture (B.Arch)

Pre-professional Degree programs

Bachelor of Arts in Architecture (B.A.)

Post professional Programs (studio-based)

Master of Advanced Architectural Design (MAAD)
Master of Urban Design (MUD)

Master of Science & PhD Programs (Non studio/ Research-based)

Architecture–Engineering–Construction Management (MSAECM | PhD-AECM)
Building Performance & Diagnostics (MSBPD | PhD-BPD)
Computational Design (MSCD | PhD-CD)
Master of Science in Sustainable Design (MSSD)
Doctor of Design (DDes)

The number of credit hours for each degree is outlined below. All accredited programs must conform to minimum credit-hour requirements established by the institution's regional accreditor. Programs must provide accredited degree titles, including separate tracks

Programs must document the minimum number of credits required by their institutional accreditor for a bachelor's, master's, or doctorate degree.

4.2.4 Bachelor of Architecture. The B. Arch. degree consists of a minimum of 150 semester credit hours, or the quarter-hour equivalent, in academic coursework in general studies, professional studies, and optional studies, all of which are delivered or accounted for (either by transfer or articulation) by the institution that will grant the degree. Programs must document the required professional studies courses (course numbers, titles, and credits), the elective professional studies courses (course numbers, titles, and credits), the required number of credits for general studies and for optional studies, and the total number of credits for the degree.

Program Response:

Not Applicable: The CMU School of Architecture offers a NAAB-accredited B.Arch, which is subject to an independent review cycle and is not part of this accreditation review

4.2.5 Master of Architecture. The M. Arch. degree consists of a minimum of 168 semester credit hours, or the quarter-hour equivalent, of combined undergraduate coursework and a minimum of 30 semester credits of graduate coursework. Programs must document the required professional studies classes (course numbers, titles, and credits), the elective professional studies classes (course numbers, titles, and credits), the required number of credits for general studies and for optional studies, and the total number of credits for both the undergraduate and graduate degrees.

Program Response:

Course #s & Titles	**Min. CMU Units**	**Min. Credit hours**
Minimum Requirements from the Pre-professional Degree (determined through admissions & Evaluation of Previous Education)	*na***	*na***
Architectural Design Studio Course (4 studios)		
Fundamentals of Architectural History or equivalent		
Fundamentals of Construction Materials and/or Assembly or equivalent		
Fundamentals of Environmental Science and/or Systems or equivalent		

Course #s & Titles	Min. CMU Units	Min. Credit hours
Fundamentals of Structure & Statics or equivalent		
General Studies***		
Required Professional Studies Courses		
48-630 Praxis-1 Worldmaking Studio	18	6
48-640 Praxis-2 Worldshaping Studio	18	6
48-650 Advanced Synthesis Option Studio-1 (ASOS-1)	18	6
48-650 Advanced Synthesis Option Studio-2 (ASOS-2) / Thesis	18	6
48-644 M.Arch Pre-Thesis (Sem 2 Thesis Sequence)*	(3)	(1)
48-625 M.Arch Thesis Seminar (Sem 3 Thesis Sequence)*	(9)	(3)
48-635 Environmental Systems-1: Climate and Energy	9	3
48-655 Environmental Systems-2: Building Systems and Integration	9	3
48-637 Statics & Structures	9	3
48-647 Materiality & Construction Systems	9	3
48-649 Issues of Practice	6	2
48-658 Real Estate for Architects	6	2
48-634 Architectural Theory & Contemporary Issues	6	2
48-6XX Architectural Agency: Discourses & Case Studies	6	2
48-648 Ethics and Decision Making in Architecture	6	2
48-783 Generative Modeling	9	3
48-620 Situating Research	3	1
48-689 Design Skills Workshop (summer/ additional units)	(3)	(1)
48-641 Modern Architecture & Theory	6	2
Total Min. Professional Studies Units/ Credits	**156**	**52**
Required General Studies Courses* **		

NAAB

Course #s & Titles	Min. CMU Units	Min. Credit hours
48-XXX Design Ethics Selective****	3	1
48-XXX Research Selective****	3	1
Total Min. General Studies Units/ Credits	**6**	**2**
Optional Studies Courses (Selectives + Electives)		
48-XXX Design Fundamentals Selective****	3	1
XX-XXX Electives	15	5
Total Min. Optional Studies Units/ Credits	**18**	**6**
Summary		
Total Minimum Required Professional Studies	156	**52**
Total Minimum Required General Studies	6	**2**
Total Minimum Required Optional Studies	18	**6**
Total Min. Units/ Credits Required to Graduate (plus pre-professional degree)	**180**	**60**

KEY:
Course Nomenclature: 48-XXX:
48-XXX *The prefix "48" references courses in the School of Architecture. (each department on campus has its own preliminary 2-digit code).*
48-000 - 599 *References courses in the undergraduate programs*
48-6XX *References courses at the professional and early graduate level at CMU SoA*
48-7XX *References courses at the advanced and post-professional graduate level*
48-8XX *References courses at the PhD level at CMU SoA*

* *Thesis Track*
In the fourth semester of the program students have the option to take a Design Thesis instead of a second ASOS studio. Students electing to do a Design Thesis must declare to do so and be on a "Thesis Track" starting from their second semester at the school. The thesis track is a suite of courses to ensure a rigorous conceptual and research phase in semesters 2 and 3, that lead up to a Design Thesis in semester 4
48-644 M.Arch Pre-Thesis (Semester 2)
48-625 M.Arch Thesis Seminar (Semester 3)
48-650 Thesis Studio (Semester 4)

** *Minimum Requirements from Pre Professional Degree*
The program has now developed a rigorous list of Minimum Requirements related to the student's pre-professional baccalaureate degree and is able assess student

*fulfillment of these at the time of admissions. (See **4.3 Evaluation of Preparatory Education**). Since different schools have different systems for counting credits, the specific number of minimum credits required from the pre-professional degree is determined by the applicant's previous program of study.*

*** *General Studies Courses*
Most of the General Studies requirements are met through the pre-professional degree program. The program documents that all incoming students fulfill General Studies requirements within their pre-professional degree. (See 4.3 Evaluation of Preparatory Education).

**** *Selectives*
While Electives are courses that may be chosen across any school or department within CMU, Selectives are more specific courses that are to be chosen from predesignated lists of courses at SoA within each of the three streams: Design Ethics, Design Fundamentals, and Design Research. See https://soa.cmu.edu/courses. Students are required to take a minimum of three selectives. At least one of the three selectives must be in Design Research and one in Design Ethics.

4.2.6 Doctor of Architecture. The D. Arch. degree consists of a minimum of 210 credits, or the quarter-hour equivalent, of combined undergraduate and graduate coursework. The D. Arch. requires a minimum of 90 graduate-level semester credit hours, or the graduate-level 135 quarter-hour equivalent, in academic coursework in professional studies and optional studies. Programs must document, for both undergraduate and graduate degrees, the required professional studies classes (course numbers, titles, and credits), the elective professional studies classes (course numbers, titles, and credits), the required number of credits for general studies and for optional studies, and the total number of credits for the degree.

Program Response:

Not Applicable, CMU does not have a D.Arch.

4.3 Evaluation of Preparatory Education
The NAAB recognizes that students transferring to an undergraduate accredited program or entering a graduate accredited program come from different types of programs and have different needs, aptitudes, and knowledge bases. In this condition, a program must demonstrate that it utilizes a thorough and equitable process to evaluate incoming students and that it documents the accreditation criteria it expects students to have met in their education experiences in non-accredited programs.

4.3.1 A program must document its process for evaluating a student's prior academic coursework related to satisfying NAAB accreditation criteria when it admits a student to the professional degree program.

See also Condition 6.5

Program Response:

Evaluation of Previous Coursework

The M.Arch admissions process has been substantially strengthened since the last NAAB visit in 2019, in particular our evaluation of previous education. We have edited our website to be sure all potential applicants clearly understand the need to have previous experience in architecture, and that the evaluation of this past experience would be part of the application process to our two-year program. We have revised our online Slideroom application to include an entire new section called *"M.Arch Evaluation of Previous Coursework"* that asks applicants to self-identify all previous coursework and professional experience in the following 6 categories. Each category includes a brief description to help students

understand what kind of previous coursework might qualify. See sample below from the application process:

Architectural History and/or Modern Architecture

2. Have you taken any courses relating to Architectural History and/or Modern Architecture? Applicable courses may include those that teach the history of architecture and cultural norms of a variety of indigenous vernacular, local, and regional settings in terms of their political, economic, social, ecological and technological factors.

2.1. List any previous courses relating to Architectural History and/or Modern Architecture.

Construction Materials and/or Assembly

3. Have you taken any courses relating to Construction, Materials, and/or Assembly
Applicable courses may include those that teach:
– 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.
–Basic principles used in the appropriate selection of interior and exterior construction materials and assemblies based on their inherent performance, including environmental impact and reuse.
–Basic principles and appropriate application and performance of building service systems that include lighting, mechanical, plumbing, electrical, communication, vertical transportation, security and fire protection systems.
–Fundamentals of building costs that include project financing methods and feasibility, construction cost estimating, construction scheduling, operating costs and life-cycle costs.
–Design of sites, facilities and systems that are responsive to relevant codes and regulations and include the principles of life-safety and accessibility standards of life-safety.

3.1. List any previous course relating to Construction, Materials, and/or Assembly.

Environmental Science and/or Systems

4. Have you taken any courses relating to Environmental Science and/or Systems? Applicable courses may include those that teach the principles of environmental systems' design, how design criteria can vary by geographic region and the tools used for performance assessment. Course content includes active and passive heating and cooling, solar geometry, daylighting, natural ventilation, indoor air quality, solar systems, lightning systems and acoustics.

4.1. List any previous courses relating to Environmental Science and/or Systems.

Professional Practice

5. Have you taken any courses relating to Professional Practice?
Applicable courses may include those that each 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.

5.1. List any previous courses relating to Professional Practice.

Structure & Statics

6. Have you taken any courses relating to Structure & Statics?
Applicable courses may include those that teach the basic principles of structural systems and their ability to withstand gravitational, seismic and lateral forces as well as those that teach the election and application of appropriate structural systems.

6.1. List any previous courses relating to Structures & Statics.

General Studies

7. Have you taken any courses relating to General Studies?
An important component of architectural education, general studies provide basic knowledge and methodologies of the humanities and fine arts, mathematical and natural sciences and social sciences. Applicable courses may include general education courses or electives taken outside of your area of discipline.

7.1. List any previous courses relating to General Studies.

For every enrolled student, we document the courses they list here and cross-reference it to their transcript to ensure all minimum requirements are met regarding NAAB accreditation criteria. This assessment is a binary “Met / Not Met” designation, and does not include quantitative or qualitative evaluation.

As a sample, upon evaluating these criteria for Incoming class of 2022 we found that:

1) All students have prior academic coursework in Architectural History and/or Modern Architecture
2) All students have prior academic coursework in Construction Materials and/ or Assembly
3) All students have prior academic coursework in Environmental Science and/or Systems
4) All students have prior academic coursework in Structures and Statics
5) All students have prior academic coursework in General Studies.
6) Out of the 25 incoming students 4 students did not have any prior coursework in Professional Practice

Opt-out Process

Since these are minimum thresholds, not based on a qualitative assessment, it does not qualify students to Opt-out of required coursework that satisfy key SC or PC criteria. It merely ensures that students have adequate background necessary to join a two-year program. If students believe the work they have covered in their previous education is equivalent to required professional courses for the M.Arch program, they are able to apply for an Opt-out process.

The Opt-out process has also be revised significantly since the last accreditation, with the goal of:

a) A rigorous qualitative assessment of prior course work, based on extensive evidence of course work provided by the student.
b) Limiting the Opt-outs only to select courses whose content overlaps with undergraduate courses. We are in the process of creating greater separation between the B.Arch and M.Arch curricula. To this end we have updated the M.Arch curriculum to offer various courses dedicated only for M.Arch students. (Praxis-1&2, Materiality and Construction Systems, and the forthcoming course: Architectural Agency.)

To Opt-out of a CMU course, students need to complete an M.Arch Course Opt-out Form for the specific course with detailed instructions for Opt-outs. All Opt-out applications are made through the M.Arch Canvas Portal: https://canvas.cmu.edu/courses/23852

Through an online PDF form, students list all pertinent information about relevant courses from their previous education and also compile extensive "evidence" that demonstrates competence. Evidence must include both materials from the course like syllabus and project statements but also samples of their own work such as exams, design projects, assignments and class notes. We acknowledge that different schools often teach similar material in different ways, spread over multiple courses, or centralized in one. If there are multiple courses in the students' previous education that fit or relate to the CMU course, students provide evidence from ALL related courses for the relevant subject. In very exceptional cases, students may have acquired competency in the subject matter from prior relevant work experience. In such cases students need to provide evidence that specifically considers work in relation to the NAAB student performance criteria for the course.

In most cases, the professor teaching the course for which an opt-out is requested reviews the evidence turned in via the Canvas Portal. Oftentimes clarifications or further evidence is requested. Not all students who apply are granted opt-outs. The Track Chair maintains documentation and oversight of the process at all times. If students are able to opt out, they are able to take extra selectives/ electives offered by the university and/or at CMU SoA. Students who do not Opt-Out have more required courses and fewer electives but are still able to graduate within the four-semester, 180 units stipulated for the M.Arch program.

Process of Evaluating Incoming Students

CMU SoA offers a diverse range of graduate programs that are highly specialized. Hence each program has developed its unique application requirements. The application requirements for various graduate programs at CMU SoA can be found here: https://soa.cmu.edu/graduate-admissions

For the M.Arch program, Application Requirements are accessed by the Track Chair in conversation with the admissions committee, Curricular Committee and the Associate Head for Design-Research. Preparatory Education is thoroughly evaluated at the time of admissions by the M.Arch Admissions Committee led by the Program Track Chair. The admissions committee is composed of about 10 faculty members. To manage the sheer volume of applications, the process is divided into two Phases. The goal is to retain the constitution of the admissions committee across both phases of admission.

First Phase
In the first round each application is reviewed by three faculty members. The committee takes a holistic view of the students' application by reviewing a portfolio, Statement of Purpose, CV, Video Statement, Academic Transcript and NonAcademic documents. The weighted criteria for the assessment of these is listed below. Based on this assessment we create a short list for Round-2 based on the strength of the applications. This entails both qualitative and quantitative assessment. The committee creates a ranking system that includes a qualitative assessment in addition to a detailed numeral ranking on the following criteria of assessment. This system also helps with determining a list of students for merit-based scholarships.

Portfolio: (40%)
- Design quality & sophistication
- Process, Concept Development, Artistic Acumen
- Graphic Clarity, Sophistication, Representation, Model-making
- Evidence of Construction, Materials & Assembly
- Evidence of Environmental & Ecological Thinking
- Evidence of generative modeling, computation?
- Hand drawings & Sketches

Statement of purpose, CV & Video: (20%).
- Clarity of thought, focus
- Unique background & experiences
- Professional architecture office experience or similar
- Knowledge of CMU & alignment of interests with program
- Maturity for grad school / Future ambitions

Academic Transcript (20%)
- The general level of grades in studios
- Courses in humanities.
- Technical studies

Non-academic (10%)
- Employment, travel experiences, hobbies,

Recommendation letters (10%)
- Top 10%?
- Do the letter-writers know the candidate CMU?

Second Phase
In the second phase, we conduct interviews of select candidates we are interested to know more about. We work to prepare a shortlist considering our yield numbers. The goal of the interviews will be to make a pitch for our program, to gauge interest specific to CMU and in borderline cases evaluate English proficiency etc. Two faculty interview each candidate and the same set of questions are asked across all interviews to ensure parity. Feedback from faculty is written and documented to enable the Track Chair and committee to have an overview of the process.

The following documents are accessed in both phases. (The assessment of these in the first phase is more skewed toward a quantitative/ numerical assessment. In the second phase the emphasis is distinctly qualitative).

Personal Statement
The Personal Statement describes why the M.Arch program at CMU is a good fit for the applicant at this point in their career, what specific focus areas they might want to explore in the Graduate Program, and aspirations and plans for the future after leaving CMU, including how they hope to position themselves in practice, design and/or research.

Video Statement
The Video Statement is a 30-second introductory video that highlights aspects about the applicant's personal interests in architecture or the built environment and requires no staging or post production. We are interested in getting to know the broad context of the applicant and their portfolio submission.

Personal Statement/ Video Statement Assessment Criteria include: Clarity of thought, focus / Unique background & experiences Professional architecture office experience or similar/ Knowledge of CMU & alignment of interests with program / Maturity for grad school/ Future ambitions.

CV/Resume
Assessment Criteria include: Prior education/ Employment experience/ Professional qualifications, Extracurricular achievements/ Other noteworthy achievements.

Portfolio
The portfolio is 25-30 page long document formatted in single spreads (landscape or portrait) and saved as a single PDF document (not exceeding 20MB with a maximum resolution of 150dpi).

Portfolio Assessment Criteria include: Design quality & sophistication/ Process, Concept Development, Artistic Acumen/ Graphic Clarity, Sophistication, Representation, Model-making/ Evidence of Construction, Materials & Construction Systems/ Evidence of Environmental & Ecological Thinking/ Evidence of generative modeling, computation/ Range & Breadth of work/ Hand drawings & Sketches

Academic Transcripts
All applicants to the M.Arch program are required to upload a PDF document copy of college transcript(s). If applicants have attended more than one institution of higher education, these are merged into a single PDF document. Hard copies of complete official transcripts for all degrees are required at the time of enrollment.

Conflict of Interest Protocol
When a faculty or staff member has a conflict of interest with a prospective student and/or a member of the prospective student's family, the faculty or staff member is expected to disclose the conflict to the Associate Head for Design Research. Following best practices, the faculty or staff member will recuse themselves from any decision regarding the admission of the prospective student. In some cases, where recusal is not feasible, the Associate Head for Design Research will coordinate with the Director of Recruitment and Enrollment to institute appropriate controls to mitigate the conflict of interest.

4.3.2 In the event a program relies on the preparatory education experience to ensure that admitted students have met certain accreditation criteria, the program must demonstrate it has established standards for ensuring these accreditation criteria are met and for determining whether any gaps exist**.**

Program Response:

All students joining the M.Arch program have either a five year architecture degree (international students) or a pre-professional baccalaureate degree in architecture (domestic students). **Hence the program relies on preparatory education to ensure that students have met the minimum necessary standards for joining the two-year professional M.Arch degree program. These include:**

Architectural Design Studios (at least 4 studios)
Fundamentals of Architectural History or equivalent
Fundamentals of Construction Materials and/or Assembly or equivalent
Fundamentals of Environmental Science and/or Systems or equivalent
Fundamentals of Structure & Statics or equivalent
General Studies

However, **the M.Arch curriculum also offers courses that satisfy all minimum requirements for NAAB PC-SC criteria.** (See **3, Program and Student Criteria, PC-SC Matrix**). If a student can demonstrate competency through previous education or employment, that student may request an Opt-out for that particular course. Students that demonstrate core competencies may qualify to opt-out of the following courses listed in the PC-SC matrix:

48-635 Environmental Systems-1: Climate and Energy
48-655 Environmental Systems-2: Building Systems and Integration (in exceptional cases only)
48-637 Statics & Structures
48-634 Modern Architecture & Theory

Opt-outs are not possible for any other required courses, since those courses are particular to the CMU M.Arch program and/or because faculty in those areas bring unique and particular perspectives to bear on the material which the program considers fundamental to their professional education in architecture. See **4.3.1 Evaluation of Previous Education** for details regarding the Opt-out process

Opting out of a course does not reduce the total requirements of 180 CMU credit Units or the required two-year time period to graduate.

4.3.3 A program must demonstrate that it has clearly articulated the evaluation of baccalaureate-degree or associate-degree content in the admissions process, and that a candidate understands the evaluation process and its implications for the length of a professional degree program before accepting an offer of admission.

Program Response:

CMU SoA currently only offers a two-year M.Arch program, and all admissions are for two years only, so all admissions decisions are for that program only; all students who would need more than two years are denied admission. The admissions web pages and process, as well as the application itself make clear that the M.Arch program requires extensive previous education in architecture, and that undergraduate work and transcripts is evaluated as part of the admissions process. We ask applicants to list all courses in specific areas mentioned in the previous section, so that we can more clearly see their previous coursework in specific areas. No M.Arch student has been asked to enroll for more than four semesters (180 units) due to deficiencies in undergraduate experience. A few students have encountered hurdles to their performance, including both academic difficulties in certain areas, but also wellness and health issues, which required them to stay an additional semester in order to complete the 180 units of required passing work and the various distribution requirements.

5—Resources

5.1 Structure and Governance
The program must describe the administrative and governance processes that provide for organizational continuity, clarity, and fairness and allow for improvement and change.

5.1.1 Administrative Structure: Describe the administrative structure and identify key personnel in the program and school, college, and institution.

Program Response:

School of Architecture's leadership is composed of the Head of School (Omar Khan), an Assistant Head of School responsible for all financial matters (David Koltas), three Associate Heads: Associate Head for Design Fundamentals (Mary Lou Arscott), Associate Head for Design Research (Joshua Bard), Associate Head for Design Ethics (Kai Gutschow) and a Director of Diversity Equity and Inclusion (Erica Cochran Hameen). Jointly, the leadership maintains that the school's and university's policies and procedures are properly established and followed in running of its programs. The four-year B.A. and 5-year B.Arch programs are administered by the Associate Head for Design Ethics and the Associate Head for Design Fundamentals respectively, while the graduate school is administered by the Associate Head for Design Research. Each individual graduate program has its own Track Chair who administers their program and advises students enrolled in them. These are the following:

Master of Architecture (M.Arch), Sarosh Anklesaria
Master of Urban Design (MUD), Stefan Gruber
Master of Advanced Architectural Design (MAAD), Jeremy Ficca
Master of Science in Sustainable Design (MSSD), Dana Cupkova
Master of Science and PhD in Building Performance and Diagnostics (MS/PhD BPD), Vivian Loftness
Master of Science and PhD in Computational Design (MS/PhD CD), Daniel Cardoso Llach
Master of Science and PhD in Architecture, Engineering and Construction Management (MS/PhD AECM), Joshua Lee
Doctor of Design, Erica Cochran Hameen
PhD In Architecture, Nida Rehman

The College of Fine Arts's leadership is composed of:
Dean, Mary Ellen Poole
Associate Dean for Finance & Operations, Rob Sauritch
Associate Dean for Advancement, Carolyn Hess Abraham
Associate Dean for Research, Jenn Joy Wilson
Assistant Dean for Diversity, Equity and Inclusion, Valeria Martinez

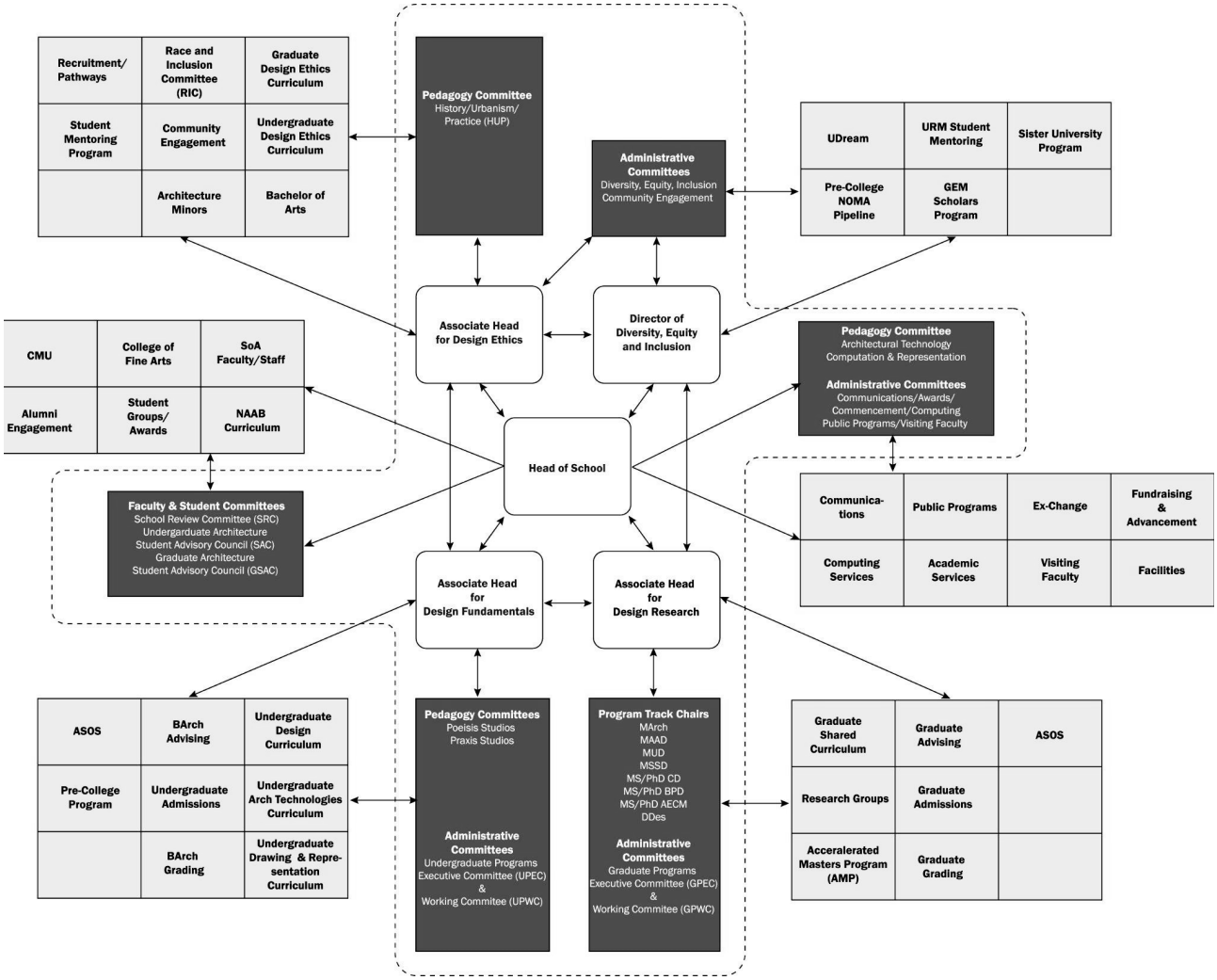
The Provost of CMU is Jim Garrett and its President is Farnam Jahanian

5.1.2 Governance: Describe the role of faculty, staff, and students in both program and institutional governance structures and how these structures relate to the governance structures of the academic unit and the institution.

Program Response:

The following diagram provides the structure for the role of faculty, staff and students in the administration of the school's programs. Faculty, students and staff partake in the school's governance through numerous committees that can be categorized as either *administrative* or *pedagogical*. Administrative committees are responsible for executing school tasks like admissions, student grading, public programs and faculty searches, while pedagogical committees are tasks with evaluating and proposing curricular changes. There is broad representation of faculty and staff on these committees with some student

participation where appropriate. Students also have their own committees like the Student Advisory Council (SAC) and the Graduate Student Advisory Council (GSAC) with representatives from each graduating class, each separate program, and representative clubs like AIAS and NOMAS. These committees provide students the ability to offer the administration advice on policies, express grievances and influence the choices laid out for their education. The School of Architecture administration, Head and Associate Heads, meet twice weekly, with SAC meeting bi-weekly, and the GSAC monthly.



5.2 Planning and Assessment

The program must demonstrate that it has a planning process for continuous improvement that identifies:

5.2.1 The program's multi-year strategic objectives, including the requirement to meet the NAAB Conditions, as part of the larger institutional strategic planning and assessment efforts.

Program Response:

In Fall 2020, The School of Architecture embarked on a strategic planning process, titled Pedagogies 2020, to review its mission, values, and programs and to develop an actionable vision to address some of the significant challenges facing architecture and the built environment in the 21st century. The process was initiated by Omar Khan, when he became Head of the School of Architecture the same year.

Pedagogies 2020

The aim of the Pedagogies 2020 process was critical, speculative and provocative; grounded in science and evidence but also the projective capacity of the architectural imaginary. Our faculty, students and staff must represent the global society we aim to design for and our educational and research facilities must be able to support the innovative design and research we plan to do. Most significantly our pedagogy must address the imminent challenges facing society.

1) **Climate change** and its impending environmental and social problems and how architecture can support living in the Anthropocene
2) **Artificial intelligence** and its challenge to human agency and what it means to live in a posthuman society
3) **Social justice** and the need for greater equity and inclusion of race, gender and intersectionality in our politics and communities

To address these challenges, Pedagogies 2020 was divided into three unique but interrelated pedagogies: *Design Fundamentals*, *Design Research*, and *Design Ethics* (formerly Race & Inclusion). During the Fall 2020 semester, each was tasked with "stocktaking" to engage faculty, staff, and students in conversations and information gathering. In Spring 2021, we translated these efforts into actionable items that will better align our mission, programs, personnel, facilities, and resources to address the challenges we have laid out for ourselves.

Design Fundamentals Pedagogy
The fundamentals pedagogy seeks to articulate an expansive model of core architectural education that is responsive to societal concerns and the challenges and opportunities currently confronting the discipline and profession. As the initiation to architectural concerns and thought, design fundamentals hold a privileged position in architectural education. It introduces students to the discipline's intellectual traditions, its unique modes of thought, and the tools and protocols of its inner workings. It aims to outline the concerns, methods, and competencies fundamental toward the education of an architect and seeks to expand, contextualize, and reposition its references. Acknowledging the unique conditions and strengths of the SoA and Carnegie Mellon on one hand, and disciplinary legacy on the other, the Fundamentals pedagogy seeks to articulate a model of core architectural education that is situated within the context of Carnegie Mellon, yet focused upon global concerns. Design fundamentals reveal intersections between architecture and a broad range of subjects to introduce processes of design synthesis.

Design Research Pedagogy
To address design research is to confront architecture's disciplinary tensions. Historically, architectural education has been split across the disparate domains of art and applied science. In American universities, roughly half of all architecture programs are housed in art departments while the others are part of engineering programs and technical schools. This productive conflict between the analytical and deductive modalities of the sciences and the projective creativity of the arts is a defining hallmark of the discipline. This disciplinary instability is also an asset in the contemporary research landscape, where interdisciplinary teams of varied expertise must communicate across multiple epistemological frameworks. In addition to exploring the implications of research-through-design, the School of Architecture can contribute to the research-of-design. The complex nature of producing architecture requires greater collaboration between architects, engineers, manufacturers, builders, clients, and communities. For any design innovation to be relevant and sustainable, it must be built on interdisciplinary research that considers appropriate societal frameworks relevant to the issues at hand. While the process of architectural design is projective, it must rely on analysis and evidence that helps us become more thoughtful actors in the world.

Design Ethics Pedagogy (formerly Race and Inclusion)
The Design Ethics pedagogy seeks to address the role architecture can play in creating more equitable, inclusive, and just communities at every scale: in our school, at CMU, in Pittsburgh neighborhoods, the region, and the world. Our internal focus is on improving school culture, refining our curriculum, and

expanding our research projects to greater inclusion. Our external focus is to strengthen our relationships within Pittsburgh and in society at large as we collectively face intense ethical, social, economic, and ecological challenges. The discipline and profession of architecture are uniquely positioned to address issues of “Race & Inclusion” at many scales. It must become our responsibility to advocate for race, inclusion, and equity in all our architectural work: at school, in the profession, and as citizens. Architects are interacting with an ever-greater variety of specialists within the building industry and society at large, and we must do more to advocate for ethical decision making in those collaborations.

Multiyear Strategic Objectives

Schedule for Implementing Pedagogies 2020
Pedagogies 2020 outlines a vision that requires developing new governance structures, re-evaluating and developing assessment protocols for curricula, hiring of faculty, re-invigorating our research productivity, improving our facilities, expanding our recruitment and admissions and addressing the cost of education. Over the next five years a plan to systematically address all of these has been put in place. The schedule highlights the demonstrable achievements we are aiming for in each year even as we work concurrently on all these reforms:

2020: Pedagogies 2020 initiated
2021: New Governance: Three Associate Heads and Director of DEI established, new Track Chair of M.Arch program selected (Sarosh Anklesaria). Reform Admissions processes.
2022: Curricular and program assessment reforms. Educational costs addressed. New faculty hires.
2023: Research Centers and faculty research productivity reforms. New faculty hires.
2024: Facilities improvements
2025: Assessment of Pedagogies 2020

Schedule for M.Arch Strategic Objectives
The Master of Architecture program has been aligned with the Pedagogies 2020 implementation agenda. This began in 2021 with selecting Sarosh Anklesaria as the new Track Chair for the M.Arch program. Anklesaria is building on former Track Chair Kai Gutschow’s work that included re-establishing the program and shepherding it through its initial accreditations. Gutschow is currently the Associate Head for Design Ethics but continues to be a co-advisor for the program. A general schedule of the M.Arch plan is as follows:

2021: New Track Chair- Sarosh Anklesaria. New mission for the program focused on Design Ethics (see 2. Shared Values: Design and 3.1 PC.2 Design). Revised Goals, Objectives & Curricular Updates. Reform of Admissions process.
2022: New curriculum and assessment protocols established to align with Pedagogies 2020 (For Assessment see "M.Arch Assessment Strategy" below. For Curriculum protocols see 5.3 Curricular Development) Facilities improvement to develop more collaborative workspace.
2023: Faculty hire in Architectural Structures.
2024: Faculty hire in Architectural Design

M.Arch Assessment Strategy

The increased emphasis by NAAB on self-assessment has led the program to initiate assessment at three distinct tiers. These are assessment tiers and do not include the Curricular Committee, the Program Track Chair, or Core M.Arch Faculty, who are tasked with taking assessment results and recommendations across the tiers, and making changes to the program and curriculum.

Tier 1: External Program Level Assessment
Tier 2: Internal Program Level Assessment
Tier 3: Course Level Assessment

Tiers of Assessment	**Constitution** *Who is assessing?*	**Criteria** *What is being assessed? (Performance Indicators)*	**Outcomes** *What are the outcomes?*	**Frequency/ Status** *How often is it assessed ?*
Tier 1: External Program Level Assessment				
M.Arch Program External Review	External Assessor: Prof. Lily Chi, Director of Graduate Studies, Cornell University	Program Vision & Goals Program Outcomes, Strategic Objectives, Curriculum, NAAB Program Criteria (PC), Student wellbeing, Finances, Shared values	External Assessment Report	Yearly Assessment/ Complete for 2021-2022
	The Eberly Center for Teaching Excellence & Educational Innovation	Program Vision & Goals, Program Outcomes, Strategic Objectives, Curriculum	Written Report/ verbal feedback	Once every two years/ Forthcoming 2023-2024
Tier 2: Internal Program Level Assessment				
Internal M.Arch Assessment Committee	CMU SoA Faculty Bill Bates Jennifer Lucchino Laura Garófalo Stuart Coppedge	NAAB Student Criteria (SC) Course Learning Goals and Outcomes	Internal Assessment Report	Once every two years /Underway for 2021-22
Pedagogy Committees: 1. Architectural Technologies 2. Representation & Computation 3. History Urbanism Practice	CMU SoA Faculty	Overall Pedagogies across CMU SoA	To be decided	Once every two years/ Forthcoming 2023-2024
End of Year M.Arch Student Survey	All First Year M.Arch students (End of Year 1)	Student Wellness Diversity Equity & Inclusion, Pedagogies, Resources, Student Wellbeing, Career Ambitions & Goals	Internal Survey Report	Yearly/ Complete for 2021-2022
M.Arch Alumni Survey	M.Arch Alumni	Career Paths Program Experiences Preparedness for current roles	Internal Survey Report	Once every two years/ Complete for 2021-2022
Student Performance Data Survey	Institutional Research and Analysis at CMU (in conversations with Track Chair)	Student Demographics Academic Performance Scholarships	Internal Survey Report	Yearly/ Underway 2022-2023
Tier 3: Internal Course Level Assessment				

Tiers of Assessment	**Constitution** *Who is assessing?*	**Criteria** *What is being assessed? (Performance Indicators)*	**Outcomes** *What are the outcomes?*	**Frequency/ Status** *How often is it assessed ?*
Faculty Self Assessment	Various Faculty teaching Primary NAAB PC/ SC courses	Course Learning Goals & Outcomes Course level Improvement	One page self-assessment of course	Yearly/ Complete for 2021-2022
Graduate Program Working Committee	Track Chairs of various Graduate Programs. Committee Chair: Prof. Josh Bard Assoc. Head of Design Research	Student Performance	Academic Actions Commendations Scholarship evaluations	Once every semester/ Complete for 2021-2022
Faculty Course Evaluations	Enrolled students for respective courses	Faculty Performance	FCE	Every Semester/ Complete for 2021-2022
Reviews/ Exams Assignments	Various Faculty teaching Primary NAAB PC/ SC courses. Invited architects, academics, industry leaders	Student Performance	Grades	Multiple times a semester/ Complete for 2021-2022
GSAC Graduate Student Advisory Committee	M.Arch representative, Graduate Student Council	Student wellness / Grievances Faculty and Course feedback Resources and Opportunities	Meetings with Head / Associate Heads	Multiple times a semester/ Complete for 2021-2022

Tier 1: External Program Level Assessment
This is a broad assessment of the program's overarching goals and outcomes, its pedagogy and translation into the curriculum.

M.Arch Program External Review
The school has asked Professor Lily Chi, Cornell University to visit the program on a yearly basis, for an initial period of three years. Toward the end of the Spring 2022 semester Professor Chi visited CMU SoA for two days of intensive conversations with students and faculty regarding the program. This was an in-person visit which included an exhibition of student work, as well as meetings with the studio and non-studio faculty, the Head and Associate Heads, Track Chair, and a three-hour exclusive meeting with M.Arch students. During these meetings various presentations were made to Professor Chi where she was given a detailed purview of the revised curriculum, studio pedagogies, synergies across courses and examples of student work related to both studio and non-studio courses. Based on this visit and supporting documents provided, Professor Chi then produced a five-page assessment report for the year. The report also includes an Appendix regarding: *Notes on fulfillment of NAAB Program Criteria.*

Professor Lily Chi, Director of Graduate Studies for Architecture. Associate Professor, Cornell University, the College of Architecture Art and Planning

Professor Chi serves as the External Assessor for CMU SoA's M.Arch Program. She has extensive experience in shaping various graduate architecture programs at Cornell including the M.Arch and the MAAD programs. Chi was the design editor of the *Journal of Architectural Education* from 2000-2004.

In addition to the M.Arch Program review, **The Eberly Center for Teaching Excellence & Educational Innovation** is a valuable teaching resource at Carnegie Mellon University, that exists outside of SoA. The center brings together expertise in pedagogical and technological issues to support Carnegie Mellon faculty across the university. This summer the Eberly Center provided expert feedback and guidance in the writing, and proofreading for the M.Arch program's revised Program Goals and Outcomes. See **Chapter 1, Context and Mission, M.Arch Program Goals & Outcomes.** In the coming academic year (2023-24), the Eberly Center will undertake a more detailed assessment at the program level and further that this assessment will be carried out every two years.

Tier 2: Internal Program Level Assessment
Tier 2 entails internal assessment done at the Program Level including NAAB Student Criteria, a more detailed assessment of the pedagogies as these concern the curriculum, as well as student well being.

Internal M.Arch Assessment Committee (Tier 2)
An Internal Assessment Committee has been established that consists of faculty within CMU SoA who are not core members of the M.Arch faculty. The task of this committee is to ensure that required course syllabi, pedagogy and resultant student work, correspond to the stated NAAB Student Criteria for these courses. While the focus of the External Assessment is on assessing the program's overarching goals, outcomes, curriculum and fulfillment NAAB Program Criteria, the focus of the Internal Assessment is on required courses toward the fulfillment of NAAB Student Criteria.

At the time of writing this report, the Internal Assessment Committee has already commenced its task of assessing the previous academic year Fall '21 - Spring'22. The committee will convene to make assessments and recommendations every two years.

The Internal Assessment Committee comprises of the following CMU SoA faculty:

Bill Bates, FAIA, NoMA, Adjunct Faculty, CMU SoA:
William (Bill) Bates is a registered architect and has a long history of international development experience in corporate real estate and construction. Bates served as 2019 AIA National President, and is currently Secretary of the Pennsylvania State Architect’s Licensure Board. He is also a board member of the National Trust for Historic Preservation and V.P. of the Pittsburgh History and Landmarks Foundation. He is a past President of the Green Building Alliance, former Vice President of the Allegheny Land Trust, and retired Vice President of Real Estate for Eat’n’Park Hospitality Group, Inc.

Jennifer Lucchino, RA, Owner and Cofounder Inter*ARCHITECTURE
Jennifer Lucchino is a licensed architect, owner and cofounder of Inter*ARCHITECTURE, Pittsburgh, a design studio dedicated to the exploration and implementation of contemporary architectural expression through architectural design, design/build projects and community involvement. Prior to founding Inter*ARCHITECTURE, Lucchino’s professional experience includes employment by the San Diego Padres as Architectural Advisor for Ballpark Planning and work at the Pittsburgh-based firms Damianos Group and Astorino Architecture & Planning.

Laura Garófalo, Associate Professor, CMU SoA
Laura Garófalo is Associate Professor at the Carnegie Mellon University School of Architecture (CMU SoA). She teaches graduate and undergraduate studios and seminars focused on material production and ecologically centered design. Her research, pedagogy, and practice focuses on the conjunction of natural and architectural systems. The role of architecture as an active environmental steward defines her work in lightweight structures, architectural ceramics, and hydrologically centered buildings.

Stuart Coppedge, FAIA, NCARB, LEED AP, Adjunct Instructor, CMU SoA
Stuart Coppedge is a Registered Architect and Fellow of the American Institute of Architects, serving at all levels of that institution, culminating in two terms on the national board. He also has extensive community service experience, including chairing the boards of the Colorado Springs Downtown Partnership and Atlas Preparatory School and leading the Colorado Springs Downtown Review Board. Coppedge understands the complexities of architectural practice and the interdependence of the various players and has worked within design-bid-build, design-build and construction manager at risk delivery methods as well as gaining exposure to multi-party contract integrated project delivery (IPD).

Pedagogies Stream Committees (Tier 2)
The Pedagogies Stream Committees are a continuation of the debates and dialogues that emerged from Pedagogies 2020. They are tasked with asking broad questions regarding pedagogies across the three streams (Fundamentals, Design Ethics and Research)

1. Architectural Technologies (Committee chair: Joshua Lee)
2. Representation & Computation (Committee chair: Eddy Man Kim)
3. History Urbanism Practice (Committee chair: Valentina Vavasis)

Assessments made by these three committees will be considered as recommendations for the M.Arch Curriculum Committee that will influence the broad content and form of what is taught in the M.Arch program, a scope similar to the External Assessment which is currently carried out yearly. At the time of writing this report, the pedagogies stream committees have been focused on the B.Arch program, but will be assessing the M.Arch program in the coming year.

Surveys (Tier 2)
In addition to the internal Assessment Committee, internal assessment at the program level happens also through surveys carried out by the M.Arch program: i) An End of Year student survey for the incoming class of 2021 and ii) Alumni Survey. Both surveys ask questions with a focus on student experience to help identify areas of success and possible areas for future improvement. The End of the Year student survey is more elaborate, and was designed in conjunction with faculty, M.Arch students and CMU's Eberly Center for Teaching Excellence and Educational Innovation. The goal is to include student opinions and voices, not only as an outcome of the survey, but also in its ongoing formulation. These surveys also serve as tests, as the SoA hopes to design and implement similar surveys for all programs in the future.

End of Year Student Survey (Tier 2)
This End-of-Year Survey was conducted in Summer 2022 and intended for the incoming Class of 2021, who have completed the first academic year of the two-year term. The survey is part of a yearly cycle for assessing the climate and culture of the program through student experiences in following key areas:

1) Diversity Equity and Inclusion: Do students feel a sense of agency/ belonging?
2) Pedagogies: Do students believe the curriculum/ required courses deliver upon their stated Learning Objectives?
3) Resources: Do students feel supported? Are students aware of available resources? and
4) Career Ambitions and Goals: What are the alignments between what is taught and students' evolving goals and aspirations...?

The survey was anonymous and all questions were optional. Students were encouraged to respond to every question, though not all long form narrative questions might be equally important to each student, and individual students could choose to skip those that are not relevant. The goal was to seek specific responses, identify patterns, and use student inputs in making improvements to the program. For the descriptive questions we value direct first-hand experiences from students, and answers on issues they feel strongly about. In terms of process, we reached out to the student cohort, core M.Arch faculty and also the CMU's Eberly Center for Teaching Excellence & Educational Innovation for initial feedback.

Additionally, student responses also helped in framing the questions articulated in the survey. The school is keen to include student opinions and voices, not only as an outcome of the survey, but also in its formulation. To ensure that the highest standards of ethics and process were maintained, we also reached out to The Carnegie Mellon University's Institutional Review Board (IRB) to ascertain that the survey did not constitute research and the results of it could be used within this APR. We see this as a pilot survey, and are working on improving the process and content with future yearly iterations of the survey.

The survey has already yielded valuable insights into the program and we have used examples of the survey under "Assessment" sections for Shared Values, PCs and SCs as necessary.

Alumni Survey (Tier 2)
CMU, the SoA staff and administration, the Track Chair and former Track Chair, and individual faculty all attempt to maintain connections and networks with M.Arch alumni. Among the regular communications are the alumni newsletters, social media feeds, and invitations to campus events. We used www.LinkedIn.com as one of the primary ways to stay connected with the careers of M.Arch alumni, but also allow them to network with us and with each other through a CMU M.Arch Alumni group on LinkedIn. In 2022 we started an annual alumni survey, sent to all M.Arch graduates since the program was restarted in 2017. It is much shorter than the current student survey, and is focused on career and employment pathways after graduation. It is part of an extended self-assessment process for the upcoming NAAB accreditation, and to better connect and network our alumni. All answers were anonymous with the following areas of emphasis: Career Paths/ Program strengths/ Areas for improvement/ Preparedness for current roles.

Tier 3: Course Level Assessment
Course level assessments access student and faculty performance at the level of the courses. These are done each semester or academic year, depending on the mode of assessment, and include the following:

Faculty Course Self Assessment (Tier 3)
Due to the 2020 NAAB emphasis on assessment, faculty have been asked to self-assess their courses and write short narratives describing any changes to course content, or syllabi as a result of this self-assessment. In some cases faculty also conduct interim surveys to get student feedback regarding particular aspects of their course. CMU's Eberly Center for Teaching Excellence and Educational Innovation serves as a university-wide resource to bring pedagogical and technological issues together to support Carnegie Mellon faculty in their roles as educators.

Assignments, Reviews & Final Exams (Tier 3)
These include normative modes of assessment that happen on an ongoing basis at the school—assignments, reviews, interim and final exams for various courses. Throughout the semester, and especially during midterm and final reviews, the school invites academics, architects, scholars and industry leaders from outside of CMU SoA to participate and give feedback for studios and related courses. We have also begun the documentation of this feedback (especially for Praxis-1 & 2 studios) regarding not only student work, but also studio pedagogies. The School of Architecture also maintains a list of BIPOC critics who have built relationships with CMU over the years, who can be invited on a recurring basis. This is in response to student feedback and calls for increased diversity in studio reviews.

The design studio faculty also interview students in person at least once during the semester to collect feedback regarding the course, its learning and teaching methods, workload etc. During the years of the COVID pandemic and remote/ hybrid modes of instruction, these meetings were increased with a focus on student wellness.

Graduate Programs Working Committee (GPWC) (Tier 3)
The Graduate Programs Working Committee (GPWC) comprises the Track Chairs of every master’s program, as well as Principal Advisors of PhD students, Graduate Programs Coordinators, and Graduate Admissions Coordinators. The GPEC a Grades Meeting at the end of each semester, after the semester grades have been issued. The purpose of this meeting is to review and monitor the academic progress of

all graduate students. In this meeting, the Track Chair will present an oral report to the GPWC along with oral reports by the Principal Advisor of each doctoral student. Any academic actions or recommendations developed are transmitted, in writing, to students and to the Head of the School by the Graduate Program Executive Committee (GPEC), after the Graduate Program grades meeting at the end of each semester.

In addition to the Grading Practices and Academic Actions stipulated by the University and College of Fine Arts, the Graduate Program in the School of Architecture has implemented the following School-level actions:

COMMENDATION – For achieving a quality point average of 4.0 or above in any semester while carrying a full academic load of a minimum of 36 units AND comprising a minimum of four (4) courses, OR an 18-unit studio and a minimum of two (2) courses.

STUDIO COMMENDATION – Studio commendations are given to students for excellence in design work and/or leadership during a particular semester. The studio professors teaching in that year select recipients at the semester grades meeting.

PROBATION – For achieving a grade below a minimum of B in any course identified on each program curriculum with an asterisk(*) to qualify for graduation (not applicable for the M.Arch program), OR a grade below a minimum of C in any other course taken in any semester, OR a semester quality point average below 3.00 AND when the Track Chair and GPEC determines that there is still a possibility for the student to improve their performance to meet requirements for graduation as stipulated in the respective program descriptions online. Academic probation may result in any scholarships, research assistantships and/or financial awards to be rescinded. Students on academic probation cannot be selected to receive awards. For a student on academic probation, this status will be automatically removed during the next academic review if the semester and cumulative QPA are 3.0 or better.

DROP FROM PROGRAM – For achieving a PROBATION AND when the Track Chair and GPEC determines it is NOT likely that the student will be able to meet the requirements for graduation OR under extraordinary circumstances as determined by the faculty, a student may be dropped without previously having been on probation. The student will be notified in writing and should meet with their Advisor and Track Chair as soon as possible to discuss their academic situation. The student will then meet with the School Head. If a decision for removal from the program is made, the student will receive the decision in writing and may appeal the decision by sending a formal letter stating the basis for appeal to the Department Head. The student will have an opportunity to appeal a removal decision by the School Head to the Dean of the College of Fine Arts.

Generally, sanctions resulting from an Academic Action (e.g. probation or drop) take effect immediately, regardless of whether an appeal is filed. In exceptional circumstances, however, the appropriate Dean of Graduate Students or the Provost may elect to hold sanctions in abeyance pending the resolution of an appeal. If the removal decision is not overturned, the student is not entitled to a refund of tuition or student fees incurred during the semester in which the appeal was being considered.

Graduate Student Advisory Committee (GSAC) (Tier 3)
Graduate Student Advisory Committee (GSAC), consists of one student representative from each of the Graduate programs at CMU SoA. GSAC meets regularly with the Head, Associate Head of Design Research, and the Graduate Academic Advisors to discuss issues of concern to the students, including feedback on instructors, courses, facilities and other academic and non-academic opportunities.

Faculty Course Evaluations (FCE) (Tier 3)
Faculty Course Evaluations (FCE) conducted by the university and completed by students at the end of every course at CMU give faculty vital clues directly from students regarding the reception of the course content and the success of their courses. These assessments of course content and teaching methods are primarily for the instructor.

5.2.2 Key performance indicators used by the unit and the institution

Program Response:

Tier 1

- Program Vision & Goals
- Program Outcomes/ Strategic Objectives
- Curriculum
- NAAB Program Criteria (PC)
- Student wellbeing
- Cost of Tuition/ Finances
- Shared Values

Tier 2

- NAAB Student Criteria (SC)
- Course Learning Goals and Outcome
- Student Academic Performance and Scholarships
- Student wellness / Diversity Equity & Inclusion
- Cost of Tuition
- Career Paths
- Shared Values

Tier 3

- Faculty course level self-assessment
- Student wellness / Grievances
- Faculty and Course feedback
- Resources and opportunities
- Feedback from outside professionals, academics, and industry leaders

5.2.3 How well the program is progressing toward its mission and stated multiyear objectives.

Program Response:

The year 2020 marked an important moment in the school with Omar Khan becoming the new Head of the School of Architecture. Khan initiated the 2020 Pedagogies conversations to bring a new vision to the school, based on its strengths in computation, participatory design and sustainability. This resulted in a year of stocktaking that generated a broad strategic vision around three areas: Design Ethics/ Design Fundamentals/ Design Research based on the grand challenges of our time. In Fall 2021 Sarosh Anklesaria was appointed as the Track Chair of the M.Arch program. Anklesaria shifted the program from its initial emphasis on a more general professional education built on the foundations of the existing B.Arch, towards a greater separation from the B.Arch, a focus on Design Ethics, and continued integration with the other research-based masters programs within CMU SoA.

This led to a substantial revision of the program's curriculum as well as a written statement regarding the Program Goals and Objectives (see Chapter 1. Context and Mission), as well as a three-tier system of assessment to evaluate the program's mission, stated objectives and NAAB related PC-SC criteria. This has been an ongoing process of evidence-based evaluation. The Tier 1 External Committee Report has just been completed in summer 2022. As stated in 5.2.1, at the time of writing this report the Tier 2 Internal committee meeting has begun the task of evaluating courses related to the previous academic year Fall 2021 – Spring 2022. The Tier 2 Pedagogies Stream committees have not yet convened for assessment specific to the M.Arch program but will be doing so in the coming academic year.

Highlights from the External Assessment Report indicate a favorable assessment of the program's revised ambition, identity and brand:

> *"1.0 Program Ambitions, Identity & Brand:*

Carnegie Mellon's Master of Architecture bears the clear imprint of the School of Architecture's Pedagogies 2020, itself a remarkable distillation of 21st-century conditions and the challenges therein for architectural work and education. Pinpointing their coalescence in climate change and attendant environmental and social urgencies; artificial intelligence and its impact on human agency and societies; and social (in)justice in human affairs, Pedagogies' is a strategic plan framed by three axes of inquiry--Design Fundamentals, Design Research, and Design Ethics. This framework is clearly evident in the M.Arch curriculum, not just in structure but also in course content and implementation. The result is a distinctive, relevant and forward-looking pedagogical agenda in a number of ways."

"…More broadly, the triadic pedagogical structure imprinted upon and communicated by the M.Arch's curriculum sets out a remarkable definition of architecture's relation to contemporary worlds and, more specifically, CMU's position on how the discipline would contribute to the future thereof. The suggestion is that design has an iterative as well a progressive dynamic, and that its productions can no longer be assumed to be autonomous goods-in-themselves, independent of environmental, socio-cultural, geopolitical effect. Together, Design Fundamentals, Research and Ethics position architectural design as a unique mode of relational, material, and spatial thinking and action."

For a more detailed outline of the current status for various assessment related efforts see **5.2 Planning and Assessment, M.Arch Assessment Strategy.**

5.2.4 Strengths, challenges, and opportunities faced by the program as it strives to continuously improve learning outcomes and opportunities.

Program Response:

Strengths:

- The location of CMU SoA in an R-1 research university, with a long legacy of scholarly and technical research in the SoA to build on.
- Resources: Human – faculty & students.
- Resources: Physical / labs etc.
- A relatively young/ small M.Arch program with the ability to be nimble in making changes.
- Long term vision/ goals to address the grand challenges of our time, articulated across the university, the school and the program.
- Revised Program goals and outcomes with alignments across the Pedagogies conversations at CMU SoA.
- A renewed focus on Design Ethics at various levels across the program.
- An updated curriculum that reflects this new impetus and focus for the program,
- Location in Pittsburgh, a post-industrial city with deep traditions alongside a strong impetus on technology and its potentials for emancipatory futures.
- CMU prides itself in the rich traditions of working in interdisciplinary ways across disciplines, departments, universities, industries, government, etc.
- The program is located in the College of Fine Arts, at the intersection of technology and the arts.
- The STEM designation of the CMU M.Arch allows international students to stay in the US and work professionally for an extra 24 months, in addition to the 12 months granted to all student visa holders.
- The SoA Head and faculty have a great deal of freedom and autonomy to make decisions about courses, tenure, strategic plans, etc. CMU prides itself on being a "bottom up" institution.

Opportunities:

- Pedagogies conversations have resulted in a new focus and identity for the program, that presents a great opportunity for unique pedagogical frameworks .
- Connections to various SoA graduate level programs including Design studio-based MAAD/ MUD/ programs.
- Scholarships/Merit awards during the two years

- Connection to Inter•punct. Opportunity for M.Arch students to take leadership roles in Inter•punct
- Connections to AIAS/ NOMAS
- The newly constituted M.Arch Teaching Fellowships allow for second year M.Arch students to teach first year B.Arch undergraduate studios.
- Starting Fall 2022, New Scholarships/ Financial incentives are offered for summer study travel and/or work related to studio expenses and/or thesis.
- Restart the extensive travel opportunities for SoA students generally, but M.Arch students in particular after the hiatus of the pandemic.
- Networking opportunities with alumni across the world, to create lifelong connections with the school and its current students.

Challenges:

- We strive for greater diversity of students and faculty in the program, especially Black/ Hispanic candidates.
- Cost of Tuition, competing against schools that have higher endowments and are able to offer better financial packages to students.
- Administrative support/ Overview of course registrations/ Student performance/ academic actions
- Faculty Support; no sabbaticals for research or regeneration; no backup if a faculty drops out or wants to try something new.
- Space and facilities are aging, crowded, with little support for upgrades, and building plans seem far away.
- Making the M.Arch program more embedded/ interconnected across graduate programs at SoA and CMU. This includes both students cross-registering for courses across departments, and faculty connections across units.
- School budget: CMU's financial allocations and grad student funding are heavily influenced by research money that faculty obtain and philanthropic giving that schools can attract, with the arts often having far fewer resources than Computer Science, Engineering, Science, and even Public Policy, where there are more research funds through industry, government and nonprofits, and alumni often wealthier.

5.2.5 Ongoing outside input from others, including practitioners.

Program Response:

The M.Arch program at CMU SoA benefits from outside input from a variety of sources, across various Tiers of Assessment.

Tier 1 includes an entirely outside input that directly affects the vision, goals and outcomes of the program. Lily Chi, Professor at Cornell University's Department of Architecture, is serving in the capacity for a 3-year term to conclude in 2024. The Tier 2 Internal assessment committee is composed of at least two practitioners who are not directly involved with administering the M.Arch program. The committee conducts a detailed assessment of program's core courses, including a review of student work and learning objectives, and gives direct input to the Curriculum committee, see 5.2.1 M.Arch Assessment Strategy). Tier 3 consists of the faculty teaching the course, but also a diverse range of studio critics, and guests who are invited to course and studio design reviews, as well as end of year shows. Often members of the public, various stakeholders, as well as national and international practitioners are invited to design studio final reviews, providing vital feedback not only to the project at hand but also to the pedagogy of the studios and courses. Additionally, students lead and organize strong chapters of the AIAS and NOMAS that continually invite practitioners in architecture and associated disciplines.

The MArch program, being one of seven graduate programs in the school, benefits from guests and speakers in the other programs. The Computational Design and Sustainable Design programs run their own lecture series in addition to the public program run by the school. This brings exceptional practitioners and academics working in architecture and related professions to the school. Also, final reviews in these other programs provide MArch students access to outside reviewers and to the related work their peers are doing.

CMU faculty are part of a global research university and participate extensively with the larger architecture and design community across the world through lectures, conferences, symposia and workshops. This allows for critical feedback from professionals, scholars and academics outside of CMU SoA to inform the research and pedagogical initiatives of our faculty. During the years of the Covid pandemic faculty were still able to participate through online participation in lectures, conferences, studio reviews, and symposia and in many cases this made the online format yielded greater affordability and access to such events.

The program must also demonstrate that it regularly uses the results of self-assessments to advise and encourage changes and adjustments that promote student and faculty success.

Program Response:

As indicated in **5.2 Planning and Assessment, M.Arch Assessment Strategy,** the M.Arch program conducts assessment across three tiers that evaluate the program through various criteria which promote student and faculty success. The school appoints an external reviewer who is an authority in the field to review the program's mission, goals, objectives, as well as its curriculum, program criteria and student wellness on a recurring basis. The M.Arch program also conducts biennial reviews of its courses through an Internal Assessment Committee that evaluates course syllabi, learning objectives, as well as student work. Three Pedagogies committees (Technologies, Representation & Computation, History & Urbanism) have been constituted to evaluate the Pedagogies 2020 agenda across the breadth of CMU SoA wide undergraduate and graduate programs.

The school also conducts an End of Year student survey and an alumni survey to gauge student wellness and collect feedback from students regarding their challenges. Students are also assessed on a recurring basis through reviews, exams and assignments. The Graduate Program Working Committee monitors student success and awards commendations and/or increases in merit scholarships to students who have regularly excelled in the program. Through the Associate Head of Design Research the GPWC also sends notices of "academic actions" to underperforming students. Student success and wellness is also addressed by the Student Advisory Council (SAC) and the Graduate Student Advisory Council (GSAC) that provide students the ability to offer the administration advice on policies, express grievances and influence the choices laid out for their education.

The frequency, constitution and status of these ongoing assessment efforts has been documented in the chart under M.Arch Assessment Strategy above. The various modes of assessment are reviewed on an ongoing basis by the curriculum committee, the Track Chair, the Associate Heads, and Heads at CMU SoA to make changes at various levels to the program. Seen together these various processes put into place a system of checks and balances that help the program ensure faculty and student success.

While not comprehensive, the list below offers a few examples of changes and adjustments to the program, based on assessments that promote student and faculty success:

Updates: **Curricular Charts/ Canvas Website/ Student Handbook**
Based on the multi-tiered assessment, updates are made annually to the curriculum charts and more frequently to the M.Arch Canvas Website. The canvas website has been developed over the past year as a one stop portal for all M.Arch students where various resources for student success are collated and regularly revised. Student handbooks are also revised annually to update student policies across the graduate program. (The handbooks include older versions of the requirements to be sure the students are evaluated according to the standards that were in place when they arrived. The SoA has a “grandfather clause” in every handbook that allows existing students to use either the new requirements, or to stick to the requirements that were in place when they arrived.)

New **Learning and Teaching Culture Policy**
The school is currently in the process of drafting its Learning and Teaching Culture Policy (formerly the Studio Culture Policy). The policy will be taking into account various assessment efforts and will be jointly

drafted by faculty and students. The new document will be maintained by a Committee of faculty, students, and administrators, and designed to guide our learning community toward an ethical environment that productively educates and champions healthy, capable, and intelligent students and faculty. (For more on the Learning and Teaching Culture Policy see **PC.7 Learning and Teaching Culture**)

New **M.Arch Teaching Fellowships**
Starting Fall 2022, CMU SoA has constituted teaching fellowships to allow M.Arch students who are highly skilled in design and communication skills to assist in teaching first year undergraduate Design Studio as Teaching Fellows. For Fall 2022, four M.Arch students have been awarded Teaching Fellowships. Our End of the Year Student Survey (Tier 2) indicated that M.Arch students have limited engagement with students outside of the program. The M.Arch Teaching Fellowships were constituted in part to encourage greater immersion within the culture of teaching and learning at CMU SoA and offer the chance to work with faculty and students in our vaunted B.Arch program.

Enhanced **Student Fund for Travel/ Thesis/ Study grants**
The M.Arch student fund has traditionally been used to help with student expenses related to studio costs, thesis development and travel. During the years of the Covid pandemic, these funds have remained underutilized due to the lack of opportunities for pandemic related travel. In the forthcoming year we envisage a greater opening up of these opportunities which have been enhanced to include summer travel, travel related to small study grants, as well as studio travel.

New **Graduate Program Administrator**
The school has recently hired Alison Petrucci as the Graduate Academic Advisor to offer administrative support to the program. In her role as graduate advisor Petrucci will help both graduate students as well as the Track Chair to ensure administrative effectiveness and oversight.

New **NCARB Licensing Advisor**
Our End of Year student survey indicates that students have called for an increased engagement with aspects of professional licensure and practice. As a result, the school has consolidated the role of the NCARB Licensing Advisor (formerly a joint appointment with Recruitment and Enrollment). As of Fall 2022, Jenna Kappelt, Assoc. AIA, has been appointed as the new NCARB Licensing Advisor. Kappelt provides guidance to students interested in beginning or continuing the path to professional architecture licensure. Students are encouraged to start their NCARB Record prior to graduation, begin the Architectural Experience Program (AXP), and learn about the Architect Registration Exam (ARE). This position was previously held by Alexis McCune Secosky, who continues to serve as the Director of Recruitment and Enrollment.

Promoting Faculty Support & Success
The school is eager to support faculty and promote their success. Since many faculty issues are more personal and not subject to open assessment, these changes are not always the result of reacting to assessments, but rather come from a sense of fairness, a desire to create a great workplace that can compete with other schools, as well as more anecdotal feedback, mentoring, and individual concerns. Since his arrival in 2020, Head Omar Khan has worked to recognize the important role that adjunct and part time faculty play in the school. He has worked on increasing their salaries, and worked to provide longer-term contracts to several key faculty members that had been on semester-by-semester contracts. In order to ensure greater success for our visiting faculty, the SoA also moved to extend all visiting faculty contracts to two years, recognizing the difficulty of starting research and teaching while transitioning to a new city and campus. Although the SoA does not have sabbaticals, Khan has also worked with junior faculty on the tenure track to support their research and work through course release, project funding, and similar. He recently also made it possible for a tenured faculty who received a Fulbright grant to be able to afford to go abroad and undertake her research without it becoming a financial hit. In every case, we believe that when any one person can be helped, we all benefit.

Khan has also been working with the staff to promote their success. He has sought to increase their salaries, at times needing to work around obstacles to that created by the College and the University.

Khan has also been eager to be generous in granting family leave for new children, and during Covid was generous in working with staff to find a balance of off-campus and on-campus duties, especially for staff with children or other immune-compromised family members.

5.3 Curricular Development
The program must demonstrate a well-reasoned process for assessing its curriculum and making adjustments based on the outcome of the assessment.

Programs must also identify the frequency for assessing all or part of its curriculum.

Program Response:
As noted in Section 5.2.1, CMU SoA has a three-tiered assessment system that examines individual courses and the program as a whole. The expected frequency of assessment is as follows:

Tier 1, External, Program-Level
- External M.Arch Program Review by External Accessor—Annually
- Program Review by The Eberly Center for Teaching Excellence & Educational Innovation—Every two years

Tier 2, Internal, Program-Level
- Internal M.Arch Assessment Committee—Every two years
- Pedagogy Stream Committees (3)—Every two years
- End-of-Year Student Survey—Annual
- M.Arch Alumni Survey—Every two years
- Student Performance Data Survey—Annual

Tier 3, Internal, Course-Level
- Faculty Self-Assessment—Annual
- Graduate Program Working Committee—Every semester
- Faculty Course Evaluations — anonymous student evaluations of faculty teaching for every course taken at CMU SoA
- Course reviews, exams, and assignments—Multiple times each semester
- Graduate Student Advisory Committee (GSAC)—Multiple times each semester

5.3.1 The relationship between course assessment and curricular development, including NAAB program and student criteria.

Program Response:

The relationship between course assessment and curricular development begins with defining the M.Arch program's Goals and Outcomes. After a comprehensive review of the program in the light of the Pedagogies 2020 conversations, and following the appointment of a new Track Chair, the M.Arch program's Goals and Outcomes were rewritten with input from core M.Arch faculty, Associate Heads, and Head Omar Khan. CMU's Eberly Center Teaching Excellence & Educational Innovation also provided expert counseling and proofreading in the articulation of these key Goals and Outcomes. While goals reflect the broad mission of the program (See **1-Context and Mission, M.Arch Program Goals**), the outcomes indicate measurable knowledge, skills, and abilities that students will demonstrate at the successful completion of the program. (See **1-Context and Mission, M.Arch Program Outcomes**). These are also indicated on the program's website: https://soa.cmu.edu/march.

The M.Arch Curriculum Committee then reviews key Learning Outcomes within the syllabi of required M.Arch courses to ensure that these meet with the Program Outcomes. Various standards and measures are established for the program outcomes that meet both the core mission of CMU's M.Arch program as well as key NAAB PC-SC criteria. This is to ensure that student learning is scaffolded across various courses, as well as through extracurricular learning. Additionally, a set of key policies and performance targets are established that include, but are not limited to, policies for Opt-outs, Preparatory Education,

and Curricular requirements for Selectives and Electives (See **Introduction, Program Changes; 4.2.5 Professional Degrees, Master of Architecture;** and **4.3 Evaluation of Preparatory Education**). The Curriculum Committee then evaluates and revises the NAAB PC-SC Matrix to recalibrate connections between required courses in the M.Arch curriculum and the NAAB required PC-SC Matrix including key Shared Values. To demonstrate a nuanced understanding of this process, the committee has used the matrix to indicate both "Primary" courses—that meet key PC-SC criteria; as well as "Secondary" courses —that buttress and scaffold various Learning Outcomes.

Additionally the Curricular committee uses the three tiered system of assessment (see **5.2 Planning and Assessment, M.Arch Assessment Strategy**) as discussed previously, to gain critical feedback regarding the relationship between course assessment and curricular development. This includes External Review, Internal Committee Review, Student Performance Data Survey, Faculty Self assessment. Student voices are also folded into this process through the student surveys and the Graduate Student Advisory Committee's meetings with the Head and Associate Heads. Faculty Course Evaluations (FCE) are made available to the course faculty as well as administrators at the end of semester. Many faculty also use Early Course feedback during the semester, outside of the FCEs to gain more insight into their courses. Through this process critical student feedback from courses is considered during curricular development.

While not comprehensive, the list below offers a few recent examples of the relationship between course assessment and curricular development, including NAAB Program and Student criteria:

Curricular Alignments
The current curriculum (Incoming Class of 2022) has been updated to from the previous curriculum (Incoming Class of 2021) to align closely with the Pedagogies 2020 conversations at CMU SoA to offer courses in three simultaneous tracks: Design Fundamentals, Design Ethics, and Design Research. Simultaneously it elevates Design Ethics to be a core area of focus for the program. For an overview of all updates to the curriculum see **Introduction, Program Changes** and **1-Context and Mission.** The Tier 1 (external, program-level) **External Assessment Report 2021-22** indicates that this has been a successful endeavor, which we will be building upon in forthcoming iterations of the curriculum.

“The curriculum structures--and communicates in its structuring–a compelling vision of architecture’s role in contemporary contexts: from historic and systemic complicities, to responsibility and potential contributions to better futures. While Design Fundamentals affirms the importance of creative, critical, and technical knowledge that make up architecture’s specific ways of contributing to societal and environmental concerns, Design Research foregrounds inquiry and innovation as equally fundamental to continuing relevance of the discipline in a time of great fluidity and change. Calling out research in a professional program also invokes CMU’s renown in this arena, signaling the new M.Arch’s distinction amongst most peers and, conversely, the potential contribution of the program to that renown…..The third axis, Design Ethics, is the most distinctive. While fundamentals are the staple of professional programs, and research has become a popular mantra, no other school has identified ethics as a pedagogical motive, much less a constituent principle with design fundamentals and research. Raising ethics to a structural component makes CMU’s M.Arch distinctively relevant at a time of painful disciplinary reckoning about architecture’s role and responsibilities in today’s social, technological, and environmental crises. As a pedagogical thread, it suggests a different tack to technical, disciplinary instruction. If Bauhaus education was pivotal to the modernization of American architectural education, a key component of its vast influence was Basic Design as curricular principle and philosophical concept: the premise of a universal, ‘pure’ perceiving subject independent of social, cultural formation. The instruction of technique in context at CMU signals a turn from this tradition with profound future potential.”

48-647 Materiality and Construction Systems
The **48-647 Materiality and Construction Systems** course was created in response to student and faculty feedback about the different level of skill and experience for the masters students compared to their second year undergraduate classmates. The course is now taught alongside the Praxis-2 design studio to reiterate key learning outcomes in the studio. The goal was also to align the course towards key program outcomes regarding Design Ethics.

Tier 2 (internal, program-level) **End of Year Student Survey 2021-22** indicates that this has been a welcome change to the curriculum. Anonymous student feedback suggests, *"The Praxis-2 Studio and the Materials and Construction courses complemented each other nicely."* Another student in the survey said, *"I loved the synergy between Materials and Construction Systems, and the Praxis-2 studio course. I feel like I learned so much about how a building actually comes together, as I never had the exposure to the more technical side of architecture prior to CMU. I consider the knowledge I have gained from these two courses to be some of the most valuable things I have learned in my first year at CMU."*

For more on 48-647 Materiality and Construction Systems, see **SC.4 Technical Knowledge**, and **SC.6 Building Integration.**

Design Synthesis
As articulated in further detail in **SC.5 Design Synthesis,** the Praxis-1 & 2 sequence of studios has been overhauled to fulfill NAAB requirements for Design Synthesis across the first and second semester of the program. While previous iterations of the first and second semester studios entailed very different choice of studio sequences (Integration-I & II offered alongside the Urban Design Build Studio). The revised Praxis-1 & 2 studio sequence offers two studio courses that are closely aligned, to offer content and pedagogies that build upon and scaffold key learning objectives including Design Synthesis.

Furthermore, our Tier 2 (internal, program-level) **Internal Committee Report 2021-22**, suggests that *"In broad terms, both studio courses, Praxis 1 and 2, outline an ambitious agenda that requires students to consider and ultimately to synthesize a wide range of issues, information, concepts and knowledge over the course of the semester. These issues include social justice and ecological systems (Praxis 1) and "cultural and historical flows" (Praxis 2). In addition, a similarly broad range of working methods and learning objectives help to facilitate the student synthesis of material. Further, the term Design Synthesis is referred to and reinforced in the course materials to varying degrees in Praxis 1 and 2. In Praxis 1, the terms "Design Synthesis" and "synthesis" are integrated in the course materials in the context of numerous reviews. These terms are also mentioned in both courses in the grading rubric."*

The report also encourages greater emphasis on synthesis of regulatory requirements: "*The issue "regulatory requirements" is introduced in exercises in the beginning of both courses. This occurs during the Documentation, Research and Analysis phases in Exercise 1 (Praxis 1) and 1.2 Data Collection (Praxis 2). Praxis 1 provides references to Pittsburgh resources including the Pittsburgh Zoning Code, Zoning and Parcel Map whereas Praxis 2 includes a group Code Analysis that asks students to "Perform an analysis of City of Pittsburgh Zoning and Building Codes to identify land development constraints and life safety and building service requirements for the site and project." However, the results of these assignments and the extent to which these issues were discussed is not immediately clear."*

With this in mind, the issue of regulatory requirements has been further integrated into both the pedagogy as well as learning outcomes/ documentation of the Praxis-1 & 2 studios. Praxis-1 asks students to define a project, analyze and engage with zoning requirements, as well as the application of accessibility and basic egress requirements for projects. Praxis-2 builds on this knowledge to incorporate a range of diverse regulatory contexts—zoning and land use regulations (use classifications, FAR, setbacks, height and area limitations); life safety regulations governing fire-resistive construction, means of egress, and circulation; design, selection and integration of appropriate heating and cooling systems based on building occupancy and loads; and high-performance building envelope design.

For more on synthesis and its delivery through the Praxis-1 & 2 studios see **SC.5 Design Synthesis**
For more on regulatory requirements see **SC.3 Regulatory Context**.

Building Integration
As articulated in further detail in **SC.6 Building Integration,** we have revised this sequence of courses considerably from the previous NAAB accreditation. The previous "Integrative Design" sequence was based on the Integration I studio, and the parallel optional studio Urban Design Build Studio (UDBS) studio. We no longer offer these studios, and instead have reworked the Building Integration sequence to

comprise a series of associated courses that combine Design Studio and Building Technology related courses. The **48-640 Praxis-2 Studio** is the primary means through which students develop expertise in Building Integration, which is buttressed with the **48-647 Materiality and Construction Systems** taught concurrently in the same semester. Students take wall sections from building assemblies of their Design Studio projects and develop these in greater detail in 48-647 Materiality and Construction Systems. These are then presented in the final review of the Praxis-2 Studio. Both courses are taught concurrently which makes such synergies possible.

In the third semester, students take **48-655 Environmental Systems-2 Design Integration of Active Building Systems** as a third and final course to complete this sequence of three courses related to Building Integration. The studio projects developed in groups are taken on as individual projects where active building systems are further refined and integrated. Students apply material from class lectures, homework assignments and metered case studies to develop passive/active systems integration for lighting, ventilation, heating, cooling, water supply and hot water systems in their studio project designs.

This sequence of courses then ensures that students develop both the technical skills regarding building construction and assemblies, as well as the technical skills regarding active Environmental Systems and their performances, and furthermore learn about their integration into a single project. In addition to conversations with the faculty and the curriculum committee, this sequence of courses also emerged through review of Building Integration, during the Tier 1 assessment process.

These examples demonstrate that the relationship between course assessment and curricular development is a process of constant review and improvement, using the checks and balances put into place through our tripartite system of assessment.

5.3.2 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.

Program Response:

For roles and responsibilities of Personnel and Committees regarding the Assessment of the program across all three tiers see **5.2.1 M.Arch Assessment Strategy**. Recommendations and feedback from the three tiers of Assessment form the basis of updates to the curricular agendas and initiatives. Key personnel and committees involved in curricular agendas and initiatives include:

M. Arch Curriculum Committee
The M.Arch Curriculum committee is led by the Track Chair (Sarosh Anklesaria) and makes changes to the curriculum based on ongoing feedback from the three assessment tiers. At the time of this report, the Curricular committee consists of Omar Khan (Head, CMU SoA), Kai Gutschow (Associate Head of Design Ethics, and former Track Chair of the M.Arch program) and Sarosh Anklesaria (M.Arch Track Chair). This committee is in the process of being reformulated to include M.Arch faculty that teach key Praxis-1 & 2 studios as well as other non-studio faculty that teach key professional courses.

Sarosh Anklesaria, Track Chair
In addition to chairing the curricular committee, the Track Chair (in collaboration with the Head, Associate Heads and M.Arch faculty) defines and updates the vision, goals and outcomes of the program, serves as the primary advisor for M.Arch students, oversees admissions of the program, supports assessment efforts across all tiers and assists with student surveys. These in turn affect the curricular agendas and initiatives.

Kai Gutschow, Associate Head of Design Ethics
Kai Gutschow was the founding Track Chair of the M.Arch from 2015-2021. He now serves as co-advisor to the M.Arch program and also co-advisor to all M.Arch students. He also maintains curricular and extracurricular oversight regarding matters pertaining to Design Ethics, and works closely with the Director of Diversity Equity and Inclusion on DEI related issues.

Joshua Bard, Associate Head of Design Research
Maintains an oversight of the M.Arch program especially on matters pertaining to Design Research. Also reviews Track Chair recommendations based on student performance for student commendations, academic actions and continuing scholarship appraisals.

Erica Cochran Hameen, Director of Diversity, Equity and Inclusion
Maintains an overview of all matters pertaining to DEI efforts across the school and program.

Omar Khan, Head
Regularly meets with the Track Chair and Associate Heads to maintain oversight of all aspects regarding the M.Arch program. Is currently actively involved with the Curriculum Committee and will maintain oversight once the committee is restructured. Also serves to connect the program to broader CFA / university level administration.

5.4 Human Resources and Human Resource Development
The program must demonstrate that it has appropriate and adequately funded 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:

5.4.1 Demonstrate that it balances the workloads of all faculty in a way that promotes student and faculty achievement.

Program Response:

The school is committed to having a diverse faculty that demonstrates the gender, ethnic and racial compositions that we see in our student body. We also pride ourselves on attracting exceptional teachers hired through competitive searches. As an equal opportunity employer that recognizes we can increase the quality of our innovations by increasing the diversity of our community on a range of intellectual and cultural dimensions, Carnegie Mellon encourages applicants who will contribute to this diversity through their research, teaching, and service, including women, members of minority groups, protected veterans, individuals with disabilities, and others who would contribute in different ways. Carnegie Mellon University seeks to meet the needs of dual-career couples and is a member of the Higher Education Recruitment Consortium (HERC) that assists with dual-career searches.

The school offers five different faculty position tracks: tenure track, teaching track, research track, special faculty track and adjunct track. The description below are from the CFA Faculty Handbook (https://www.cmu.edu/cfa/faculty-and-staff/assets/cfa-faculty-appointment-and-tenure-handbook-2016-v1.pdf):

Tenure Track Faculty
Tenure-track faculty in the School of Architecture are evaluated for appointment, reappointment, promotion, and indefinite tenure based upon the quality of their performance in the categories of (1) teaching and other educational activities; (2) research activities, scholarly activities, artistic activities, and/or professional practice; and (3) other considerations.

- Assistant Professor: Appointments to the position of assistant professor are for candidates who have begun to establish peer recognition in their field and have a record of contributions to their field according to the criteria stated above.
- Associate Professor without Tenure: Appointments to the position of associate professor without indefinite tenure are for candidates who in due time will establish a national/international reputation in their field and have a significant record of contributions to their field according to the criteria stated above.
- Associate Professor with Indefinite Tenure: Appointments to the position of associate professor with indefinite tenure are for candidates that are clearly in the process of establishing a well

documented national/international reputation in their field and have a sustained and significant record of contributions to their field according to the criteria stated above.

- Professor: Appointments to the position of professor are for candidates who have established a well documented national/international reputation in their field and have a sustained and significant record of contributions to their field according to the criteria stated above.

Teaching Track Faculty
Teaching-track faculty in the School of Architecture are evaluated for appointment, reappointment, promotion based upon the quality of their performance in the categories of teaching and other educational activities, and other considerations (as defined in the College guidelines). The School of Architecture may use the expertise of teaching-track faculty to further the other educational activities and needs of the school beyond direct teaching. Examples of other educational activities may include, but are not limited to, developing curriculum, mentoring and advising students, participating in undergraduate reviews and undergraduate or graduate student thesis committees, contributing to strategic planning and communication materials, partaking in the design and use of physical spaces and technologies. In addition to CMU service, a candidate may have external professional activities e.g. professional practice/performance, public service, service in professional and technical societies, or work on professional publications or events. Insofar as such activities either contribute to, or are an extension of, the general criteria as defined in section 2.1 of this document, they should be considered when evaluating a candidate's qualifications for reappointment or promotion.

- Assistant Teaching Professor: Appointments to the position of assistant teaching professor are for those who have a record of professional expertise appropriate to the School's curricular needs, are prepared to provide service to the School, and are able to produce quality student work from courses. Reappointments to the position of assistant teaching professor are based on having established a professional record of teaching expertise appropriate to the School's curricular needs, and commensurate service to the School, with evidence of high-quality student work from courses.
- Associate Teaching Professor: Appointments to the position of associate teaching professor are for those who have an established professional record of teaching expertise appropriate to the School's curricular needs and commensurate service to the School, college and university. Associate teaching professors are expected to demonstrate exceptional mastery in teaching with a substantial impact on the School's educational mission, with evidence of high-quality student work from courses.
- Teaching Professor: Appointments to the position of teaching professor are for those who have an extraordinary accomplishment in teaching and commensurate contributions to the School's educational mission as well as service to the college and university, with evidence of high-quality student work from courses.

Research Track
These academic appointments are at the ranks of assistant research professor, associate research professor, and research professor. We seldom have faculty members on this track.

Special and Visiting Track
Special faculty appointments are for full-time appointments. Every special faculty appointment or reappointment shall be for a term of at most three years.

The Studio Professor is a unique title to the School of Architecture that permits the appointment of faculty with exceptional practice-based skills to a multi-year contract under the University Special Faculty policy. The Studio Professor title is designed to recognize the need for full time instructional faculty with a projected or demonstrated effectiveness in studio teaching whose contributions come primarily from professional expertise, rather than from research and scholarly activity. As a Studio Professor, one must maintain a teaching load of two studios plus one additional course per academic year. Further, whether continuing in active practice or not, Studio Professors are expected to remain current in the field.

Promotion within the Studio Professor track is dependent upon effectiveness in teaching and professional expertise or professional practice at a high level of achievement and demonstrated recognition for

exemplary, critical, reflective and/or award-winning work as the basis of appointment and promotion. Studio professors that are under consideration for reappointment and/or promotion will be reviewed by the SRC in the penultimate year of their contract.

- Associate Studio Professor is the first level of appointment in the studio professor track: Appointments to the position of Associate Studio Professor are for terms of three years. Appointments or reappointments to the position of associate studio professor are for candidates who excel in teaching and professional expertise, and have achieved recognition in these areas. Evidence of excellence and regional or national reputation in professional work, whether in the past or present, must be demonstrated by publication in periodicals and books, critical acclaim, awards, public exhibitions, or other such forms of exemplary work. Individuals at this rank are expected to be role models of excellence in their profession. A minimum of ten years of professional experience is required for initial appointment at this rank.
- Studio Professor: Appointment to the position of Studio Professor is for terms of three years. Promotion to or reappointment to the position of studio professor are for candidates who perform outstanding teaching and attain regional, national or international recognition for professional expertise. Similar criteria as those for the associate studio professor level apply with expected quantitative differences in the number and/or impact of achievements. Faculty are expected to have attained broad peer recognition of their work in the profession and teaching. Individuals in this rank are expected to represent the most distinguished levels of achievement. The number of years of professional experience for first appointment at this rank is more than fifteen years with acknowledged leadership in the field.

Adjunct Track
Adjunct appointments are generally made to cover temporary teaching or other needs and can be either special faculty appointments or more commonly instructional staff appointments.

Faculty Teaching Loads
Full Time faculty in tenure, teaching and special tracks teach two courses per semester. For design studio faculty that means a studio per semester and seminar. For non-studio faculty a lecture course and a seminar. The exception is for Visiting and Studio faculty, both special designations within the Special Faculty category, where two studios and a seminar make up the full year's teaching. Part time and Adjunct faculty teach one course per semester.

Faculty Recruitment and Hiring
The school maintains a robust recruitment and hiring schedule. Since 2020,it has focussed on increasing the number of full-time faculty relative to part-time faculty to provide adequate support for student learning and achievement. In 2020 there were 34 full time and 31 part time faculty for a total of 65 faculty, while in 2022 we added 4 additional full time faculty bringing us to 38 full time faculty and 31 part time faculty for a total of 69 faculty.

Annually visiting professorships are advertised and through a faculty search committee candidates are identified. Starting in 2022, all full-time visiting professors receive a minimum 2-year contract. This policy change was to redress the undue burdens a 1-year contract imposed on faculty, including moving to a new city, adjusting to their new context, familiarizing themselves with the school, and then transitioning out in the short span of one year. Also, the disturbance to family life this created was recognized in the policy change.

Long term positions including teaching and tenure track are periodically advertised and follow a strict search committee process. In 2022, we will be conducting two tenure-track searches, an assistant professor in Computational Design and an assistant or associate professor in Architectural Structures.

Since the last NAAB visit, the school has made many hires that affect the Master of Architecture program. This includes Track Chair Sarosh Anklesaria, studio professors Laura Garofalo, Azadeh Sawyer, Matt Huber, Jackie McFarland, Theo Issaias, Zaid Kashef Alghata, Priyanka Bista and Heather Bizon, Real Estate professor Tamara Dudukovich and Issues of Practice professor Stuart Coppedge.

The following chart outlines the distribution and characteristics of the faculty since the last visit:

Faculty Roster	2020-21		2021-22		2022-23	
Total	65		66		69	
Male	39	60%	42	67%	41	59%
Female	26	40%	24	38%	28	41%
Non-Bi	0	0%	0	0%	0	0%
Tenured	13	20%	13	20%	13	19%
Tenure-Track	6	9%	6	9%	4	6%
Teaching Track	5	8%	5	8%	4	6%
Special Faculty	16	25%	13	20%	19	28%
Adjunct	25	38%	29	44%	29	42%
Fulltime	**34**	**52%**	**34**	**52%**	**38**	**55%**
Part Time	**31**	**48%**	**32**	**48%**	**31**	**45%**

Faculty to Student Ratio for Courses
The school is committed to maintaining faculty to student ratios that provide the best teaching and learning. Studio ratios for Praxis 1 and Praxis 2 studios are 6-8 students to 1 faculty member while in advanced Option studios it is 10 students to 1 faculty member. For large lecture classes, TAs are assigned for every 20 students. These ratios provide students with the adequate and sustained facetime they need to succeed in their work. It also provides faculty with adequate support and collaborative teaching opportunities to be able to maintain a positive work-life balance. As part of Pedagogies 2022 we are also experimenting with a variety of class delivery systems including virtual and asynchronous. Digital skill building courses benefit from virtual and asynchronous delivery and both the **48-689 Design Skills Workshop** and **48-783 Generative Modeling** are being delivered in this fashion.

5.4.2 Demonstrate that it has an Architect Licensing Advisor who is actively performing the duties defined in the NCARB position description. These duties include attending the biannual NCARB Licensing Advisor Summit and/or other training opportunities to stay up-to-date on the requirements for licensure and ensure that students have resources to make informed decisions on their path to licensure.

Program Response:

Starting in Fall 2022, Jenna Kappelt will serve as Architect Licensing Advisor (ALA). Kappelt replaces Alexis McCune Secosky, who served as the SoA's Architect Licensing Advisor (ALA) for many years. Kappelt conducts a fall workshop with Stuart Coppedge FAIA, who teaches the Issues of Practice class, that introduces the Architectural Experience Program (AXP) and licensure path to students. Kappelt also coordinates with the CMU Career and Professional Development Center (CPDC), on career fairs and other career development programs like resume building and interviewing.

See also **PC.1 Career Paths**.

5.4.3 Demonstrate that faculty and staff have opportunities to pursue professional development that contributes to program improvement

Program Response:

Faculty Leave Policies
Historically the school has not provided sabbatical leaves as these do not exist institutionally at CMU. As of 2022 the school has introduced a new policy, in line with CMU leave policies, that provide paid (semester leave) or partial pay (½ pay full year) “Professional Leave of Absence”. These leaves are not by right but granted based on demonstrated professional development opportunity for faculty including but not limited to residencies, Fulbright scholarships and fellowships.

Faculty Research/Travel Funds
Research and travel funds are available on a case-by-case basis through discussions with the Head of School. There are two competitive research awards also available to faculty: The Isabel Sophia Liceaga Discretionary Fund supports faculty-led projects that critically engage students and advance the mission and reputation of the School of Architecture, and the Ferguson Jacobs Prize in Architecture that alternates between faculty and students and supports projects that explore the classical tradition as vital knowledge to an architect’s education, practice, and scholarship, or to individual apprenticeships and internships with a classical focus.

Staff Professional Development
The School encourages staff to enroll in courses and degree programs for career advancement or for self-fulfillment. Benefits-eligible, full-time and part-time staff members are encouraged to take advantage of the university's tuition benefits program. Full-time staff members can take two courses at any one time per term (at one or multiple institutions) while part-time staff members can take one course at any one time per term at Carnegie Mellon only. There is 100% tuition remission for courses taken at Carnegie Mellon and 50% tuition assistance for courses taken at other institutions. Full-time, benefits-eligible staff members can also receive tuition assistance for their dependent children.

5.4.4 Describe the support services available to students in the program, including but not limited to academic and personal advising, mental well-being, career guidance, internship, and job placement.

Program Response:

Student Affairs at CMU supports students' social, physical, mental and spiritual well-being so they can thrive. At Carnegie Mellon, individual and collective well-being is rooted in healthy connections, both to people and to campus resources. An extensive list of all Student Support Services can be found here. https://www.cmu.edu/student-affairs/resources/index.html

Career Guidance
Every M.Arch student is assigned an Advisor, typically the Track Chair. The Advisor and/or Track Chair guides a master’s student throughout their academic study in the SoA. Students may also seek advice from the Graduate Programs Executive Committee (GPEC), the Head of School and the other graduate program faculty as well as the Graduate Programs administrative staff.

Students are required to meet with their Advisor prior to each semester’s course registration to discuss matters such as course selections, course performance, and other academic matters, and periodically during the duration of the semester to report progress in courses, research, thesis, and other aspects of academic life. Students are expected to bring administrative matters such as course substitution and program transfers to the attention of both the Advisor and the Track Chair in cases when they are different people.

For additional Career Guidance resources including Internship and Job Placements see **PC.1 Career Paths**.

Student Rights – Appeal and Grievances
The Summary of Graduate Student Appeal and Grievance Procedures is posted on the Graduate Education Resource webpage, https://www.cmu.edu/graduate/policies/appeal-grievance-procedures.html

"*This document summarizes processes available to graduate students who seek review of academic and non-academic issues. Generally, graduate students are expected to seek informal resolution of all concerns within the applicable department, unit or program before invoking formal processes. When an informal resolution cannot be reached, however, a graduate student who seeks further review of the matter is to follow the formal procedures outlined here. These appeal and grievance procedures shall apply to students in all graduate programs of the University. Students should refer to the department specific information in this handbook for department and college information about the administration and academic policies of the program. Additionally, students may confer with the graduate student ombudsman on issues of process or other concerns as they navigate conflicts.*"

The School of Architecture adopts the University's practices regarding student rights. Students who believe that they have been treated inappropriately are encouraged to raise their concern(s) with their Program Track Chair, the GPEC, Head of School or other designated people in their department, college or central administration. For further information about procedures that graduate students can pursue when addressing concerns and grievances, see:
https://www.cmu.edu/graduate/policies/appeal-grievance-procedures.html

Intellectual Property Policy, Restricted Research and Policy for Handling Alleged Misconduct in Research
The School adopts the University's policies pertaining to:

Intellectual Property:
https://www.cmu.edu/policies/administrative-and-governance/intellectual-property.html

Restricted Research:
https://www.cmu.edu/policies/research/restricted-research.html

Handling of Alleged Misconduct in Research:
https://www.cmu.edu/policies/research/handling-alleged-misconduct-in-research.html

Safeguarding Educational Equity

The Center for Student Diversity & Inclusion
Diversity and inclusion have a singular place among the values of Carnegie Mellon University. The Center for Student Diversity and Inclusion (CSDI) actively cultivates a strong, diverse and inclusive community capable of living out these values and advancing research, creativity, learning and development that changes the world.

The Center offers resources to enhance an inclusive and transformative student experience in dimensions such as access, success, campus climate and intergroup dialogue. Additionally, the Center supports and connects historically underrepresented students and those who are first in their family to attend college in a setting where students' differences and talents are appreciated and reinforced.

Assistance for Individuals with Disabilities
The Office of Disability Resources at Carnegie Mellon University has a continued mission to provide physical and programmatic campus access to all events and information within the Carnegie Mellon community. We work to ensure that qualified individuals receive reasonable accommodations as guaranteed by the Americans with Disabilities Act (ADA) and Sections 503 and 504 of the Rehabilitation Act of 1973. Students who would like to receive accommodations can begin the process through Disability Resources secure online portal (https://www.cmu.edu/disability-resources/) or email access@andrew.cmu.edu to begin the interactive accommodation process. Students with disabilities are encouraged to self-identify with the Office of Disability Resources and request needed accommodations.

Policy against Sexual Harassment and Sexual Assault
The University prohibits sex-based discrimination, sexual harassment, sexual assault, dating/ domestic violence and stalking. The University also prohibits retaliation against individuals who bring forward such concerns or allegations in good faith. The policy can be viewed in its entirety at:
http://www.cmu.edu/policies/documents/SA_SH.html

If students are impacted with any of these issues they are are encouraged to make contact with any of the following resources:
Office of Title IX Initiatives, http://www.cmu.edu/title-ix/
University Police
University Health Services
Counseling & Psychological Services

Additional resources and information can be found at:
https://www.cmu.edu/title-ix/resources-and-information/resources.html.

Medical/ Health Resources
https://www.cmu.edu/health-services
UHS provides medical care and referrals for all CMU students, including general health issues, comprehensive care management, nutrition/diet/eating disorder services and alcohol and drug assessment. On-call consultation is available after hours.

Counseling and Psychological Services (CAPS)
https://www.cmu.edu/counseling
Counseling and Psychological Services (CaPS) provides a safe, confidential environment for students to talk about personal and academic concerns. All students currently enrolled at the Pittsburgh campus are eligible for services at CaPS at no additional cost to them, and all services are confidential. CAPS provideS consultation services for faculty, staff, and family members who are concerned about a student or have questions. For additional resources related to Counseling and Mental Health see:
https://www.cmu.edu/counseling/resources/index.html

Immigration Resources
https://www.cmu.edu/oie/
The Office of International Education (OIE) serves CMU's international student and scholar community by advising individuals on immigration, personal, academic, social, and acculturation issues. In addition to providing a variety of resources for foreign students and scholars, OIE facilitates study abroad and international exchange at CMU, and advises students on programs and options. OIE's friendly, knowledgeable and experienced staff are passionate about supporting international education.

Religious and Spiritual Resources
https://www.cmu.edu/student-affairs/spirituality
CMU supports all students along the spectrum of religious and spiritual practice and exploration through events, resources, connections, wellness and promoting religious literacy.

Identity Related Support and Bias Concerns
https://www.cmu.edu/student-diversity
Expert staff, resources and programs for students who align with historically underrepresented or marginalized identities such as women, LGBTQ+, transgender and gender non-binary, racially and ethnically underrepresented, and those who are first in their families to attend college.

Anti-Hazing Resources
https://www.cmu.edu/hazingprevention
This website provides information about how to report hazing, CMU's policy and Pennsylvania state laws against hazing, hazing prevention and education resources, and past CMU hazing reports.

Academic Integrity Issues
http://www.cmu.edu/student-affairs/ocsi/
Reports of violations of the university's academic integrity policy should be made to OCSI. Staff are available to consult regarding the university's policies and procedures.

Legal Consultation
https://www.cmu.edu/student-affairs/resources/legal-consultation.html
One free 20-minute initial legal consultation with an attorney is available to all CMU students. Legal advice received under this program will be provided by an attorney who is not an agent, employee or representative of Carnegie Mellon, the Graduate Student Assembly or the Undergraduate Student Senate (the "CMU Parties"). As such, the CMU Parties, their trustees, officers, employees, attorneys, agents, successors or assigns are not responsible for any advice given to the students.

Facilities Management and Campus Services
FMCS's phone line is answered 24 hours a day. Call for maintenance and custodial services, access control, event support, as well as after-hours support for parking and transportation, Tartan Ink copying and printing, postal services, and the university stores.

Student Emergency Support Funding
https://www.cmu.edu/student-affairs/dean/loans/index.html
Student Affairs offers short-term emergency student loans and grants for students facing financial challenges. There are three forms of student emergency support funding available: emergency student loans, maternity loans, and the Tartan Emergency Support Fund. These funds have been established through the generosity of alumni, trustees, friends of the university, Undergraduate Student Senate, Graduate Student Assembly and student organizations to provide enrolled CMU undergraduate and graduate students with emergency funds. More information about the types of funding is available to students if they schedule a meeting with a member of the Office of the Dean of Students to discuss their needs. Tuition costs are not eligible for Student Emergency Support Funding.

Food Insecurity
https://www.cmu.edu/student-affairs/resources/cmu-pantry/index.html
The CMU Pantry is a resource for undergraduate and graduate students to help combat food insecurity on campus.

Parental Accommodation Protocol
https://www.cmu.edu/graduate/programs-services/maternity-accommodation-protocol.html
The School of Architecture extends the Student Maternity Accommodation Protocol to all parents with births or adoptions as amended below with brackets.

The birth [or adoption] of a child is a significant life event that may require time away from academic pursuits for delivery and recovery from delivery of a newly born child [or integration of an adopted child]. [All] students whose anticipated delivery [or adoption] date is during the course of a semester may need to take time away from their academic responsibilities. [All] Carnegie Mellon students seeking time away are afforded two options as possible [Parental] Accommodation:

Short-Term Maternity Accommodation – A short term absence from academic responsibilities up to a maximum of six (6) weeks. Short-Term Maternity Accommodation may be extended by two (2) weeks, for a total of eight (8) weeks, where a longer absence is medically necessary. Prior to the absence students must work with relevant university faculty and staff to adjust their course work, research, teaching and other academic responsibilities during the period of absence. This may include extensions of time to complete assignments, incomplete grades, and/or dropping courses, shifting research responsibilities and adjusting TA assignments. Students who take a Short-Term Maternity Accommodation will remain enrolled.

Formal Leave of Absence– A formal leave of absence under the Student Leave Policy. Generally, the Student Leave Policy permits students to take a leave of absence for a

full-semester, mini-semester, or for the time remaining in the semester during which the leave is taken. Students who take a Formal Leave of Absence drop all remaining courses for the semester and are unenrolled for the semester. International students must consult with the Office of International Education before considering this option due to visa implications.

See https://www.cmu.edu/graduate/programs-services/maternity-accommodation-protocol.html fr additional university resources, and see **SC.7 Learning and Teaching Culture** for additional student support systems.

5.5 Social Equity, Diversity, and Inclusion
The program must demonstrate its commitment to diversity and inclusion among current and prospective faculty, staff, and students. The program must:

5.5.1 Describe how this commitment is reflected in the distribution of its human, physical, and financial resources.

Program Response:

Like many institutions, CMU has been examining its role in the fight to confront racism and promote social justice, inclusion and economic empowerment. On July 2, 2020, President Farnam Jahanian wrote to the university community to share a set of commitments and action items focused on accelerating this important work. "As our society continues to grapple with racism and systemic injustice and as the CMU community unites in dialogue on how to fully realize its DEI goals, every member of our community has a role to play in supporting these efforts, and a responsibility to find ways to engage with these topics."

Diversity, equity and inclusion (DEI) is a major focus in Carnegie Mellon University's Strategic Plan 2025 with the goal to "*create a diverse and inclusive community and environment where Carnegie Mellon University (CMU) faculty, staff, students, and alumni develop a distinctive ability to work, learn and live in diverse environments.*" The university has established an Office for the Vice Provost for Diversity. Equity and Inclusion and Chief Diversity Officer, led by Dr. Wanda Heading-Grant. Likewise, the College of Fine Arts (CFA) has a designated Assistant Dean for Diversity, Equity and Inclusion, Valeria Martinez (see below), who coordinates with all the five schools in the college DEI policy and implementation. Under the School of Architecture (SoA) Design Ethics Pedagogy, achieving diversity, equity and inclusion has been elevated as one of the three areas of focus. SoA define diversity broadly to include people of all identities, experiences and ideas, and we seek to increase diversity on all dimensions, including gender and underrepresented minority (URM) groups, defined in this plan to include Black, Indigenous and People of Color (BIPOC), Hispanic/Latinx, and LGBTQA+ communities. To achieve our goals in DEI, SoA has established a Director of DEI position that is responsible for increasing DEI representation in the school through admissions and faculty searches, supporting BIPOC and URM students in the school and developing programs like UDream that create pathways for BIPOC students into the architectural profession.

New Position: Assistant Dean of Diversity Equity and Inclusion at CFA
In January 2021, after a national level search, Valeria J. Martinez was appointed as the assistant dean for diversity, equity and inclusion within Carnegie Mellon University’s College of Fine Arts (CFA).

Martinez comes to Carnegie Mellon from Cornell University, where she taught online courses in ethnicity, diversity and gender studies. Prior to that, she was a national training specialist with The Posse Foundation, where she provided training for internal and external audiences, designed curriculum and mentored staff, among other key responsibilities. Martinez served as associate director of the Office of Multicultural Affairs at Columbia University. There, she managed activities and services for all outreach and social justice educational programming, developed diversity training and workshops, and supported the recruitment and retention efforts for the division of undergraduate student life. At Syracuse University, Martinez served in a dual role as a university instructor in the College of Arts and Sciences’ Latin/Latino American Studies Department and associate director of mentoring programs and diversity education. Earlier, she had been the coordinator of mentoring programs in the Office of Multicultural Affairs.

New Position: Director of Diversity Equity and Inclusion
In April 2021 Head Omar Khan announced Erica Cochran Hameen, PhD, NOMA, Assoc. AIA, LEED AP as the new Director of Diversity Equity and Inclusion at CMU SoA.

Dr. Hameen serves as an instructor for multiple graduate and undergraduate courses and recently developed a new course focused on energy efficient and healthy retrofits. Formerly, she was Program Director for the UDream program at CMU, which from 2009-2016 worked to increase diversity in the urban design profession nationally, and in the Pittsburgh region specifically, by offering opportunities for permanent employment in Pittsburgh to recent college graduates. She has served as a studio critic at multiple universities. Her architectural experience includes over 50 educational, media and broadcast, residential, community, and transportation facilities. She is also an active member of several community service and non-profit organizations.

Full Time Special Faculty & Tenure Track Faculty Hiring
The school has under the new Head begun to recruit and hire full time faculty on 2+ year contracts to redress the shortcoming of Black, Asian and women faculty at the school. Over the last two years, SoA has made five full time hires and is projected to make two tenure track hires this year, in computational design and architectural structures. These are in tandem with curricular changes that better recognize non-western perspectives and contributions to architecture.

Faculty DEI Training Workshops and Eberly Center
SoA has conducted many workshops to help faculty better understand DEI work and how to implement it in their teaching. On May 18, 2022, the school conducted a comprehensive 3hr DEI workshop with faculty and staff to present strategies for implementing change in their conduct and courses.CMU's Eberly Center for Teaching Excellence & Educational Innovation was invited to lead part of the workshop. The center provided ways to: 1) Identify opportunities to enhance inclusion and equity while supporting learning opportunities for all; 2) Consider a menu of inclusive teaching strategies and how to implement them effectively to enhance equity and inclusion, including classroom and studio settings; and 3)Commit to one or more strategies that could be implemented in a CMU course in Fall 2022. The College of Fine Arts has also conducted DEI retreats for leadership (August 17, 2022) and faculty/staff (August 19, 2022). The commitment to this effort is at every level at the university.

5.5.2 Describe its **plan** for maintaining or increasing the diversity of its **faculty and staff** since the last accreditation cycle, how it has implemented the plan, and what it intends to do during the next accreditation cycle. Also, compare the program's faculty and staff demographics with that of the program's students and other benchmarks the program deems relevant.

Program Response:

The school recognizes its shortcomings in the diversity of its full-time and part-time faculty. There is a predominance of whites and males in our existing faculty, especially the senior tenured faculty, but also the professional architecture offices in Pittsburgh, and in the applicant pools of our faculty searches, both full time and adjunct. Our year-long "stock-taking" in 2020 as part of the "Race and Inclusion" (now Design Ethics) Pedagogy identified the need for our faculty to better reflect the makeup of our diverse student body. With retirements on the horizon, the school has plans for annual hiring over the next five years. Since 2020, hiring of all new faculty have taken steps to identify and hire exceptional BIPOC and woman faculty. Over the last two years, four visiting professor hires have started to address this imbalance. In 2022, two searches for tenure track professors in Computational Design and Architectural Structures have named diversity one of the important criteria for the hires. In the hiring of adjunct faculty for studio teaching teams, there is always a high priority on hiring women and BIPOC faculty to ensure that our students have access to a diversity of viewpoints and can see themselves in the representation of the faculty.

	2020-21		2021-22		2022-23	
Total faculty	65		66		69	
Male	39	60%	42	67%	41	59%
Female	26	40%	24	38%	28	41%
Non-Binary	0	0%	0	0%	0	0%
White	44	71%	42	68%	44	71%
Asian	**12**	**19%**	**17**	**27%**	**17**	**27%**
Black	5	8%	5	8%	6	10%
Hispanic	4	6%	2	3%	2	3%

5.5.3 Describe its **plan** for maintaining or increasing the diversity of its **students** since the last accreditation cycle, how it has implemented the plan, and what it intends to do during the next accreditation cycle. Also, compare the program's student demographics with that of the institution and other benchmarks the program deems relevant.

Program Response:

The SoA's graduate school has seven Masters programs that are focussed on attracting a diverse population of students. However the school, like Carnegie Mellon University, has historically had international students comprise the largest demographic of its graduate student body. These students are predominantly from Asia, with China and India being the biggest contributors. Currently at the school, the graduate programs combined have close to 90% international students. While it is easy to simplify nationality as a singular block we have seen that there is regional and language diversity in these populations, especially those coming from India. As such, while we aim to be a global school and attract the best from around the world we are committed to our DEI mission and recruiting from domestically underrepresented communities. Within our M.Arch program, we aim to increase the number of domestic students and those from underrepresented minorities (URM) and Black, Indigenous and People of Color (BIPOC) communities, especially from the US.

Cost of education is the greatest impediment to yielding URM students. We have started to address this through increased scholarship and most importantly through the university-administered National Consortium for Graduate Degrees for Minorities in Engineering and Science, Inc. (GEM) program. The GEM program assists underrepresented groups- African Americans, American Indians, and Hispanic Americans- at the masters and doctoral levels in engineering and the physical sciences. In the 2022 admissions, we will be welcoming our first GEM scholar into our M.Arch program.

Below is the breakdown of the demographics of our M.Arch students over the past three years. Our aim is to increase our domestic student yield which will contribute to diversity but also our pedagogy. The city of Pittsburgh and the socio-cultural context of the United States play a vital role in our teaching and having students more familiar with this better serves the learning of all the students.. Additionally, the diversity of our domestic students brings greater variety of experience to bear on our pedagogy.

2019: 12 Students entering
USA: 2 (17%); Korea: 1 (8%); India: 3 (25%); China: 6 (50%)
Female: 6 (50%); Male: 6 (50%); Non-Binary: 0 (0%)

2020: 9 Students entering

USA: 3 (33%); Ecuador: 1 (11%); Pakistan: 1 (11%); India: 1 (11%); China 3 (33%)
Female: 4 (44%); Male: 5 (56%); Non-Binary: 0 (0%)

2021: 23 Students entering
USA: 11 (50%), India: 7 (30%), Canada: 2 (8%), China: 2 (8%), Pakistan: 1 (4)%
Female: 15 (60%): Male: 8 (40%): Non-Binary: 0 (0%)

2022: 22 Students entering
India: 9 (41%), USA: 6 (27%), China: 6 (27%), Taiwan: 1 (5%)
Female: 11 (50%): Male: 11 (50%); Non-Binary: 0 (0%)

5.5.4 Document what institutional, college, or program policies are in place to further Equal Employment Opportunity/Affirmative Action (EEO/AA), as well as any other social equity, diversity, and inclusion initiatives at the program, college, or institutional level.

Program Response:

Policy on Equal Employment Opportunity/Affirmative Action at Carnegie Mellon University
Carnegie Mellon University is committed to Equal Employment Opportunity and Affirmative Action (EEO/AA).

The university bases its employment decisions on the principle of equal employment opportunity. All personnel actions including, but not limited to, recruitment, hiring, training, promotion, compensation, benefits, transfer, layoff, return from layoff, education tuition assistance and social and recreational programs are administered in accordance with the university's commitment to non-discrimination.

Further, the university takes affirmative action to attract qualified candidates for employment who are minority, female, individuals with disabilities, disabled veterans and veterans of the Vietnam Era; ensures that bona fide job-related and valid requirements are used to evaluate employees for promotion and applicants for employment; and complies with applicable federal, state and local laws, statutes, orders and regulations prohibiting discrimination on the basis of race, color, religion, gender, age, national or ethnic origin, gender identity, sexual orientation, veteran status or non-job-related disability.

Reason for the Policy
This EEO/AA policy is a reminder of our commitment to equal opportunity and as an update on current responsibilities.

The university recognizes that its success depends on the development and use of the full range of human resources. At the basis of this precept is equal employment opportunity. It is critical that Carnegie Mellon's faculty, staff and student body continue to cultivate and enhance its diversity. Through administration of this and related policies, the university intends to assure that all people are included in the diversity that makes Carnegie Mellon stronger in sustaining world-class distinction.

Regulatory Compliance
The university does not discriminate and is required not to discriminate in employment by Executive Order 11246, the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, the Vietnam Era Veterans Readjustment Assistance Act of 1974, Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, and other federal, state and local laws. Consistent with the university's Policy Against Retaliation, employees and applicants are protected from harassment, threats, coercion, intimidation, interference, discrimination, or retaliation for filing a complaint or assisting in an investigation under the above statutes and executive order.

The U.S. Department of Labor, including the Office of Federal Contract Compliance Programs (OFCCP) is responsible for the external administration and enforcement of the applicable federal laws, rules and regulations cited in this policy.

Accountability
This policy was developed by Equal Opportunity Services and incorporates suggestions by the president, general counsel, vice president for business and planning, assistant vice president for human resources and director for equal opportunity services.

Equal employment opportunity and affirmative action must be supported by top management leadership to succeed. The president of the university is the chief officer responsible for oversight of Carnegie Mellon's affirmative action program. This responsibility is delegated through the provost, vice presidents, deans and department heads, who support the president in maintaining the importance of EEO/AA as a critical component of university operations.

Responsibility
The broad-based efforts of all faculty and staff are key to meeting the university's equal employment opportunity commitments. At Carnegie Mellon, non-discrimination and affirmative action are everyone's responsibility.

In support of Carnegie Mellon's affirmative action and equal employment opportunity commitments, the Office of Human Resources has been charged with responsibility for coordination of the university's Equal Employment Opportunity and Affirmative Action (EEO/AA) programs. EEO/AA programs, which includes: developing and implementing procedures, policies and programs and bringing new initiatives to the attention of senior administrators; formulating Carnegie Mellon's affirmative action plans and monitoring and reporting results; and handling or referring complaints to appropriate university access points. EOS maintains communication with appropriate external organizations in order to remain informed about employment and affirmative action issues. The department also coordinates accommodations for individuals with disabilities, as well as compliance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 and the Vietnam Era Veterans' Readjustment Assistance Act (VEVRAA).

Other individuals and offices carrying specific responsibilities for EEO/AA include:

Farnam Jahanian, President, Carnegie Mellon University is involved in all queries concerning the application of our non-discrimination policy as it applies to educational programming, and works with the university's Faculty Review Committee to resolve complaints regarding the application of Carnegie Mellon's policies as they apply to faculty.

University Ombudsperson. The ombudsperson hears complaints, clarifies issues and suggests possible solutions to work-related problems.

5.5.5 Describe the resources and procedures in place to provide adaptive environments and effective strategies to support faculty, staff, and students with different physical and/or mental abilities

Program Response:

CMU's Office of Disability Resources provides the school with resources to meet the special needs of all in the CMU community. This includes providing physical, digital and programmatic campus access to all events and information within the Carnegie Mellon community for students and visitors to our campus. From its webpage (https://www.cmu.edu/disability-resources/policies-guidelines/index.html):

- Providing reasonable accommodations, academic adjustments, and auxiliary aids and services (collectively "accommodations") to students with disabilities, as required by the Americans with Disabilities Act (ADA), the Rehabilitation Act of 1973, and other applicable federal, state and local laws. The objective is to ensure that the university's programs and services are accessible to students with disabilities.
- Ensuring that the university makes final decisions regarding all requests for accommodations, through an interactive process with students. This deliberative and interactive process involves both the student requesting the accommodation and staff members in the Office of Disability

Resources, as well as academic advisers, faculty members and outside experts, if and as necessary.

- Ensuring that decisions regarding student requests for accommodations are sufficiently documented and communicated to students. For each student who submits such a request, the Office of Disability Resources will develop an Accommodation Plan that documents, among other things, each request, whether the request was approved or denied, and the reasons why any request is denied.

5.6 Physical Resources
The program must describe its physical resources and demonstrate how they safely and equitably support the program's pedagogical approach and student and faculty achievement. Physical resources include but are not limited to the following:

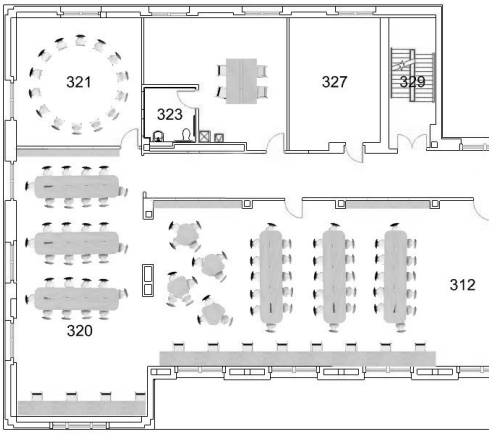
5.6.1 Space to support and encourage studio-based learning.

Program Response:

The School of Architecture occupies two historic Beaux-Arts buildings, the College of Fine Arts (CFA), and Margaret Morrison Carnegie Hall (MMCH), designed and built by Henry Hornbostel between 1904-1907 when he was commissioned to design the Carnegie Tech Campus. The Buildings are centrally located on the campus. The School is located on the third floor of the CFA and on the third and fourth floor of MMCH. Between the two buildings, the School is able to provide dedicated studio space for every full-time student.

As the foundation to the pedagogy of the first professional degree programs, the studios are of ultimate importance. CFA 200 has been the traditional studio for the School of Architecture and currently houses all first and second-year students as well as some vertical Advanced Synthesis Option Studios (ASOS). MMCH 312 is the home of third-year, and all the other ASOS studios, plus all studio-based graduate programs including the M.Arch program. The fourth floor is home to all MS/PhD students.

The physical studio space for the M.Arch students has gone through a significant refurbishment with greater proximity to the Master of Urban Design (MUD) studio. This includes new furniture – group study desks, tables, and chairs that encourage interactive learning. This also helps create a physical sense of identity for both programs. The proximity of MUD, M.Arch and B.Arch studios ensures an environment conducive to cross-program/ intersectional learning.



5.6.2 Space to support and encourage didactic and interactive learning, including lecture halls, seminar spaces, small group study rooms, labs, shops, and equipment.

Program Response:

In addition to studio spaces the school has on the floors that it occupies two large classroom spaces (CFA 214 and MMCH 303) that can be converted from lecture, to seminar to studio crit spaces. There are also two seminar rooms in the CFA and two in MMCH for small classes. The school has access to lecture halls in MMCH and Theater spaces in the CFA as may be needed for its courses. Some are administered by the university registrar's office while others can be negotiated between Heads of School within the College of Fine Arts. In short, while we could benefit from more classrooms and lecture halls located in proximity to the school, we do have access to classrooms across the campus through the registrar's office.

Specialized Facilities:

Digital Fabrication Lab (dFAB) (MMCH C)
dFAB offers students and faculty advanced digitally-driven design, prototyping and manufacturing equipment to span the divide between virtual simulation and physical design investigation. Students and faculty from the Schools of Architecture, Art and Design use the lab that is open 40 hours per week—throughout the design process and at multiple scales. The lab is located in the basement of Margaret Morrison Carnegie Hall (MMCH) and comprises 4,000 square feet, including 1,000 square feet of dedicated robotic fabrication space.

Robot lab equipment:
- ABB IRB 120 6-axis industrial robotic cell, including mobile cart
- ABB IRB 1600 6-axis industrial robotic cell
- ABB IRB 4400 7-axis industrial robotic cell, including external rotary axis table (45kg payload rating)
- ABB IRB 6640 8-axis industrial robotic cell, including 6-meter linear rail axis and tool axis (180kg
- payload rating)

Automated tooling:
- Tool change milling spindle
- Pneumatic gripper
- Sensor probe
- Hot wire cutter
- Incremental metal former

Other equipment:
- 4-axis CNC router (48" x 96" x 11" cutting volume), includes oscillating tangential knife
- 24" x 36" 75W laser cutters (2)
- Vacuum forming machine (22" x 22" x 16" forming volume)
- 60" x 96" vacuum laminator
- Fused deposition soluble and breakaway support 3D printers (2)
- Polyjet resin 3D Printer
- Plaster powder color 3D printer
- 3-axis CNC Bed Mill, includes vacuum and jaw workholding fixtures

Computational Design (CoDe) Lab (MMCH 403)
The Code Lab is a multidisciplinary research and learning laboratory within the School of Architecture at Carnegie Mellon University. It houses a dynamic community of graduate students and faculty investigating relationships between people, spaces and computational ideas and processes. Current research includes speculative design tools, spatial analytics, computational making, virtual and augmented realities, data visualization, architectural robotics, tactical media, as well as research into historical and theoretical questions concerning technology in design. Code Lab faculty and students often collaborate with partners in the scientific fields and the humanities, and endeavor to form and maintain alliances with peer centers in academia and industry both nationally and internationally.

The lab primarily houses graduate students and faculty in the Master of Science in Computational Design program, but collaborations with students and faculty from other programs and departments are common, and encouraged. The lab offers spaces and resources for collaborative and individual work, presentations, prototyping, and fabrication. The lab is actively seeking to update its computational, fabrication and prototyping resources. The facility is home to around 20 Master students in the Computational Design program but is an open research platform for interested students at all levels, from any background. The lab is divided into two spaces: an open space with individual and communal work areas, and a fabrication space.

Equipment:

- Epilog 24" x 18” laser cutter (beyond service warranty)
- Dimension SST FDM 3D printer (beyond service warranty)
- component storage, electronics workbench with soldering stations
- drill press, bandsaw, various power & hand tools

Robert L. Preger Intelligent Workplace (IW) (MMCH 415)
This living and lived-in office/laboratory provides hands-on experience with the performance of advanced integrated building technologies including acoustics, lighting and materials. It also affords interaction with leading researchers and professionals in architecture, engineering, manufacturing, government and the nonprofit sector who visit to participate in research and demonstration projects. Research undertaken in the IW aims to improve organizational flexibility; technological adaptability; energy and environmental effectiveness; and the health, productivity and motivation of white-collar workers. The IW is home to the Center for Building Performance and Diagnostics but is open to all interested students. At 6,700 square feet, the IW sits atop Margaret Morrison Carnegie Hall.

Selected components:

- radiant heating and cooling
- energy recovery ventilation
- modular components (eg, structure, façade, access floor tiles, power, voice and data, interior systems)
- windows that maximize daylight, ventilation and heat rejection
- environmental control and feedback via iOS apps
- extensive insulation, including stress-skinned insulated metal panels
- design for disassembly

The Shop (CFA A)
The Shop provides a setting for each member of the School of Architecture to work with a range of tools and raw materials as they fabricate hand-made objects of their own design. Every first-semester undergraduate student receives introductory shop training, and is subsequently encouraged to develop classic wood- and metalworking skills throughout their course of study. Many graduate students take advantage of the same training and resources. The shop is nearly 3,800 square feet in size with a large machine and assembly room, a separate metalworking room, tool and material storage areas, a project storage area, offices and an adjacent pin-up area for design review.

Woodworking equipment includes:

- Three vertical band saws
- Two SawStop table saws
- 12" jointer
- 20" surface planer
- 24" dual-drum thickness sander
- Radial arm saw
- Slot and hollow chisel mortisers
- Stationary jig saw
- Router table
- Two drill presses
- Vertical and horizontal belt sanders

- Three disc sanders
- Oscillating spindle sander
- Variable-speed lathe, 20” swing
- Several vise-equipped workbenches

…plus a range of powered and manual hand-held tools

Machining and sheet metal equipment includes:

- Machine lathe, 14” swing
- Vertical mill
- Horizontal band saw
- Bench and foot shears
- Finger and magnetic brakes
- Bench punch
- Slip roll
- English wheel

Remaking Cities Institute (RCI)
An urban design research center based in the School of Architecture, the RCI aims to promote an improved quality of life in cities and towns through academic, applied and action research into place-making and community redevelopment. The RCI expands the regional and global impact of the School of Architecture's Urban Laboratory studio and Master of Urban Design (MUD) program by fostering multi-sector collaboration between faculty, researchers, professionals and community organizations. With the AIA, the RCI recently co-hosted the Remaking Cities Congress, a working meeting of 300 urban-design delegates from around the world.

5.6.3 Space to support and encourage the full range of faculty roles and responsibilities, including preparation for teaching, research, mentoring, and student advising.

Program Response:

The school provides full time faculty with individual and shared office spaces where they can prepare their teaching materials and also host students for advising. There are also shared spaces where faculty can meet each other and students to work on joint projects, teaching and advising. There are also many unprogrammed spaces in the school and college where ad-hoc meetings can take place. The Zebra Cafe in the College of Fine Arts Building and other cafes and meeting places available across the campus provide for a collegial environment.

5.6.4 Resources to support all learning formats and pedagogies in use by the program.

Program Response:

The school supports studio, seminars, lecture and design/build learning formats and pedagogies through specialized equipment and technologies as may be needed. The school provides all full time instructors with a computer and software to support their teaching and research where it applies. These are updated on a three-year cycle with support from our Computing Administrator, Robert Armitage. The school’s teaching spaces are also equipped with monitors and projectors as needed. Plotters and scanners are also provided for use to faculty and students free of charge.

We are also constantly looking to improve the furnishings that can support our pedagogy. Some notable improvements since the last visitation in this regard have been the new collaborative studio desks for the MAch and MUD programs (explained in 5.6.1). These were in direct response to developing collaborative and team based learning that our bulky single person desks did not make possible. We anticipate significant refurbishment work in the school in the coming years as new pedagogies are introduced across the programs.

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, off-site, or hybrid formats have on digital and physical resources.

Program Response:

The school has a robust digital infrastructure that supports our learning and teaching. This includes virtual conferencing enabled rooms and monitors, digital fabrication tools and on demand 3D printing. While students must purchase their own laptops, they are provided with the basic design software that they need for studio and media classes- rhino, CAD, adobe creative suite, rendering- at no cost. In addition, plotting drawings is also provided at no costs. The school's digital infrastructure was tested while we were doing exclusively remote teaching in 2020-21 during the pandemic. Faculty were supported with cameras and tablets to assist them in conducting online courses. Likewise students were supported on a case by case basis if they required technology.

An important lesson learned from remote teaching was that technology courses benefited from this modality. As such we have continued to provide courses like **48-689 Design Skills Workshop** and **48-783 Generative Modeling** through an exclusively remote or hybrid format. From our student surveys we are finding approval of this modality with 74% of respondents who took the course feel it "Delivers very well" or "Delivers Well" and 26% of respondents who took the course feel it "Delivers for the Most Part" for both courses.

5.7 Financial Resources
The program must demonstrate that it has the appropriate institutional support and financial resources to support student learning and achievement during the next term of accreditation.

Program Response:

Revenue
Funding for the SoA comes predominantly from an annual allocation based on undergraduate enrollment from the Provost to the College of Fine Arts, and then to each of the schools within the college. This allocation was originally intended to fund the direct and indirect costs of the undergraduate and graduate programs of the school. However, in 2006, the university encouraged the individual departments and schools to build their graduate programs by returning 75%-80% of graduate student tuition dollars. In 2016, the university adjusted this stance and agreed to let the Deans of the seven colleges reallocate Masters Tuition Sharing (MTS) to the various colleges, based on the number of units a college taught to a student from another college. This new model worked against SoA's graduate tuition income since our students were more likely to take courses outside of our college than were non-architecture students wanting to take courses in our School. The annual cost to our program was approximately $90,000. As of 2021, through the efforts of the Dean, the College of Fine Arts has been exempt from participating in the MTS program. Hence, graduate tuition income flows directly to the school that houses the degree program after a share of roughly $9,000 is withheld for central administrative services and expenses. In addition, gifts from institutions and individual donors, as well as endowment income and sponsored projects round out the school's revenue streams.

Sources of Funds	**FY20**		**FY21**		**FY22**	
Provost Allocation:	$ 4,043,754	49%	$ 4,087,213	54%	$4,069,086	41%
Grad Tuition Income:	$ 3,276,235	39%	$ 2,544,575	33%	$ 4,486,894	45%

Other:	$988,292	12%	$ 982,099	13%	$ 41,346,118	14%
Total:	**$ 8,308,281**		**$ 7,613,887**		**$ 9,902,098**	

Expenses
All faculty and staff salaries and operating expenses are initiated at the School level and approved by the Dean. The School has no discretion over the tuition and the offers of financial aid to our undergraduate students. However, our graduate student tuition is set by the school and approved by the Dean. For the 2021-2022 academic year the tuition for the M.Arch program was $39.950. The SoA currently offers all masters students annual scholarships of $6,000 to $25,000, based on academic achievement and financial need. These scholarships are contingent upon timely payment of tuition and successful completion of the previous semester as a full time student. In addition, a limited number of Graduate Teaching and Research Assistantships are available to full time master's students annually. These pay $15/hr for up to 135 hours for first time students and $17/hr for returning students, based upon full time enrollment. There are also opportunities for teaching fellowships for exceptional students that pay $20/hr. We have made student support a critical part of our budgetary planning. As can be seen we have steadily increased our student support over the past years where it makes up 32% of the expense budget.

Uses of Funds	**FY20**		**FY21**		**FY22**	
Full-time Faculty	$ 2,450,667	31%	$ 2,944,723	38%	$ 2,956,201	32%
Part-time Faculty	$ 692,490	9%	$ 567,563	7%	$ 586, 864	6%
Staff	$ 796,528	10%	$ 816,020	11%	$ 767,858	8%
Benefits	$ 915,800	12%	$1,070,163	14%	$1,054,450	12%
Grad Student Support	$ 2,094,934	26%	$ 1,763,484	23%	$ 2,919,576	32%
Operating and Other:	$ 990,388	12%	$ 559,448	7%	$ 876,673	10%
Total:	**$ 7,940,807**		**$ 7,721,401**		**$ 9,161,625**	

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

Program Response:

The Carnegie Mellon University Libraries supports teaching, learning, research, and creative activities of the faculty and students of Carnegie Mellon University. The Libraries strives to meet the university's contemporary needs and aspirations with an increasing support for researchers and graduate programs in addition to support for undergraduate education. Carnegie Mellon's information resources are competitive in an environment that encourages resource sharing and plays to the university's technological strengths. The Libraries supports all School of Architecture curricula and programs at the undergraduate, masters and doctoral levels.

The position of architecture librarian includes liaison responsibilities for the School of Architecture and facilitates research access for the Carnegie Mellon University Architecture Archives. The Libraries' team of subject librarians is led by the associate dean for liaison services. The dean of University Libraries reports directly to the university's provost. Librarians and archivists have faculty status at Carnegie Mellon under the Policy on Librarian and Archivist Appointments. Library faculty must meet criteria for reappointment and promotion by mastering professional practice and by pursuing scholarly and creative activity and professional service. The architecture librarian has no faculty status within the School of Architecture, but is welcomed as a faculty colleague within the school. The current architecture librarian, Lynn Kawaratani, who joined the University Libraries at the librarian rank in August 2022, holds a bachelor of arts in architecture (B.A.), a master of architecture (M.Arch), and is completing a master of library and information science (MLIS) degree. During the transitional onboarding period, the architecture librarian is supported by the art and design librarian, Jill Chisnell, who served as the liaison to the School from August 2020 to August 2022 following the previous architecture librarian's retirement. The art and design librarian, appointed at the senior librarian level, is a member of the Art Libraries Society of North America (ARLIS/NA). Both librarians are members of the Association of Architecture School Librarians (AASL).

The architecture librarian is responsible for:

- Reference and consultation services
- Instruction, teaching, and classroom support activities
- Collection development and management in various media
- Communications regarding issues in scholarly communications
- Outreach to faculty, staff, and students through promotion of library resources and services, participation in school culture and project reviews, and so forth

The architecture librarian is based in Hunt Library, a central arts, humanities, social sciences, and business library within a short walking distance of School of Architecture facilities. The Sorrells Engineering and Science Library in Wean Hall is also within walking distance from School facilities.

A program of library instruction supports the educational objectives of the School of Architecture. First-year architecture students participate in the university's Computing@Carnegie Mellon (C@CM) course, which teaches skills in information literacy and responsible computing, focusing on tools and technologies specific to Carnegie Mellon. Instruction sessions tied to specific courses and assignments in the School of Architecture orient students to the Libraries, demonstrate the uses of information resources and technology, and introduce them to research topics and methods. The architecture librarian and teaching faculty are jointly responsible for instruction throughout the curriculum. Presently, library instruction occurs most explicitly in the first-year studio and other required courses, and in some upper-level studios and classes that require research. Incoming graduate students are introduced to the research environment at Carnegie Mellon. As they advance in their programs of study, the Libraries provides support at critical stages of the research lifecycle, providing services, tools and expertise in data management and visualization, digital humanities, Geographic Information Systems (GIS), citation management, copyright, bibliometrics, and publishing. Graduate students are encouraged to publish theses and dissertations in KiltHub, Carnegie Mellon's scholarly research and data repository.

The Libraries provide ever-expanding access to electronic information resources that are available without regard to place and time, especially crucial for remote teaching and learning during the COVID pandemic. Carnegie Mellon University Libraries' book collections surpass one million volumes. Though subject-based collection figures are difficult to compile in a central library, collections include approximately 60,000 holdings in NA and other classes related to architecture, landscape architecture, construction, and urbanism. The architecture librarian is dedicated to developing a collection that engages with and enhances the values set forth in the School's Pedagogies 2020. The collection includes an increasing number of electronic books licensed for multiple-users, especially reference works and titles in technical fields. Print books are classified using the Library of Congress Classification system. The Libraries maintain a commitment to providing information resources in whatever media are necessary and appropriate. For architecture and the arts in particular, active collecting in a variety of media will continue

for the foreseeable future. The Libraries offers interlibrary loan, document delivery services, and virtual course reserves, greatly expanding the scope of available resources on an as-needed basis. Carnegie Mellon affiliates have borrowing privileges at the University of Pittsburgh and the Carnegie Library of Pittsburgh.

The Libraries provides access to hundreds of active and ceased print journals and e-journals in architecture and related fields. The “Core Periodicals List,” developed by the Association of Architecture School Librarians (AASL), has long been used to shape this collection, as well as input from architecture faculty. The Libraries offer access to thousands of additional journals via aggregated databases and other online collections. The Libraries also licenses dozens of web-based databases that are of use for architectural research including the Avery Index to Architectural Periodicals, Art & Architecture Source, Design and Applied Arts Index, JSTOR, and Compendex. Subscriptions to more specialized digital products include BuildingGreen Suite, MADCAD.com, and ARTstor. Increasingly, such resources provide online access to images, full-text articles, and other documents. Architecture-related videos are available in the University Libraries’ media collection and through the streaming video service, Kanopy.

The Carnegie Mellon University Architecture Archives is a special collection of architectural drawings and other records documenting the architects and architecture of the university, the city of Pittsburgh, and its region. A searchable collections database and guide is available on the Libraries’ website. The Archives serves as a resource for the School of Architecture, the University, and the community at large through support and participation in exhibits, publications, and other special projects. User access to the Architecture Archives, suspended since March 2020 due to the COVID pandemic related closures, staff changes, and facility renovations, is expected to resume in Fall 2022.

Funding for library operations takes place within a centralized University Libraries context. Carnegie Mellon has increased funding for library materials by up to 6% annually for the last twenty-four years. This sustained record of funding increases demonstrates institutional commitment and has had a significant impact on the library and its users. The architecture librarian is responsible for expending funds in allocated and shared accounts that surpass $60,000 annually. Though subject to a number of special circumstances that may affect annual totals, this spending level is sustainable. The Caste Architecture Resources Endowment Fund provides additional funding for library materials. Since 2017, the Libraries has been awarded over $100,000 in discretionary grant funding for resources supporting School of Architecture programs and initiatives. Substantial funding expended for other library collections also benefits the School of Architecture as architectural education becomes increasingly interdisciplinary.

Further, the program must demonstrate that all students, faculty, and staff have access to architecture librarians and visual resource professionals who provide discipline-relevant information services that support teaching and research.

Program Response:

All CMU students have access to the library and its myriad of resources free of charge. The subject-specific liaison librarians, including the architecture librarian, are responsible for ensuring that students, faculty and staff all have not only access, but help in understanding and using the collections and information resources. The architecture librarian is introduced to undergraduate and graduate students at orientation, as well as in many courses throughout their studies, as they move to needing ever more sophisticated resources. The architecture librarian attends SoA faculty meetings and retreats, and helps faculty construct and scaffold student research projects, but also aids in developing faculty research. The newly hired architecture librarian has started to set up appointments with individual faculty, as well as with student groups, to determine interests that will help her in expanding the collections, or updating the focus areas of collection. The architecture librarian has the ambition of developing exhibits more regularly with SoA faculty and students to make visible the information of both existing and new information resources. The architecture librarian regularly contributes to the SoA newsletter so that students, faculty, and staff are aware of the latest library developments and purchases. Faculty and staff are encouraged to suggest books or other resources that the library should purchase. The generous

Caste Fund has allowed a special focus on purchasing materials for the three Pedagogies, especially in the areas of Social Justice, Design Ethics, the Global South, etc.

The primary impediment to using the library is the fact that the books and resources are located in a separate building, and students and faculty must walk to the library. The new architecture librarian has made it an early priority to find ways to bring a small “teaching collection” into Margaret Morrison Hall, adjacent to the studios. Exact details are being worked on in Fall 2022. Given the heavy emphasis on computing and the digital, the CMU library also has always had a special focus on purchasing e-books and journals with many licenses to ensure easier access for all.

6—Public Information

The NAAB expects accredited degree programs to provide information to the public about accreditation activities and the relationship between the program and the NAAB, admissions and advising, and career information, as well as accurate public information about accredited and non-accredited architecture programs. The NAAB expects programs to be transparent and accountable in the information provided to students, faculty, and the public. As a result, all NAAB-accredited programs are required to ensure that the following information is posted online and is easily available to the public.

6.1 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, 2020 Edition, Appendix 2, in catalogs and promotional media, including the program's website.

Program Response:

The Statement on NAAB-Accredited Degrees is available on the SoA website from the main menu "The School/NAAB Accreditation":
https://soa.cmu.edu/about#naab

6.2 Access to NAAB Conditions and Procedures
The program must make the following documents available to all students, faculty, and the public, via the program's website:

a) Conditions for Accreditation, 2020 Edition
b) Conditions for Accreditation in effect at the time of the last visit (2009 or 2014, depending on the date of the last visit)
c) Procedures for Accreditation, 2020 Edition
d) Procedures for Accreditation in effect at the time of the last visit (2012 or 2015, depending on the date of the last visit)

Program Response:

All NAAB Conditions and Procedures are accessible on the SoA website from the main menu "The School/NAAB Accreditation":
https://soa.cmu.edu/about#naab

6.3 Access to Career Development Information
The program must demonstrate that students and graduates have access to career development and placement services that help them develop, evaluate, and implement career, education, and employment plans.

Program Response:

For Access to Career Development information see:
https://soa.cmu.edu/career-development and https://www.cmu.edu/career/.

See also, **PC.1 Career Paths, Resources.**

6.4 Public Access to Accreditation Reports and Related Documents

To promote transparency in the process of accreditation in architecture education, the program must make the following documents available to all students, faculty, and the public, via the program's website:

a) All Interim Progress Reports and narratives of Program Annual Reports submitted since the last team visit
b) All NAAB responses to any Plan to Correct and any NAAB responses to the Program Annual Reports since the last team visit
c) The most recent decision letter from the NAAB
d) The Architecture Program Report submitted for the last visit
e) The final edition of the most recent Visiting Team Report, including attachments and addenda
f) The program's optional response to the Visiting Team Report
g) Plan to Correct (if applicable)
h) NCARB ARE pass rates
i) Statements and/or policies on learning and teaching culture
j) Statements and/or policies on diversity, equity, and inclusion

Program Response:

a-h) All reports (a-h) are accessible on the SoA website from the main menu "The School/NAAB Accreditation":
https://soa.cmu.edu/about#naab

b) Studio Culture Policy:
https://tinyurl.com/ms6dmaej.

c) SoA Statements regarding diversity, equity & inclusion:
https://soa.cmu.edu/diversity-equity-inclusion

6.5 Admissions and Advising

The program must publicly document all policies and procedures that govern the evaluation of applicants for admission to the accredited program. These procedures must include first-time, first-year students as well as transfers from within and outside the institution. This documentation must include the following:

a) Application forms and instructions
b) Admissions requirements; admissions-decisions procedures, including policies and processes for evaluation of transcripts and portfolios (when required); and decisions regarding remediation and advanced standing
c) Forms and a description of the process for evaluating the content of a non-accredited degrees
d) Requirements and forms for applying for financial aid and scholarships
e) Explanation of how student diversity goals affect admission procedures

Program Response:

a) For Application forms and instructions:
https://soa.cmu.edu/graduate-admissions
https://cmu-soa-grad-programs.slideroom.com/#/Login

b) For Admissions requirements; admissions-decisions procedures, including policies and processes for evaluation of transcripts and portfolios (when required); and decisions regarding remediation and advanced standing:
https://soa.cmu.edu/graduate-admissions
https://soa.cmu.edu/graduate-admission-faq
https://soa.cmu.edu/march

c) For Forms and a description of the process for evaluating the content of a non-accredited degrees:
https://soa.cmu.edu/march

d) For Requirements and forms for applying for financial aid and scholarships:
https://www.cmu.edu/sfs/financial-aid/graduate/index.html

e) For Explanation of how student diversity goals affect admission procedures:
https://www.cmu.edu/policies/administrative-and-governance/statement-of-assurance.html

6.6 Student Financial Information

6.6.1 The program must demonstrate that students have access to current resources and advice for making decisions about financial aid.

Program Response:

For Graduate Financial Aid Process:
https://www.cmu.edu/sfs/financial-aid/graduate/index.html

For Graduate Admissions: Tuition and Financial Questions:
https://soa.cmu.edu/graduate-admission-faq

6.6.2 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.

Program Response:

For 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:
https://www.cmu.edu/sfs/tuition/graduate/cfa.html

See also, Graduate Admissions: Tuition and Financial Questions:
https://soa.cmu.edu/graduate-admission-faq