Carnegie Mellon University
School of Architecture

Architecture Program Report For The 2012 NAAB Visit For Continuing Accreditation

Bachelor Of Architecture: 486 Units
Year Of Previous Visit: 2005

Current Term Of Accreditation: “As a result, the professional architecture program: Bachelor of Architecture was formally granted a six–year term of accreditation.”

Submitted To: The National Architectural Accrediting Board
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Program Administrator of the School of Architecture:
  **Stephen R Lee**, Professor & Head

Chief Administrator of the College of Fine Arts:
  **Dan Martin**, Interim Dean

Chief Academic Officer of Carnegie Mellon University:
  **Mark Kamlet**, Executive Vice President & Provost

President of Carnegie Mellon University:
  **Jared Cohon**

Individual submitting the Architecture Program Report:
  **Stephen R. Lee**

Name of individual to whom questions should be directed:
  **Stephen R. Lee**, 412 268 3528, stevelee@cmu.edu
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Carnegie Mellon University: Carnegie Mellon University has been a birthplace of innovation throughout its 111-year history. It has always fostered a close connection of industry, the physical and social sciences, the humanities and the arts to educate practical and critical thinkers and leaders. Today, it is a global leader bringing groundbreaking ideas to market and creating successful start-up businesses. The faculty members are renowned for working closely with students to solve and research major scientific, technological and societal challenges. The University puts a strong emphasis on creating things—from art to robots. Our students are recruited by some of the world’s most innovative companies and we have over 86,500 alumni in nearly 130 countries around the world and a total of 79 alumni chapters worldwide.

Carnegie Mellon is the only school founded in the United States by industrialist and philanthropist Andrew Carnegie, who wrote the time-honored words, "My heart is in the work," when he 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, Carnegie Mellon is a national research University of about 11,500 students and 5,000 faculty, research and administrative staff.

Carnegie Mellon is a diverse blend of academic disciplines. The University consists of seven colleges and schools: the College of Fine Arts, the Carnegie Institute of Technology (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 H. John Heinz III College (Public Policy & Information Systems). It has become a international leader in technological fields such as computer science, robotics and engineering. From its inception it has had 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 in technology is unusual in higher education today.

President Jared L. Cohon, the University’s president since 1997, has led the implementation of a comprehensive strategic plan that aims to leverage the University’s existing strengths to benefit society in the areas of biotechnology and the life sciences, information and security technology, environmental science and the arts and humanities. In the last decade, Carnegie Mellon has expanded beyond its Pittsburgh home with campuses in California's Silicon Valley and Qatar and programs in Asia, Southeast Asia, Africa, Australia, Europe and Mexico.

The University is in the midst of a $1 billion fundraising campaign, titled "Inspire Innovation: The Campaign for Carnegie Mellon University," which aims to build its endowment, support faculty, students and innovative research and enhance the physical campus with equipment and facility improvements. The campaign is currently nearing its goal. Businessman, scholar, philanthropist and longtime CMU trustee William S. Dietrich II announced a plan in September 2011 to provide a record-breaking gift of a $265 million fund to support CMU. It is the largest gift in CMU's history and one of the ten largest by an individual to a private higher education institution in the United States. The fund will be a catalyst for CMU’s global initiatives and its fusion of left-brain and right-brain thinking. It will enhance studies connecting technology and the arts, as well as future academic initiatives such as undergraduate and graduate programs, scholarship, artistic creation and research.

The University is also committed to broadening and enhancing undergraduate education to allow students to explore various disciplines while maintaining a core focus in their primary area of study. Inter-disciplinary study, liberal arts classes and practicum-based training are encouraged to accompany more tightly focused majors. Realizing that today’s graduates must understand international issues, Carnegie Mellon is committed to providing a global education for its students and is striving to expand its international offerings and increase its presence on a global scale. There are 3,640 international students (28.7%), hailing from 100 countries outside the U.S., giving Carnegie Mellon one of the most international student bodies, by percentage, anywhere. Increasing diversity in all aspects and fostering the economic development of southwestern Pennsylvania are also top priorities.
Excerpts from the University’s Strategic Plan (2008): Carnegie Mellon will meet the changing needs of society by building on its traditions of innovation, problem solving and interdisciplinarity.

University Mission Statement: The mission of Carnegie Mellon is to create and disseminate knowledge and art through research and creative inquiry, teaching and learning and to transfer our intellectual and artistic product to enhance society in meaningful and sustainable ways; to serve our students by teaching them problem solving, leadership and teamwork skills and the value of a commitment to quality, ethical behavior and respect for others and to achieve these ends by pursuing the advantages of a diverse and relatively small University community, open to the exchange of ideas, where discovery, creativity and personal and professional development can flourish.

The six pillars of the strategic plan are: Research & Artistic Creation; Education & Student Life; Regional Impact; Globalization & International Initiatives; Carnegie Mellon University Community Success and Finance & Infrastructure

College of Fine Arts: The College of Fine Arts (CFA) at Carnegie Mellon University has its roots in 1900, when the institution was first founded as the Carnegie Technical Schools. The School of Fine and Applied Arts was one of the original four schools within Carnegie Technical Schools and would later become the College of Fine Arts. Officially founded in 1905 as the first comprehensive arts learning institution in the United States, CFA has educated outstanding artists, architects, designers, theater artists and musicians who have made important contributions to culture in the United States and the world for almost a century.

The College of Fine Arts concentrates on the education of professionals in the arts in the broader context of Carnegie Mellon University. Beyond their education in their chosen field, through required and elective course work, students are involved with other disciplines within CFA and within the other colleges of the University. The college’s location in the Oakland District of Pittsburgh with its unique density of cultural resources (The Carnegie Museum of Art, The Carnegie Museum of Natural History, The Carnegie Library, the University of Pittsburgh, Hillman Library, the Frick Fine Arts Building and Phipps Botanical Conservatory) places CFA at the center of a premier cultural environment.

The College of Fine Arts is a community of artists, teachers, professionals and students organized into five schools: Architecture, Art, Design, Drama and Music. Along with the five schools, the College of Fine Arts offers interdisciplinary degrees that provide students a well-rounded education in various fields. The current enrollment in the College of Fine Arts is 996 undergraduate students, 252 Master’s students and 26 Ph.D. students. There are a total of 122 Tenure and Teaching Track Faculty. Each school prides itself on having an innovative, interdisciplinary approach to education at the intersection of art and technology and a commitment to learning by making in both a practical and liberal arts context. Each student graduates with an in-depth knowledge of his or her field of study, but also with an appreciation of the benefits of collaboration with students and faculty from other fields.

Excerpts from the College of Fine Arts Strategic Plan (2008): The strategic plan of the College of Fine Arts was developed through an extensive process, designed to be inclusive and visionary. The process engaged the entire staff and faculty of the College and was also informed by the opinions and expectations of students, alumni, senior University administrators and key external stakeholders. Task forces, benchmarking, surveys, wikis and retreats were employed to identify the unique advantages and responsibilities of CFA’s position in relation to its five Schools, the other Colleges, the University and the local, national and global community.

CFA’s Values: The College of Fine Arts at its core: is human-centered; is multidisciplinary in its intellectual capital and approach; believes in and practices “Thinking through Doing” and “Learning through Doing”; is committed to community engagement; supports creative risk-taking and actively embraces diversity.

CFA’s Aspirations: The College of Fine Arts seeks to: graduate well-placed, professionally successful students; realize a distinctive role in and contribution to CMU’s constellation of Colleges; further advance leadership in multidisciplinary research and education; inspire and transform the Schools and related professions and increase local, national and international impact.
CFA’s Competencies: The College of Fine Arts’ success derives from its capabilities in: integrating research, scholarship, education, practice and service; connecting with the community; incorporating technology and nurturing interdisciplinary programs.

School of Architecture: Architecture has been an integral part of education at Carnegie since its beginnings in 1905. The founder and patrons of the Carnegie Technical Schools saw it as their goal to create a particularly American fusion of the Ecole Polytechnique and the Ecole des Beaux-Arts. Carnegie Tech’s first Professor of Architecture, Henry Hornbostel, was himself a student at the Paris Ecole des Beaux-Arts (1895-97), with a prominent practice that featured both architectural and engineering masterworks.

By the end of the ‘40s, the teaching of Architectural Design did not emphasize the established Beaux-Arts principles, rather, the observation of human behavior and needs in relation to the built and natural environment. In the ‘60s, under the direction of Paul Schweikher, the undergraduate program became a five-year, fixed-length program. As was common elsewhere during this period, it consisted of an introductory year of basic design followed by four years of architectural design. A long list of distinguished visitors and lecturers were introduced.

In the ‘70s and into the ‘80s with Delbert Highlands, Robert Taylor and Louis Sauer as Heads, the program developed into a four-level, variable-length program. Distinctive characteristics of the program during these years include the introductory course in architecture that was developed as an alternative to courses in basic design; the four-level design sequence which defined skills necessary for advancement through the program; the technology sequence which structured architectural technology in a manner parallel to architecture design; and the possibility (never more than 10-15% of all students) of completing the program in a period of four years.

The appointment of Charles M. Eastman in 1967 as Assistant Professor of Architecture and Computer Design marked a departure prophetic of new departmental directions. Eastman developed a Ph.D. program in the new science of Computer-Aided Design. 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, in addition to the degrees in Computational Design.

Omer Akin became Department Head in 1981 and introduced a fixed five-year B.Arch curriculum, which is still in place today. In the fall of 1994, Vivian Loftness was appointed Head of the Department and was joined by Bruce Lindsey as Associate Head in 1995. Building on the curricular efforts led by Doug Cooper and the entire full-time faculty, a revised curriculum was adopted that called for parallel creative, technical, environmental and historical competences. At the heart of the curriculum was the tightly structured ten semester studio sequence organized around a series of inter-related critical knowledge areas: Design, Representation, History/Theory, Technology and Practice. In 1998, the Department of Architecture was re-designated the CMU School of Architecture to reflect the strength of its conservatory-based professional practice degree program, in parallel to the other four Schools in the CFA.

In July 2004 Laura Lee was appointed Head of the School of Architecture. With a background in teaching architecture design studio, interdisciplinary arts and professional practice, Lee’s vision for the School was to develop a center of excellence for integrated design.

In July 2008, Stephen Lee was appointed as the Interim Head of the School. As an alumnus with a B.Arch and an M.Arch in Advanced Building Studies from Carnegie Mellon in the mid-70s, a practitioner and as a faculty member since 1981, he brought a unique perspective to the position. The School conducted a search process in the spring of 2009 and Stephen Lee was appointed to a full five-year term as Head.

Stephen Lee is working to revise the curriculum to provide more fundamental courses in the first three years and to provide greater flexibility in the last two years. An outside consultant was engaged to conduct a year-long strategic planning process that re-focused the school on the themes of design thinking, learning by making and improving the quality of the built environment. The studios in Margaret Morrison were substantially renovated to support better collaboration and the computer labs
were disassembled and workstations were incorporated into the studios to further the integration of analog and digital thinking in the studio.

**Current School of Architecture Mission Statement:** The School of Architecture at Carnegie Mellon University takes pride in being a community of students and faculty interested in positively changing the built environment. Graduates of the School of Architecture enter the profession with design creativity, historical perspective, social responsibility, technical excellence and global environmental leadership.

Existing at the intersection of art and technology, the curriculum serves as the foundation for the professional Bachelor of Architecture degree. The School of Architecture views architecture design studios as the core of the undergraduate curriculum in collaboration with five foci: Representation, Building Technology, Environmental Technology, Architectural History and Critical Practice. The School is committed to architectural design excellence linked to environmental, urban and technological innovation that is further informed by our renowned graduate programs.

**Vision Statement from the School of Architecture Strategic Plan Draft (2011):** Graduates of the Carnegie Mellon School of Architecture are design-thinkers who use the act of making to explore, analyze, formulate, fabricate and represent new ideas about the built environment. Our programs and facilities are widely recognized for providing unique learning experiences at the intersection of art, humanities, science and technology. We enable our students to become creative and knowledgeable global collaborators who improve the quality of life and the sustainability of the built environment we inhabit.

1.2 Identity & Self Assessment: Learning Culture and Social Equity

Learning culture in the School of Architecture at Carnegie Mellon University is detailed in the student handbook. The handbook is updated yearly and evaluated through feedback from the School of Architecture faculty, staff and Student Advisory Council (SAC). The most recent version and past student handbooks are made available to all students/faculty/staff via online and print versions. The Coordinator of Student Programs and the Senior Academic Advisor present information in the handbook to all students and faculty, highlighting the School mission, academic curriculum, academic policies, student opportunities and valuable resources.

The official studio culture policy of the School of Architecture at Carnegie Mellon University has been allowed to lapse, after a flurry of discussion related to the AIAS publications on studio culture in 2004 and 2008. The current President of AIAS and the Student Advisory Council (SAC) have been charged with updating and developing a renewed, formalized studio culture policy statement. Once the policy statement is developed and approved, full access to the statement will be available on the School website to all students/faculty/staff.

Learning culture policies are implemented through various programmatic offerings in the School, inclusive of individual and group academic advising sessions for all current students, monthly Ice
Cream socials, semester town-hall meetings and special topic sessions as needed. Participation and engagement in these sessions are measured and evaluated to continually improve the performance of School faculty and staff and the delivery of resources and opportunities.

Carnegie Mellon University publishes an online University-wide policy handbook for faculty/staff/students. In the student/student life section of the policy handbook, specific guidelines are mapped out to instruct students on the grievance procedure for sexual harassment and discrimination cases (www.cmu.edu/policies/StudentPolicy.html). The School of Architecture adheres to all University policies and procedures.

Academic integrity policies are also published in the online University-wide policy handbook for faculty/staff/students. In the student life section of the handbook, academic integrity policies including cheating and plagiarism are outlined (www.cmu.edu/policies/documents/Cheating.html). Our faculty members include the University-wide statement on academic integrity (or a link to it) in course syllabi.

Carnegie Mellon’s “Statement of Assurance” is the University’s formal assurance of non-discrimination in compliance with federal, state and local laws or executive orders. The statement must be placed in all undergraduate and graduate admissions publications and all other publications where such a statement is necessary and appropriate. The statement can be found at: www.cmu.edu/policies/documents/SoA.html

The School of Architecture is committed to the University’s diversity efforts as reported in The State of Diversity at Carnegie Mellon University Annual Report by the Diversity Advisory Council published in January 2011: www.cmu.edu/diversity-guide/index.html. Specifically, the School of Architecture supports the diversity of our students, faculty, staff and community through a variety of efforts.

- Student Admissions: http://my.cmu.edu/portal/site/admission/diversity/
- Faculty Recruitment: www.cmu.edu/diversity-guide/resources/recruiting-faculty/
- Staff Recruitment: www.cmu.edu/diversity-guide/resources/recruiting-staff/index.html
- Community: The School of Architecture offers three programs to support our efforts to improve diversity

In addition to partnering in institution-wide efforts, the School implements several programs to both promote diverse representation in the School and the field and to enhance the richness of the School’s educational environment. (Please refer to Part One.2.1 – Initiatives for Diversity)

1.3 Identity & Self Assessment: Responses to the Five Perspectives

Architectural Education and the Academic Community: Boyer’s four categories of scholarship—discovery, integration, application and teaching—are the very essence of the Carnegie Mellon School of Architecture. The current strategic planning effort reaffirmed the way in which the faculty and staff see themselves—very strongly aligning with the concepts of invention and systems thinking. From its inception, Carnegie Mellon has taken great pride in integrating research, scholarship, education, practice and service. Aspects of this philosophy include the creation of a diverse community and the expansion of the post-professional graduate programs and their impact on the first professional degree program.

Faculty: The School of Architecture faculty members are distributed between the tenure track, the teaching track, the research track and instructional staff (adjunct professors). There are currently 10 faculty members that are tenured; two that are on the tenure track; and three that are on the teaching track. One tenure-track faculty member is in his terminal year. The Provost has approved the hiring of up to three tenure-track faculty members for the next academic year. We have one joint faculty appointment with the Department of Civil and Environmental Engineering and one joint faculty appointment with the H. John Heinz III College. All faculty members are encouraged to engage in activities to advance their careers, become more effective educators and gain recognition for the School, the College and University. The Eberly Learning Center provides workshops, training and individual mentoring to promote teaching excellence and innovation. The College provides a dedicated staff member to assist all faculty members with preparation, submission and administration of grants and research contracts. The School, as the result of new fundraising successes, has
recently created new faculty development grants. In addition, many of our faculty members have been successful in receiving Berkman Fund Awards from the University to support junior faculty member research projects.

Impact of Graduate Programs: Since the mid-1970s, the graduate programs of the School of Architecture have established a global reputation in the fields of high-performance buildings, computational design and management. There is a reciprocal relationship between the scholarship in the graduate programs and the scholarship in the undergraduate programs and three Ph.D. concentrations. These graduate programs play a significant role in the University context, the College context and in the first professional degree program. The faculty members of the School of Architecture are engaged in fundamental and applied research, professional practice and advocacy roles. ALL of the faculty members associated with these programs, as well as some of their graduate students, are teaching studio courses, architectural courses and/or elective courses. This provides our first professional degree students with the opportunity to benefit directly in the classroom from cutting edge research work, an understanding of the very nature of research and scholarship itself and the ability to gain advanced standing in our graduate programs by taking advanced courses.

The Participation of Non-architecture Faculty in the School of Architecture: Faculty from other schools and disciplines regularly contribute to our school by participating in courses as teachers, guest lecturers and critics. Additionally faculty from the University have developed and offered courses within our curriculum.

The Participation of Architecture Faculty in the University: Architecture faculty members occasionally teach joint courses within other units on campus and contribute to the University is through the Osher Academy for Lifelong Learning, a program for people eager to extend their education in their senior years through a special set of courses created by the faculty participants.

Staff: The School of Architecture has a knowledgeable, competent staff with a variety of backgrounds. There is a business group, an advising group, a graduate program group, a digital fabrication lab manager, a computing services manager, a facilities & special projects manager and an outreach coordinator. The staff members meet with the Head on a biweekly basis, are encouraged to participate in school-wide and University-wide events and are eligible to participate in self-selected development programs.

Architectural Education and Students: In the past seven years, the School of Architecture has maintained its commitment to a University-wide education, where students complete required courses in Computing@CMU, Descriptive Geometry (CFA), Critical Histories of the Arts (CFA) and Interpretation & Argument (English) along with University electives in fields they wish to pursue. Every student in the School of Architecture has the foundations to support a shift in major without a loss of academic time, or to minor or double major in other areas of academic strength at CMU.

Dual Degrees: Building on their architecture courses, students in the School of Architecture have pursued dual degree programs. Dual degrees require that students complete 90 units of coursework above and beyond the number of units required for one of their degrees.

Double Majors: Students have also pursued double majors in a vast array of disciplines on campus. This requires students to take all major requirements (including core prerequisites) for the additional major.

Minors in Architecture and Other Disciplines: Undergraduate students in architecture can also qualify to earn two minors within the subject of architecture. Minors may be earned in many of the Schools and Departments on campus. Generally, a student must complete 6 courses within a specific department or concentration to receive a minor.

The Participation of Non-architecture Majors in the School of Architecture: Our history and drawing courses and many elective courses are open to students from other departments and universities. We believe strongly that the architecture students benefit from the alternative perspectives provided by those students. In addition, the School of Architecture offers a lecture/ studio course called
Architecture for Non-Majors. Some Students do transfer into the architecture major after taking this course, but the majority stay in their various disciplines.

The subsequent sections further discuss the breadth and depth of architecture education.

**Architectural Education and the Regulatory Environment:** Students enrolled in the School of Architecture at Carnegie Mellon University are prepared for the transition to internship and professional registration through a diverse array of required and elective mechanisms. The primary required mechanism is the 9-credit 48-550: Issues of Practice Course, offered in the fourth year of the undergraduate curriculum. To reinforce the importance of professional development, evidence of enrollment in the Internship Development Program (IDP) is required for students to pass the course. Specific lecture content addresses steps to Professional Architectural Registration in the State of Pennsylvania, elsewhere in the United States and protocols in various International locations. Course content also illustrates how entities like the National Council for Architectural Registration Board (NCARB), State Professional Registration and Licensure Boards, The American Institute of Architects (AIA), State Legislature, National Legislature and professional consortiums influence regulatory statutes that govern responsibilities of the Architectural Professional. This content is further reinforced in the Critical Practice stream through the course, 48-551: Ethics and Decision Making in Architecture.

In addition to the exposure provided through required course content, the School of Architecture provides a number of programs and resources to enhance the student’s academic experience through tangible interaction with professional organizations and their representatives. The School’s IDP Educator Coordinator, Alexis McCune and IDP Auxiliary Coordinator, Associate Professor Jeremy Ficca, facilitate these programs. Opportunities provided on an annual basis are IDP presentations offered in conjunction with the University’s Creative Arts Opportunities Conference (CAOC), a job fair that allows students to connect with organizations and firms presenting career opportunities; hosted presentations by representatives and local professionals from AIA Pittsburgh’s Young Architects Forum (YAF); an event called Design Your Future with NCARB’s Assistant Director of Communications; and NCARB and You: IDP, ARE and Certification. These programs have been well attended, are open to all undergraduate students and focus heavily on making the connection between professional practice and the regulatory environment.

The School of Architecture offers Professional Development Office Hours, available weekly on Tuesday and Thursday afternoons. Students are able to meet with the IDP Educator Coordinator to receive individual consultation regarding IDP and professional Development Objectives. The Career Auditing program is offered to all students on an elective basis throughout their time at Carnegie Mellon University. The program serves as a mechanism of reinforcing advancement in IDP while aiding students in understanding how they may acquire units during their enrolment at the school. The CMU Career and Professional Development Center also assists School of Architecture students with experiential learning and professional advising related to regulatory statute through the commitment of two staff members, Elaine Stolick and Sonjala Williams.

**Architectural Education and the Profession:** The Critical Practice Curriculum Stream at Carnegie Mellon University includes a sequence of courses that embrace the diverse set of demands that characterize contemporary global practice. Each course simultaneously operates independently and in support of the Design Studio curriculum stream, reinforcing the relevance of content in application. The courses included in the Practice stream are 48-351: Human Factors in Architecture, 48-452: Real Estate Design and Development, 48-453: Urban Design Methods, 48-550: Issues of Practice and 48-551: Ethics and Decision Making in Architecture. The scope of condition that these courses encompass is unique in reaching beyond the territories traditionally assigned to an academic practice stream, engendering positive, comprehensive sensibilities with regard to diverse collaborative roles and responsibilities that the professional architect must assume.

Course 48-351: Human Factors in Architecture, requires students to mine anthropologically for information that will enhance an understanding of conditions that inform design. Skill sets and critical thinking skills developed in that course are applied in the 48-400: Design Studio - Occupancy in the
following year. Similarly, 48-453: Urban Design Methods and 48-452: Real Estate Design and Development, both support students enrolled in 48-500: Urban Laboratory Studio. Students are required to work with community clients through a participatory design process involving three community meetings. Urban Design Methods builds the students’ capacities in understanding how to engage the community, understand place and communicate graphically to a broad constituency. Real Estate Design and Development focuses on reinforcing the pressing economic and organizational requirements necessary for implementing the proposals developed through the community design process. 48-550: Issues of Practice and 48-551: Ethics and Decision Making in Architecture, focus on engendering sensibilities associated with the architect’s implied social contract, leadership ability and contractual responsibilities. Issues of Practice class addresses this concretely through a client-based project that stresses logistical and contractual navigation.

Beyond the core academic components preparing students for their transition into the profession, the school’s lecture series provides exposure to a spectrum of diverse practices. A representative sample from a recent lecture series illustrates the breadth of model professional practices demonstrated: Andrew Freear from the Rural Studio exemplifying the role of the citizen architect; Thom Mayne professing the architect’s need to “Change or Perish,” and Gordon Gill demonstrating the architect’s role in establishing new standards of environmental consideration in global mega-projects. These lectures mirror the types of elective opportunities that are available to students through design-build experiences, digital fabrication workshops and extensive travel abroad experiences including study at Carnegie Mellon’s University campus in Doha, Qatar.

Architectural Education and the Public Good: The Urban Lab, the Remaking the Cities Institute, K–12 Architectural Explorations and other school programs demonstrate remarkable breadth, depth, effectiveness and continuity. Each in its own orbit broadens and strengthens relationships among academic, professional and public constituencies. In particular, the school annually introduces hundreds of minority students of all ages to the unique culture and mission of the profession through the lens of the CMU experience.

Urban Design/Build Studio: The Urban Design/Build Studio (UDBS) is a design collaborative involving students, professors, community members and organizations, municipal groups, contractors and granting foundations, all working towards making socially conscious urban architectural interventions for the betterment of the communities in which they are built. The projects worked on by the UDBS are real, taking students through the realities of design development, client relations and construction administration. Each project provides invaluable education in the complex relationships that surround any architectural project, including construction. The UDBS is dedicated to producing positive architectural solutions for communities in need in the Pittsburgh area, but also providing aspiring architecture students with the necessary experiences to enter the complex realm of architectural practice.

1.4 Identity & Self Assessment: Long Range Planning

The CMU School of Architecture is constantly evaluating the performance of its faculty, staff and students and self-assessing both its long-range strategic direction and progress in relation to previously set goals, as well as to the external environment around it in the College, at the University, in the profession and in the world at large. Long term strategic planning and visioning grows out of this ongoing self-assessment process (see also Part One.1.e.)

Two years after the most recent NAAB accreditation process in 2005, the School underwent a regularly scheduled Presidential Advisory Board visit, a standard self-assessment tool used by the CMU President and Provost to evaluate all units on campus. Much like the NAAB process, the advisory board consisted of high level outside reviewers from academia and the profession, both domestic and international, as well as University Board members. The resulting October 2007 Advisory Board report that resulted summarized the assessment process and succinctly stated the major strengths, challenges and long-range recommendations that the School has used to help guide long term hiring goals and curricular development.
In 2008 both the University and the College of Fine Arts (CFA) undertook rigorous strategic planning processes, in which School faculty participated and which in turn helped focus our strategic thinking going forward. In spring of 2008 the Dean of the CFA created a committee to search for and nominate a new Head of the School of Architecture. This committee, as well as the ensuing search process continued discussion to assess the present state and future direction of the School and took into account the changes mandated by the effects of the nation-wide recession and its effect on the University budget. The new Head’s introductory lecture laid out values he would stress and ideas he would try to implement in his Headship, most notably to emphasize “making” as a central value of the School.

These larger planning efforts overlap with ongoing discussions about the direction of the School from within (see also below, section 1.e). In 2009 the Head initiated a “Curriculum Committee” to discuss and solicit a wide range of proposals on revising the curriculum. Faculty from all parts of the School submitted proposals that ranged from the radically new, to subtle alterations of the existing curriculum. This led to continued dialogue about the future direction of the School.

In the spring of 2010, the Head hired the firm of Dewey & Kaye Non-profit and Foundation Consultants, to help lead a rigorous, strategic planning process for the 1st professional degree program with a five-year horizon. A committee of three tenured faculty, two tenure-track faculty and two staff was selected to form a “Strategic Plan Drafting Committee.” The charge of the committee was to do extensive research and a SWOT (strengths, weaknesses, opportunities, threats) analysis of the School’s first professional degree and the external environments and to draft a strategic plan that would be constantly vetted with the overall faculty.

The drafting committee spent the fall semester collecting information and preparing summary reports on other architecture education programs here and abroad, on global trends in the profession, as well as on trends, opportunities and threats from the world at large. The committee also solicited and received two-page “White Papers” from many faculty about any issues they felt were relevant to preparing a strategic direction. A written poll was conducted of all current students about how and why they chose CMU, as well as expectations for their education and their future careers. A questionnaire was also sent to alumni to determine how their expectations have been met over the years with regard to their education. The committee had the chance to conduct informal discussions with other faculty and brought issues to the table not included in the other research.

In spring 2010 the drafting committee hosted three all-faculty retreats on the subjects of “Proposed Tenets of Architecture”, “Curriculum” and “Pedagogy”. The first discussed six idealized images of the work of the architect in contrasting pairs and sought input from the faculty about the present state of the first professional degree and where we wanted to be. A discussion on the curriculum focused primarily on the weaknesses of the existing work. The pedagogy discussion sought input on how to deliver the material most effectively. The intent throughout was to focus attention on long-range plans and all-school ideals, rather than more specific and individualized agendas and program changes.

Based on the research, analysis and input from faculty, the spring 2011 Strategic Plan Drafting Committee drafted a strategic plan that included a vision, strategies, goals and metrics. That summer a graphic designer was hired to begin shaping a concise method of communicating it to the School. In the fall of 2011, this draft strategic plan was unveiled to the whole faculty, with the intent of promoting more feedback and consensus on the proposed strategic plan (the Strategic Plan will be available in the Visiting Team room). The Head has engaged the Student Advisory Committee (SAC) in this feedback and review process and has scheduled Town Meetings, so that all students, not just their elected representatives, have the opportunity to comment on the Plan.

1.5 Identity & Self Assessment: Program Self Assessment

The University as a whole is assessed and accredited through a voluntary, peer-review self-assessment process coordinated by the Middle States Commission on Higher Education (MSCHE). The last Middle States self-assessment and accreditation occurred in Feb. 2008 and dealt with 14 standards divided between "Institutional Context" and "Educational Effectiveness," each of which
included numerous elements or benchmarks that must be satisfied in order to qualify for re-accreditation.

The Presidential Advisory Board process mentioned in 1.d is a standard self-assessment tool used by the CMU President and Provost to evaluate all units on campus. Architecture's Oct. 2007 report summarized the assessment process and succinctly stated the major strengths, challenges and long-range recommendations that the School has used to help guide long term hiring goals and curricular development.

CMU has long used a Faculty Course Evaluation (FCE) system for students to evaluate the quality of courses and instructors. FCE's are used to improve the quality of teaching and learning at Carnegie Mellon through feedback to individual faculty member, promotion committees and the Head for adjunct hiring. Responses to the FCE provide information on students' perceptions of their engagement, learning outcomes, the instructor's behavior and course activities. This feedback helps guide changes in future iterations of the course and/or the instructor's teaching.

These more formal self-assessment efforts overlap with ongoing discussions about the performance of the school and our students. The studio coordinators meet every month to discuss the status and direction of the studio sequence. At the end of every semester they host an all-faculty discussion of the studio sequence, with examples of student work displayed, to gather feedback on each studio year and to discuss how closely the student work fits with the faculty's expectations. Every spring, as part of its awards program, the School requests that the best students in the class create individual exhibits on four years of their work. Faculty as well as outside professionals from the local AIA are invited to assess and rank the student work exhibits. Voting and discussion leads to the awarding of prestigious travel grants for the students, but also to a rigorous discussion on the state of the student work and by implication the teaching and learning that is taking place with respect to the School’s goals, but also the profession’s needs.

In addition to these School and faculty assessment tools, the Student Advisory Committee, which consists of three representatives from each graduating class, 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. Their assessment is used to help shape the policy and programs of the school.
2.1 Human Resources & Human Resource Development

Policy Statement on Equal Employment Opportunity/Affirmative Action (EEO/AA): 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, sexual orientation, veteran status or non-job-related disability. Additional information about the University’s regulatory compliance and accountability, as well as contact information, can be found online at http://www.cmu.edu/policies/documents/EEOAA.html

Initiatives for Diversity: (continued from Part One.1.2)

College Initiatives: The College of Fine Arts Student Diversity Committee consists of ethnic minorities from across the College. This initiative launched in the 2010-11 academic year to get student suggestions on ways to promote diversity in the college. Three architecture students serve on this committee and suggested forming a joint NOMAS (National Organization of Minority Architects Students) chapter with the University of Pittsburgh. Toward this goal, the students have reached out to professionals in Pittsburgh to support the chapter; contacted the NOMA National Parliamentarian regarding the basic bylaws from nationals that we can use as a guide for our local chapter; and spoke with the Vice President of the North East Region to obtain help starting the chapter.

Student Admissions: http://my.cmu.edu/portal/site/admission/diversity/ The Office of Undergraduate Admissions has an Ethnic Minority (EM) recruitment strategy to increase the number of matriculating African-American, Hispanic/Latino, and Native-American undergraduate students at Carnegie Mellon University and is also concerned with access to opportunities at Carnegie Mellon for minority students such as first-generation, low socio-economic status, rural, and women interested in technical fields. The recruitment strategies administered by the Office of Admission continue to support the President’s Diversity Agenda and its efforts to further diversify the campus community. EM programs include At-Home Interviews for undergraduate admissions eliminating the need for expensive travel; Celebration of Diversity Weekends for prospective students with subsided travel; and Building Our Network of Diversity (BOND) where ethnic minority alumni attend college fairs, conduct admission interviews, and initiate direct contact with prospective students.

Faculty Recruitment: http://www.cmu.edu/diversity-guide/resources/recruiting-faculty/

Staff Recruitment: http://www.cmu.edu/diversity-guide/resources/recruiting-staff/index.html

Community: The School of Architecture offers three programs to support our efforts to improve diversity:

Architecture Explorations: A collection of programs for K-12 students reaches a wide range of students in an effort to develop interest in architecture and prepare interested students for undergraduate admission. The Saturday Program offers significant need-based scholarships to individual students. Academic workshops and after school programs serve a range of schools, including several schools with a majority of the student body eligible for the federal free- and reduced-fare lunch program. Architecture Building Communities, a free architecture and urban design summer program, reaches out to a local urban primary school and recruits diverse high school student from the region.
Pre-College: Each summer, the university sponsors through full tuition, room and board, four or five diversity students into our six-week intense Pre-College program. Upon the expression of a student's interest and ability, we will provide supplementary information in the form of recommendations, to the office of admissions to promote enrollment. The School has admitted and matriculated several of these students.

Urban Design Regional Employment Action for Minorities (UDream): Diverse recent graduates in architecture, urban design, and landscape architecture participate in a five-week academic program modeled after the Urban Laboratory followed by a twelve-week internship with a local architecture or planning firm. From our first two cohorts of only seven students each, three diverse participants have remained in Pittsburgh. The goal of UDream is to increase the diversity of the local profession from which the School of Architecture draws many of our practicing adjunct instructors.

University Support of Faculty: In order to keep current in their knowledge of the changing demands of practice and licensure, the University has traditionally granted full-time members of the tenure-track faculty the right to devote up to an average of one day (of University time) per week to outside, professional activities, where that activity is consistent with that person's role as a member of the faculty and where that activity also enhances the contribution of the faculty member to the University. Such activity benefits both the faculty member and the University. The faculty member in participating in such activities must accept the responsibility to arrange his or her work so that during the academic year (and summer, if on salary) the faculty member will devote the appropriate amount of time to activities connected with the primary appointment. See http://www.cmu.edu/policies/documents/FacConsult.html under Full Time Service.

College Support of Faculty and Staff: The College of Fine Arts provides administrative support at the highest level to assist faculty and staff obtain and manage research funding. The Assistant Dean for Research is a Certified Research Administrator who assists in the preparation & submission of proposals in conjunction with the Office of Sponsored Programs, establishing and reporting on research accounts and acting as a liaison with Sponsored Projects Accounting.

Program Support of Faculty and Staff: The School of Architecture actively encourages it’s faculty and staff to pursue research and development opportunities by following University Policies on Leaves and time schedules, by providing regular funding as well as special funding opportunities for faculty, as well as publicizing professional meeting opportunities via our web page, email from the grants coordinator, newsletter and faculty meetings. Tenure, tenure-track and adjunct faculty are encouraged to attend meetings related to their expertise or interests.

University Support for Faculty Members: The University provides for faculty support through the Berkman Faculty Development Funds. Approximately one faculty member per year is supported by grants of up to $10,000 for course development, research, or scholarship. Myles and Carol Berkman, “to offer smart and dedicated faculty members the freedom to explore new ideas and passionate interests, with no strings attached”, created the Berkman Faculty Development Fund. CMU research grants on average of $10,000 are available through the Steinbrenner Institute for Environmental Education and Research (SEER). Architecture faculty members have been regular recipients since the previous visit.

Faculty Professional Development and Studio Grants: Grants have been established for each faculty member. Funds allocated to each faculty are intended to advance the teaching mission of the School and to promote professional development, including individual research endeavors and scholarship opportunities.

Tenure stream faculty members at the rank of Assistant or Associate Professor receive fixed amounts (in recent years, $1850 annually). Funds are intended to cover travel and conference fees (including registration, accommodation, etc.), books, computer media, equipment, photographic services, special printing needs, etc. Funds may also be used for events or to host guests.
Teaching, special and adjunct faculty members receive $12.50 per teaching unit. For example, teaching a fall studio at 18 units and spring studio at 18 units yields $450. Funds are intended to cover all expenses listed above for tenured and tenure track faculty, plus on-campus parking. Faculty members are responsible for monitoring their spending.

To promote intellectual exchange and travel, each studio year receives $2000 per semester. These funds are administered by the coordinator of each year, in discussion with the faculty team. Funds are intended primarily for inviting and hosting guest critics, class field trips and review receptions. An additional $3000 per year is granted to the 1st, 2nd and 3rd year studios to support a single field trip to explore significant architecture in a city other than Pittsburgh. Destinations since the previous NAAB visit have included New York, Boston, Washington, DC, Philadelphia, Chicago and the State of Ohio.

*Additional time for Research through Course Buyout*: The School provides the opportunity for full time Faculty to devote more time to funded research projects by buying out one teaching responsibility in exchange for charging $15,000 of their academic year salary + associated benefits to their research grant. This provides the School with budgetary freedom to find other qualified faculty to fill their teaching role for that semester.

*Leaves of Absence*: The School of Architecture encourages its faculty to take advantage of the University policy on Leaves of Absence to contribute to his/her professional stature as a scholar, as well as leaves necessary for personal reasons.

*Personal Leaves*: Leaves for personal circumstances are granted on either a half-time or a full-time basis. For example, a faculty member might request such leave to care for an ill, elderly parent. Also, such leave can be granted to assist in childcare.

*Professional Leaves*: Two policies concerning professional faculty leaves are outlined below: The first concerns leaves that are supported in large part by the University; the second concerns leaves that are supported wholly by outside funds.

*University-Supported Leaves*: The University-supported leaves will be financed by departments and colleges through teaching load exchanges or through the utilization of funds at their disposal, by as much outside money as faculty members can raise, supplemented by budgeted University funds which are administered, individually, by each dean solely for support of professional leaves.

*Professional Leaves Supported by Outside Funds*: The University encourages leaves of absence supported by outside funds. In general, such leaves will be granted for the purpose of professional development by the faculty member, but such purposes as service to the government, to corporations and to foundations will also be recognized and encouraged. The full Faculty Leave policy is available for review at: http://www.cmu.edu/policies/documents/FacLeaves.html

*Program Endowed Funds and Dedicated Gifts*: Since the previous visit, the School of Architecture has funded three new faculty research/support funds to further their development.

In 2007 the Ferguson Jacobs Prize has was established to promote the continuity of tradition in contemporary architectural practice. It encourages design excellence based on long-standing design principles that promote beauty and harmony in the built environment. Endowed by Mark Ferguson, Arch ’78 and Natalie Jacobs, Arch ’79, this prize of $5000 is available to students and faculty on alternating years in the School of Architecture. The prize 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. Emphasis is placed on the dissemination of knowledge of the classical tradition and impact on the wider School of Architecture community.

In 2010 the Margaret B. Gruger Faculty Fund was established to support the needs of the School of Architecture and its faculty. Each year the Head of the School solicits project proposals from the faculty that advance the mission and reputation of the School. Proposals are judged on:

- The impact of the proposal in relation to the candidate’s career development,
Part One | Institutional Support and Commitment To Continuous Improvement

- The impact of the proposal in relation to the mission of the School of Architecture,
- The candidate’s proposed public presentation to the wider School of Architecture community.

Upon completion of the project, the recipients of funding will be required to make a public presentation of their work to the School community. Typical award amounts are $5000.

In 2010 the Isabel Sophia Liceaga endowment in the School of Architecture was established to provide support to the highest priority needs of the School of Architecture and its constituents. To that end, the Head of the School solicits project proposals from the faculty that advance the mission and reputation of the School. A strong emphasis is placed upon projects that critically engage our students. Upon completion of the project, the recipients of funding are required to make a public presentation of their work to the School community. Award amounts are based upon Endowment distributions but have been up to $2000.

Support of Symposia: In recent years, the School has begun to support symposia, bringing researchers/practitioners to campus to share their knowledge on a specific set of topics via a week of lectures and workshops.

Evidence Of Professional Development And Studio Grants: Below are samples of Professional Development funds used for Conferences, Professional Memberships, Equipment, Computing and Supplies over the previous four years.

2011

Garcia Registration to attend The First International Conference on Gigapixel Imaging held on campus
Garcia External Optical Drive to assist in video and audio transfer and encoding for teaching
Garcia iPad for teaching and research
Garcia One Year Membership from 4/11/11 - 4/11/12 for Project File Management
Golli HP desktop computer with monitor used for teaching 1st Year Studio
Gross Travel to Los Angeles, CA to attend and present at the Sketching in Hardware 10 Conference
Gross Tubing Coils and Cutting Table Grid for Laser Cutter in the CoDe Lab
Gross Band saw for CoDe Lab
Gross Reallusion Animation software to host CoDe Lab visitors from MIT Media Lab
Gross Crazy Talk software to host CoDe Lab visitors from MIT Media Lab
Gutschow Netbook for teaching required courses and class trips
Gwin Expenses to attend the American Institute of Architects (AIA) Convention held in New Orleans, LA on May 11-14, 2011
Johnson Annual membership to the American Institute of Architects (AIA)
Krishnamurti Conference Fee for Ramesh Krishnamurti to attend the Ecobuild Conference December 6-10, 2010 in Washington, D.C.
Kurland 3D Studio Max Software for teaching Course #48-568
Lam Travel related expense to New York City to attend Simbuild Conference August 10-12, 2010
Lam Academic license renewal for Dymola software
Lee 2011 American Institute of Architects (AIA) Membership
Mondor Travel to Sacramento, CA to attend the Behavior, Energy & Climate Change Conference held Nov. 14-18, 2010
Torello Membership to the Society of Architectural Historians

2010

Clifford Travel to Delft, Netherlands to attend the Smart and Sustainable Built Environments Conference held June 15 - 19, 2009
Dong Travel to Vancouver, British Columbia to attend the Neural Information Processing Systems 2009 Conference Dec 7-12, 2009
Dong Travel to Glasgow Scotland to attend the 11th International Building Performance Simulation Association Conference July 27-30, 2009
Garcia Equipment to translate VHS video to digital formats for teaching Course 48-120
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garcia</td>
<td>Camera for teaching &amp; documenting Course 48-387 Scandinavia Summer Study Abroad</td>
</tr>
<tr>
<td>Gross</td>
<td>Travel to Atlanta, GA to attend the Computers &amp; Humans Interact Conference (CHI)</td>
</tr>
<tr>
<td>Gross</td>
<td>Travel to Atlanta, GA to attend and present at the ACM Human Factors Conference; Design Sketch Recognition Interfaces Workshop</td>
</tr>
<tr>
<td>Gross</td>
<td>Flip Camera used for CoDe Lab Research</td>
</tr>
<tr>
<td>Gutschow</td>
<td>College Art Association Conference Registration</td>
</tr>
<tr>
<td>Gutschow</td>
<td>Membership and Conference Registration for Society of Architectural Historians: Registration to Chair a Panel in April, 2010</td>
</tr>
<tr>
<td>Gutschow</td>
<td>Membership to College Art Association</td>
</tr>
<tr>
<td>Gutschow</td>
<td>Membership and Conference Registration for Society of Architectural Historians</td>
</tr>
<tr>
<td>Hutzell</td>
<td>Camera for Urban Design Documentation for Courses #48-453 &amp; #48-576</td>
</tr>
<tr>
<td>Hutzell</td>
<td>External hard drive to store student work for Course #48-576</td>
</tr>
<tr>
<td>Johnson</td>
<td>American Institute of Architects (AIA) Membership Renewal</td>
</tr>
<tr>
<td>Lam</td>
<td>Additional expenses while attending the &quot;Building Simulation 2009&quot; conference at the University of Glasgow between July 19 and July 30, 2009</td>
</tr>
<tr>
<td>Lam</td>
<td>Dell computer and ink for use with the Konstruct project</td>
</tr>
<tr>
<td>Lam</td>
<td>multi media keyboard and 6 foot cable for use with the konstruct project</td>
</tr>
<tr>
<td>Lee</td>
<td>Travel to Brussels, Belgium for the Integrated Design Project</td>
</tr>
<tr>
<td>McNutt</td>
<td>IMAC used to process and collect research for 2nd Year Studio presentations</td>
</tr>
<tr>
<td>Morris</td>
<td>Allowable portion of the cost of laptop used for teaching 4th Year Studio based on percent of effort</td>
</tr>
<tr>
<td>Reid</td>
<td>Replacement Monitor</td>
</tr>
<tr>
<td>Rosenblum</td>
<td>Digital camera and accessories for teaching Course 62-100</td>
</tr>
<tr>
<td>Shaw</td>
<td>Vernacular Architecture Forum Conference Registration</td>
</tr>
<tr>
<td>Shaw</td>
<td>Travel to Oakland, CA to be a Panel commentator for the Society of American City &amp; Regional Planning History, SACRPH Conference held Oct 15 - 18,2009</td>
</tr>
<tr>
<td>Shaw</td>
<td>File Scanning And Digitization Of Slide Collection Per Agreement Dated 7/29/09</td>
</tr>
<tr>
<td>Shaw</td>
<td>External Hard Drive For Storage Of Slide Files</td>
</tr>
<tr>
<td>Smith</td>
<td>The Furniture Society Conference Registration</td>
</tr>
<tr>
<td>Torello</td>
<td>Renewal of Membership to Society of Architectural Historians and Planning History Society</td>
</tr>
</tbody>
</table>

**2009**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akin</td>
<td>Parking for meeting with Prof. Dr. Yucel Yilmaz, President of KadirHas University to meet with Omer Akin and Dr. Cohon to establish exchange program</td>
</tr>
<tr>
<td>Akin</td>
<td>Purchases of small laptops and accessories for use with departmental projects</td>
</tr>
<tr>
<td>Arscott</td>
<td>Computer Memory and Back-up</td>
</tr>
<tr>
<td>Arscott</td>
<td>Supplies for Studio and Site Course</td>
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<tr>
<td>Brill</td>
<td>Rope for 1st Year Studio Project</td>
</tr>
<tr>
<td>Cooper</td>
<td>Art Supplies for Animation Project</td>
</tr>
<tr>
<td>Davis</td>
<td>Travel to Boston, MA to attend the Greenbuild Conference for continuing education and professional development</td>
</tr>
<tr>
<td>Davis</td>
<td>Conference Registration to attend the School Building Expo Conference</td>
</tr>
<tr>
<td>Ficca</td>
<td>Power Translators 5.0 for MAX Educational Version</td>
</tr>
<tr>
<td>Fineout</td>
<td>Paracloud software for research for Building Systems Studio</td>
</tr>
<tr>
<td>Garcia</td>
<td>Photochemistry supplies for research work</td>
</tr>
<tr>
<td>Gross</td>
<td>Electronic Supplies for teaching Making Things Interactive</td>
</tr>
<tr>
<td>Gross</td>
<td>Electronic Supplies for Prototyping Project</td>
</tr>
<tr>
<td>Gross</td>
<td>Travel to Banff, Canada to attend and present at the Digitel'08 Conference</td>
</tr>
<tr>
<td>Gross</td>
<td>CHI 2009 Boston Conference Registration</td>
</tr>
<tr>
<td>Gutschow</td>
<td>Website Production And Updates</td>
</tr>
<tr>
<td>Gutschow</td>
<td>USB jump drive + USB Cables</td>
</tr>
<tr>
<td>Hartkopf</td>
<td>Registration for attendance at the Pgh Tech Council business to business seminar</td>
</tr>
</tbody>
</table>
Part One | Institutional Support and Commitment To Continuous Improvement

Hutzell  Course Materials for Mapping Urbanism Course - Doha Spring'09
Hutzell  Computer Synching Software for Mac used for Global Ed Project
Johnson  Scanner used for student work
King    Digital Camera for documentation of student work
Kurland 3DS Max Software for Teaching
Lam    Card Reader
Loftness Additional desktop computer for research
Lucchino One year membership to AvantGuild an architectural publication for paper/ article submission
Mondor  Conference registration to attend the 2008 ACSA Teachers Conference
Oppenheim Travel to San Diego, CA to attend and present at the Smart Structures Conference held March 8 - 12,2009
Rico Gutierrez Purchase of desktop computer for work at home
Rothschild Materials for Urban Lab Studio Model
Shaw    Travel to Butte, MT to attend the Vernacular Architecture Forum Conference
Torello Society of Architectural Historians Membership
Wolff  MacBook Laptop for teaching purposes
Wolff    External hard drive for MacBook Laptop

2008
Abdul-Aziz Camera and battery for NEAT Cart Research
Burns Travel To Australia - Faculty Exchange For Continuum Project
Coohill Digital Camera For Teaching Course 48-433
El Samahy Airfare from Sharjah, UAE to Doha, Qatar for George Katodrytis, Studio X Guest Critic
Ficca  ACSA Conference Registration
Ficca Registration For The Future Of Professional Practice Conference
Ficca HP Printer For The Digital Fabrication Lab
Gross Interaction Design & Children Conference Registration
Gross Travel To Denmark To Present Paper At University Of Aarhus And Visit University Of Southern Denmark's Lab For Modular Robotics
Gutschow CAA 96TH Annual Conference Registration
Gutschow Membership to the Society of Architectural Historians
Hutzell To attend the Instant Cities Conference at the American University of Sharjah
Hutzell Digital Camera And Assories For Global Education Course Documentation
Hutzell Software For The Global Education Project
Kurland Software for Teaching Course 48-568
Lam Conference fee to attend COBEE 08- First International conference on building energy and environment in Dalian, China July 13-16, 2008
Lam Samsung Monitor for use with Konstruct project
Lam Ecotect Software for 4th Year Studio
Oppenheim Smart Structures and Materials Conference Registration
Rico Gutierrez Conference Registration for New Urbanism and the Booming Metropolis
Rico Gutierrez External hard drive for research and "Big Questions" seminar
Rico Gutierrez Tripod for documentation of projects
Rico Gutierrez Airplane power adapter for laptop
Shaw Conference Registration for Fresno CA Historical Society
Shaw Travel To Guatemala - Arch-Multi Course Development Research
Smith Registration to attend The Furniture Society Conference

Evidence Of Leaves Of Absence
Kai Gutschow  AY 2008-09  Unpaid Leave (supported by individual Getty Prize)
Laura Lee ABC 2008-09  Paid Leave
Laura Lee  AY 2009-Present  Unpaid Leave

Two other faculty members were approved for Leaves since the previous visit but both faculty members chose to postpone their leaves
Evidence Of University Funds

2009-10 Berkman Fund Awardees

Doug Cooper, Professor
Award of $7,000 for Hill Dancers
Douglas Cooper and Thomas Douglas jointly request $10,000 for partial support of the creation of a 12 minute-long animated film, to be called Hill Racers. The film will use green screen and 3-d modeling techniques to set characters into cityscape backgrounds created by Pittsburgh muralist, Douglas Cooper. The film will be built around a choral score composed and performed under the direction of Thomas Douglas, Artistic director of Pittsburgh’s Bach Choir. Funding sought from the Berkman Fund would be used principally to pay undergraduate students who will assist in the project’s realization.

Charles Rosenblum, Assistant Teaching Professor
Award of $9,000 for Biography of a Building: The Life, Times and Meaning of The College of Fine Arts.”
Biography of a Building will combine social history and architectural scholarship in its written narratives. It will include a portfolio of archival images of student life and a catalogue of details and references from the structure’s considerable program of pedagogical art in its collection of illustrations, all as one bound volume.

2008-09 Berkman Fund Awardees

Dale Clifford, Assistant Professor, Architecture
Award of $6,750 for Bio Logic-Responsive Building Systems
Professor Dale Clifford was awarded funding for his proposal, "Bio Logic_Responsive Building Systems". The construction, operation and demolition of the built environment consume land, water, energy and material resource at unsustainable levels, resulting in enormous stress on the world ecology. In response, the Berkmen Foundation will support an experimental course entitled, "Bio Logic_Responsive Building Systems" composed of an interdisciplinary group of faculty, undergraduate and graduate students with the directive to advance the transfer of knowledge and technology across disciplines and address energy consumption by the built environment.

Pablo Garcia, Assistant Professor, Architecture
Award of $7,296 for Catoptric Cistulae
Associate Professor Pablo Garcia received partial support for his proposed work, "Catoptric Cistulae". Funding will be used to research and craft five “mirror theaters” (catoptric cistulae), drawing from 17th and 18th century investigations into optical experimentation. These virtual realities, where observers peer into cabinet-sized boxes to find elaborate miniature worlds, replicated and altered by carefully hidden mirrors and lighting, have all but disappeared from consciousness in the age of photography, cinema and digital spaces. This research will revive a moribund craft while establishing a new context for the supposed novelty of 21st century digital technologies.

Kai Gutschow, Associate Professor, Architecture
Award of $5,500 for Publishing "Inventing Expressionism"
Professor Kai Gutschow received partial funding for his project, "Inventing Expressionism: Art, Criticism and Modern Architecture". Funding will provide financial assistance for the final steps in the publication of his book manuscript "Inventing Expressionism: Art, Criticism and Modern Architecture," including paying for illustrations and an index. "Inventing Expressionism" is a work of architectural history that explores the intellectual history and origins of German Expressionism from 1910-1925. It reconstructs how key critics, artists, intellectuals and architects developed a mind-set that synthesized the increasing hegemony of technology and applied functional design of the day with a more artistic and expressive sense of modern architecture.

Diane Shaw, Associate Professor
Award of $6,765 for Maya Field Workshop
Professor Diane Shaw received funding which will permit her to participate in the "Maya Field
Workshop” held in Palenque, Mexico under the direction of the MacArthur-award winner and Maya scholar David Stuart. The workshop is an intensive, on-site seminar devoted to introducing educators and researchers to the interdisciplinary world of Maya archaeology and MesoAmerican studies.

**Evidence Of Program Endowed Funds and Dedicated Gifts**

**2011 Ferguson Jacobs Prize in Architecture**
Award of $5000 to Assistant Teaching Professor Charles L. Rosenblum
The Carnegie Mellon University College of Fine Arts Centennial History will publish through the Carnegie Mellon University Press a book that is a history of the structure and a catalogue of its spaces, paintings and sculpture. Assistant Teaching Professor Charles L. Rosenblum, PhD, who completed his dissertation on Hornbostel's work, is collaborating with University Archivist, Jennie Benford. Rosenblum’s research focuses on the history and theory of the building’s design and construction, while Benford specializes in the social history and use of the building. Nearly all of the research and much of the writing is complete. Requested funds will be spent on acutely needed building photography.

**2009 Ferguson Jacobs Prize in Architecture**
Award of $5000 to Assistant Professor Pablo Garcia

**Drawing From Durer To Digital**
In a direct rebuke to the supposed novelty of digital design, I propose to research and craft automated drawing devices from the 16th to 19th centuries. These machines will perform complex drawing tasks, currently assumed to reside exclusively in the digital domain, using finely crafted analog parts in an exhibition allowing demonstrations and experiments in a public setting. These devices will debunk the myth of 21st century complexity in architecture by elucidating complex drawing methods developed throughout the Renaissance and Baroque periods, perfected in the late 18th century and largely forgotten as the Modern period began. Construction and demonstration of three drawing machines were proposed. Funds were used to travel to research these devices as well as purchase materials for construction.

**2007 Ferguson Jacobs Prize in Architecture**
Awards of $5000 each to Professors Omer Akin and Diane Shaw
Professor Omer Akin, is the Architect of Record for the Turkish Nationality Room in the Cathedral of Learning at the University of Pittsburgh. He chose to use the Turkish traditional Kunekari form of carpentry for the crafting of large panels out of relatively small pieces of wood. This enables the creating of exceptional craft from limited size wood members while also eliminating the bending and warping of wood when moved from one location to another - allowing craftsmen in Turkey to produce the panels and ship them to Pittsburgh. The award was used to fund the careful collaboration between Prof. Akin and the craftsmen. In addition to the installation of the Turkish Nationality Room in the Cathedral of Learning, will be a manuscript based on the research conducted and the documented experiences who executed the work.

Professor Diane Shaw received funding to continue her research for a book exploring Village Improvement and the New England Landscape. Funds were used to support a 3 week research trip to New England as well as the acquisition of t early 20th century books and articles in support of her book which will provide a greater historical and theoretical understanding of traditional town planning and its lessons for modern application. Her research promises a fuller understanding of what constitutes historical authenticity and the continuum of style as it accords with contemporary values and social needs. The classical tradition as a constant, dynamic force tapped to meet present-day needs can best be strengthened through careful analysis of precedent.

**2011 Margaret B. Gruger Faculty Fund**
Awards of $5000 each to Professors Gerard Damiani and Kai Gutschow
Adjunct Professor in Practice, Gerard Damiani proposal was titled: "Mentorship in the Age of Environmental Responsibility: Participation in the 2011 Glenn Murcutt International Master Class in Australia". "Commenced in 2001, the annual Master Class has been described by many
participants as "a life changing experience" and has created a wonderful active international alumni network which includes practicing architects (older and younger), academics, postgraduates and senior students from Argentina, Austria, Bangladesh, Belgium, Brazil, Bulgaria, Canada, China, Colombia, Costa Rica, Croatia, Curacao, Cyprus, Dominica, Denmark, England, Ethiopia, Faroe Islands, Finland, France, Germany, Guernsey, India, Ireland, Italy, Jamaica, S.Korea, Kyrgyzstan, Kuwait, Luxembourg, Mexico, Montserrat, Nepal, The Netherlands, New Zealand, Norway, Philippines, Poland, Portugal, Puerto Rico, Romania, Scotland, Singapore, Slovenia, South Africa, Spain, Sweden, Taiwan, Uruguay, United Arab Emirates, Uruguay, Vietnam, Wales, many states of the US and, of course, Australia."

Associate Professor, Kai Gutschow's proposal was titled: "Inspired Making: Halifax and the 'Ideas in Things' Conference 2011". "The Ghost Lab, on the farm of Brian MacKay-Lyons on the Nova Scotian coast of Canada, has been the research laboratory for MacKay-Lyons Sweetapple Architects since 1994. It has been a meeting place for an international 'school' of architects who share a commitment to: landscape, making and community. From June 14th - 17th, 2011, 24 members of this virtual school will congregate on the Ghost site as Speakers for a Conference on the theme of 'Ideas in Things'. These Architects operate within the master builder tradition and insist on the unity of our discipline, which embraces both the academy and practice, or the mind and the hand. Through a commitment to place, we represent a resistance to the numbing effects of a globalized culture."

2010 Margaret B. Gruger Faculty Fund
Awards of $5000 each to Professors Kai Gutschow and Dale Clifford

Associate Professor Gutschow's proposal, "Publicizing Pittsburgh's Postwar Modern Architecture", "seeks to help make publically accessible valuable research findings on Pittsburgh's postwar modern architecture, as part of a series of inter-connected, city-wide efforts at the moment to call attention to and to celebrate Pittsburgh's rich architectural heritage from the post-World War II era. Professor Gutschow proposes to achieve this through the creation of a vibrant, information-rich blog/website.

Assistant Professor Clifford's proposal, "Plywood Nervi, Material Experiments in Force Trajectories - plywood + carbon fiber", intends to form a course that advances the boundary of composite construction with materials plywood and carbon fiber. The pedagogy will emanate from Material Experiments that characterize the relationship between material placement, aesthetics and structural performance". Professor Clifford will attempt to "produce an exhibit that will demonstrate logical and empirical proof of the materials and forces that give form to an architectural prospect."

2011 Isabel Sophia Liceaga Discretionary Fund
Award of $2000 given to Professor Jeremy Ficca

Associate Professor, Jeremy Ficca proposed research titled "Digital Tectonics: The Building Joint Reconsidered". Per Professor Ficca, "The research does not seek to solve a particular construction problem, but rather aims to explore the potential within novel processes. As a point of departure, the wall will be used as the focus for study. Performative criteria will be utilized to inform the design and development of the components and assembly. This initial phase of research will result in the production of prototype wall assemblies and joinery system. The associated robotic fabrication workflow and affect upon the design and fabrication loop is of equal importance to the physical object and will offer a significant contribution to the current digital fabrication discourse."

2010 Isabel Sophia Liceaga Discretionary Fund
Award of $1000 each given to Adjunct Instructors Bing Dong and Erica Cochran

Bing Dong and Erica Cochran were chosen as the first recipients of the Isabel Sophia Liceaga Discretionary Fund. Their proposal entitle, "Total Sustainable Urban Environment Performance Studies" proposes "to investigate the design and measured environment performance of a neighborhood in Pittsburgh with the goal to document existing environmental conditions and
propose design solutions with a low environmental carbon footprint." Their research will be "integrated into the Architecture Design Studio: The Urban Laboratory's design studio design project with urban level simulation and measurement tools."

Evidence Of Symposia

School of Architecture Tectonics Symposium - February 2011

Traditional and Emergent Material Processes in Architecture conferred to make visible the process of design and construction that emanate from Emergent and Traditional Material Experiments and Fabrication Technologies. Speakers hold a range of experience relevant to the design and construction of complete geometries, from the handcrafting of exceptional architectural component to the development of state-of-the-art building modeling, fabrication and management software. A series of lecture and workshops will be held with focus on the status of analogue, mathematical and physical modeling in contemporary practice.

Richard Kroeker - Negotiating Nature and Technology
Director, Dalhousie School of Architecture
Halifax, Nova Scotia
Lecture: Tuesday, February 15, 2011 at 10:30am MMCH A14
Workshop: Tuesday, February 15, 2011 at 4:30pm CFA 214 (RSVP)

Michael Mulhern - Material Technologies
Principal, TriPyramid Structures, Inc.
Westford, MA
Lecture: Wednesday, February 16, 2011 at 1:30pm
Workshop: Wednesday, February 16, 2011 at 3:00pm

Dale Stenning - Merging Design, Fabrication and Construction Models
Operations Manager, Hoffman Construction, Seattle, WA
Lecture: Thursday, February 17, 2011 at 10:30am
Workshop: Thursday, February 17, 2011 at 12:00pm

Rolando Mendoza - Digital Building Design and Construction
Managing Director, Service Group Gehry Technologies
Los Angeles, CA
Lecture: Friday, February 18, 2011 at 1:30pm
Workshop: Friday, February 18, 2011 at 3:00pm

Digital Tectonics: Robotic Fabrication Symposium - November 2009

As the impact of digital fabrication systems permeates the construction industry, opportunities for increased control, customization and efficiency emerge. The computer numerically controlled operation of such equipment allows for an increasingly fluid connection between design data and fabrication instructional data. By extension of this numerically reliant process, algorithmic processes and computationally driven design rule systems can inform digital fabrication processes and manifest beyond the screen. Industrial robots have long been utilized in the automotive industry for the precise repeatability of finite tasks. Recently, the cost and workflow of these systems has afforded investigations that seek to tap into the underlining process flexibility of the robot for the production of customizable building components that redefine material use and assembly.

Three practitioners and educators are presented in this mini-symposium - Martin Bechthold, Kostas Terzidis and Fabio Gramazio (Gramazio & Kohler) - who are utilizing advanced digital design and production work flows for the production of individualized, tailored design solutions. While reliant upon software and hardware machines, the voice of the author is evident in the work of each presenter and promotes alternative modes of expression reliant upon the use of the machine. The "Digital Tectonics" mini-symposium, directed by Professor Jeremy Ficca is a venture of the Digital Fabrication Laboratory (dFAB) in the CMU School of Architecture.

Lecture
6pm, November 3
Part One | Institutional Support and Commitment To Continuous Improvement

Giant Eagle Auditorium
Martin Bechthold
Grasshopper Workshop
Noon-1:30pm, November 4, College of Fine Arts (CFA), Room 317
Lecture
6pm, November 4
Giant Eagle Auditorium
Kostas Terzidis
Dialogue
9-10:30am, November 5
College of Fine Arts (CFA), Room 214
Fabio Gramazio
Processing Workshop
10:30am-noon November 5
College of Fine Arts (CFA), Room 317
Kostas Terzidis
Luncheon + Discussion
12:30-1:30pm November 5
College of Fine Arts (CFA), Room 214
Lecture
6pm, November 5
Giant Eagle Auditorium
Fabio Gramazio

Code, Form, Space Mini-Symposium - February 2009
Algorithmic processes, harnessed through the medium of code allow creators to generate complex forms and organic structures by the application of elementary but carefully-tuned sets of rules. Digital fabrication systems, such as computer-controlled laser cutters, 3D printers and machining systems, offer a nearly instantaneous way of exploring ideas in new spatial and material formats. The combination of these two approaches represents an extreme but growing position in art and design, wherein the traditions of handcraft are exchanged almost entirely for the unprecedented possibilities made possible through a demanding new form of mind-craft.

In this mini-symposium, we present four practitioners - Casey Reas, Marius Watz, Ben Pell and MOS Architects (directed by Michael Meredith and Hilary Sample) - who are refiguring the material world through rule systems and digital fabrication tools. Their work spans the disciplines of art, design, architecture and engineering; the objectives of provocation, of utility and of pure aesthetic delight; and the realms of bits, atoms and ideas. All of these practitioners have singularly rigorous personal aesthetics and sensitive understandings of how the arts can transform the way we live. In their contrasting approaches at the limits of digital craft we can catch a glimpse of a new humanism in our increasingly computer-articulated environments. The "Code, Form, Space" mini-symposium, directed by Professors Jeremy Ficca and Golan Levin, is a collaborative venture of the Digital Fabrication Laboratory (dFAB) in the CMU School of Architecture and the CMU School of Art Lecture Series.

Dialogue
5pm, February 3
McConomy Auditorium
C.E.B. Reas, www.reas.com
Design | Media Arts, UCLA
Oslo School of Architecture
Oslo National Academy of the Arts
Workshop
8:30am-11:30am February 4
Evidence Of Research

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Carnegie Mellon University | School of Architecture
Architecture Program Report For The 2012 NAAB Visit For Continuing Accreditation | Page 22
### Part One | Institutional Support and Commitment To Continuous Improvement

<table>
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<th>Name(s)</th>
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Appointment, Promotion & Tenure Procedures: The present Appointment and Tenure Policy of Carnegie Mellon University establishes a system of faculty appointments that is intended to lead to permanent appointment (indefinite tenure) and that

- provides that each faculty member is appointed because of competence in his or her field;
- responds to the expectation that each faculty member will maintain and increase mastery and creativity in his or her field as well as in educating others in it;
- assures academic freedom to all faculty members; and
- specifies the responsibilities imposed on faculty, administration and trustees to secure these goals.

To this end, the Policy

- states the kinds of appointment that faculty members may hold and the conditions under which such appointments are made and held;
- establishes due process for the orderly consideration of decisions on appointment and on indefinite tenure;
- outlines the criteria that are to be applied in making these decisions; and
- provides mechanisms for the resolution, by due process and in good faith, of conflicts arising out of the implementation of this Policy.

In all educational activities, each faculty member has the freedom and the responsibility to choose the material and the format that will, in his or her judgment, best serve the objectives of the specific course or activity as well as of the educational program of Carnegie Mellon University. The faculty member has the right to express opinions on matters pertinent to the subject; he or she has the responsibility to respect the freedom of belief of the students and their right to express their opinions and the duty to make clear the distinction between information and opinion.

Each faculty member has the freedom to determine how to make contributions to his or her field, in education, research, scholarship or artistic creation and the responsibility to adhere to the ethical standards and the evidentiary criteria generally accepted by professionals in that field.

It is the duty of the administrative officers and of the trustees of Carnegie Mellon University to assist and protect the faculty in the exercise of these freedoms and responsibilities.

In general, the criteria are:

Teaching and Other Educational Activities: Teaching, a principal function of the faculty, is direct educational involvement with students inside or outside the classroom, laboratory or studio and includes such activities as classroom, laboratory or studio instruction, seminars, independent study project supervision and supervision of graduate and postdoctoral research. It also includes the advising of undergraduate and graduate students. Competence in teaching should be
documented by means including colleague evaluations and meaningful student evaluations obtained through surveys and solicited and unsolicited written opinions. Other educational activities include development of new or reformed courses, curricula, degree programs and training programs; educational publications, textbooks and other instructional materials; and technical and critical popularization.

**Research, Scholarly or Artistic Activities:** Research, scholarly or artistic activities are those activities that lead to the production of new knowledge; to increased problem-solving capabilities, including design and analysis; to original critical or historical theory and interpretation; or to the production of art or artistic performance. Competence in the activities of this category should be documented by the record of accomplishment, including publications, commissions, inventions and works of art; the record of recognition, including awards, prizes, honors from professional societies, exhibitions and critical reviews of publications, artistic production and research proposals; and the considered opinions of outstanding experts in the candidate’s field, both inside and outside the University.

**Other Considerations:** Candidates for appointment and tenure decisions may also carry out professional activities that should be considered: e.g., professional practice, consulting, public service, service in professional and technical societies and editorial work on professional journals and other publications. Insofar as such activities either contribute to, or are an extension of, either of the two categories of activities described earlier in this subsection, they should be considered when evaluating qualifications under each of these two categories. It is expected that every faculty member will contribute, by means of his or her expertise and the commitment of reasonable time and effort, to the functioning and welfare of the University community and of his or her academic unit in particular, through such activities as chairing or serving on committees and councils, providing professional supervision of educational, research and other scholarly University resources, etc. Quality of contributions in this area of Service is to be considered (as well as substantial failure to attend to it), in addition to the main two categories of activities described above.

The full University Policy is here: [http://www.cmu.edu/policies/documents/Tenure.html](http://www.cmu.edu/policies/documents/Tenure.html)

Because of the diversity of academic environments and faculty activities in the University's colleges and schools, each of these units has a document, here called that college's or school's Appointment and Tenure Policy, describing its own detailed criteria and methods for evaluating each candidate for an appointment or tenure decision, within the provisions of the section of the present Policy entitled Faculty Appointments: Criteria; and providing for procedures for the consideration of appointment and tenure decisions leading to recommendations forwarded by the dean, as prescribed in the subsection on General rules of the present section of this Policy. The Appointment and Tenure Policy of each college or school must conform to the provisions of the present University Policy; to the extent of any inconsistency between a college's or school's policy and this University Policy, the latter shall prevail.

The Appointment and Tenure Policy of each college or school is established and amended as needed from time to time, by the respective college or school council with the approval of the dean and with opportunity given for consultation with the faculty of the respective unit. The policy is subject to review by the University Committees on Faculty Appointments (see the subsection on University Committees of the present section of this Policy), in particular on the occasion of an amendment.

With regard to the procedure to be followed in the consideration of appointment and tenure decisions, the Appointment and Tenure Policy of each college or school should provide for deliberate examination of candidate qualifications and for due attention to the philosophy and direction of the educational and scholarly or artistic programs of the college or school and of the relevant department. To that end, the policy should require effective participation of the department head and of the departmental faculty of the appropriate rank and tenure status in formulating departmental recommendations, including, if appropriate, the opinion of departmental
committees. The departmental process should also provide for reasonable opportunities for the expression of opinion on the decision by other faculty members (including research faculty) and, if appropriate, of graduate and undergraduate students.

For those appointment or tenure decisions for which a comprehensive procedure is prescribed by the provisions of the subsection on General rules of the present section of this Policy, the Appointment and Tenure Policy of each college or school should further require:

Effective participation by the dean and by the department heads in the college or school, as well as by faculty members of the appropriate rank and tenure status and of expertise representing the breadth of the college's or school's academic activities, through standing and/or ad-hoc college- or school-wide committees.

The full College document including the School of Architecture addendum is here:
http://www.cfa.cmu.edu/pdf/cfa_rpt.pdf

School of Architecture Lecture Series

The nature of architecture is itself ambiguous. Architecture, as physic, a noun, is that of a constructed object; fixed, static and enduring, the material reality of a building. Architecture, as metaphysic, a verb, is that of the state of the idea; fluid, alive and in flux, the dynamic experience of the individual. Adroitly duplicitous, architecture straddles the territory existing between the gravity of built form and the radical luminosity of its own critical deconstruction.

Architecture is changing. As the world, its technologies and our cultures are rapidly and progressively evolving, so is the practice of architecture. The interests, influences and investigations in current architectural practice are broad and unrestrained by the limits of convention or science. There exists a rich tradition of the discipline of architecture and also an unknown future, full of possibilities yet to be invented.

These lectures are strategically non-strategic. As architecture is a stealthily moving target, so the series is intentionally eclectic, reflecting the expansive diversity of the field. The lecture series provides both a measure of what is out there and a challenge to the divergent potentials of where architecture can go.

2011/12

Sep 15        Global Cities, Model Worlds, presented as part of the 2011 Pittsburgh Biennial
Oct 01        Architecture Symposium: Irish Architecture Now, presented by the Heinz Architectural Center
Oct 03        Dhiru Thadani, David Lewis Lecture on Urban Design
Oct 24        Kelly Hutzell and Rami el Samahy, over,under
Nov 07        Antonino Saggio, University of La Sapienza, Rome
Nov 28        Richard Sennett, New York University, London School of Economics
-TBA-         Mark Goulthorpe, dECOi
-TBA-         Peter Stutchbury, Peter Stutchbury Architecture, Sydney
-TBA-         Charles Rosenblum, Carnegie Mellon University
-TBA-         Jesse Seppi, Tronic Studio
-TBA-         Tatiana Bilbao, Architect, Mexico City

2010/11

Sep 20        Marilyn Jordan Taylor, David Lewis Lecture on Urban Design
Oct 04        Peter Bohlin, Bohlin Cywinski Jackson
Nov 08        Smackdown: Lubetz v Damiani, faculty dialogue
Jan 31        Gordon Gill, Adrian Smith + Gordon Gill
Feb 07        Dora Epstein Jones, SCI-Arc, Jones, Partners: Architecture
Feb 14        Dale Clifford, Carnegie Mellon University
Feb 21        Farshid Moussavi, Foreign Office Architects
Mar 21        Gaston Nogues, Ball-Nogues Studio
Apr 04        Chris Shanley, Marmol Radziner
Part One | Institutional Support and Commitment To Continuous Improvement

Apr 18 Craig Dykers, Snhetta

2009/10
Oct 29 Peter Bosselmann, David Lewis Lecture on Urban Design
Feb 15 Pablo Garcia, POINT
Feb 22 Grace La and James Dallman, LaDallman
Mar 29 Ben Aranda, Aranda\Lasch
Apr 03 Lars Spuybroek, NOX
Apr 05 Andrew Freear, Rural Studio
Apr 19 Thom Mayne, Morphosis

2008/09
Sep 15 Joan Busquets, David Lewis Lecture on Urban Design
Nov 03 Mark Pasnik, over,under
Nov 14 R Steven Lewis, National Organization of Minority Architects
Jan 20 Bruce Mau, Bruce Mau Design, Massive Change
Jan 22 Peter Fend, Ocean Earth Development
Feb 02 Tom Wiscombe, Emergent Architects
Feb 16 Sarah Dunn, UrbanLab, Archeworks
Feb 27 Fernando Romero, LAR/ Laboratory of Architecture
Mar 23 Preston Scott Cohen, Preston Scott Cohen Architecture, Harvard GSD
Mar 30 Aaron Betsky, Cincinnati Art Museum, Venice Biennale
Apr 20 Bill Mitchell, MIT Design Lab

2006/07
Oct 9 Duany and Plater-Zyberk, DPZ Associates David Lewis Lecture by Urban Design Associates
Oct 13 George Stiny, MIT
Jan 19 David Adjaye, Adjaye Associates Jill Watson Memorial Lecture
Jan 19 Elizabeth Diller, Diller Scofidio, Renfro Jill Watson Memorial Lecture
Jan 29 Fritz Haeg, Fritz Haeg Studio Alumnus
Feb 26 Gerard Damiani, Studio D\ÄArc Epic Metals Lecture
Mar 19 Allison Williams, Perkins + Will Hans Vetter Memorial Lecture
Mar 26 Mark Wigley, Columbia University William Finglass Lecture
Apr 02 Anthony Vidler, Cooper Union
Apr 23 Adam Caruso, Caruso St. John Architecture Henry Hornbostel Lecture
May 11 Hansy Better Barraza, Studio Luz Fifth Year Show Lecture

2005/06
Mar 25 Michael Maltzan, Michael Maltzan Architecture
Sep 26 Leon Krier, Leon Krier Architect David Lewis Lecture by Urban Design Associates
Oct 27 John Sergio Fisher, John Sergio Fisher Architect
Jan 30 Andrew Zago, Zago Architecture William Finglass Lecture
Feb 06 Niall McLaughlin, Niall McLaughlin Architects
Feb 13 Mira Nakashima, George Nakashima Woodworker
Feb 20 Hadrian Predock, Predock Frane Architects Hans Vetter Memorial Lecture
Feb 27 Arthur Lubetz, Arthur Lubetz Associates
Mar 20 Monica Ponce de Leon, Office d\Ä
Apr 03 Mack Scogin, Mack Scogin Merrill Elam Architects
Apr 10 Peter Stamberg/Paul Aferiat, Stamberg Aferiat Architecture
Apr 24 Roger Duffy, Skidmore Owings & Merrill Henry Hornbostel Lecture

Partial List of Visiting Studio Critics
S11 48105 Ben Nicholson, Wade Kavanaugh, Stephen Nguyen, John Thackera, Nick Durrant, Gill Wildman
Public Exhibitions

The School of Architecture collaborates closely with the Heinz Architectural Center (HAC) to share resources. The HAC co-sponsors the School of Architecture Lecture series by donating the venue and security. The School of Architecture promotes Public Exhibitions at the HAC through print and web materials. As such, the School does not mount its own exhibitions. In addition, a local firm - Edge Studio - provides gallery space available for student exhibitions and installations in support of the School’s mission. Many Edge Studio architects are members of the School’s Adjunct Faculty.
Student Resources & Development

Application Process: Architecture applicants complete The Common Application for evaluation by the University Undergraduate Office of Admission committee and apply directly to the Bachelor of Architecture degree program through the Carnegie Mellon University Application Supplement. The Supplement directs applicants to the College of Fine Arts Admission website to submit materials evaluated by the School of Architecture.

Architecture applicants are required to complete a questionnaire and have the option of submitting a portfolio of creative work for review by the School of Architecture. Portfolios are submitted electronically and evaluated by the Architecture Admission Committee consisting of faculty and student representatives. On-campus portfolio reviews are available for applicants who what to visit our campus to interview with a faculty member.

The undergraduate admission procedure is a collaborative process between the Office of Admission and the School of Architecture. The Office of Admission Committee, supervised by Jason Nevinger, Associate Director of Admission and the School of Architecture Admission Committee, managed by Alexis McCune, Coordinator of Student Programs, meets to evaluate applicants and make admission decisions for both Early Decision and Regular Decision Applicants. Students are notified of their Early or Regular Decision Admission decision in mid-December and April, respectively.

Academic Advising: Architecture students can receive advice from many sources, including the faculty, staff and the Head of the School. In addition, we encourage all of our students to become involved with organizations (such as AIAS) and committees (such as the Student Advisory Council) so that they can also learn from each other.

The main point of contact for academic advice is the Senior Academic Advisor. The academic advisor answers questions about registration, course options, study away and academic actions. Meetings with the academic advisor can be scheduled as individual appointments to discuss concerns regarding academic progress, special academic needs and personal/social adjustment issues. Group advising sessions are also held to cover various topics including registration planning, study away process and choosing a minor/additional major.

Semester Grades Meetings. At the mid point and close of every semester, students are evaluated on their academic progress. The grades meetings are held at the studio, School and College level. Evaluating each individual student at both the mid point and end of semester, allows the School of track student progress and provide additional support and referral to campus resources as necessary.

Mid Semester Grades Meeting: Each student is evaluated at the mid point of the semester. Students who are struggling based on their mid semester grades are contacted by the Senior Academic Advisor. If a student has received a D/R in one course, the individual instructor is asked to reach out to the student for additional support. If a student has received multiple D/R’s they are required to meet with the Head of the School to discuss any concerns and evaluate their academic progress. Referrals to other campus resources are made at this time.

Studio Grades Meeting: At the end of each semester, the Head, the studio Coordinator and the studio faculty meet to review the work across the studio to ensure that all students are performing up to the expectations of the School. Studio grades are finalized at this meeting per the criteria in each studio syllabus. Studio Commends are determined at this meeting.

School Grades Meeting: Once final grades have been submitted and compiled, the Grades Meetings begin. A faculty representative from each sequence (Design, Drawing and Media, History, Building Technology, Environmental Technology, Practice) and the coordinator of each design year meet with the Head and Senior Academic Advisor to review each student’s academic progress. Faculty pay specific attention to students with a grade lower than a C, students with a QPA of less than 1.75 for freshmen and 2.00 for others and students on a previous academic
action. At this time, the recommendations of the Semester Review are again discussed. The faculty present at the Grades Meeting approve all actions.

College Grades Meeting: The Associate Dean and the College Council then take these actions to the College of Fine Arts Grades Meeting where they are reviewed and issued. The student is sent a letter explaining the action, the reason for the action and any conditions that may be associated with this action and conditions under which a student will be removed from the action. The decision to impose an academic action is first initiated by the faculty most closely involved in the student's primary area of study and then presented at both the School Grades Meeting and at the College Grades Meeting. Academic Actions are the result of outstanding performance that lead to design commendations and School honors or poor performance as represented by grades typically below a C and/or a low QPA. A student who is not making satisfactory progress toward graduation may be asked to leave the program even though the student has received passing (D or above) grades.

Careers: The Carnegie Mellon University Career and Professional Development Center is available to assist students with career exploration, experiential learning and connections with employers and opportunities. Two staff members are dedicated in part to consulting with architecture students and employers respectively:

Elaine Stolick
Assistant Director, Career and Professional Development Center
Career Consultant, College of Fine Arts - Architecture, Art, Drama and Music

Sonjala Williams
Assistant Director, Career and Professional Development Center
Career Consultant and Employer Relations, College of Fine Arts - Architecture and Design

TartanTrak: Carnegie Mellon students and alumni are connected to employment opportunities through TartanTrak, the Carnegie Mellon's online recruiting system for the Career and Professional Development Center. Students and alumni can submit resumes and sign up for Career and Professional Development Center events. Employers are able to post job positions, register for campus events and recruit students for both summer and full-time internships.

In October 2010, the School of Architecture and the Career and Professional Development Center conducted a workshop to teach students how to utilize the TartanTrak and its specific career navigating tools.

SoArch Professional Development / IDP Educator Office Hours are available weekly during non-studio afternoons for students to be able to meet with Alexis McCune, Coordinator of Student Programs, IDP Educator, to ask architecture-specific questions about the Intern Development Program and professional development. Students were able to receive input on resumes, cover letters and portfolios. These office hours were well-utilized and students found them to be helpful.

Career Audits were instituted by Alexis McCune as a means to assess students’ professional development interests, progress and needs and to facilitate discussion over the course of a student’s tenure in the School of Architecture. Career Audits were completed for each fifth-year student during individual consultations and with underclass students during office hour appointments.

Field Trips And Other Off-Campus Activities: School of Architecture students have the unique opportunity to explore outside of the studio classroom. Architecture coursework and student programming engages students in their communities and encourages travel to other metropolitan areas. Students are notified of lectures, conferences and events happening in our city and at other University campuses through bulletin board postings located outside the CFA 200 and Margaret Morrison studios. Important announcements about these events are posted weekly on the “What’s Good” section of the School of Architecture website and fed to social our social media outlets of Facebook and Twitter.
The Urban Laboratory design studio seeks to educate architects to be leaders for vision-based change at the scales of neighborhood, city and region. The studio will focus on a particular kind of urban design project: the creation of a long-term community vision plan for a neighborhood of Pittsburgh. Students engage community members and stakeholders through three phases: analysis, urban design framework and an urban design project. In the past five years, the studio has worked in the Pittsburgh neighborhoods of: Hazelwood (2007, 2008); Larimer (2008); Wilkinsburg (2008); Homewood (2009); Downtown (2009, 2010); Lawrenceville (2010); and Chateau/Manchester (2011).

The Pittsburgh Gallery Crawl: The Pittsburgh Cultural Trust sponsors this event. The Gallery Crawl is a free quarterly showcase of art and entertainment in the heart of Pittsburgh’s Downtown neighborhood Cultural District. Students in the 2009 and 2010 Urban Laboratory participated with a participatory exhibition of their work.

Young Architects Forum (YAF) of Pittsburgh offers students to engage with local, young professionals through participation in educational outreach programming that has included student participation in the following: networking receptions, PechaKucha presentations, popcorn/movie socials and the opportunity to become a participating member of the Young Architects Forum as students and/or alumni.

cityLive!, an event of cityLAB, a local Pittsburgh “Do Tank,” invites students as participants and has engaged their expertise in their monthly discussions.

Professional Societies And Organizations, Honor Societies and Other Campus-Wide Activities: In conjunction with the Office of Student Activities at Carnegie Mellon University, School of Architecture students have access to services and resources that engage students in campus culture. Carnegie Mellon offers a variety of student organizations to explore personal interests and meet fellow students from other colleges and schools across campus.

Each fall, an activities fair is held to introduce students to the various student groups as well as garner interest and participation. The School encourages participation in student organizations and students from the School have been instrumental to the success of these organizations that include, but are not limited to: special interest clubs, Student Government, Greek Life, Orientation, Residence Life, GLBT and Varsity and Intramural Sports. A full list of student organizations and contact information is available at the Student Activities website at www.studentaffairs.

Within the School of Architecture, students have the opportunity to participate in several student programs:

The Student Advisory Council in the School of Architecture consists of three representatives from each year that are elected by the members of that year. They serve a one-year academic term. Elections are organized at the beginning of the fall semester. The SAC meets once each month to provide a more formal means of interaction between students, faculty and administration. The student representatives are responsible for communicating the efforts of the council to their colleagues, bringing to the council issues forwarded by fellow students and contributing time, energy and ideas to improve both the School and the University.

The American Institute of Architecture Students (AIAS) promotes excellence in architecture education, training and practice in the School of Architecture at Carnegie Mellon University. The organization seeks to enrich our learning community with a spirit of collaboration and organizes students’ efforts for the advancement of the art and science of architecture. The CMU chapter solicits membership at the beginning of the fall semester. Various discounts and subscriptions are available for members.

The Architectural Mentorship Program (AMP) is a means to foster interaction and growth between students of all years in the School of Architecture. Mentors, or AMP’s, will serve as friends to incoming first-year students to answer questions, provide support, give critiques and advice and expose them to the college experience. This mentoring program gives underclassman and...
upperclassmen the opportunity to socialize, discuss, educate and learn from one another through organized events and more informal interaction inside and outside of the studio setting.

*Phi Beta Kappa*: The School of Architecture nominates eligible students annually to the Phi Beta Kappa Society.

*Evidence of support to attend meetings of student organizations and honorary societies*: Carnegie Mellon University and the School of Architecture provide both schedule flexibility and monetary support for students to attend student organization meetings and honorary societies.

Carnegie Mellon University has an Undergraduate Course Meeting policy that classes and exams are not to be held on weekdays between the hours of 4:30pm and 6:30pm so that students have a period in which they may participate in co-curricular meetings and athletics. In accordance with this policy, School of Architecture courses conclude at 4:30pm and begin at 6:30pm.

*University Student Organization Funding Sources*: Every semester, Carnegie Mellon collects a Student Activities Fee from all undergraduate and graduate students attending the University. That fee is distributed among GSA, Senate and the Joint Funding Committee (JFC) for allocation in support of student activities on campus. Allocations are available to support any one-time or first-time project or activity. Any student or student organization—recognized or not—is eligible for a special allocation. Students can obtain funding by one of two processes: 1) Petitioning the JFC for an annual operating budget and 2) Petitioning the Senate and/or GSA special allocation committees for funding.

The Joint Funding Committee (JFC) allocates student government recognized organizations an annual subsidy to offset operating costs that are not met through income and fundraising. In the fall, members of the JFC work with individual organizations.

*School of Architecture Student Organization Funding Sources*: The School of Architecture financially supported student organization meetings and activities as follows (*outlined in section One.2.4 Financial Resources*).

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*The students did not participate in the creation of a Carnival Booth in Academic Year 2010-11

*Evidence Of Undergraduate Student Research & Awards*

**2010-2011 (To Date)**

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<td>Xianghu Wu</td>
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<td>$300/Team</td>
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**Part One | Institutional Support and Commitment To Continuous Improvement**

Patrick Amorosa, Samantha Carter, Max Arocena, Katherine Koloska, Jarrod Coleman (Team)

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**2006-2007**

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<td>Jan P. Junge Award</td>
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**2005-2006**

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<td>Luther S. Lashmit Award</td>
<td>$7500</td>
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Lauren Distefano  Louis Vaentour Traveling Scholarship  $7500
2.2 Administrative Structure & Governance

*College of Fine Arts:* The University consists of seven colleges and schools: the College of Fine Arts, the Carnegie Institute of Technology (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 H. John Heinz III College (Public Policy & Information Systems). In addition to the Pittsburgh campus, a Silicon Valley campus offering graduate degrees was established in 2002 and an undergraduate campus in the Gulf nation of Qatar was opened in 2004. Carnegie Mellon has many additional education and research programs and partnerships around the world.

The College of Fine Arts (CFA) at Carnegie Mellon University has its roots in 1900, when the institution was first founded as the Carnegie Technical Schools. The School of Fine and Applied Arts was one of the original four schools within Carnegie Technical Schools and would later become the College of Fine Arts. CFA was officially founded in 1905 as the first comprehensive arts learning institution in the United States. The College of Fine Arts is organized into five schools: Architecture, Art, Design, Drama and Music. The college shares numerous research projects, interdisciplinary centers and educational programs with other units across the University. In addition to undergraduate and graduate programs in each of the five schools, the college offers interdisciplinary bachelor’s degrees integrating studies in fine arts with work in the humanities, sciences, or computer science. The College of Fine Arts Interim Dean Dan J. Martin reports directly to Mark S. Kamlet, Executive Vice President and Provost.
School of Architecture: The School of Architecture has been an integral part of education at Carnegie since its beginnings in 1905. The School’s facilities are currently located in two buildings - the College of Fine Arts Building and the Margaret Morrison Carnegie Hall. The School has two programs: the B.Arch 1st Professional Degree Program and the Graduate Program consisting of seven Master degrees and three PhD Concentrations.

Stephen R. Lee, AIA, Professor and Head is responsible for all of the activities of the School. The Head is responsible for all, finance, development, operations, policies and procedures for the graduate and undergraduate programs in the School. The Head presides overall undergraduate committees, tenure and promotion cases and oversees faculty for finances and University and School rules and regulations. The Head is responsible for faculty recruitment and hiring. He is available to students by appointment.

Mark D. Gross, PhD, Associate Head, is the director of the graduate programs of the School and Director of the CoDe Lab.

Business Team:
David Koltas, Assistant Head, is responsible for all financial and personnel matters of the School. Diana Martin, Financial Assistant, is responsible for day-to-day financial transactions, including reimbursable expenses. teaching assistants, shop monitors, office assistants, and work study students submit their time cards to Diana on a bi-weekly basis.

Advising Team:
Heather Workinger Midgley, PhD, Senior Academic Advisor, advises undergraduate students and assists students in establishing their class schedules and gives guidance about general University regulations. She is responsible for registration and transcripts. She can answer scheduling, academic audit and general academic progress questions. She coordinates study abroad activities including inquiries, applications and transfer credits. Alexis McCune, Coordinator of Student Programs, organizes undergraduate student programs and assists students with professional development and the Intern Development Program (IDP) as the school’s Educator Coordinator. She is also responsible for working with prospective students by managing recruitment efforts and the admission committee. In the fall semester, she works with community outreach in the Urban Laboratory Studio.
Facilities:
Kristen Frambes, Facilities and Special Projects Manager directs and manages front office work study students and the school facilities. She coordinates student, faculty and alumni awards, as well as, special alumni events for the school.

Outreach:
Kelly Lyons, Director of Outreach Programs, organizes outreach programs to bring architecture education to the Pittsburgh community including Architecture Explorations, UDREAM and Pre-College.

Graduate Programs:
Darlene Covington-Davis, Graduate Programs Coordinator, assists in the daily administration of the graduate programs and advising current students on administrative policies and procedures for the school and the University.
Emma Davison, Graduate Admissions & Communications Coordinator, assists with the graduate admissions process and coordinates the Graduate Program’s advertising, public relations and website content.

Computing Services:
Bob Armitage, Computing Administrator, along with student assistants, comprise the computing team. They are responsible for the school’s computing infrastructure, including hardware, software, servers, workstations, printers, plotters and scanners. The computing team is responsible for projector reservations and managing plot monitors who staff the plot office.

dFAB Lab:
P. Zach Ali, Digital Fabrication Lab Manager, is responsible for the operations of the dFAB lab. Responsibilities include: hiring and management of dFAB student monitors; website management; materials stock and re-sale; equipment management and training; billing; tutorials; safety and emergency protocol; interdepartmental projects; and general lab operation and procedures.

The Shop:
Scott Smith, Architecture Shop Director, is responsible for the operations of the Shop. Responsibilities include: hiring and management of student monitors; materials stock and re-sale; equipment management and training; billing; tutorials; safety and emergency protocol; interdepartmental projects; and general shop operation and procedures.
Ben Saks, Shop Assistant, assists the Shop Director, faculty and students in the wood and metal shop.

Committees
The School of Architecture maintains a number of committees for the management of specific tasks, projects and processes. Assignments to chair these committees are made by the Head of School and other faculty are then invited or appointed to join. Course relief is often given for the larger responsibilities.

Faculty committees include:
Admissions (Undergraduate) - Doug Cooper, Chair
Awards Committee - Dale Clifford, Chair
College Review Committee - Khee Poh Lam
Computing Committee - Kristen Kurland, Chair
Curriculum Committee - Stephen R. Lee, Chair plus studio coordinators plus foci leaders
Faculty Search - to be established F11
Graduate Committee - Mark D. Gross, Chair
Highlands Fund - Doug Cooper, Chair
Lecture Series - Spike Wolff, chair
Publications - Don Johnson, Chair  
School Review Committee - Vivian Loftness, Chair  
Strategic Plan Drafting Committee, Stephen R. Lee, Chair  
Study Away Committee - Diane Shaw, Chair  
wats:ON? Festival - Spike Wolff & Pablo Garcia, co-curators  

In addition to participation at the School of Architecture level, members of our Faculty have representation on College and University Committees such as College Council, College Review Committee, Studio for Creative Inquiry Advising Committee and the University Tenure and Promotion Review Committee, among others.

Staff members are requested to sit on various committees as their area of responsibility overlaps with the charge of the committee. Staff may request to participate on committees other than those to which they are assigned.

**Student Committees**

Students have several formal platforms for meeting regularly with the administration to discuss ideas and concerns about policies, facilities, curriculum and services at the departmental level and to request changes. Student committees include:

The Student Advisory Council (SAC) consists of three representatives from each year that are elected by the members of that year. They serve a one-year academic term. Elections are organized at the beginning of the fall semester. The SAC meets at least once each month to provide a more formal means of interaction between students, faculty and administration. The student representatives are responsible for communicating the efforts of the council to their colleagues, bringing to the council issues forwarded by fellow students and contributing time, energy and ideas to improve both the School and the University.

Town Hall Meetings are held each semester (starting F11) that are open to the entire student body. This provides an open forum for students to address any issues that they feel may not being addressed adequately by their SAC representative.

**Other Undergraduate Degrees:**

The School of Architecture offers one (1) other Undergraduate degree in the following area:

**Bachelor of Arts in Architecture**

**Graduate Degrees:**

The School of Architecture offers seven (7) post-professional Master and three (3) PhD degrees in the following areas of study:

**Architecture**

Master of Science (MSA)

This 9-month post-professional program is designed for recent graduates and practitioners to grow and enhance their skill set. Students in the MSA program are free to direct their own studies to fit their needs and interests.

**Architecture-Engineering-Construction Management**

Master of Science (MSAECM) and Doctor of Philosophy (PhD-AECM)

A joint effort between the School of Architecture and the Department of Civil & Environmental Engineering, the AECM programs provide a uniquely interdisciplinary education, exposing students to the multi-faceted building delivery process while providing a foundation for ethical, economic and environmentally-sensitive decision making.

**Building Performance & Diagnostics**

Master of Science (MSBPD) and Doctor of Philosophy (PhD-BPD)

Building Performance & Diagnostics deals with the comprehensive integration of building design and advanced technology, as a means of producing high-performance architecture. Led by the Center for Building Performance & Diagnostics (CBPD) and housed within the Robert L. Preger
Intelligent Workplace™, students have the opportunity to gain both diversity and depth of knowledge from world-renowned and experienced faculty.

Computational Design
Master of Science (MSCD) and Doctor of Philosophy (PhD-CD)
One of the first and best-known Computational Design programs in the US, our legacy continues today. Under the direction of dedicated faculty and in collaboration with other departments within the University, (e.g. School of Computer Science and Department of Civil & Environmental Engineering), our visionary students continue to push for innovation and evolution of the state-of-the-art in design technology.

Sustainable Design
Master of Science (MSSD)
At the forefront of research in sustainable design & technology for over 35 years, Carnegie Mellon's School of Architecture is recognized internationally for its large core of dedicated faculty, providing a solid foundation from which students can learn how to positively and sustainably affect the future of the built environment. This post-professional degree program integrates design and technology to provide a comprehensive knowledge base for professional practice.

Tangible Interaction Design
Master degree (MTID)
A truly interdisciplinary program, Tangible Interaction Design integrates computational intelligence and the physical world. MTID students make interaction tangible by building and programming working prototypes. Housed within the Computational Design (CoDe) Lab and leveraging our state-of-the-art

Urban Design
Master degree (MUD)
The Master of Urban Design (MUD) program is a post-professional degree, intended to prepare graduates for careers using design to critically address environmental, economic, social and cultural issues affecting the contemporary metropolis. The studio-based curriculum allows students to explore strategies for development in a variety of scales and settings, including the post-industrial city, the suburban periphery and the rapidly urbanizing region. This intensive 12-month program is open to recent graduates and practicing professionals with a previous bachelor degree in architecture, landscape architecture, or city planning.

2.3 Physical Resources

The School of Architecture occupies two wonderful turn-of-the-century buildings on the central part of campus. With over 42,000 square feet of space in these two buildings, (Margaret Morrison Carnegie Hall and the College of Fine Arts), the School is able to provide dedicated studio space for every full-time student. Adjacent to the studios are lecture and seminar spaces that accommodate both didactic and interactive learning; analog and digital workshops for making, research laboratories, individual office space for each full-time faculty member and shared spaces for adjunct faculty.

As the foundation to the pedagogy of the first professional degree program, the studios are of ultimate importance. CFA 200 has been the traditional "main" studio for the School of Architecture. Since the previous visit, CFA 200 has changed from the fourth year and fifth year studio to the third-year and fourth-year studio. The former computer lab and exhibition space, CFA 214, has been converted to a full-time studio with integral classroom to house the fifth year. This large space will accommodate the large models and drawings that the Urban Lab students produce and will be a fertile, dedicated space for the production of thesis work.

The first, second and third year studios were located on the third floor of Margaret Morrison Carnegie Hall at the time of the previous visit. With significant funding from the Provost, the school of architecture was able to remove the dividing walls that created individual classrooms to create a large, linear studio space to house the first and second year studios. The funding was sufficient to install a spray booth, worktables and accessible bathroom in MMCH 322. In addition,
Legend

MMCH-C-Departments

Occupying Organization

210100 - ARCHITECTURE, 3,916 USF
210101 - CENTER FOR BUILDING PERFORMANCE & DIAGNOSTICS, 53 USF
530300 - FMS OPERATIONS - MAINTENANCE, 4,339 USF
OAM900 - SHARED ROOM OCCUPANCY, 539 USF
the funding enabled the School of Architecture to create new faculty offices, thereby congregating all faculty members in the School on either the third floor or fourth floor of Margaret Morrison.

Funding for the project was made possible when the School of Architecture released MMCH102 and seven, small second-floor faculty offices to the School of Design. The School of Architecture also agreed to share MMCH203 with the School of Design as a classroom and pin up space, since their studios meet in the morning and ours meet in the afternoon. As part of this arrangement, CFA 206A, CFA 211, CFA 212, CFA 213 were returned from the Registrar to the School of Architecture.

During winter break last year, Prof. Ficca, the director of the Digital Fabrication Lab and a group of students designed and fabricated a continuous storage/pinup wall in the area used by the second-year studio. This simple, elegant intervention transformed the way in which the second year studio faculty collaborated and positive impact on productivity. It was so successful, that during the summer of 2011, Prof. Folan and his students expanded storage/pinup all to the first, third and fourth-year studios, as well as mocking up a mobile storage pinup wall for the fifth-year studio.

A breakdown of the specialized facilities in the School of Architecture follows:

**Digital Fabrication Lab (dFAB):** The Carnegie Mellon School of Architecture’s Digital Fabrication Lab provides a venue through which students and faculty can gain experience with this new reality of the profession. It is a vehicle for the use of advanced digitally driven design, prototyping and manufacturing equipment, fostering a context through which students and faculty are better equipped to probe the potential of pervasive digital design and manufacturing processes. Fundamental to this is the understanding that architecture exists in the physical world and the belief that the physical realm of design investigation is a necessary complement to virtual simulation. As such, the dFAB Lab is a bridge between the digital and the physical and is to be used throughout the design process at multiple scales. Furthermore, the dFAB Lab will equip young professionals with the skills to thrive in an increasingly fluid and technologically sophisticated model of practice. This facility is a natural fit at Carnegie Mellon with its strong legacy of innovation in design education and at a University renowned for the advancement and application of technology. The dFab Lab is located in the basement of Margaret Morrison Hall. Our range of equipment includes various digitally driven additive and subtractive tools including 3D printing, laser cutting, 3-axis CNC milling, 6-axis robotic milling cell and vacuum forming. A materials library, workshop space and CAD/CAM cluster are also part of the facility. The lab is open roughly 40 hours per week and is staffed by student monitors who have authority in the operation and safety of lab use. The School of Architecture supports the teaching of one School of Design course and one School of Art course in the dFAB Lab every year.

**The Shop:** The School of Architecture has a long tradition of merging shop and early design. Every student receives training in the shop during their first semester at Carnegie Mellon so that they may use these classic wood and metalworking skills during their entire undergraduate career. The woodshop provides a setting for each member of the School of Architecture to explore the process of designing and creating handmade objects. The shop is nearly 3,800 square feet in size with a large machine and assembly room, tool and material storage areas, a project storage area, offices and a library and an adjacent pin-up area for design review. The shop is equipped with a surfacer, 2 joiners, 2 table saws, a radial arm saw, 2 wood band saws, a metal band saw, metal and wood lathes, a milling machine, a table top router, 4 drill presses, vertical and horizontal belt sanders, 2 disc sanders, 2 jig saws and a plethora of other power and hand tools. It is specifically for the use of architecture students and faculty for class and School-related projects. The shop director is Scott Smith. The assistant shop director is Ben Saks. There are 8 student monitors that have authority in the operation and safety of shop use.

**The Robert L. Preger Intelligent Workplace:** The Robert L. Preger Intelligent Workplace, our living & lived-in laboratory makes a significant contribution to the education of our students by providing hands-on experience with the performance of advanced integrated building technologies such as
Part One | Institutional Support and Commitment To Continuous Improvement

It also provides opportunities for interaction with visiting faculty and leading professionals in architecture, engineering, manufacturing, government and non-profit organizations as they come to visit and participate in research and demonstration projects.

**The Computational Design Lab (CoDe):** The Computational Design Lab is an interdisciplinary research lab at Carnegie Mellon University. Focusing on computational design and embedded computing, work in the CoDe lab spans the fields of computer science, human-computer interaction, digital fabrication, tangible interaction design, mechanical engineering, product design and electrical engineering. The lab includes a seminar room used for meetings and classes, a studio space with mezzanine and a physical workshop with a 24x36" Epilog laser cutter, a Dimension SST 3-D form deposition modeling printer, drill press and hand tools. The lab also provides an electronics workbench with soldering stations and a small supply cabinet with assorted electronics materials for building working prototypes. Master students in the Tangible Interaction Design program have desks in the CoDe lab, which is open to students at all levels, from any background, who demonstrate an interest in working there.

**Plot Facility:** As the school becomes increasingly digital, the need for inputting and outputting facilities grows continuously. Four high-speed plotters were purchased in 2008-two for CFA and two for MMCH—better located in the studios and available to students 24/7. The School of Architecture provides all of the ink and servicing, while the students provide their own media. Recognizing a need for a service-based facility, a dedicated plot facility was constructed and CFA 214. This facility includes a very high quality plotter, color LaserWriter, color inkjet and 42 inch drum scanner. Students place their files in the drop box on the server and get a 24-hour turnaround for a very low price.

**Remaking Cities Institute:** The Remaking Cities Institute (RCI) is an urban design research center based in the School of Architecture. Their mission is 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-sectorial collaboration between faculty, researchers, professionals and community organizations. The Executive Director of the Remaking Cities Institute is Don Carter and the research associate is Karen Brannick. The offices of RCI are located on the fourth floor of the Margaret Morrison Carnegie Hall building.

**Future Plans:** The most critical space need for the school is additional space for every studio. The storage/pinup wall has helped, but by the middle of the semester the artifacts of studio work are piled everywhere and it is difficult to maintain a professional setting. During the planning phase (1989-91) for the Intelligent Workplace, the architect Pierre Zoelly proposed the construction of a new wing on the North East side of Margaret Morrison Carnegie Hall on the axis of symmetry through the rotunda. Through the leadership of Dean Robinson and the College of Fine Arts strategic planning process, this project became known as the Margaret Morrison Extension (MMX) and was embraced by the schools and units of the College. The Provost authorized funding to conduct a visioning study for the college to understand how the various schools and units of the college would come together in this revolutionary, interdisciplinary facility. MMX has been included on the Comprehensive Master Plan of the University and is urgently needed to fulfill the human, spatial and pedagogical needs of the College. Andrew Carnegie and Henry Hornbostel created a truly unique constellation of schools to form the College of Fine Arts - our challenge is to redefine the 21st-century equivalent in the form of the MMX.

**Problems:** Occupying two buildings that are each over 100 years old, while being inspirational for architecture students, is not without its unique problems. The most serious problem that occurs on an almost annual basis is the flooding of the A, B and C levels of Margaret Morrison Carnegie Hall. The flooding is the result of climate change, configuration of the steam tunnels on campus and the combined sewers that characterize Pittsburgh and the region. Flooding creates physical damage—this year we lost our laser cutter and one of our 3-D printers—as well as a significant toll on human resources. The director and the manager of the lab should be expending their energy...
on delivering a world leading digital fabrication experience for our faculty and students, yet they spend significant amounts of time in rubber boots pushing mops. The University has provided stopgap measures to mediate problems, but a more holistic solution is needed.

The University is embarking upon a $2 million renovation to the west façade of the Margaret Morrison building. Water penetration through masonry materials that were not designed to be water resistant and the intricate detailing by Hornbostel have lead to the deterioration of the shelf angles and tiebacks in the wall, leaving the masonry in an unsafe condition. The School of Architecture spaces in Margaret Morrison have not been directly affected by this deterioration but the renovation that is scheduled for 18 months to two years will disrupt the Intelligent Workplace and the third-floor studios.

Architecture Computing: Computer labs and clusters have been removed. Computers, printers, and plotters have been moved into the studios. Architecture students can print to Architecture equipment free of charge. We supply both toner and paper to all equipment daily, including Friday afternoons in preparation for the weekend.

Additional information:
CFA200, 3rd & 4th Year Studios: 24 Dell T3500
CFA214, 5th Year Studio: 10 Dell T3500 and 1 T3400 with resident projector
CFA214, Plot Facility: 1 Dell T3400 with plotter/ scanner machines, color laser and color inkjet
MM308, MUD Studio: 2 Dell T3400
MM328, 1st & 2nd Year Studios: 20 Dell 1600 & 2 Dell T3500
MM401, Render Farm: 12 Dell 390
MM408, Master of Science Studio: 6 Dell T3400
MMC402, PhD Office: 1 Dell T3400
MMC405, PhD Office: 1 Dell T3400
All systems have 22” Dual monitors (excluding render farm).

Total Inventory:
390s: 12
T3400s: 12
T3500: 36
T1600s: 20
Total: 80 supported desktops

Core Specs:
CPU, MEM, GPU
390: Intel 2.6Ghz Quad core, 4GB DDR2, 160GB HD, 512MB Nvidia Quadro Graphics
T3400: Intel 2.8Ghz Quad core, 4GB DDR2, 160GB HD, 512MB Nvidia Quadro Graphics
T3500: Xeon 3.0Ghz Quad core, 4GB DDR3, 320GB HD, 1GB Nvidia Quadro Graphics
T1600: Xeon 3.4Ghz Quad core, 8GB DDR3, 500GB HD, 1GB Nvidia Quadro Graphics

Server: The school is committed to provide server space for each student. A quota system has been implemented that allot a total of 4 Gigabytes of space to each user. We also have individual studio folders for each of the five years, granting each studio 20 Gigabytes for collaborative work.

The College of Fine Arts (CFA) Multimedia Cluster: Located in CFA 317, 318, 321 and 323. The cluster has PCs and MACs that are available to architecture students. The clusters are open 24 hours a day, but only staffed M-F from 8:30 am to 10:00 pm and S-S from Noon to 8:00 pm. The CFA Multimedia Studio is a co-managed facility under the guidance of the College of Fine Arts and Computing Services. These groups work together to provide a facility for teaching and student work that goes beyond other public computing labs at Carnegie Mellon. The studio contains cutting edge computers and other equipment for sound and video editing and 3D animation. The 27 inch core i7 iMacs are a recent gift from Trustee Ed Frank.

Staff: Every full time staff member has a computer and software with support by the School (seven PCs and eight Macs).
Faculty: Every tenure stream, special and teaching faculty member has a computer and software with support by the School (nine PCs and twelve Macs).

Peripherals: Peripherals are located in offices, studios and the plot facility.

B/W Laser Printers: 12
Color Laser Printers: 2
Inkjet Printers: 6
Slide Scanners: 1
Drum Scanner: 1
Flatbed Scanners: 3
Plotters: 5
Multi-Function Copiers: 2

Software Inventory: The following software is installed on School of Architecture machines with enough licenses to run everywhere.

<table>
<thead>
<tr>
<th>Company</th>
<th>Software Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-Zip</td>
<td>7-Zip File Manager</td>
</tr>
<tr>
<td>Activestate</td>
<td>Komodo</td>
</tr>
<tr>
<td>Adobe</td>
<td>Dreamweaver</td>
</tr>
<tr>
<td>Adobe</td>
<td>Fireworks</td>
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<tr>
<td>Adobe</td>
<td>Flash Pro</td>
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<tr>
<td>Adobe</td>
<td>Illustrator</td>
</tr>
<tr>
<td>Adobe</td>
<td>InDesign</td>
</tr>
<tr>
<td>Adobe</td>
<td>Photoshop</td>
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<tr>
<td>Adobe</td>
<td>Acrobat</td>
</tr>
<tr>
<td>Apple</td>
<td>Quicktime</td>
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<tr>
<td>Archibus</td>
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<td>Autodesk</td>
<td>3ds Max</td>
</tr>
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<td>Autodesk</td>
<td>Ecotect</td>
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<td>Autodesk</td>
<td>Revit</td>
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<tr>
<td>Autodesk</td>
<td>Civil 3d</td>
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<tr>
<td>DOE</td>
<td>eQuest</td>
</tr>
<tr>
<td>Eclipse</td>
<td>Eclipse</td>
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<tr>
<td>ESRI</td>
<td>ArcGIS</td>
</tr>
<tr>
<td>Google</td>
<td>Sketchup Pro</td>
</tr>
<tr>
<td>Google</td>
<td>Chrome</td>
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<tr>
<td>Graphisoft</td>
<td>Archicad</td>
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<tr>
<td>IES Visual Analysis</td>
<td></td>
</tr>
<tr>
<td>McNeel</td>
<td>Rhino3d</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Office Suite</td>
</tr>
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</tr>
<tr>
<td>Microsoft</td>
<td>Visual Studio</td>
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<td>NREL</td>
<td>Energy10</td>
</tr>
<tr>
<td>On Center</td>
<td>On-Screen Takeoff</td>
</tr>
<tr>
<td>On Center</td>
<td>Quick Bid</td>
</tr>
<tr>
<td>Oracle</td>
<td>Java</td>
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<tr>
<td>Prime Focus</td>
<td>Deadline</td>
</tr>
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<td>Python</td>
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<tr>
<td>Symantec</td>
<td>Endpoint</td>
</tr>
<tr>
<td>Tectia</td>
<td>SSH Tectia</td>
</tr>
</tbody>
</table>

Plugins do now show up in any software list, they are as follows:
Sketchup: Weld, Make Faces, Extrude Multiple Faces, Cleanup
Rhino: V-ray, Grasshopper, Monkey, Paneling Tools
**Copiers:** Copiers are located throughout the campus. The School of Architecture copiers are for the use of the faculty and staff only. There is a color copier available for student use in Hunt Library on the 4th floor.

**AV Equipment:** A.V. Equipment is available for school-related activities. This includes a digital camera and 7 projectors. The equipment is stored in the computing area within the main office of the School of Architecture.

**Networking:** Our wired network, named "Andrew" in honor of our benefactors Andrew Carnegie and Andrew Mellon, links every residence hall and campus office which are served by a 10Gbs core data network. Our wireless network blankets the campus, spanning millions of square feet and connecting 56,000 devices. For our wireless connections, we use 802.11n technologies to achieve speeds upwards of 100Mbps. This is comparable to most campus wired connection speeds.

**Telecommunications:** Telecommunications provides the campus community with a full range of basic and advanced telecommunications. They also provide cable TV service to all Campus Housing residents and most academic and administrative buildings on campus.

**List of Clusters:**
- Baker Hall 140C
- Baker Hall 140D
- Baker Hall 140E
- Baker Hall 140F
- CFA 317
- CFA 318
- CFA 321-Sound Room
- CFA 323-Multimedia Studio
- Collaborative Teaching Cluster
- Cyert Hall 100A
- Cyert Hall 100D
- Gates-Hillman 3000
- Gates-Hillman 5201
- Gates-Hillman 5205
- Hunt Library Lower Level-Far
- Hunt Library Lower Level-Near
- Hunt Library Lower Level Open
- Morewood Gardens
- Music Technology Center
- Residence at Fifth
- Wean Hall 5201
- Wean Hall 5202-CTC
- Wean Hall 5205
- Wean Hall 5207
- West Wing Collaborative

The School of Architecture works with the University wide clusters team to ensure that the majority of our software and versions numbers match for maximum compatibility across university computing.

All clusters are open 24 hours each day with the following exceptions:
- Clusters are unavailable when they are reserved for classes, a reservation schedule is available online.
- Some clusters are only open during building specific hours, these hours are posted on their respective web pages.

**Web Stations:** Clusters Services maintains web stations across campus. Web stations offer quick access to email, web browsing and printing.
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- CFA: Third floor
- Doherty Hall: First floor corridor
- University Center: First floor, Wean Commons
- Wean Hall: Fifth floor in front of 5200 cluster corridor

Public “Andrew” Printing: Andrew Printing is available to students, faculty and staff members who wish to print to any of the public cluster or library printers. To encourage conservation, eligible campus affiliates are allotted a print quota. A standard sheet of 8.5x11 paper costs $0.05 and 11x17 prints are $0.10. There are additional charges for Color.

2.4 Financial Resources

School of Architecture Enrollment: After enrolling 81 students (plus four BxA students) in Fall 2010, the School of Architecture has made a conscious effort to decrease enrollment in the first year to a more appropriate level considering the space and financial resources available. Decreasing admission from 220 to 170 students resulted in a freshman enrollment decrease from 81 to 62 students. The percentage yield was higher but the absolute number of enrolling students lowered to a level that better suits the facilities and funding that we have. The University target for the entering class of the School of Architecture is 65.

Financial Changes: In January 2009, President Cohon announced that the global recession had affected and was expected to continue to affect all University sources of revenues. The expectation was that our endowment would end the fiscal year down by 30 percent, with slow recovery in value thereafter. At that time he asked all academic and administrative units to reduce the centrally funded portion of their annual operating budgets. For academic units the decrease was 5 percent by 2012 with a minimum reduction of 2 percent in 2010. For administrative units it was 10 percent. These cuts have resulted in a significant reduction in the University's projected operating deficits, but there were no budget increases over the next 3 years. Coincident with the economic downturn, the President announced the public phase of the capital campaign with the goal of raising $1 billion by the end of 2013 to build the endowment to fund interdisciplinary activities. With the recently announced planned gift of $265 million from businessman, scholar, philanthropist and longtime Carnegie Mellon University trustee William S. Dietrich II, the campaign total to date is approximately $950 million, which is 95 percent of the campaign’s goal. In meeting this goal there is great promise of a return of operating budgets, if not just a continuation of the special funding detailed below.

School of Architecture Response to Financial Changes: The School of Architecture has responded by decreasing the number of facility improvements, special projects and the level of faculty development funding made from Operating budgets and has sought both outside and one-time University funding for such initiatives.

In that 3-year period, the School of Architecture has been successful in securing the following University funding from the Provost:
- A $250,000 renovation of the Margaret Morrison Carnegie Hall (MMCH) Studios and Faculty Offices, supplemented by internal resources of over $90,000.
- A $75,000 Monitor Initiative to provide 22-inch, energy efficient, LCD monitors for every student worktable so they can more easily work from their own laptops in the studio environment. Space allocation changes and renovations were funded in this project as well. College of Fine Arts (CFA) rooms 206A, 211, 212 and 213 were returned to the School of Architecture to give the school control of all space on the 2nd floor of CFA, in exchange for offices in MMCH: Rooms 102, 201, 201A, 202 suite and 204 suite. Multipurpose room 203 was released from School of Architecture’s sole control and is now a shared resource with the School of Design.

Significant Gifts and Funding: The School of Architecture has also received a number of significant gifts in support of our faculty:

Mark Ferguson (A’78) and Natalie Jacobs (A’79) made a gift of $50,000 to establish an endowment to fund the Ferguson Jacobs Prize to promote the continuity of tradition in
contemporary architectural practice. As detailed above in Part One.2.a - Human Resources and Human Resource Development, the income is used in alternating years to support Faculty or Student projects. In addition to the distributions, Mr. Ferguson and Ms. Jacobs have pledged additional support so that the annual prize is no less than $5,000.

Magaret B Gruger (A’41) established a charitable gift annuity for the needs of its faculty. The market value of Mrs. Gruger's gift at the time of her passing was over $83,000. The uses of these funds are detailed in Part One.2 above.

Christina Isaly de Liceaga (BHA’95) made a gift of $50,000 to establish the Isabel Sophia Liceaga Fund, an endowment with the income directed to fund the Head’s highest priority projects. As noted above, those funds have been directed to the faculty based on a review of annual proposals.

CMU received a bequest from George N. Pauly Jr. in June 2009 in the amount of $250,000. This unrestricted gift has been used to establish the George N. Pauly Jr. Visiting Professorship. $50,000 will be used every other year over a 10-year period to bring to campus an up and coming practitioner to teach a studio and an elective course. The Operating budget relief from charging this fund will be used to support and exhibition for sharing their vision of the future of Pittsburgh as well as other faculty development opportunities relating to this.

The School of Architecture received a gift from Phylis Kalla to establish the endowed Sara Ann Kalla, HS’76, Scholarship in Architecture in memory of her daughter. Her family wishes to encourage other talented women who wish to pursue this path. This fund will provide scholarships to undergraduate students who qualify for financial aid, with first preference for female architecture students and second preference for architecture students.

Other Significant Gifts and Funding

The School of Architecture received the following gifts for equipment, facilities, centers and other projects:

A $2 million gift was received from the Heinz Endowments. This is the most significant gift the School of Architecture has ever received.

- $1.5 million was dedicated to a named endowment: The David Lewis Directorship of the Remaking Cities Institute, further described in Part One.2.d - Physical Resources.
- $500,000 was dedicated to funding 3 years of the UDream - (Urban Design Regional Employment Action for Minorities) program, further described in Part One.1b - Learning Culture and Social Equity.
- An additional gift of $175,000 from the Heinz Endowments to fund a 4th year of the UDream program.

The School of Architecture received a $750,000 gift from the P.J.Dick Corporation to support fellowships in the Architecture-Engineering-Construction Management programs.

A special $491,000 allocation was received from the Provost to fund the renovation of the Margaret Morrison Carnegie Hall (MMCH) C Level for the creation of a Digital Fabrication Lab in conjunction with the hire of Tenure Track faculty member Jeremy Ficca. The Digital Fabrication Lab is further described in Part One.2.3 - Physical Resources.

An additional commitment of $150,000 was made by the Provost over a 3-year period to fund equipment for the Digital Fabrication Lab.

A grant of $250,000 was received from the Enkeboll Foundation for the Arts and Architecture in support of Integrated Design and Practice as well as the purchase of a 6-axis robotic milling system with rotating materials table, controlling hardware and software ($134,000) and the funding of student projects.

Further Expected Changes

With the steadily increasing cost of networking infrastructure, the University has decided to change its charging model for usage. Previously, the departments were charged based on the
number of physical, hard-wire network and phone connections. The new model charges based on a head count of faculty and staff. Because the School of Architecture employs many adjunct faculty members to teach a single course in their area of expertise, the number of faculty and staff (unique users) in the School of Architecture is significantly higher than it is in most other units on campus. This new model significantly shifts the cost burden to the School of Architecture and others with similar teaching models, such as the Schools of Design, Music and Drama within the College of Fine Arts. The Provost recognizes this shift and has determined that the University will proceed with the head count charging model but will supplement the Base Allocations of the affected schools so there is little or no net increase for this service in the overall budget.
### Comparative Report of Operating Funds from Prior Years, Current Fiscal Year and Forecasts, including Capital

#### School of Architecture

**General Operating**

<table>
<thead>
<tr>
<th>Prior Years</th>
<th>FY06</th>
<th>FY07</th>
<th>FY08</th>
<th>FY09</th>
<th>FY10</th>
<th>FY11</th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
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<tbody>
<tr>
<td><strong>Revenue</strong></td>
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<td></td>
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<td></td>
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<tr>
<td>One Time Allocation</td>
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<td>$50,000</td>
<td>$50,000</td>
<td>$50,000</td>
<td>$ -</td>
<td>$ -</td>
<td>$25,000</td>
<td>$25,000</td>
<td>$25,000</td>
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<td>Grad Tuition</td>
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<td>$1,001,248</td>
<td>$1,006,407</td>
<td>$1,217,418</td>
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<td>$1,053,000</td>
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<td>Graduate Aid</td>
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<td>$(169,264)</td>
<td>$(103,614)</td>
<td>$(263,222)</td>
<td>$(441,071)</td>
<td>$(346,465)</td>
<td>$(349,930)</td>
<td>$(353,429)</td>
<td>$(356,963)</td>
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<td>Gifts &amp; Other Revenue</td>
<td>$93,390</td>
<td>$77,267</td>
<td>$97,480</td>
<td>$113,510</td>
<td>$324,892</td>
<td>$99,445</td>
<td>$130,439</td>
<td>$108,139</td>
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<td><strong>Total Revenue</strong></td>
<td>$3,960,862</td>
<td>$4,066,807</td>
<td>$4,143,684</td>
<td>$4,170,577</td>
<td>$4,275,876</td>
<td>$4,143,975</td>
<td>$4,103,775</td>
<td>$4,192,829</td>
<td>$4,272,481</td>
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**Expenses**

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<th></th>
<th>FY06</th>
<th>FY07</th>
<th>FY08</th>
<th>FY09</th>
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<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
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<tbody>
<tr>
<td><strong>Salaries</strong></td>
<td>$2,701,144</td>
<td>$2,695,214</td>
<td>$2,650,210</td>
<td>$2,685,712</td>
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<td><strong>Benefits</strong></td>
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<td><strong>Capital</strong></td>
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<td><strong>Digital Fabrication Lab</strong></td>
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<tr>
<td><strong>Architecture Shop</strong></td>
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<td>$20,456</td>
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<td><strong>Student Orgs and Projects</strong></td>
<td>$4,583</td>
<td>$4,181</td>
<td>$4,364</td>
<td>$3,920</td>
<td>$4,997</td>
<td>$2,467</td>
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<td><strong>Student Employment</strong></td>
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<td><strong>Other Operating</strong></td>
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<tr>
<td><strong>Development &amp; Alumni Relations</strong></td>
<td>$11,025</td>
<td>$7,202</td>
<td>$12,667</td>
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<td>$17,848</td>
<td>$16,500</td>
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<td>$18,000</td>
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<tr>
<td><strong>Grad Projects + Transfers</strong></td>
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<td>$(32,744)</td>
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<td>$311,026</td>
<td>$205,133</td>
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<td>$3,960,862</td>
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<td>$4,143,684</td>
<td>$4,170,577</td>
<td>$4,275,876</td>
<td>$4,143,975</td>
<td>$4,103,775</td>
<td>$4,192,829</td>
<td>$4,272,481</td>
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**UG Enrollment**

- FY06: 253.90
- FY07: 273.40
- FY08: 275.00
- FY09: 289.00
- FY10: 281.00
- FY11: 293.00
- FY12: 260.00
- FY13: 260.00
- FY14: 260.00

**Grad Enrollment**

- FY06: 42.32
- FY07: 44.62
- FY08: 37.87
- FY09: 41.57
- FY10: 49.99
- FY11: 49.24
- FY12: 46.50
- FY13: 50.00
- FY14: 50.00

**Total Expenses/UG Student**

- FY06: $15,600
- FY07: $14,875
- FY08: $15,068
- FY09: $14,431
- FY10: $15,217
- FY11: $14,143
- FY12: $15,784
- FY13: $16,126
- FY14: $16,433

**Total Capital/UG Student**

- FY06: $ -
- FY07: $446
- FY08: $296
- FY09: $604
- FY10: $75
- FY11: $261
- FY12: $185
- FY13: $48
- FY14: $48

*In recent years, capital equipment was defined as purchases of $5000 or more. For the purpose of this report, that rule has been applied to all years.**

*The University and College have funded 2 dedicated staff, imbeded in the College, to handle Development and Advancement activities for the College and its Schools.*
Comparative Report of Endowment Funds from Prior Years, Current Fiscal Year and Forecasts

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<tr>
<th>School of Architecture</th>
<th>Prior Years</th>
<th>Projected</th>
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<tr>
<td></td>
<td>FY06</td>
<td>FY07</td>
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<td><strong>Revenue</strong></td>
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<td>Endowment Distributions</td>
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<td>Contributions</td>
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<td>Total Revenue</td>
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<tr>
<td>Salaries &amp; Benefits</td>
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<td>Salaries</td>
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<tr>
<td>Benefits</td>
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<td>Scholarships</td>
<td>$ 4,000</td>
<td>$ 2,000</td>
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<td>Non-Qualified Scholarships</td>
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<td>Lecture Funding</td>
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<td>Alumni Support</td>
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<td>Total Expenses</td>
<td>$ 77,623</td>
<td>$ 36,477</td>
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### Comparative Report of Annual Expenditures and Capital Investment of Architecture and 2 other Professional Degree Programs

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<th>CIT Comparable - Civil &amp; Environmental Engineering</th>
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<td>General Operating</td>
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<td><strong>Expenses</strong></td>
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<td>FY10</td>
<td>FY11</td>
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<td>Salaries &amp; Benefits</td>
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<td>Grad student support</td>
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<td>Capital</td>
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<td>Other Operating</td>
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<tr>
<td>UG Enrollment</td>
<td>289.00</td>
<td>281.00</td>
<td>293.00</td>
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<td>Grad Enrollment</td>
<td>41.57</td>
<td>49.99</td>
<td>49.24</td>
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<tr>
<td>Total Expenses/UG Student</td>
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<td>$14,143</td>
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<tr>
<td>Total Capital/UG Student</td>
<td>$604</td>
<td>$75</td>
<td>$261</td>
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2.5 Information Resources

The Carnegie Mellon University Libraries supports teaching, learning and research activities of faculty and students of Carnegie Mellon University. The University Libraries operates under a strategic plan, is subject to periodic review by an Advisory Board, enjoys oversight by a Faculty Senate University Libraries Advisory Committee (currently chaired by a faculty member from the School of Architecture) and fosters a culture of assessment and data-driven decision-making.

The Arts Library occupies the fourth floor of Hunt Library, a central arts, humanities and social sciences library. The Arts Library supports teaching, learning and research activities of faculty and students in the arts by offering services, collections, instruction and outreach that are targeted to Carnegie Mellon’s College of Fine Arts, including the Schools of Architecture, Art, Design, Drama and Music. The Arts Library also provides many of these functions for constituencies across the University and within the larger community. The Arts Library operates within a self-study process of annual review and produces an annual document that addresses departmental goals.

Core functions of the Arts Library include:

- Reference and consultation services provided via scheduled staffing at a reference desk and other public service points, on site within the schools of the College of Fine Arts and via office consultations, phone, email, online chat and instant messaging.
- Collection development and management in various media including books and e-books, periodicals and e-journals, scores and recordings, visual resources and electronic resources such as databases and other Web-based products, expending approximately $200,000 per year in allocated funds and endowment income.
- Instruction and teaching activities including library orientation, information literacy instruction, teaching and learning with collections and teaching for-credit courses.
- Outreach to schools, faculty and students through promotion of library resources and services, creation of Web-based content, social media, participation in school culture and project reviews and so forth.

The Dean of University Libraries, who reports to the University Provost, delegates primary responsibility for overseeing the Arts Library & Special Collections department to the Associate Dean of University Libraries. The Head, Arts Library & Special Collections reports to the Associate Dean. The Head, Arts Library & Special Collections is currently also the Architecture Librarian and Archivist. This position is divided between the management responsibilities of a department head, liaison responsibilities for the School of Architecture and responsibility for the Carnegie Mellon University Architecture Archives. This position serves on the Libraries’ primary administrative governance committee and has opportunities to serve within the Libraries’ governance structure at many levels.

Librarians and Archivists have faculty status at Carnegie Mellon under the Policy on Librarian and Archivist Appointments <www.cmu.edu/policies/documents/Librarian.html>. Library faculty must meet criteria for reappointment and promotion and are required to pursue professional development activities including scholarship and creative activity and professional service. The current Architecture Librarian and Archivist is appointed at the Principal Librarian level, the highest faculty rank. The Architecture Librarian and Archivist has no formal faculty status within the School of Architecture, but attends School of Architecture faculty meetings, serves on departmental committees, lectures in School of Architecture courses, participates in studio project reviews and is treated as a faculty colleague by the School. The current Architecture Librarian and Archivist holds a Master of Library Science (MLS) degree and an MA in American Studies and Historic Preservation and is an active member of the Association of Architecture School Librarians (AASL) and the Art Librarians Society of North America (ARLIS/NA).

The Carnegie Mellon University Libraries maintain extensive service hours during the academic year. Hunt Library is normally open 140 hours per week; the Engineering and Science Library is...
normally open about 95 hours per week. Hours may be lengthened during final exam periods. Reference and information services in architecture are primarily provided at the Arts Information and Reference Desk and the Audio and Visual Resource Collections desk in the Arts Library and at the Engineering and Science Library. Reference and information service is also available by phone, email and an online chat; and the Architecture Librarian and Archivist is available for reference consultation by request or as assigned.

A team of four faculty librarians/archivists, four staff, an information assistant and student employees conducts the work of the Arts Library. Each of the faculty librarians holds an M.L.S. and has an advanced degree and/or subject specialization in architecture, art, design, drama, music and/or rare books. All librarians have written statements of assignment. Paraprofessionals have appropriate qualifications, training and experience and have written position descriptions. There is an annual process of individual goal-setting and evaluation for Libraries’ faculty and paraprofessionals. Opportunities for professional development are available to all library staff. The Arts Resources Specialist manages the Visual Resources Collection. Centralized units of the University Libraries perform most acquisitions, cataloging, circulation and information technology functions.

The Arts Library is a short walking distance from School of Architecture facilities in the College of Fine Arts building and in Margaret Morrison Carnegie Hall. The Engineering and Science Library in Wean Hall is a short walking distance from all School of Architecture facilities. The Arts Library has adequate reader space in a comfortable environment featuring large work tables and individual study carrels. All facilities are air-conditioned and a Fine and Rare Book Room provides controlled environmental conditions for special collections, including the bulk of the Architecture Archives. Limitations in shelving space are eased by an off-site storage facility for collections. Computer workstations and network access in the library and campus-wide wireless internet connectivity meet demands for access to electronic resources and services. Library equipment includes scanners and printers, including a color printer. There is barrier-free access to library facilities and equipment.

The Carnegie Mellon University Libraries strives to meet the increasing demand for access to information. Carnegie Mellon’s information resources are becoming increasingly competitive in an environment that encourages resource sharing and plays to the University’s technological strengths. The Libraries provides ever-expanding access to electronic information resources that are available at the library, in the design studio or office and in the dormitory or the home. At the same time, the Libraries continues to grow its print collections and maintains 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.

Collection development activities in architecture are governed by written collection development policies for the Libraries’ architecture collection and for the Architecture Archives. Organization and cataloging of library collections is executed in a timely fashion according to national standards. Books are classified using the Library of Congress Classification system and are primarily accessed by way of Cameo, the Carnegie Mellon University Online Library Catalog.

Books: Carnegie Mellon University Libraries collections surpass one million volumes. Though subject-based collection figures are difficult to compute in a central library, collections include approximately 48,000 volumes in NA and other classes related to architecture, landscape architecture, construction and urbanism. Existing architecture collections are ranked overall at a Study or Instructional Support Level, defined by the American Library Association as “a collection which supports undergraduate or graduate course work, or sustained independent study; that is, which is adequate to maintain knowledge of a subject required for limited or generalized purposes, of less than research intensity.” An acquisitions approval plan brings the most recent and important architecture publications to the library automatically and at a considerable discount. The collection includes an increasing number of e-books, especially reference works and titles in the field of sustainable design. In addition, the University Libraries offers superior interlibrary loan
Part One | Institutional Support and Commitment To Continuous Improvement

and document delivery services, greatly expanding the scope of available resources on an as-needed basis. This service assists in meeting the research needs of School of Architecture faculty and graduate students. In addition, Carnegie Mellon affiliates have borrowing privileges at the University of Pittsburgh and the Carnegie Library of Pittsburgh.

Subscriptions: The University Libraries currently subscribes to approximately 100 active architecture-related journals and other serials. The Libraries subscribes to hundreds of additional titles in related fields and maintains extensive back-runs of numerous additional titles. Current subscriptions include all but a handful of the periodicals included in “A Core List of Periodical Titles for a First Professional Degree in Architecture” (revised 2009) developed by the Association of Architecture School Librarians (AASL). Journals are increasingly available electronically as e-journals, as independent subscriptions, or through aggregator databases and online collections.

Databases and Other Electronic Resources: The Libraries provides access to the Avery Index to Architectural Periodicals, RIBA British Architectural Library Catalogue Online, Art Full Text, Art Retrospective, Design and Applied Arts Index, America: History and Life, Applied Science and Technology Abstracts, JSTOR and dozens of other web-based databases that are of use to architecture faculty and students. Subscriptions to more specialized electronic tools include CumInCad, BuildingGreen.com and ULI Development Case Studies. Increasingly, such databases and products provide online access to full-text articles and other documents.

Visual Resources: The Visual Resources Collection <guides.library.cmu.edu/vr> is located in the Arts Library. The slide collection is being replaced by the Image Collection, a growing collection of high-quality digital images selected by and for Carnegie Mellon users, powered by Luna Imaging software. The Image Collection provides digital images intended for presentations and educational use within the University, with a primary focus on art and architecture. The Arts Library also subscribes to a number of visual resources products including ARTstor, the premier digital image database. A collection of architecture-related videos is available for classroom use in the Video Collection.

Architecture Archives: The Carnegie Mellon University Architecture Archives <www.andrew.cmu.edu/user/ma1f/ArchArch> is a special collection of architectural records documenting the architects and architecture of Pittsburgh and its region. The Architecture Archives actively collects records in all relevant formats including drawings, photographs, office files and occasionally models. The Architecture Archives serves as a resource for the School of Architecture, the University and the community at large. It encourages class visits and student projects and sponsors and participates in architectural exhibits and publications.

The University Libraries supports all aspects of the School of Architecture's academic program including the five-year undergraduate first-professional degree program as well as graduate Masters and PhD programs. Collection development emphasizes the undergraduate curriculum in keeping with University policy. At the same time, substantial efforts are made to meet the needs of the School's distinctive graduate programs.

The Architecture Librarian/ Archivist is designated as liaison to the School of Architecture and the School names a faculty member as Library Representative to represent architecture faculty in library matters. The Architecture Librarian/ Archivist solicits participation in library planning from faculty and students. Faculty and student requests and input are always given full consideration and normally meet with a positive response. The Architecture Librarian/ Archivist compiles key information resources for architecture as an “Architecture Research Guide” <guides.library.cmu.edu/architecture>. This suite of web pages is continually updated and acts as a reference and instruction tool.

Acknowledging changes in the information resources landscape, the Standards for Accreditation of the Middle States Association of Colleges and Schools now emphasize information literacy as a framework for learning and de-emphasize library collection size as a meaningful measure. At Carnegie Mellon, a curriculum-based program of library instruction directly supports the educational objectives of the School of Architecture. First-year architecture students are required
to participate in the University’s C@CM program, which provides instruction in computer skills, research skills and information ethics. Instruction sessions tied to specific courses and assignments in the School of Architecture orient students to the Libraries and instruct them in the uses of information resources and technology. Presently, library instruction occurs primarily in the first and second year studios and in upper-level architectural history classes that require research papers. The Architecture Librarian and Archivist and/or teaching faculty take responsibility for this instruction. Incoming graduate students are introduced to the research environment at Carnegie Mellon. Orientation sessions in the library commonly introduce students to a suite of important Web-based information resources including the University Libraries home page, Cameo, the Avery Index, the “Architecture Research Guide” and frequently a web-based course guide designed to support their specific course or class assignment, plus a tour of the library as needed.

At Carnegie Mellon, library instruction also encompasses sessions that promote teaching and learning with rare and unique collections-including rare books and architectural drawings-and even with circulating collections. Such classes commonly involve collaborative teaching as the librarian and teaching faculty contribute their expertise and insight as curators, experts and educators in ways that reinforce and amplify course content and objectives. Students are exposed to carefully selected library materials that act as vehicles for exploration, inspiration and communication. While some class time may be scripted, students commonly have the opportunity to explore collections at their own pace and select, examine and contemplate books or other objects in order to develop new knowledge and insights. Learning is frequently embodied in subsequent course projects that emphasize making. [See Martin Aurand, “Teaching and Learning with Collections: The Library as a Site for Exploration and Inspiration,” Art Documentation 30:1 (Spring 2011), 12-20.]

The University Libraries is actively engaged with scholarly communications issues and sponsors Carnegie Mellon’s Research Showcase <repository.cmu.edu>, an institutional repository for scholarly output including research from the School of Architecture.

Funding for library operations takes place within a centralized University Libraries context. The Architecture Librarian and Archivist participates in the allocation process for materials funding and has full responsibility for expending funds that are allocated to the architecture accounts. Funding explicitly allocated for architectural resources surpasses $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, valued at approximately $37,000, provides additional funding for library materials in support of the Caste Career Development Professorship in Architecture and Urban Design. The relevant staff makes expenditures for visual resources and videos with input from the Architecture Librarian and Archivist. Endowment funds dedicated to the Architecture Archives are valued at approximately $160,000.

Carnegie Mellon has historically under-funded its library materials budget in comparison with its peers. Nevertheless, the University has increased funding for library materials by up to 6% annually for the last twenty years, in contrast to the cutbacks that have been common at many institutions. This sustained record of funding increases demonstrates institutional commitment and has had a significant impact on the library and its users. Endowments, grants and gifts have also proved helpful. During this time the University Libraries has maintained and in some cases expanded its level of access to print resources and has vastly broadened and deepened access to electronic resources. The impact of inflation has been moderate in architectural publishing, so annual budget increases have truly benefited the architecture collection. Substantial funding expended for other library collections also benefits the School of Architecture. Supplementary resources are increasingly significant as architectural education becomes increasingly interdisciplinary.

Carnegie Mellon University acknowledges an inherent conflict between the Libraries’ undergraduate funding level and the University’s ambitious research mission. This situation is not
expected to change given the University’s overall budget picture. Annual funding increases have enabled the Libraries to maintain the status quo in the face of escalating prices. Undergraduate level funding supports selective collecting to meet faculty and graduate needs, which is the case in architecture.

Library operations and services support the School of Architecture seamlessly and effectively within a centralized library system and information resources are increasingly available without regard to place; but the lack of immediate proximity to the classroom and the design studio limits the potential role of the library and information resources in the educational experience of architecture students at Carnegie Mellon.
### I. Full-time Instructional Faculty Compared to the Time of the Last Visit (full academic year)

**As reported in the 2011 ARS**

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<th>Professor - Female</th>
<th>Assoc. Professor - Male</th>
<th>Assoc. Professor - Female</th>
<th>Assis. Professor - Male</th>
<th>Assis. Professor - Female</th>
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**As reported for the academic year in which the last visit took place**

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<th>Professor - Female</th>
<th>Assoc. Professor - Male</th>
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<th>Assis. Professor - Female</th>
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## II. Faculty Promotions

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## III. Faculty Receiving Tenure

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## IV. Registration in U.S. Jurisdictions

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### Comparative Data for Students

#### I. Total Enrollment Compared to the Time of the Last Visit (full academic year)

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<th>FT Female</th>
<th>FT Total</th>
<th>PT Male</th>
<th>PT Female</th>
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<td>5</td>
<td>164</td>
<td>134</td>
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#### II. Qualifications of Students Admitted

**SAT:**
- Critical Reading
  - 25th percentile SAT score: 610
  - 75th percentile SAT score: 680

**Mathematics**
- 25th percentile SAT score: 660
- 75th percentile SAT score: 760

**Writing**
- 25th percentile SAT score: 630
- 75th percentile SAT score: N/A

**ACT:**
- 25th percentile ACT score: 28
- 75th percentile ACT score: 31

**Graduate Record Examination**
- Verbal (200-800)
- Quantitative (200-800)
- Analytical (0.0-6.0)

#### III. Time to Graduation

**Normal Time to Completion:** (number of quarters or semesters in which students are expected to complete all requirements for the NAAB-accredited degree)
- 66% Note... five year graduation rate of fall 2005 cohort, as of fall 2010
- 74% Note... five year graduation rate of fall 2000 cohort, as of fall 2005

**Percentage of students who completed in normal time**
- 66% Note... six year graduation rate of fall 2004 cohort, as of fall 2010
- 77% Note... six year graduation rate of fall 1999 cohort, as of fall 2005

**Percentage of students who completed in 150% of normal time.**

---

Note: The data presented is as reported in the 2011 ARS and as reported for the academic year in which the last visit took place.
MEMORANDUM

TO: NAAB accredited programs
cc: Andrea Rutledge, CAE, Executive Director
FROM: Cassandra Pair, Accreditation Manager
DATE: May 28, 2008
RE: 2007 Annual Report Responses

Enclosed please find the NAAB response to your 2007 Annual Report submission.

As a reminder, the 2008 Annual Report submission has been changed to November 30, 2008. For further information as it relates to these changes, log onto the NAAB website (www.naab.org) and click on the “News” link.

Should there be any questions, please contact the NAAB office at (202) 783-2007.

Thank you.
NAAB RESPONSE TO CARNegie MELLON UNIVERSITY
2007 ANNUAL REPORT

Rec’d Date: 7/2/2007
Date of Visit: N/A

Section One:
Checklist of required elements

1. Statistical Report
   Included

2. Response to deficiencies identified in the most recent VTR
   Included

3. Causes of Concern
   Included

4. Changes in the accredited program
   Included

Section Two (A):
Assessment of response to deficiencies

Condition 5: Human Resources
Satisfied, no further reporting required

Condition 7: Physical Resources
Satisfied, no further reporting required

Condition 11: Professional Degrees and the Curriculum
Satisfied, no further reporting required

Condition 12.14: Accessibility
Satisfied, no further reporting required

Condition 12.17 Comprehensive Design
Satisfied, no further reporting required

NOTE: Carnegie Mellon is to be complimented on the thorough and well-documented 2007 Annual Report. The information was complete and changes to the program were well-documented. Although the student work is difficult to review when reduced to 8½ x11 pages, it clear that students are integrating systems and design in the comprehensive studio.

---

1 Although an area may be marked "satisfied, no further reporting required," the next visiting team may include in its report its own assessment of the program’s response to the deficiency.

2 Although an area may be marked "satisfied, no further reporting required," the next visiting team may include in its report its own assessment of the program’s response to the deficiency.

3 Although an area may be marked "satisfied, no further reporting required," the next visiting team may include in its report its own assessment of the program’s response to the deficiency.

4 Although an area may be marked "satisfied, no further reporting required," the next visiting team may include in its report its own assessment of the program’s response to the deficiency.

5 Although an area may be marked "satisfied, no further reporting required," the next visiting team may include in its report its own assessment of the program’s response to the deficiency.
Section Two (B):
Assessment of response to causes of concern

None to report.

Section Three:
Changes to the accredited program

None to report.
Cassandra Pair
Accreditation Manager
NAAB
1735 New York Avenue, NW
Washington, DC 20006

Dear Cassandra Pair:

Enclosed please find the 2007 NAAB Report for Carnegie Mellon University’s School of Architecture.

If I can answer any questions or you require any additional information, please do not hesitate to contact me at 412.28.1538 or kframbes@andrew.cmu.edu.

Sincerely,

Kristen Frambes
Senior Administrative Associate
Carnegie Mellon University
School of Architecture

Enclosures

#### STUDENT DATA

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#### FACILITY / RESOURCE DATA

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<th>Min.</th>
<th>Average</th>
<th>Max.</th>
<th>Univ.Avg.</th>
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National Architecture Accreditation Board  
Annual Report 2006 / 2007 Academic Year  
Carnegie Mellon University School of Architecture  
Bachelor of Architecture (5 year)  

Laura A. Lee, FAIA, Professor and Head  

Report on Conditions Not Met  

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Condition 5.0 Not Met  Human Resources

NAAB Condition: The program must demonstrate that it provides adequate human resources for a professional degree program in architecture, including a sufficient faculty complement, an administrative head with enough time for effective administration, administrative and technical support staff, and faculty support staff.

2005 Visiting Team Response: This Visiting Team, as did the last, found the School to be overly dependent on adjunct faculty with little evidence that substantial improvement has been made since the previous visit. This concern is exacerbated by the fact that the tenured faculty is involved in the pursuit of valuable but highly specialized areas of research which require them to expend from 30 to 50% of their time with graduate programs. The Team felt that the correlation between the excellent courses taught by the tenured faculty, and the lack of evidence that such knowledge was applied in the studio, was at least partly due to the tenured faculty’s reliance on the adjunct faculty. The Team believes that if the School is to maintain its position as a leader in the field of architecture, it must increase the number of full-time faculty that teaches in the design studios. The Team also found a weak design aesthetic in the upper level studios and believes that the search for new faculty should focus on persons able to improve that aspect of the program. The School does not yet have a full-time, endowed Chair to be occupied by someone to provide creative leadership for the design faculty and inspiration to the students.

2006 / 2007 Annual Report on Condition 5.0 Human Resources

The School has prioritized the following to re-establishing design focus (and increase diversity) and in faculty resources:

1. Hiring of new junior faculty with expertise in design

Faculty searches in the past three years have resulted in the following tenure track design faculty hires:

- 2004 / 05  Kelly Hutzeil  MArch Columbia  Caste Assistant Professor
- 2005 / 06  Jeremy Ficca  MArch Harvard  Assistant Professor
- 2006 / 07  Pablo Garcia  MArch Princeton  Assistant Professor

Kelly Hutzeil leads the 6th year Urban Design studio and faculty team of 3
Jeremy Ficca leads the 2nd year Materials and Assembly studio and faculty team of 5
Pablo Garcia leads the 1st year Form and Space studios and faculty team of 7

Faculty searches in pursuit of leadership in design will be conducted in the coming years as follows:

- 2007 / 08  Caste Visiting Assistant Professor in Architecture and Urban Design
- Fitzgibbon Visiting Professor
- 2 Visiting Faculty
- 2 Tenure-track Faculty

- 2008 / 09  2 Tenure-track Faculty
- 2009 / 10  2 Tenure-track Faculty

2. Hiring of new adjunct faculty with focus on design

The following faculty with expertise in design have been hired in the past 3 years:

- 2004-06  Dee Briggs  MArch Yale  First Year Studio
  Teresa Bucio, AIA  MArch North Carolina  First Year Studio
  David Burns  MArch Columbia  First Year Studio, Introduction to Digital Media
  Matt Fineout, AIA  MArch Sci-Arc  Fourth Year Studio
  Jeff King, AIA  MArch Tulane  Fourth Year Studio
  Jen Lucchino, AIA  MArch Rice  First Year Studio
  Jason Morris, AIA  MArch Illinois Inst. Tech.  First Year Studio

- 2006/07  Rami el Samahy  MArch Harvard  Fifth Year Urban Lab Studio
  Mike Ginw, AIA  MArch Virginia Tech  Third Year Studio
  Don Johnson, RA  MArch Yale  First Year Studio
  Mck McNutt, AIA  MArch Syracuse  Fourth Year Studio
  Matt Plecky, RLA  MArch University of Virginia  Third Year Studio

- 2007/08  MaryLou Arscott, RIBA  AA London  First and Second Year Studios
  Christine Buhl, RLA  MLA Penn State  Third Year Studio
  Jonathan Golli, PEng  MArch Toronto  Second Year Studio
Additional adjunct faculty hired to contribute to the history and professional practice sequences:

<table>
<thead>
<tr>
<th>Name</th>
<th>Degree</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joseph Coohill, PhD</td>
<td>PhD Oxford</td>
<td>Architectural History</td>
</tr>
<tr>
<td>Francesca Torello, PhD</td>
<td>PhD Politecnico Torino</td>
<td>Architectural History</td>
</tr>
<tr>
<td>Casimer Kawecki</td>
<td>MArch Virginia</td>
<td>Real Estate Development</td>
</tr>
<tr>
<td>Mark Minnerly, RA</td>
<td>BArch Cornell</td>
<td>Real Estate Development</td>
</tr>
</tbody>
</table>

3. Elevating long term and award winning adjunct faculty to leadership positions in design, practice, research

Ten of 38 adjunct faculty have over ten years of sustained commitment to the design studio program in the School. All are award winning practicing principals. These faculty have provided leadership in design and have provided mentoring of junior adjunct faculty. Most recently, a new category of faculty has been created, a practice track, with a three-quarter time appointment.

Gerard Damiani, is the first to hold the title of Professor of Practice and will be leading the introduction of a thesis program in the final semester of the program. Similarly, Luis Rico, Associate Dean, has been granted a three year, three quarter time appointment which allows him to teach as well as direct the Remaking Cities Institute. A third faculty member, Christine Mondor, holds a three quarter time appointment and leads the new Executive Education, Sustainable Design Academy.

4. Re-engaging tenured faculty in undergraduate design studios

The following senior faculty have resumed coordinating and teaching in the undergraduate studios:

- Steve Lee – coordinator
- Omer Akin – coordinator
- Khee Poh Lam – coordinator
- Vivien Loftness

Third year Advanced Construction studios
Fourth year Occupancy studios
Fourth year Systems Integration studios
Third Year and Fourth Year studios

5. Aggressively fund raising for three senior endowed chair positions

The School has identified donors and is in the process of raising senior chairs as follows:

- Professor of Practice: $2,500,000 Preliminary Stage
- Professor of Sustainable Design: $2,500,000 Advanced Stage
- David Lewis Professor of Urban Design: $2,500,000 Advanced Stage

6. Leveraging existing and establishing new joint and courtesy appointments

The School benefits from the following joint appointments:

- Irving Oppenheim, PhD: Professor of Civil Engineering, teaching structures
- Susan Finger, PhD: Assoc. Prof. of Mechanical Engineering, teaching arch engineering construction
- Kristen Kurland: Assoc. Teaching Prof, Heinz School of Public Policy, teaching BIM and GIS

The School benefits from the following courtesy appointments:

- Omer Akin (arch): Department of Civil and Environmental Engineering
- Mark Gross (arch): Human Computer Interaction Institute
- Cindy Linnauro: Professor of Drama, teaching Architectural Lighting Design
- Robert Reid, PhD: Dept. of Mechanical Engineering, teaching Physics for Architecture
- Diane Shaw (arch): Department of History
- Raymund Ryan: Carnegie Museum, Heinz Arch Center, collaborating on Lectures and Exhibitions

In summary, faculty distribution has emerged and is projected as follows (plus chart for current faculty distribution and rank)

<table>
<thead>
<tr>
<th></th>
<th>2005/06</th>
<th>2006/07</th>
<th>2007/08</th>
<th>2008/09</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tenured</td>
<td>9.5</td>
<td>10.5</td>
<td>10.5</td>
<td>10.5</td>
</tr>
<tr>
<td>Tenure Track</td>
<td>2.5</td>
<td>3.5</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Teaching Track</td>
<td>2</td>
<td>1.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Special Appointment</td>
<td>2.5</td>
<td>2</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Adjunct faculty 10+ years</td>
<td>11</td>
<td>11</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Adjunct faculty</td>
<td>18</td>
<td>24</td>
<td>28</td>
<td>22</td>
</tr>
<tr>
<td>Caste Junior Chair</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>FTE (full time equivalent)</td>
<td>24.0</td>
<td>25.5</td>
<td>27.0</td>
<td>27.0</td>
</tr>
</tbody>
</table>
Condition 7.0 Not Met: Physical Facilities

NAAB Condition: The program must provide physical resources that are appropriate for a professional degree program in architecture, including design studio space for the exclusive use of each full-time student; lecture and seminar spaces that accommodate both didactic and interactive learning; office space for the exclusive use of each full-time faculty member; and related instructional support space.

2005 Visiting Team Response: Again, following comments found in the 2000 Visiting Team Report, the Team found a shop that is still too small and is limited to woodworking, providing no access to metal, plastic, a paint booth, physical modeling, or the other elements associated with a well-equipped shop. Also, the program would profit from consolidating the studio spaces into one building, with neighboring adjacencies to enhance peer-to-peer learning and the new mentoring system of the "i AM" program, in which upper-level students support younger students’ acclimation and degree progress. This team felt this consolidation to be more compelling than the catchet of having certain studios in the CFA Hall, since other classes and advising needs will still bring students there for interaction with the other Fine Arts disciplines. Equipment resources need to expand to provide digital 3-D modeling capability. Remedies are planned by the School, however wider institutional commitment is pending.

2006 / 2007 Annual Report Condition 7.0 Physical Facilities

1. General space improvements and renovations

2004
Renovation of main administrative offices College of Fine Arts #201 $100,000 (75,000 in kind furniture)
Renovation of MMCH 409 into Master of Sustainable Design Studio $35,000
Renovation of MMCH 408 into CoDe Lab $5,000

2005
Renovation of main design studio CFA 200 and addition of 34 movable crit panels $60,000
Renovation of CFA 214 into new computer lab, crit / exhibition / lecture space $80,000
Renovation of MMCH 102 into Master of Urban Design studio and community lab $40,000

2006
Renovation of MMCH 308 into computer lab for first, second, third year students $30,000
Renovation of MMCH 310 first year yellow studio for additional crit space $15,000
Creation of an exclusive metals shop as part of the architecture woodshop in CFA $10,000

2007
Creation of Media Center / consolidated printing facilities (not complete) $20,000

2. Increase in number and distribution of high-powered graphic, dual screen work stations and software

The School has invested in new computers and state-of-the-art software as follows

<table>
<thead>
<tr>
<th>Year/Year</th>
<th>Existing Machines</th>
<th>Additional Machines</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004/05</td>
<td>24</td>
<td>26</td>
<td>1:11</td>
</tr>
<tr>
<td>2005/06</td>
<td>28</td>
<td>52</td>
<td>1:5</td>
</tr>
<tr>
<td>2006/07</td>
<td>24</td>
<td>76</td>
<td>1:3.5</td>
</tr>
</tbody>
</table>

3. Creation of digital fabrication lab in Margaret Morrison

A new 3,000 sf facility has been established for the School of Architecture with direct support of the Provost, Mark Kamlet. Construction cost for the facility is approximately $500,000. The fabrication lab is centered on five pieces of complementary equipment plus a $70,000 spray booth facility. These can be categorized as two-dimensional and three-dimensional additive and subtractive processes. The equipment and associated costs borne by the School of Architecture are as follows:

- CNT Million 850 CNC Router 48" x 96" x 11" including workstation $48,000
- Epilog Legend 36EXT Laser Cutter 24" x 36" including workstation $32,000
- Dimension 76S STS 3d printer (abs plastic) 8" x 8" x 12" incl. workstation $28,000
- Z-Corp Z450 3d printer (plaster) - 8" x 8" x 10" incl. workstation $40,000
- Formech MB660 Vacuum Forming Machine 24" x 48" $10,000
- Purex HEPA, Chemical and Dust Filtration System for laser cutter $6,500
- GFS Industrial Spray booth $12,000
- Oneida Cyclone HEPA dust collection system $1,500
- Compressed Air System including dryers and filters $2,000
- Total Cost $180,000
4. Improvements in the existing shop facilities

With direct financial support from the Dean, Hilary Robinson, the woodshop has expanded its space, upgraded and purchased new machinery, and expanded its material capabilities as follows:

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Machine Cost</th>
<th>Shipping</th>
<th>Sub-total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saw stop table saw</td>
<td>2</td>
<td>$2,799.00</td>
<td>$600.00</td>
<td>$3,399.00</td>
</tr>
<tr>
<td>Table saw accessories</td>
<td>1</td>
<td>$1,527.00</td>
<td></td>
<td>$1,527.00</td>
</tr>
<tr>
<td>Saw stop extension table</td>
<td>1</td>
<td>$150.00</td>
<td></td>
<td>$150.00</td>
</tr>
<tr>
<td>Metabo KGS 305 Dual bevel Sliding Miter Saw</td>
<td>1</td>
<td>$681.25</td>
<td></td>
<td>$681.25</td>
</tr>
<tr>
<td>Lauguna 16&quot; band saw</td>
<td>1</td>
<td>$1,750.00</td>
<td>$266.00</td>
<td>$2,016.00</td>
</tr>
<tr>
<td>Wallied canopy for dust containment</td>
<td>1</td>
<td>$369.17</td>
<td></td>
<td>$369.17</td>
</tr>
<tr>
<td>Plugs and lights for walled canopy</td>
<td>1</td>
<td>$40.25</td>
<td></td>
<td>$40.25</td>
</tr>
<tr>
<td>3 ph plugs and cord for new machines</td>
<td>1</td>
<td>$138.24</td>
<td></td>
<td>$138.24</td>
</tr>
<tr>
<td>Powermatic wood lathe</td>
<td>1</td>
<td>$3,200.00</td>
<td>$250.00</td>
<td>$3,450.00</td>
</tr>
<tr>
<td>Extrema 20&quot; planer</td>
<td>1</td>
<td>$3,699.00</td>
<td>$250.00</td>
<td>$3,949.00</td>
</tr>
<tr>
<td>Powermatic dual drum sander</td>
<td>1</td>
<td>$2,799.00</td>
<td>$250.00</td>
<td>$3,049.00</td>
</tr>
<tr>
<td>Saw Systems panel saw</td>
<td>1</td>
<td>$1,696.00</td>
<td>$162.00</td>
<td>$1,858.00</td>
</tr>
<tr>
<td>Accessories for panel saw</td>
<td>1</td>
<td>$558.00</td>
<td></td>
<td>$558.00</td>
</tr>
<tr>
<td>Invicta slot mortiser</td>
<td>1</td>
<td>$3,040.00</td>
<td>$177.78</td>
<td>$3,217.78</td>
</tr>
<tr>
<td>Wire for new slot mortiser</td>
<td>1</td>
<td>$19.95</td>
<td></td>
<td>$19.95</td>
</tr>
<tr>
<td>Floor model with rolling wheels and anvils wheels</td>
<td>1</td>
<td>$2,485.25</td>
<td>$200.00</td>
<td>$2,685.25</td>
</tr>
<tr>
<td>Additional anvils</td>
<td>2</td>
<td>$60.75</td>
<td></td>
<td>$121.50</td>
</tr>
</tbody>
</table>

**Non-wood working equipment**

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Machine Cost</th>
<th>Shipping</th>
<th>Sub-total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot shear, 37&quot; x16ga</td>
<td>1</td>
<td>$1,432.00</td>
<td></td>
<td>$1,432.00</td>
</tr>
<tr>
<td>Box and pan brake, 48&quot;</td>
<td>1</td>
<td>$1,362.20</td>
<td>$268.00</td>
<td>$1,630.20</td>
</tr>
<tr>
<td>Weld on leg kit for box/pan brake</td>
<td>1</td>
<td>$110.00</td>
<td></td>
<td>$110.00</td>
</tr>
<tr>
<td>Slip roller, 50&quot; x 16ga</td>
<td>1</td>
<td>$883.45</td>
<td>$139.00</td>
<td>$1,022.45</td>
</tr>
<tr>
<td>Brake stand for slip roll</td>
<td>1</td>
<td>$142.95</td>
<td></td>
<td>$142.95</td>
</tr>
<tr>
<td>Punch</td>
<td>1</td>
<td>$1,479.00</td>
<td>$159.10</td>
<td>$1,638.10</td>
</tr>
<tr>
<td>Horizontal band saw</td>
<td>1</td>
<td>$918.00</td>
<td></td>
<td>$918.00</td>
</tr>
<tr>
<td>Support stands for hrz bnd sw</td>
<td>1</td>
<td>$154.98</td>
<td></td>
<td>$154.98</td>
</tr>
<tr>
<td>3/4&quot; tubing bender</td>
<td>1</td>
<td>$147.25</td>
<td>$12.11</td>
<td>$159.36</td>
</tr>
<tr>
<td>Low plate brake</td>
<td>1</td>
<td>$199.50</td>
<td>$15.55</td>
<td>$215.05</td>
</tr>
<tr>
<td>Nibbler</td>
<td>1</td>
<td>$230.00</td>
<td></td>
<td>$230.00</td>
</tr>
<tr>
<td>Magnabend sheet metal bending machine</td>
<td>1</td>
<td>$2,375.00</td>
<td>$175.00</td>
<td>$2,550.00</td>
</tr>
</tbody>
</table>

**Lathe accessories**

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Machine Cost</th>
<th>Shipping</th>
<th>Sub-total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bowl gouge (included below)</td>
<td>1</td>
<td>$0.00</td>
<td></td>
<td>$0.00</td>
</tr>
<tr>
<td>Miscel accessories, Woodcraft</td>
<td>1</td>
<td>$125.97</td>
<td></td>
<td>$125.97</td>
</tr>
<tr>
<td>Curved tool rest</td>
<td>1</td>
<td>$39.95</td>
<td></td>
<td>$39.95</td>
</tr>
<tr>
<td>43/4&quot; double ended caliper</td>
<td>1</td>
<td>$13.99</td>
<td></td>
<td>$13.99</td>
</tr>
<tr>
<td>Curved undercut scraper</td>
<td>1</td>
<td>$51.99</td>
<td></td>
<td>$51.99</td>
</tr>
<tr>
<td>5/8&quot; swan neck hollowing tool</td>
<td>1</td>
<td>$59.99</td>
<td></td>
<td>$59.99</td>
</tr>
<tr>
<td>7&quot; double ended caliper</td>
<td>1</td>
<td>$13.99</td>
<td></td>
<td>$13.99</td>
</tr>
<tr>
<td>Vm 120 1-1/4 x 8 chuck</td>
<td>1</td>
<td>$269.00</td>
<td></td>
<td>$269.00</td>
</tr>
<tr>
<td>Vm bowl jaws</td>
<td>1</td>
<td>$94.95</td>
<td></td>
<td>$94.95</td>
</tr>
<tr>
<td>Vm adapter 1 to 1-1/4</td>
<td>1</td>
<td>$29.95</td>
<td></td>
<td>$29.95</td>
</tr>
<tr>
<td>3/16 diamnd shpd parting tool</td>
<td>1</td>
<td>$39.95</td>
<td></td>
<td>$39.95</td>
</tr>
</tbody>
</table>

**Other**

<table>
<thead>
<tr>
<th>Item</th>
<th>Qty</th>
<th>Machine Cost</th>
<th>Sub-total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mark X vacuum pump with controls</td>
<td>1</td>
<td>$985.00</td>
<td>$985.00</td>
</tr>
<tr>
<td>54x60x20&quot; 20 mill polyurethane vac bag</td>
<td>1</td>
<td>$197.00</td>
<td>$197.00</td>
</tr>
<tr>
<td>54x109x30&quot; 30 mill polyurethane vac bag</td>
<td>1</td>
<td>$394.00</td>
<td>$394.00</td>
</tr>
</tbody>
</table>

**TOTAL**                                           |     |              | $42,356.21 |
Condition 11 Not Met: Professional Degrees and the Curriculum

NAAB Condition: The NAAB only accredits professional programs offering the Bachelor of Architecture and the Master of Architecture degrees. The curricular requirements for awarding these degrees must include three components—general studies, professional studies, and electives—which respond to the needs of the institution, the architecture profession, and the student respectively.

2005 Visiting Team Response: The professional degree does not require a sufficient number of courses in the liberal arts and sciences, in favor of extensive requirements in architecture studies. The School has a plan to reverse this imbalance, however the stated plan may not be quite aggressive enough to meet either NAAB’s old requirement of a 40/60 % distribution ratio between non-architecture and architecture courses, or the up-coming requirement (in the 2004 Conditions) of 45 credit hours of general studies (or 135 units, in CMU’s course-credit system.) The Team also recommends finding “room” in the early years of study for students to take their University Elective and general education courses. In the current situation, those electives are taken in the last 3 years of study, meaning that the student is inclined to take the upper-level courses that the Majors in other disciplines might take, yet they cannot qualify for the courses, not being Majors and not having taken the introductory survey courses. Room for University Electives in the early years allows them to take the introductory courses and establish interests in other disciplines to set up a Minor or other specialty in other programs of study.

2006 / 2007 Annual Report on Condition 11 Professional Degrees and the Curriculum

1. Changes in curriculum since NAAB Visit

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculus for Architecture</td>
<td>replaced</td>
<td>Differential and Integral Calculus</td>
</tr>
<tr>
<td>Physics for Architecture</td>
<td>replaced</td>
<td>Physics for Engineers</td>
</tr>
<tr>
<td>Critical Histories of the Arts</td>
<td>replaced</td>
<td>World History</td>
</tr>
<tr>
<td>Principles of Economics</td>
<td>removed</td>
<td>as required course</td>
</tr>
<tr>
<td>Statistical Reasoning</td>
<td>removed</td>
<td>as required course</td>
</tr>
<tr>
<td>Site Engineering</td>
<td>reduced</td>
<td>from 9 to 6 units</td>
</tr>
<tr>
<td>Advanced Building Systems</td>
<td>reduced</td>
<td>from 9 to 6 units</td>
</tr>
<tr>
<td>Acoustics and Lighting</td>
<td>reduced</td>
<td>from 9 to 6 units</td>
</tr>
</tbody>
</table>


Electives 99 units 18% 135 units 27%
University Fundamentals 63 units 13% 35 units 7%

Note: While 501 units is the minimum number of units required for graduation, most architecture students earn minors or double majors requiring an additional average of 36 units. The result is a ratio greater than the 50% to 40%.

2. Proposed Curriculum (under review, to be implemented in 2008/09)

- Design 192 units (64 credits)
- Drawing and Media 36 units (12 credits)
- History 27 units (9 credits)
- Building Technology 27 units (9 credits)
- Environmental Technology 27 units (9 credits)
- Practice 36 units (12 credits)
- Electives 54 units (18 credits)
- University Electives 54 units (18 credits)
- General Education 27 units (9 credits)
3. Introduction of new architecture electives

2004/05  Arcadia in Context: An Interdisciplinary Course  Diane Shaw
          Asian Architecture  Mrea Csorba
          Contemporary London Architecture  Raymund Ryan
          History of Sustainable Architecture  Christine Mondor / Charles Rosenblum
          Inventing Futures with Design Computing  Ellen Do

2005/06  Architectural Lighting Design (with the School of Drama)  Cindy Limauro
          Architectural Construction Kits / Architectural Robotics  Mark Gross
          Competitions as Independent Study  various design faculty
          Design Computing Theory and Methods  Mark Gross
          Mapping Urbanism  Kelly Hutzell
          Model Making In Wood: Barns of Western PA Exhibit at the CMoA  Scott Smith
          Parametric Design: Maya / Rhino / Rapid Prototyping  David Burns
          Passport (see http://www.arc.cmu.edu/passport)  Dee Briggs
          Portfolios Presentations Publications  Kelly Hutzell
          Real Estate Design and Development  Casimer Kaveczi

2006/07  Architectural Robotics  Mark Gross
          Contemporary Middle Eastern Cities  Rami el Samahy
          Critical Histories of the Arts  Ting Chang
          Destruction and Rebuilding of Iconic Buildings and Cities  Joseph Coohill
          Digital Fabrication: How to Make Things  Mark Gross
          Ecological Footprints  Volker Hartkopf
          Patterning: Third Generation Digital Design  David Burns
          Synergistic Form (joint with the School of Art)  Charles Rosenblum

2007/08  European Cities in the XIX Century: Planning, Arch, Pres  Francesca Torello
          Drawing Effective: Clearly Complex and Sublimely Simple  Kent Suhbier
          Advanced CAD, BIM, and 3D Visualization  Kristen Kurland
          Digital Fabrication Lab Construction  Jeremy Ficca
          Making Furniture Interactive  Mark Gross
          Contemporary Architectural Theory  Charles Rosenblum

Condition 12 Student Performance Criteria 14 Not Met: Accessibility

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

2005 Visiting Team Response: Although the appropriate subject matter is covered in classroom work, its application in studio work is either weak or nonexistent. Very similar comments were seen in the previous VTR and the continued failure to address this issue was of concern to this team.

2006 / 2007 Annual Report Condition 12 Student Performance Criteria: Accessibility

The Visiting Team acknowledged the strengths of the Human Factors course as a pre-requisite, but reported that the material was not consistently evident in the upper level studios. Immediately following the visit, the fourth year team implemented regular studio assignments focused on accessibility and fire safety issues. As part of the final presentation and semester review, each student was required to submit:

Analysis: a written synopsis of building code issues
          occupancy type, diagrammed in plan
          calculation of egress based on occupancy count and code definitions
          cumulative numbers of occupancy descending to ground floor exits + minimum width requirements

Synthesis: graphic demarcation of primary accessible path of travel
           accommodation for handicap persons in public and private areas
           diagram of egress from a typical public-use space, assembly or other
Equally importantly, accessibility is part of every studio project from the first year onward, and the Human Factors required course in third year has several lecture and assignments devoted to accessibility issues and ADA codes.

**Condition 12 Student Performance Criteria 17 Not Met: Comprehensive Design**

*Ability to produce an architecture project informed by a comprehensive program, from schematic design through the detailed development of programmatic spaces, structural and environmental systems, life-safety provisions, wall sections, and building assemblies, as may be appropriate; and to assess the completed project with respect to the program's design criteria.*

2005 Visiting Team Response: The Team could not find sufficient evidence that students were able to use the technical and environmental knowledge gained in their first three years of education to inform the design process in the projects produced in their fourth and fifth year studios. This Team, as did the previous team, found little evidence that students were retaining the knowledge gained in various "technical" courses and making it a part of what should become their growing design vocabulary. This observation was reinforced in discussions with both students and faculty and was characterized by student comment that there is not much continuity between the classroom and the studio.

2006/2007 Annual Report Condition 12 Student Performance Criteria 17

Successful strategies for integrated design in the first two years of the curriculum have now advanced through the third year. With the committed curricular changes, expansion of shop and computing environments and equipment, and most critically, the addition of new tenure-track design faculty and visitors, the mission of the School and comprehensive design is now being realized in the upper level studios.

*To make the whole greater than the sum of its parts* is both the mandate of the strategic plan and the vision of integrated design for the Carnegie Mellon School of Architecture. Tenured faculty with expertise in advanced building systems are now assuming leadership roles in the studio and new standards have been set for process and product of upper level studios. In the 2007/2008 year, thesis will be introduced as a culmination of the Bachelor of Architecture educational experience.

Please see attached project sample from the comprehensive studio.
Part One | Institutional Characteristics & Commitment to Continuous Improvement

3.3 Faculty Credentials

Please note the following six pages present the credentials of the faculty assigned to each course for the semesters F09, S10, M10, F10 & S11. The one page resumes may be found in Part Four Supplemental Information.
<table>
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<tr>
<th>Name</th>
<th>Title/Role/Position</th>
<th>Experience/Expertise</th>
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<tr>
<td>Oppenheim</td>
<td>Sr faculty member, j/j appt w/ CEE w/ 40 year research &amp; publishing career in structures</td>
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<tr>
<td>Picker</td>
<td>BArch MArch &amp; principal of Pgh development firm w/ expertise in urban design</td>
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<tr>
<td>Piccoli</td>
<td>BA Landscape/ MArch &amp; sr proj arch at Pgh firm w/ expertise in landscape</td>
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<tr>
<td>Rosenblum</td>
<td>PhD in Architectural History</td>
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<tr>
<td>Shaw</td>
<td>PhD in Architectural History</td>
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<td>Shaw</td>
<td>PhD in Architectural History</td>
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<tr>
<td>Smith</td>
<td>BFA/MFA w/ 30 year career as artist &amp; craftsman</td>
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<tr>
<td>Smith</td>
<td>BFA/MFA w/ 30 year career as artist &amp; craftsman</td>
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<tr>
<td>Subniese</td>
<td>BArch &amp; principal of Pgh firm w/ expertise in craft &amp; detail</td>
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<td>Tajima</td>
<td>BArch MLA/MUD &amp; principles of global design firm</td>
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<td>Tomiko</td>
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Architectural Program Report For The 2012 NAAB Visit For Continuing Accreditation | Page 87
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### REQUIRED COURSES

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<td>Architecture Design Studio: Foundation</td>
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<td>48-116</td>
<td>Building Physics</td>
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<td>48-120</td>
<td>Introduction to Digital Media I</td>
<td>06 CU</td>
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<td>48-125</td>
<td>Introduction to Digital Media II</td>
<td>06 CU</td>
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<td>48-130</td>
<td>Architectural Drawing I: A Tactile Foundation</td>
<td>06 CU</td>
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<tr>
<td>48-135</td>
<td>Architectural Drawing II: Appearance</td>
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<td>48-200</td>
<td>Architecture Design Studio: Composition</td>
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<td>48-205</td>
<td>Architecture Design Studio: Materials</td>
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<td>48-210</td>
<td>Statics</td>
<td>09 CU</td>
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<td>48-215</td>
<td>Materials and Assembly</td>
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<td>48-217</td>
<td>Structures</td>
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<td>48-240</td>
<td>Historical Survey of World Architecture &amp; Urbanism</td>
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<td>48-300</td>
<td>Architecture Design Studio: Site</td>
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<td>Architecture Design Studio: Advanced Construction</td>
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<td>48-312</td>
<td>Site Engineering and Foundations</td>
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<td>48-315</td>
<td>Environment I: Climate and Energy</td>
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<td>48-360</td>
<td>History II and III</td>
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<td>Human Factors in Architecture</td>
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<td>48-400</td>
<td>Architecture Design Studio: Occupancy</td>
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<td>48-405</td>
<td>Architecture Design Studio: Systems Integration</td>
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<td>48-410</td>
<td>Environment II: Light (replaced by 48-116)</td>
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<td>48-412</td>
<td>Environment III: Mechanical Systems</td>
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<td>Advanced Building Systems</td>
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<td>48-452</td>
<td>Real Estate Design and Development</td>
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<td>48-505</td>
<td>Thesis II: Studio X</td>
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<td>48-550</td>
<td>Issues of Practice</td>
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<td>48-551</td>
<td>Ethics and Decision Making in Architecture</td>
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2.1 Regional Accreditation:

The Middle States Commission on Higher Education (MSCHE) accredits degree-granting colleges and universities in the Middle States region, which includes Delaware, the District of Columbia, Maryland, New Jersey, New York, Pennsylvania, Puerto Rico, the U.S. Virgin Islands, and several locations internationally.

MSCHE is a voluntary, non-governmental, membership association that defines, maintains, and promotes educational excellence across institutions with diverse missions, student populations, and resources. The Commission is one of seven regional accreditation agencies in the United States, each covering a specific geographic area. Together, the seven regional agencies are responsible for monitoring institution-wide accreditation at over 3,000 colleges and universities.

As a regional accrediting agency, the Middle States Commission examines each institution as a whole, rather than specific academic programs within the institution. Therefore, the Middle States Commission is tasked with examining all aspects of the university including: educational activities, student learning outcomes, institutional resources (human, financial, physical, and technical), governance, administration, admissions policies, student services, institutional assessment practices, and many other aspects of the university's operations.

An institution must have regional or national accreditation in order to obtain federal financial aid for its students.

Colleges and universities must seek reaccreditation every five years. Carnegie Mellon was most recently reaccredited in 2008 following a successful Self-Study process. The Self-Study occurs every ten years. This decennial review is based upon an intensive Self-Study report that the university prepares about itself describing how the institution meets all of the Commission's standards for continual accreditation. In addition to detailing how an institution meets accreditation standards, the Self-Study is also an opportunity for in-depth analysis of an institution's strengths and areas for improvement. The Self-Study process is a significant undertaking for colleges and universities, typically taking two years (or longer) from start to finish. The process culminates with a three-day, on-campus visit from a team of external peer evaluators.
STATEMENT OF ACCREDITATION STATUS

CARNEGIE MELLON UNIVERSITY
5000 Forbes Avenue
Pittsburgh, PA 15213
Phone: (412) 268-2000; Fax: (412) 268-5249
www.cmu.edu

Chief Executive Officer: Dr. Jared L. Cohon, President

INSTITUTIONAL INFORMATION

Enrollment
(Headcount): 6108 Undergraduate; 5510 Graduate
Control: Private (Non-Profit)
Affiliation: n/a
Carnegie Classification: Research - Very High Research Activity
Degrees Offered: Bachelor's, Master's, Doctor's - Research/Scholarship;
Distance Education Programs: Yes

Accreditors Approved by U.S. Secretary of Education: National Association of Schools of Art and Design, Commission on Accreditation; National Association of Schools of Music, Commission on Accreditation
Other Accreditors: Accreditation Board for Engineering (ABET); National Architectural Accrediting Board (NAAB); National Association of Schools of Public Affairs and Administration (NASPAA); The Association to Advance Collegiate Schools of Business International (AACSB)

Instructional Locations

Branch Campuses: Carnegie Mellon University in Qatar, P.O. Box 24866, Qatar; Carnegie Mellon University, Silicon Valley Campus, Moffet Field, CA
Additional Locations: Adelaide, Australia; Asia & Pacific Trade Center, Osaka, Japan; Electronic Arts, Redwood City, CA; Instituto Superior Tecnico at the Universidade Tecnico de Lisboa, Campus Alameda, Portugal; Instituto Superior Tecnico at the Universidade Tecnico de Lisboa, Campus Taguspark, Av. Prof. Dr. Anibal Cavaco Silva, Portugal; Los Angeles Center, North Hollywood, CA; New York City, New York, NY; Partnership w/Athens Information Tech., Athens Information Technology (AIT), Greece; Universidade Catolica Portuguesa, Palma de Cima, Portugal; Universidade da Madeira, Campus Universitario da Penteada, Portugal; Universidade de Aveiro, Aveiro, Portugal; Universidade de Coimbra, Largo da Porta Ferrea, Portugal; Universidade de Lisboa, Lisboa, Portugal; Universidade do Minho, Largo do Paco, Portugal; Universidade do Porto, Reitoria da U. Porto, Portugal; Universidade Nova de Lisboa, Travessa Estevao Pinto, Portugal
Other Instructional Sites: ECE Ph.D. Program with A*STAR, Connexis, Singapore; Heinz MSPPM in Washington DC, Washington, DC; University of Hyogo, Chuo-ku, Kobe 650-0044, Japan

ACCREDITATION INFORMATION

Status: Member since 1921
Last Reaffirmed: June 26, 2008

Most Recent Commission Action:
January 19, 2011: To acknowledge receipt of notification from the institution that it has closed its additional location at CyLab Japan Campus, Hyogo Institute of Information Education Foundation (c/o University of Hyogo), Japan, effective March 31, 2010, because the cohort enrolled at the location has completed the program offered there. The Periodic Review Report is due June 1, 2013.

**Brief History Since Last Comprehensive Evaluation:**

June 26, 2008: To reaffirm accreditation and to commend the institution for the quality of the self-study process and report. The Periodic Review Report is due June 1, 2013.

January 4, 2010: To acknowledge receipt of the substantive change request, and to include the additional location at 55 Broad Street, New York, New York, 10012 within the scope of the institution's accreditation. The Periodic Review Report is due June 1, 2013.

March 3, 2010: To document receipt of the substantive change request, and to include the following additional locations within the scope of the institution's accreditation: (1) Electronic Arts, 250 Shoreline Drive, Redwood City, California 94065-1406; (2) Asia & Pacific Trade Center, Osaka, Japan; (3) Universidade de Madeira, Funchal, Portugal; (4) Universidade de Coimbra, Coimbra, Portugal; (5) Universidade de Aveiro, Aveiro, Portugal; (6) Instituto de Telecomunicacoes, Aveiro, Portugal; and (7) Faculdade de Ciencias, University of Lisbon, Lisbon, Portugal. The Commission requires written notification within thirty days of the commencement of operations at these additional locations. In the event that operations at the additional locations do not commence within one calendar year from the approval of this action, approval will lapse. To also include contractual agreements with the following entities within the scope of the institution's accreditation: Centro de Ciencia e Tecnologia da Madeira, Polo Cientifico e Tecnologica - Madeira Tecnopolo, S.A., and Fundacao para a Ciencia e e Tecnologia. The Periodic Review Report is due June 1, 2013.

November 2, 2010: To acknowledge receipt of the substantive change request, and to include the following contractual agreements and additional locations within the scope of the institution's accreditation: (1) Universidade do Minho, Largo do Paco, 4704-553 Braga, Portugal; (2) Universidade de Aveiro, Aveiro, Portugal; (3) Universidade do Porto, Reitoria da U. Porto, Praca Gomes Teixeira, 4099-002 Porto, Portugal; (4) Faculdade de Ciencias e Tecnologia, Universidade de Coimbra, Coimbra, Portugal; (5) Faculdade de Ciencias, Universidade de Lisboa, Lisboa, Portugal; (6) Instituto Superior Tecnico at the Universidade Tecnico de Lisboa, Campus Alameda, Av. Rovisco Pais, 1, 1049-001 Lisbon, Portugal; (7) Campus Taguspark, Av. Prof. Dr. Anibal Cavaco Silva, 2744-016 Porto Salvo, Portugal; (8) Faculdade de Ciencias e Tecnologia, Universidade Nova de Lisboa, Travessa Estevao Pinto, 1070 Lisboa, Portugal, and (9) Universidade Catolica Portuguesa, Palma de Cima, 1649-023, Lisboa, Portugal. The Commission requires written notification within thirty days of the commencement of operations at this location. In the event that operations at this location do not commence within one calendar year of this action, approval will lapse. The Periodic Review Report is due June 1, 2013.

November 11, 2010: To note the institution's decision not to open the additional location at Instituto de Telecomunicacoes, Aveiro, Portugal.

December 1, 2010: To amend the language of the November 2, 2010, action to read: To acknowledge receipt of the substantive change request and to include the following additional locations within the scope of the institution's accreditation: (1) Universidade do Minho, Largo do Paco, 4704-553 Braga, Portugal; (2) Universidade do Porto, Reitoria da U. Porto, Praca Gomes Teixeira, 4099-002 Porto, Portugal; (3) Instituto Superior Tecnico at the Universidade Tecnico de Lisboa, Campus Alameda, Av. Rovisco Pais, 1, 1049-001 Lisbon, Portugal; (4) Instituto Superior Tecnico at the Universidade Tecnico de Lisboa, Campus Taguspark, Av. Prof. Dr. Anibal Cavaco Silva, 2744-016 Porto Salvo, Portugal; (5) Universidade Nova de Lisboa, Travessa Estevao Pinto, 1070 Lisbon, Portugal, and (6) Universidade Catolica Portuguesa, Palma de Cima, 1649-023, Lisboa, Portugal. The Commission requires written notification.
within thirty days of the commencement of operations at these locations. In the event that operations at these locations do not commence within one calendar year of this action, approval will lapse. The Periodic Review Report is due June 1, 2013.

Next Self-Study Evaluation: 2017 - 2018

Next Periodic Review Report: 2013

Date Printed: September 19, 2011

DEFINITIONS

Branch Campus - A location of an institution that is geographically apart and independent of the main campus of the institution. The location is independent if the location: offers courses in educational programs leading to a degree, certificate, or other recognized educational credential; has its own faculty and administrative or supervisory organization; and has its own budgetary and hiring authority.

Additional Location - A location, other than a branch campus, that is geographically apart from the main campus and at which the institution offers at least 50 percent of an educational program. ANYA ("Approved but Not Yet Active") indicates that the location is included within the scope of accreditation but has not yet begun to offer courses. This designation is removed after the Commission receives notification that courses have begun at this location.

Other Instructional Sites - A location, other than a branch campus or additional location, at which the institution offers one or more courses for credit.

Distance Education Programs - Yes or No indicates whether or not the institution has been approved to offer one or more degree or certificate/diploma programs for which students could meet 50% or more of their requirements by taking distance education courses.

EXPLANATION OF COMMISSION ACTIONS

An institution's accreditation continues unless it is explicitly suspended or removed. In addition to reviewing the institution's accreditation status at least every 5 years, actions are taken for substantive changes (such as a new degree or geographic site, or a change of ownership) or when other events occur that require review for continued compliance. Any type of report or visit required by the Commission is reviewed and voted on by the Commission after it is completed.

In increasing order of seriousness, a report by an institution to the Commission may be accepted, acknowledged, or rejected.

Levels of Actions:

Grant or Re-Affirm Accreditation without follow-up

Defer a decision on initial accreditation: The institution shows promise but the evaluation team has identified issues of concern and recommends that the institution be given a specified time period to address those concerns.

Postpone a decision on (reaffirmation of) accreditation: The Commission has determined that there is insufficient information to substantiate institutional compliance with one or more standards.

Continue accreditation: A delay of up to one year may be granted to ensure a current and accurate representation of the institution or in the event of circumstances beyond the institution’s control (natural disaster, U.S. State Department travel warnings, etc.)

Recommendations to be addressed in the next Periodic Review Report: Suggestions for improvement are given, but no follow-up is needed for compliance.

Supplemental Information Report: This is required when a decision is postponed and are intended only to allow the institution to provide further information, not to give the institution time to formulate plans or initiate remedial action.

Progress report: The Commission needs assurance that the institution is carrying out activities that were planned or were being implemented at the time of a report or on-site visit.

Monitoring report: There is a potential for the institution to become non-compliant with MSCHE standards; issues are more complex or more
numerous; or issues require a substantive, detailed report. A visit may or may not be required.

**Warning:** The Commission acts to Warn an institution that its accreditation may be in jeopardy when the institution is not in compliance with one or more Commission standards and a follow-up report, called a monitoring report, is required to demonstrate that the institution has made appropriate improvements to bring itself into compliance. Warning indicates that the Commission believes that, although the institution is out of compliance, the institution has the capacity to make appropriate improvements within a reasonable period of time and the institution has the capacity to sustain itself in the long term.

**Probation:** The Commission places an institution on Probation when, in the Commission’s judgment, the institution is not in compliance with one or more Commission standards and that the non-compliance is sufficiently serious, extensive, or acute that it raises concern about one or more of the following:

1. the adequacy of the education provided by the institution;
2. the institution’s capacity to make appropriate improvements in a timely fashion; or
3. the institution’s capacity to sustain itself in the long term.

Probation is often, but need not always be, preceded by an action of Warning or Postponement. If the Commission had previously postponed a decision or placed the institution on Warning, the Commission may place the institution on Probation if it determines that the institution has failed to address satisfactorily the Commission’s concerns in the prior action of postponement or warning regarding compliance with Commission standards. This action is accompanied by a request for a monitoring report, and a special visit follows. Probation may, but need not always, precede an action of Show Cause.

**Suspend accreditation:** Accreditation has been Continued for one year and an appropriate evaluation is not possible. This is a procedural action that would result in Removal of Accreditation if accreditation cannot be reaffirmed within the period of suspension.

**Show cause why the institution's accreditation should not be removed:** The institution is required to present its case for accreditation by means of a substantive report and/or an on-site evaluation. A "Public Disclosure Statement" is issued by the Commission.

**Remove accreditation:** If the institution appeals this action, its accreditation remains in effect until the appeal is completed.

Other actions are described in the Commission policy, "Range of Commission Actions on Accreditation."
2.2 Professional Degrees and Curriculum:

Degrees Offered:

The Carnegie Mellon University School of Architecture offers one NAAB-accredited degree: Bachelor of Architecture (B.Arch)

Current Curriculum Chart (9 units at CMU are equivalent to 3 credit-hours at other institutions)

The curriculum chart is organized by semester and content. The dark gray tone represents the studio sequence of ten semesters. The light gray tone represents required classes with architectural content. The white boxes indicate general studies and electives.

As part of its culture and identity, Carnegie Mellon University is committed to interdisciplinary, self-directed study for all students. As such, the University has only three required classes – Computing@CM, Interpretation & Argument (English) and a history class. The College of Fine Arts has created a required, college-wide class, "Critical History of the Arts", for all 1st year students (2nd year for Architecture) in the five schools. The University has accepted this in fulfillment of the history requirement. The chart above indicates twelve 9-unit electives with non-architectural content and three electives with architectural content (48-xxx). The table below indicates the semester-by-semester units count by category:

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<th>1st Year Spring</th>
<th>2nd Year Fall</th>
<th>2nd Year Spring</th>
<th>3rd Year Fall</th>
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<tr>
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<td>48550 Issues of Practice</td>
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<td>48412 Environment II: Mechanical Systems</td>
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### Fifth Year Fall

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<td>Architecture Design Studio: The Urban Laboratory</td>
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<tr>
<td>48452</td>
<td>Real Estate Design and Development</td>
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### Fifth Year Spring

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**Total Overall**

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<tr>
<th></th>
<th>324 Units</th>
<th>135 Units</th>
<th>27 Units</th>
<th>486 Units</th>
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</thead>
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**Undergraduate Minors available to BArch Students:**

### Minor in Architectural History

- **Prerequisite Courses**: 27 units
  - 48240 Historical Survey of World Architecture and Urbanism I 9 units
  - 48241 Historical Survey of World Architecture and Urbanism II 9 units
  - 62100 Critical Histories of the Arts 9 units
- **Elective Courses**: 27 units/36 units
  - 48338 European Cities in the XIX Century 9 units
  - 48340 Modern Architecture and Theory 1900-1945 9 units
  - 48341 History of Architectural Theory 9 units
  - 48343 American Built Environment Since 1860 9 units
  - 48344 Architecture of Henry Hornbostel 9 units
  - 48345 The Cultural Landscape of Northern Italy 9 units
  - 48348 Architectural History of Mexico & Guatemala 9 units
  - 48350 Postwar Modern Architecture and Theory 9 units
  - 48352 A History of Preservation 9 units
  - 48368 Rediscovering Antiquity 9 units
  - 48371 American House and Housing 9 units
  - 48440 American Regionalism 9 units
  - 48441 Frank Lloyd Wright 9 units
  - 48447 History and Preservation 9 units
  - 48448 History of Sustainable Architecture 9 units
  - 48-xxx Architectural History (Pre-Approval required) 9 units
- **Minimum Units**: 54 (non architecture majors)
- **Minimum Units**: 63 (architecture majors)

### Minor in Architectural Representation and Visualization

- **Required Courses**: 33 units
  - 48120 Introduction to Digital Media I 6 units
  - 48130 Architectural Drawing I: A Tactile Foundation 9 units
  - 48135 Architectural Drawing II: Appearance 9 units
  - 483xx Architectural Drawing Elective (Pre-Approval required) 9 units
- **Elective Courses**: 21 units/30 units
  - 48125 Introduction to Digital Media II 6 units
  *Architecture majors cannot use 48125
  - 48477 Undergraduate Making things Interactive 9 units
  - 48568 Advanced CAD, BIM, and 3D Visualization 9 units
  - 48576 Mapping Urbanism 9 units
  - 48724 Parametric Design 6 units
Part Two | Educational Outcomes and Curriculum

48-xxx Architectural Representation/Visualization Elective: (Pre-Approval required)  9 units
48-xxx Architectural Representation/Visualization Elective: (Pre-Approval required)  9 units
Minimum Units: 54 (non-architecture majors)
Minimum Units: 63 (architecture majors)

Minor in Building Science
Required Courses  9 units
48711 Paradigms of Research and Architecture  9 units
Elective Courses 45 units
48596 LEED Buildings and Green Design  6 units
48721 Building Controls and Diagnostics  12 units
48722 Building Performance Modeling  12 units
48723 Performance of Advanced Building Systems  9 units
48728 Special Topics in BPD  6 units
48729 Productivity, Health and the Quality of Buildings  9-12 units
48749 Special Topics in CD  Variable units
48752 Zero Energy Housing  9 units
Minimum Units: 54

Study Away: Carnegie Mellon University and the School of Architecture offer many opportunities for students to study away from the campus in Pittsburgh, PA. There are four main types of study away opportunities:

• University Sponsored Programs offer study away opportunities to students from a variety of economic backgrounds and are ideal for students with significant Carnegie Mellon funding. Sponsored Programs allow students to pay regular Carnegie Mellon tuition, room and board while receiving the same financial aid package (minus work study) while abroad. Popular locations for students to study away through sponsored programs include: University of New South Wales: Sydney (semester only); Danish Institute for Study Abroad (semester and summer available); Lexia Berlin (semester and summer available); Temple University: Rome (semester only); IES Auckland (semester only); CIEE Barcelona (semester only); Interstudy University of Cape Town (semester only); Architectural Association of London (semester only).

• University or Departmental Exchange Programs allow students to use their Carnegie Mellon funding while attending a university abroad. Carnegie Mellon students participating in these programs continue to pay tuition directly to Carnegie Mellon and receive the same financial aid package. The School of Architecture currently offers one active Departmental Exchange program with Technische Universitat Braunschweig in Brunswick, Germany (full year or semester option). School of Architecture students are eligible to enroll in architecture design studios at three University Exchange Programs: Monterrey Tech ITESM (full year or semester option), National University of Singapore (full year or semester option), and Ecole Polytechnique de Federal Lausanne (full year or semester option).

• External Programs offer virtually unlimited possibilities for students for summer and semester study away. Another university or study abroad program provider administers these programs. External Programs allow students to pay the study abroad program directly, while still maintaining full-time enrollment status at Carnegie Mellon. Examples of external programs that School of Architecture students have enrolled are: Semester at Sea (semester only); Syracuse University in Florence (semester only); University of Melbourne (semester only); and Yonsei University (semester only).

• Departmental Programs allow students to study away with Carnegie Mellon University School of Architecture faculty for varying lengths of time and varying number units. Departmental programs for study away have included: Summer Studio in China for 8 weeks (M07), Departmental Elective course in India for 2 weeks (M07), Summer Studio and Departmental Elective in Italy for 8 weeks (M08), Departmental Elective course in Egypt for 2 weeks (M09),
three Departmental Elective courses in Scandinavia for 8 weeks (M10), and Departmental Elective course in Mexico for 2 weeks (12) and Spring Semester Studio in Qatar (every spring since S06).

2.3 Curriculum Review and Development:

In 2009, the Head initiated a “Curriculum Committee” to discuss and solicit a wide range of proposals on revising the curriculum. Faculty from all parts of the School submitted proposals that ranged from the radically new, to subtle alterations of the existing curriculum. Since this initial meeting, the Head has organized a standing curriculum Committee. The committee is chaired by the Head and includes the 10 studio coordinators and a representative from each stream – Representation, Building Technology, Environmental Technology, Architectural History and Critical Practice. The committee meets once a semester (these meetings were suspended in 2010-11 to focus on the Strategic Plan.

In addition to the semester Curriculum Committee meetings, the studio coordinators meet regularly every month to discuss the status and direction of the studio sequence. At the end of every semester they host an all-faculty discussion of the studio work, with examples of student work displayed, and gather feedback on each studio year, and the direction of the School overall. Student feedback is critical to this review process. The Student Advisory Council (SAC) meets at least once each month to provide a more formal means of interaction between students, faculty, and administration. The student representatives are responsible for communicating the efforts of the council to their colleagues, bringing to the council issues forwarded by fellow students, and contributing time, energy and ideas to improve both the School and the University.

The curriculum in place at the time (F08) Lee became department head, called for 497 units and the 10th semester allowed a student the option of completing an independent, design oriented thesis, or taking something known as studio X. Many students used a summer study away studio to count toward Studio-X enabling a December graduation. Therefore, the spring semester on campus included only 1/2 to 2/3 of the fifth year class. The observation of many of the faculty and reports from the Student Advisory Council were that the rigor, intensity and pure quantity of courses were exhausting the student body. A comment often heard, was the specific structure of ten defined studios made it difficult to study away and to find the flexibility to pursue one's interests.

Since that time, with feedback from the students, discussions in the Curriculum Committee and discussions in the Coordinators Meetings, the curriculum has evolved in the following ways: the coordinators of the first six studios meet on a regular basis to parse the relevant content and to provide a stronger foundation; the sixth semester of studio is evolving to become the NAAB Comprehensive Studio; more required courses are inserted into the first three years to enable greater flexibility in the final two years of the program; the total number of units has been reduced and the course loading per semester has become more normalized.

Some specific course changes include: Calculus for Architecture has been replaced with the college course, Descriptive Geometry; Physics for Architecture has been replaced by Building Physics; the content from Site Engineering has been parsed and inserted into the first five studios; the content of Environment II: Acoustics & Light has been parsed - Light is now included in Building Physics and Acoustics is now an architecture elective; the three course drawing requirement has been reduced to two 9 unit classes; three new drawing electives are being offered; Ethics & Decision Making has been moved to 3rd year; Issues of Practice has been moved to 4th year; Urban Design Methods is now a six unit mini; Real Estate Design & Development is now a six unit mini in parallel with the Urban Lab; and the required Survey of Architectural History has been expanded to two semesters at nine units each semester. The following page shows the evolution of the curriculum in this four-year period.
Class of 2015 SoArch Curriculum Chart

Class of 2015 Curriculum Chart (504 units)

Class of 2016 Curriculum Chart (486 units)
3.0 Evaluation of Preparatory/Pre-Professional Education

The only professional degree the School of Architecture at Carnegie Mellon University offers is the five-year professional Bachelor of Architecture degree. Students applying to the School of Architecture either for internal or external transfer will begin their education as a first-year student with no advanced standing option. Students who have completed courses at another institution may have their credits evaluated for transfer credit if they received a C or better in their coursework. Only university elective credit will be considered as a result of coursework taken at an outside institution.
4.1 Statement on NAAB-Accredited Degrees

The Statement on NAAB-Accredited Degrees is available to prospective students in the School of Architecture admission informational packet/brochure, to all undergraduate students in each annual edition of the Undergraduate Student Handbook, and to the public on the School of Architecture website at:

www.cmu.edu/architecture/academics/undergraduate/accreditation.html

4.2 Access to NAAB Conditions and Procedures

Access to NAAB Conditions and Procedures is available on the School of Architecture website. The 2009 NAAB Conditions for Accreditation is available here:

www.cmu.edu/architecture/naab/2009-conditions.pdf

The 2011 NAAB Procedures for Accreditation is available here:


4.3 Access to Career Development Information

Access to Career Development Information is available on the School of Architecture website here:

http://www.cmu.edu/architecture/jobs/index.html.

4.4 Public Access to APRs and VTRs

Public access to APRs and VTRs is available on the School of Architecture website at:

www.cmu.edu/architecture/academics/undergraduate/accreditation.html:

The most recent APR is available:


The most recent VTR is available:

http://www.cmu.edu/architecture/naab/2012-naab-vtr.pdf

4.5 ARE Pass Rates

Public access to ARE Pass Rates is available on the School of Architecture website at:

www.cmu.edu/architecture/naab/are-pass-rates.pdf
1 Summary Of Responses to the Team Findings

The following Sections excerpt statements from the Annual Reports for the period from 9 January 2006 through 29 November 2010

1.1 Responses to Conditions Not Met

9 January 2006 by Laura Lee, FAIA, Professor & Head

Condition 5.0 Not Met: Human Resources

“The highest priority of the School is the hiring of 10 year-track design faculty, research is currently underway. Five candidates will be interviewed the week of 13 February. A second phase of interviews will take place the week of one may, with the intention of hiring three new faculty by the fall semester of 2006."

Condition 7.0 Not Met: Physical Facilities

“The Dean of the College of Fine Arts, Dr. Hillary Robinson, has already responded to the NAAB report by providing an additional 900 ft² for the School of Architecture shop:
• re-configured 500 square-foot room exclusive for metals
• additional 200 square-foot room exclusive for physical modeling-in upper-level Studios
• additional 200 square-foot room exclusive for finishing-providing better quality final products

The school is also in agreement with other units on campus to share facilities included: Department of Mechanical Engineering, School of Art, School of Design, School of Drama.

New Building: since the NAAB visit, the University has announced that the new building for the School of Architecture, an extension to the Margaret Morrison Hall, is featured first and foremost in the capital campaign.”

Condition 11.0 Not Met: Professional Degrees & the Curriculum

“The liberalizing of education in the School and the opportunity for students to explore the richness of CMU has begun through the reduction of required courses over the past three semesters. An aggressive plan to meet the NAAB requirements will be achieved by the end of 2007, as evidenced in the chart below.”

Condition 12 Student Performance Criteria 14 Not Met: Accessibility

“The Visiting Team acknowledged the strengths of the Human Factors course as a pre-requisite, but reported that the material was not consistently evident in the upper level studios. Immediately following the visit, the fourth-year team implemented regular studio assignments focused on accessibility and life safety issues. As part of the final presentation and semester review each student was required to submit: analysis and synthesis.”

Condition 12 Student Performance Criteria 17 Not Met: Comprehensive Design

“Successful strategies for integrated design in the first two years of the curriculum have now advanced through the third year. With the committed curricular changes, expansion of shop in computing environments and equipment, and most critically, the addition of new tenure-track design faculty and visitors, the mission of the School and comprehensive design will be realized in the upper level studios.”

2 July 2007 by Laura Lee, FAIA, Professor & Head

Condition 5.0 Not Met: Human Resources

“The School has prioritized the following to re-establishing design focus (and increase diversity) and in faculty resources:
1. Hiring a new junior faculty with expertise in design: faculty searches in the past three years have resulted in the following tenure- or teaching-track design faculty hires: Kelly Hutzell, Jeremy Ficca, Pablo Garcia.
2. Hiring of new adjunct faculty with a focus on design the following faculty have been hired in the past three years: Dee Briggs, Teresa Bucco, David Burns, Matt Fineout, Jeff King, John
Part Three | Progress Since Last Site Visit

Golli, Jason Morris, Rami el Samahy, Mike Gwin, Don Johnson, Mick McNutt, Matt Plecity, Marylou Arscott, Christine Brill, Jonathan Golli.

3. Elevating long-term and award-winning adjunct faculty to leadership positions in design, practice and research.
4. Re-engaging tenured faculty in undergraduate design studios
5. Aggressively fundraising for three senior endowed chair positions
6. Leveraging existing and establishing new joint in courtesy appointments."

Condition 7.0 Not Met: Physical Facilities

“Physical Facilities:
2. Increase in number and distribution of high-powered graphics, dual screen workstations and software.
3. Creation of digital fabrication lab and Margaret Morrison for. Improvements in existing shop facilities.”

Condition 11.0 Not Met: Professional Degrees & the Curriculum

“Professional Degrees & the Curriculum
1. Changes in curriculum since NAAB visit: the percentage of required units dropped from 68% to 66%. The percentage of elective and University fundamental units increased from 32% to 34%.
2. Introduction of new electives.”

Condition 12 Student Performance Criteria 14 Not Met: Accessibility

“Equally importantly, accessibility is part of every studio project from the first year onward, and the Human Factors required course in third year has several lecture and assignments devoted to accessibility issues in ADA codes.”

Condition 12 Student Performance Criteria 17 Not Met: Comprehensive Design

“Successful strategies for integrated design in the first two years of the curriculum have now advanced through the third year. With the committed curricular changes, expansion of shop and computing environments and equipment, and most critically, the addition of new tenure-track design faculty and visitors, the mission of the School and comprehensive design is now being realized in the upper level studios.

To make the whole greater than the sum of its parts is both the mandate of the strategic plan and the vision of integrated design for the Carnegie Mellon School of Architecture. Tenured faculty with expertise in advanced building systems are now assuming leadership roles in the studio and new standards have been set for process and product for upper-level studios. In the 2007/ 2008 year, thesis will be introduced as the culmination of the Bachelor of Architecture educational experience.”

5 December 2008 by Stephen R. Lee, AIA, Professor & Interim Head

Condition 5.0 Not Met: Human Resources
As previously stated, no further reporting required.

Condition 7.0 Not Met: Physical Facilities
As previously stated, no further reporting required.

Condition 11.0 Not Met: Professional Degrees & the Curriculum
As previously stated, no further reporting required.

Condition 12 Student Performance Criteria 14 Not Met: Accessibility
As previously stated, no further reporting required.

Condition 12 Student Performance Criteria 17 Not Met: Comprehensive Design
As previously stated, no further reporting required.
1.2 Responses to Causes of Concern

22 December 2009 by Stephen R. Lee, AIA, Professor & Head

Although the 2007 NAAB Response stated that there were no causes of concern, this is not the case. The 2005 VTR reported two causes of concern as listed below:

Graphic Skills in the Upper-Level Studios

In the short term, our upper-level studios have gone to great lengths to improve the graphic skills of our students, utilizing not only a variety of three-dimensional modeling tools (eg. Rhino, Maya, Revit) that can be linked to the new digital fabrication shop, but also by placing an emphasis on the design of visual information. Faculty teaching studio and supporting classes instruct students in the visual organization and display of data. This includes mappings of use patterns, program, and historical overlays as well as a range of social, economic and political factors that affect design on the levels of architecture and urbanism.

In the longer term, the School of Architecture has developed and implemented a new first year curriculum to systemically improve our graphic skills at all levels. The new curriculum is titled, “Foundations I”, and was first delivered in the Fall of 2006. Its positive impact is already being observed in each of the studios that these students have taken since they completed this new curriculum.

In addition to the Foundations I (Fall) & II (Spring) Studios, we continue to focus on the simultaneous delivery of analog and digital skills. The other core first year courses, such as Drawing and Introduction to Digital Media, have been designed to integrate with studio projects to provide students with multiple methods of expressing their design intent. This integration of other course material with studio is something that will continue throughout the next four years of the program.

Diversity Initiatives at Carnegie Mellon School of Architecture

The Carnegie Mellon School of Architecture is working to increase diversity of under-represented populations by providing programs for students from kindergarten through post-graduate outreach.

Our youngest students, those in kindergarten through high school (K-12), can participate in a variety of Architecture Explorations’ programs. These programs help our youngest students explore architecture, middle school students decide if they’re interested in choosing architecture as an academic path, and high school students prepare to apply to architecture schools. Exposing children from underrepresented backgrounds to architecture and helping them prepare to apply to architecture school is critical to increase diversity at the college level. Architecture Explorations seeks to increase the racial and socio-economic diversity of our students and offers a range of options toward this goal. While the diversity we are achieving may not be obvious by looking at our students, we are also serving rural and low-socioeconomic students from low-performing schools.

- Saturday Sequence: Scholarships are available for students who are eligible for free- or reduced-fare lunch through the federal lunch program.
- After School Programs: Schools can request support through a variety of programs including those designed to increase performance at low-performance schools.
- Workshops at Fallingwater: Primarily serve students in rural communities who attend low-performing schools.
- Summer Camps at the Carnegie Museum of Art: Scholarships are available.
- Architecture Building Communities: Funded by the National Endowment for the Arts to work with 20 Black students from low-income urban school.

While Architecture Explorations is addressing the pipeline of students before they enter college, the Summer Institute for Diversity is designed for minority students at the college level. The Carnegie Mellon School of Architecture also recognizes the need to increase diversity in graduate programs, with a long-term goal of increasing diversity in academia by increasing the number of
advanced degrees held by those from underrepresented backgrounds. The Summer Institute for Diversity introduces architecture upperclassmen, in particular from Howard and Hampton Universities, to research and graduate studies at Carnegie Mellon. Over the past six years of its offering, 18 interns have completed the SID program. A third of these students have gone on to earn graduate degrees.

The Carnegie Mellon School of Architecture’s commitment to diversity extends beyond the traditional academic path to post-graduate students. UDream (Urban Design Regional Employment Action for Minorities) provides recent graduates of architecture, landscape architecture, urban design and urban planning programs the opportunity to deepen their knowledge of urban design in a summer and fall immersive experience. UDream begins with a 5-week program of academic courses and studio work with an emphasis on urban sustainability. The academic program is followed by a one-week design project with local high school students. The final component of the program is a 12-week internship with an urban design firm, public agency, or non-profit group engaged in planning and community development. The goal of UDream is to increase diversity in the profession of urban design nationally, and in the Pittsburgh region specifically, by offering opportunities for permanent employment in Pittsburgh.

The Carnegie Mellon School of Architecture has a long-term commitment to diversity and believes that these programs will contribute to increasing the diversity of underrepresented populations in the architectural profession in the years to come.

29 November 2010 by Stephen R. Lee, AIA, Professor & Head

2005 NAAB Causes of Concern

Although the 2007 NAAB Response stated there were no causes of concerns, this is not the case. The 2005 VTR reported two causes of concerns as listed below:

**Graphic Skills in the Upper-Level Studios**

The current 4th year studio is the first class to go through the revised 1st Year Foundations Studio Curriculum*. Faculty at the 2nd, 3rd and now 4th year, have reported anecdotally on the improvement in graphic skills. Historically studio semesters were treated as silos – the Head would meet individually with each year’s assigned team to review work within each studio. To go beyond anecdotal evidence and to improve vertical integration, we have implemented a new end of semester studio evaluation system. The new system will bring together all full time and adjunct studio faculty to look at the studio work across the years of the school. The evaluation will include content, as well as, graphic skills. This will enable coordinators and instructors to better understand the skill set coming in to ones studio and to see how the skill set is further developed after students leave ones studio.

The School of Architecture has engaged an outside consultant during academic year 2010-11 to work with the school community to develop a strategic plan. The plan is to be focused on the development of specific actions items with a five-year timeline. One aspect of this plan is developing a response to both the 2005 NAAB, as well as the 2007 School of Architecture Advisory Board Reports. Broadly speaking, this process will further investigate the balance between training and education, with particular attention to the area of graphic skills.

**Diversity Initiatives at Carnegie Mellon School of Architecture**

Last year’s “Response to the Visiting Team Report” document reported extensively on the diversity initiatives at the school, including Architecture Explorations (Saturday Sequence, After School Programs, Workshops at Fallingwater, Summer Camps at CMOA and Architecture Building Communities), UDREAM and SID.

Architecture Explorations continues to offer architecture programming to school-age children in the Pittsburgh region. From 2004 to 2009, the number of students served has increased from 196 to over 1,000. In 2008-09, 1,113 students participated in Architecture Explorations programs, resulting in 8,029 contact hours. Of these, 990 hours or 12.3% were with under-represented minorities. Our biggest gain in under-represented minority contact hours is from the Architecture
Building Communities (ABC) program, with the support of three grants from the National Endowment for the Arts. Additionally, most students who participated in Fallingwater Workshops are from underserved rural communities with poor performing school districts, representing an additional 8% of our contact hours. These underserved groups total more than 20% of our contact hours and more than 50% of students served – all provided at no cost to the students.

The first two years of UDREAM had 12 African-American and 2 Latino students. Three participants secured full time jobs in Pittsburgh. Several students pursued post-graduate degrees and did not enter the work force. The school has sent the UDREAM students to the NOMA fall conference each year. The school is working with a graduate of the first UDREAM class to establish a NOMA chapter in Pittsburgh.

One African-American graduate of the SID program entered the Master of Science in Architecture - Engineering - Construction Management

Changes to the Accredited Program
1. The University “Calculus” course was replaced by the College of Fine Arts “Descriptive Geometry” course
2. “Historical Survey of World Architecture and Urbanism” was moved from 2nd year to 1st year.
3. “Critical Histories of the Arts” was moved from 1st year to 2nd year
4. “Introduction to Digital Media I” was changed from 9 to 6 units (3 to 2 credit-hours)
5. “Architectural Drawing I” was changed from 6 to 9 units (2 to 3 credit-hours)
6. “Architectural Drawing III” was changed from a required to an elective class

Summary of Responses to Changes in the NAAB Conditions
The Carnegie Mellon University School of Architecture has not responded to changes in the NAAB Conditions.
4.1 Course Descriptions
The one-page, NAAB-formatted course descriptions are presented on the pages that follow.

4.2 Faculty Resumes
The one-page, NAAB-formatted faculty resumes are presented on the pages that follow.

4.3 Course Descriptions
The one-page, NAAB-formatted course descriptions are presented on the pages that follow.

4.4 Carnegie Mellon University School of Architecture
The current School of Architecture website is here:
http://www.cmu.edu/architecture

The current Carnegie Mellon University undergraduate catalog including the College of Fine Arts and the School of Architecture website is here:
http://coursecatalog.web.cmu.edu/
Faculty Resume

Omer Akin  PhD, RA  Professor

Course Taught (two years prior to visit):
48-400  Architecture Design Studio: Occupancy
48-551  Ethics and Decision Making in Architecture
48-711  Paradigms of Research in Architecture
48-759  Value Based Design AEC Management

Educational Credentials:
1979  PhD  Carnegie Mellon University
1972  MS Architecture in Environmental  Virginia Polytechnic Institute and State University

Teaching Experience:
2007  Courtesy faculty appointment, Civil and Environmental Engineering, CMU
1987 -  Professor, Department of Architecture, CMU
1981  Associate Professor, Department of Architecture, CMU
1978  Assistant Professor, Department of Architecture, CMU

Professional Experience:
1978 -  Principal, Architectural Design Associates, Inc

Licenses/ Registration:
Pennsylvania

Selected Publications and Recent Research:

Professional Memberships:
None
Faculty Resume

P Zach Ali  Adjunct Instructor

Course Taught (two years prior to visit):
48-478  Digital Tooling

Educational Credentials:
2008  BS Industrial Design  Art Institute of Pittsburgh

Teaching Experience:
2009 -  Carnegie Mellon University, Teaching Assistant; Course 48-531 Fabrication
2009  Teaching Assistant; Course 48-532 Digital Tectonics : Robotic Fabrication
       The Art Institute of Pittsburgh – Adjunct Instructor; CNC Programming

Professional Experience:
2010 -  New Pig Corp., Matt Romito. Altoona, PA Design Consulting, Fabrication
2009 -  Maya Design Inc., Steve Spencer. Pittsburgh, PA, Design Consulting,
2007 -  Phase Flooring. Pittsburgh, PA, Design and Fabrication of Signage, Logos
2009  Disney. Pittsburgh, PA, Design, Fabrication, and Rapid Prototyping on

Licenses/ Registration:
None

Selected Publications and Recent Research:
Research | Human Computer Interaction Institute (HCII) and School of Design, Jodi Forlizzi & Wayne Chung.
Research | PINCHwall, Jeremy Ficca and Course 48-478. Pittsburgh, PA (2010-2011) – Research, Design and Digital Project Completion by multiple students under the direction of Professor/Architect Jeremy Ficca and Adjunct Instructor/Designer P. Zach Ali. Experimentation and research within the Robotic Realm of Digital Materiality and

Professional Memberships:
Industrial Designers Society of America
Faculty Resume

MaryLou Arscott  RIBA Adjunct Associate Professor

Course Taught (two years prior to visit):
48-105  Architecture Design Studio: Foundation II
48-200  Architecture Design Studio: Composition
48-327  Modeling Moderns

Educational Credentials:
1974  Practical Training Year  Nakuru District Council, Kenya, E. Africa
1973  Bachelor of Architecture  Faculty of Architecture, Nottingham University

Teaching Experience:
2007 -  Adjunct Associate Professor, Carnegie Mellon School of Architecture
         1993  Department of Architecture, Edinburgh University - visiting lecturer
         1993  Department of Architecture, de Montfort University, Milton Keynes - 2nd
         1983  Women’s Education in Building (WEB), Ladbroke Grove, London - Director

Professional Experience:

Licenses/ Registration:
None

Selected Publications and Recent Research:
None

Professional Memberships:
None
Faculty Resume

Martin Aurand  Principal Architecture Librarian/Archivist

Course Taught (two years prior to visit):
None

Educational Credentials:
1994  MLIS  University of Pittsburgh
1981  Master of Arts in American Studies  George Washington University
1977  Bachelor of Arts  Haverford College

Teaching Experience:
None

Professional Experience:
2009 -  Head, Arts Library and Special Collections, University Libraries, Carnegie
1986  Archivist, Carnegie Mellon University Architecture Archives, University
1983-1986  Director of Education / Director of Research, Pittsburgh History &

Licenses/ Registration:
None

Selected Publications and Recent Research:
Aurand, Martin. “Teaching and Learning with Collections: The Library as a Site for Exploration and Inspiration.” Art
Documentation 30:1 (Spring 2011), 12-20
Aurand, Martin. Pittsburgh Right Before Our Eyes: The Spectator and the Topographical City. Pittsburgh:
University of Pittsburgh Press, 2006
Aurand, Martin. The Progressive Architecture of Frederick G. Scheibler, Jr. Pittsburgh: University of Pittsburgh
Aurand, Martin. “Condition 8: Information Resources, Architectural Program Report, School of Architecture,
Carnegie Mellon University.” In The Library and the Accreditation Process in Design Disciplines: Best Practices

Professional Memberships:
Association of Architecture School Librarians (AASL)
Art Libraries Society of North America (ARLIS/NA)
Faculty Resume

Nina Baird  MSPH, MSSD  Adjunct Instructor

Course Taught (two years prior to visit):
48-596  LEED Buildings and Green Design
48-752  Zero Energy House

Educational Credentials:
F’2011  PhD Candidate  Carnegie Mellon University
2006  MSSD  Carnegie Mellon University
1992  MSPH  University of North Carolina

Teaching Experience:
2008 -  Carnegie Mellon University School of Architecture

Professional Experience:
1993-1995  Adjunct Assistant Professor
1996-2003  President/ Project Director, Advanced Technologies & Laboratories
2008  Principal Investigator, Green Product Innovation Grant
2009-2011  Consulting in Energy Performance for Multifamily Affordable Housing and

Licenses/ Registration:
None

Selected Publications and Recent Research:

Professional Memberships:
Faculty Resume

Christine Brill  AIA  Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-300  Architecture Design Studio: Site
   UDream Summer Urban Design Studio

Educational Credentials:
2007  MLA  Penn State University
1999  BArch  Carnegie Mellon University

Teaching Experience:
2007 - Adjunct Assistant Professor, Carnegie Mellon University, Pittsburgh
2006-2007 Studio Instructor, The Pennsylvania State University, State College

Professional Experience:
2008 - Principal, Studio for Spatial Practice, Pittsburgh, PA
2000-2005 Project Manager, Pfaffmann + Associates, Pittsburgh, PA
1998-2000 Intern Architect, Perkins Eastman Architects, Pittsburgh, PA
1995-1998 Summer Intern Architect, Skidmore, Owings & Merrill, New York City, NY

Licenses/ Registration:
Pennsylvania

Selected Publications and Recent Research:
The GroundZero Action Network: Developing Agency through Public Space Production, 2007

Professional Memberships:
American Institute of Architects
Faculty Resume

Kelle Brooks  LEED AP  Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-205  Architecture Design Studio: Materials  
48-300  Architecture Design Studio: Site  
48-599  Independent Study

Educational Credentials:
1999  MArch  University of Oregon  
1992  BFA Painting  Pratt Institute  

Teaching Experience:
2009 -  Adjunct Assistant Professor, Carnegie Mellon University  
2003-2007  Adjunct Lecturer, University of Arizona  
1995-1999  Graduate Teaching Fellow, University of Oregon

Professional Experience:
2009-2011  Project Architect, Bohlin Cywinski Jackson, Pittsburgh, PA  
2002-2009  Principal, Brooks Clifford Design, Tucson, AZ  
2001  Designer, Thomas Hacker Architects, Portland, OR  
2000-2001  Designer, Leers Weinzapfel Associates, Boston, MA

Licenses/ Registration:

Selected Publications and Recent Research:
Neither Classroom nor Play Ground- Why classrooms must provide meaningful connections with the natural environment. For submission to “Constructed Environment Conference” Chicago, October 2011  
Ecological Solutions for Play Environments Design Competition “July- August Heat”, Israel, 2011  
Small Spaces, Cover article featuring recent design work of Brooks Clifford Design and Binary Design, Prattfolio, Winter 2009  
Sensory Wall, Children’s Outdoor Learning Environment Design (with Erin Moore) 2007-2008  
Block Play, Community Design Workshop on Envisioning Increased Density in Central Tucson, Design CO*OP, Museum of Contemporary Art, 2008

Professional Memberships:
American Institute of Architects  
Artist in Residence, Museum of Contemporary Art, Tucson, AZ 2007-08  
Design CO*OP, Cofounder, Tucson Arizona, 2007-2009  
Committee on the Environment, AIA Chapters, Boston, MA and Portland, OR 2000-2002
Faculty Resume

Teresa Bucco RA Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-105 Architecture Design Studio: Foundation II

Educational Credentials:
1995 MArch North Carolina State University
1990 BArch Lehigh University

Teaching Experience:
2002 - Adjunct Assistant Professor, Carnegie Mellon University
1993-1995 Graduate Teaching Assistant, North Carolina State University, School of

Professional Experience:
2005 - Teresa Bucco Architect
2002-2004 Celento Henn, Pittsburgh, PA

Licenses/ Registration:
Pennsylvania

Selected Publications and Recent Research:
None

Professional Memberships:
American Institute of Architects
The American Institute of Architects Design Pittsburgh, Design Committee
Pittsburgh Community Design Center
Faculty Resume

Lee Calisti  AIA Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-100  Architecture Design Studio: Foundation I
48-305  Architecture Design Studio: Advanced Construction

Educational Credentials:
1991  BArch Kent State University, AIA Medal of Honor

Teaching Experience:
2002 -  Adjunct Assistant Professor - Carnegie Mellon University

Professional Experience:
2003 -  lee CALISTI architecture+design, Principal
1995-2003  Integrated Architectural Services, Senior Associate

Licenses/ Registration:
Pennsylvania

Selected Publications and Recent Research:
None

Professional Memberships:
American Institute of Architects
Faculty Resume

Dale Clifford  Assistant Professor

Course Taught (two years prior to visit):
48-431  Bio Logic, Responsive Building Technology
48-505  Architecture Design Studio: Thesis II/ Studio X

Educational Credentials:
1999  MArch Massachusetts Institute of Technology
1993  BArch Pratt Institute

Teaching Experience:
2009 - 2002-2008  Assistant Professor, Carnegie Mellon University
            Assistant Professor, University of Arizona

Professional Experience:

Licenses/ Registration:
Arizona

Selected Publications and Recent Research:
Carnegie Museum of Natural History, Research Associate _Research of nature’s structural patterning and material deposition

Professional Memberships:
Building Technology Educator’s Society
Faculty Resume

Doug Cooper  Andrew Mellon Professor of Architecture

Course Taught (two years prior to visit):
48-130  Architectural Drawing I: A Tactile Foundation
48-135  Architectural Drawing II: Appearance
48-355  Perspective
48-356  Color Drawing

Educational Credentials:
1970  BArch Carnegie Mellon University

Teaching Experience:
1982 -  Professor, Carnegie Mellon University
1994-1996  Associate Dean CFA, Carnegie Mellon University
1977-1982  Associate Professor, Carnegie Mellon University

Professional Experience:
2009  Carnegie Mellon University, Qatar Campus, QATAR with S. Cooper and N.
2005  King County Courthouse, Seattle Washington—G Picher, P. Clark asst.
2003  Michael Baker Corporation, Pittsburgh PA, with G. Picher asst.

Licenses/ Registration:
None

Selected Publications and Recent Research:
Steel Shadows, University of Pittsburgh Press, Pittsburgh (1999)

Professional Memberships:
None
Faculty Resume

Gerard Damiani  AIA  Adjunct Professor in Practice

Course Taught (two years prior to visit):
48-100  Architecture Design Studio: Foundation I
48-328  Detailing Architecture
48-505  Architecture Design Studio: Thesis II/ Studio X

Educational Credentials:
1990  BArch  Magna Cum Laude, Syracuse University
1989  Scuola di Architettura  Syracuse University, Critic: Colin Rowe, Florence,
1986  Associate of Architectural Technology  SUNY Orange, NY

Teaching Experience:
1996 -  Adjunct Professor, Carnegie Mellon University, Pittsburgh
1992 - 1994  Assistant Professor, Syracuse University, Syracuse
1993  Visiting Critic, Kansas State

Professional Experience:
1996 -  Founder & Principal, studio d’ARC architects

Licenses/ Registration:
Pennsylvania, New York

Selected Publications and Recent Research:
Glenn Murcutt International Master Class, Australia, 2011
Small Scale: Creative Solutions for Better City Living, by Keith Moskow & Robert Linn, Princeton Architectural
Press, 2010
The New Modern House: Redefining Functionalism, by authors Jonathan Bell and Ellie Stathaki published by
Laurence King Press, 2010
Encyclopedia of Detail in Contemporary Residential Architecture by Virginia McLeod. published by Laurence King
Press, 2010
GreenSource, Live Work Studio, January/ February 2010
The Architectural Review, Houses by Emerging Architects, January 2009

Professional Memberships:
American Institute of Architects
Pittsburgh Architectural Club
Faculty Resume

Stefani Danes  AIA  Adjunct Professor

Course Taught (two years prior to visit):
48-400  Architecture Design Studio: Occupancy

Educational Credentials:
1976  MArch  Yale University
1973  BArch  Princeton University

Teaching Experience:
2009 -  Adjunct Professor, Carnegie Mellon University
1981-1988  Assistant Professor, Carnegie Mellon University
1989-1994  Carnegie Mellon University, Adjunct Associate Professor

Professional Experience:
1994 -  Principal, Perkins Eastman Architects
1983-1994  Principal, Quick Ledewitz Architects
1981-1983  Principal, Archiris

Licenses/ Registration:
Pennsylvania, New York, Ohio, West Virginia

Selected Publications and Recent Research:
"Evidence-Based Design: Bridging the Gap between Evidence and Design", Environmental Design Research Association (EDRA 41), 2010.
"Evidence, Knowledge, and Design", Environments for Aging, 2009
"Insights and Innovations": Evaluation of projects from the biennial Design for Aging awards program to analyze trends in senior living and highlight significant new developments. www.AIA.org/DFA.
"Kendal Design Guidelines": Architectural guide for the development of future Kendal communities in accordance with Kendal’s mission and values.
"Residential Dining Facilities for Seniors": Design guidelines based on survey of over twenty dining facilities.

Professional Memberships:
American Institute of Architects
Design for Aging Advisory Group
Faculty Resume

Jeffrey Davis  AIA, LEED AP  Adjunct Professor

Course Taught (two years prior to visit):
48-305  Architecture Design Studio: Advanced Construction

Educational Credentials:
1980  BS Architectural Studies  University of Illinois, Urbana-Champaign

Teaching Experience:
2009 –  Adjunct Professor, Carnegie Mellon University
1996-2009  Adjunct Assistant Professor, Carnegie Mellon University

Professional Experience:
2008 -  FortyEighty Architecture; Pittsburgh, Pennsylvania; Principal
2005-2008  dggp Architecture; Pittsburgh, Pennsylvania; Principal
2002-2005  Davis Gardner Gannon Pope Architecture, Pittsburgh, Pennsylvania;
1993-2002  Davis+Gannon Architecture, Pittsburgh, Pennsylvania; Principal

Licenses/ Registration:
Colorado, Illinois, Indiana, Missouri, Pennsylvania

Selected Publications and Recent Research:
REMATERIAL: From Waste to Architecture; Alejandro Bahamón and Maria Camila Sanjinés, W. W. Norton & Company, 2008 (Pittsburgh Glass Center project featured in publication)
Integrated Design in Contemporary Architecture; Kiel Moe, Princeton Architectural Press, 2008 (Pittsburgh Glass Center project featured in publication)

Professional Memberships:
American Institute of Architects
The American Institute of Architects  Pennsylvania
LEED Accredited Professional, United States Green Building Council
Second Vice President, Pittsburgh Architectural Club
Faculty Resume

Rami el Samahy  Assistant Teaching Professor

Course Taught (two years prior to visit):
48-405  Architecture Design Studio: Systems Integration
48-505  Architecture Design Studio: Thesis II/ Studio X
48-377  Egypt from the ancient to the contemporary
48-577  Contemporary Middle Eastern Cities
48-505  Architecture Design Studio: Thesis II/ Studio X
48-576  Mapping Urbanism

Educational Credentials:
2000  MArch Harvard University
1992  BA International Relations Brown University

Teaching Experience:
2006 -  Assistant Teaching Professor, Carnegie Mellon University
2007  Workshop Instructor, Henry Van de Velde Institute, Antwerp, Belgium
2001-2003  Instructor, Boston Architectural Center, Boston

Professional Experience:
2006 -  Adjunct Instructor
2001-2006  Associate, Machado and Silvetti Associates, Boston
1999-2000  Designer, Boston Design Collaborative, Boston,
1997-1998  Project Designer & Manager, Mona Zakaria Architects, Cairo, Egypt

Licenses/ Registration:
None

Selected Publications and Recent Research:
2009, el Samahy, Rami, “Lines in the Sand: Teaching Architecture in Qatar,” 50 years On - Resetting the Agenda for Architectural Education Southampton, WIT Press, 2008:

Professional Memberships:
Carnegie Mellon University
Carnegie Mellon Qatar Art Committee
Faculty Resume

Jeremy Ficca       AIA Associate Professor, Director dFab Lab

Course Taught (two years prior to visit):
48-125  Introduction to Digital Media II
48-205  Architecture Design Studio: Materials
48-531  Fabricating Customization
48-532  Digital Tectonics/ Digital Fabrication

Educational Credentials:
2000    MArch Harvard University
1996    BArch Virginia Tech

Teaching Experience:
2010    Associate Professor, Carnegie Mellon University
2007-2010  Assistant Professor, Carnegie Mellon University, Henry Hornbostel College
2002-2007  Assistant Professor, North Carolina State University, ACSA New Faculty

Professional Experience:
1994    Intern, Dennis Kilper Architect
1996-1999  Designer, Machado and Silvetti Associates
2000-2002  Senior Design and Project Manager, The Office of Peter Rose

Licenses/ Registration:
Pennsylvania, North Carolina

Selected Publications and Recent Research:
Matter: Material Processes in Architecture (Routlege, Taylor & Francis Group), Chapter contribution: Material Resistance, Editors: Gail Peter Borden and Michael Meredith
Robotic Fabrication in Architecture

Professional Memberships:
American Institute of Architects
Faculty Resume

John Folan  AIA, LEED AP BD+C  Associate Professor

Course Taught (two years prior to visit):
48-405 Architecture Design Studio: Systems Integration
48-500 Architecture Design Studio: The Urban Laboratory
48-505 Architecture Design Studio: Thesis II/ Studio X
48-510 Café 524: Construction Administration
48-511 Café 524: Construction Administration II
48-550 Issues of Practice
48-574 Alternative Delivery Methods: Process and Performance
48-766 AECM Synthesis

Educational Credentials:
1993  MArch  University of Pennsylvania
1990  BSArch  University of Illinois, Champaign-Urbana

Teaching Experience:
2009 - Carnegie Mellon University, Associate Professor with Tenure
2008-2009 Carnegie Mellon University, Visiting Professor
2002-2009 University of Arizona, Associate Professor with Tenure, Assistant Professor
2002-2008
2001-2002 University of Arizona, Visiting Professor

Professional Experience:
2002 - FOLAN+TRUMBLE; Principal
1997-2002 Hellmuth Obata + Kassabaum, PC; Associate, Senior Associate, Principal
1995-1997 AI/Boggs Architects, LLC; Associate
1994-1995 Hartman Cox Architects; Project Architect

Licenses/ Registration:
Pennsylvania, Arizona, District of Columbia

Selected Publications and Recent Research:
PURIFLUME: Funded Design-Build Research Project for the development of a mobile, closed loop water purification prototype; $50,000 from Ford Motor Company, $50,000 from Allegheny County, $25,000 from AutoDesk. 2011 to 2012
CAFÉ 524: Funded Design-Build Research Project for the Development of a Third Space in the Homewood neighborhood of Pittsburgh; $100,000 from the Urban Redevelopment Authority, $400,000 from RK Mellon, $44,000 from the Pittsburgh Foundation. 2010 to 2011
Hamnett Homestead Sustainable Living Center; Funded Design-Build Research project for the development of a community resource center and urban farm in Wilkinsburg, PA; $150,000 the Heinz Endowments. 2009 to 2011
Folan, John “EXCLUSIVELY MUTUAL” peer reviewed paper included in Performative Practices, Published Proceedings for the 2011 ACSA Annual Teachers Seminar, New York, New York; Moe, Kiel and Braham, William, editors.

Professional Memberships:
American Institute of Architects
United States Green Building Council
Association of Collegiate Schools of Architecture
Faculty Resume

Jennifer Gallagher  LEED, AP  Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-300  Architecture Design Studio: Site

Educational Credentials:
1996  BArch  University of Notre Dame

Teaching Experience:
2008 -  Adjunct Assistant Professor, Carnegie Mellon University

Professional Experience:
2002 - & 1999  Associate/ Project Manager, LaQuatra Bonci Associates, Pittsburgh
2000-2002  Instructor, ELS Shinchon, Seoul Korea
1997-1999  Intern Architect, Mark Finlay Architects, Connecticut
1996-1997  Intern, Rothman Partners, Boston

Licenses/ Registration:
Pennsylvania (pending)

Selected Publications and Recent Research:

Professional Memberships:
ALIA MUSICA PITTSBURGH, Pittsburgh PA, Graphic Designer and Member
West of Cairo, Pittsburgh PA, Artistic Director
Faculty Resume

Pablo Garcia Assistant Professor

Course Taught (two years prior to visit):
48-105  Architecture Design Studio: Foundation II
48-120  Introduction to Digital Media I
48-329  FilmSpace
48-387  The Tourist
48-388  Architectural Assembly
48-389  Scandianaivain Architecture Theory

Educational Credentials:
2003  MArch Princeton University
1998  BArch Cornell University

Teaching Experience:
2008 -  Assistant Professor, Carnegie Mellon University
2007-2008  Lecturer/Muschenheim Teaching Fellow, University of Michigan
2005-2007  Adjunct Professor, Parsons the New School for Design

Professional Experience:
2004-2007  Project Architect/Project Designer, Diller Scofidio+Renfro
1999-2000  Designer, George Sexton Associates
1998-1999  Intern, Gensler

Licenses/ Registration:
None

Selected Publications and Recent Research:
Fellowships in Architecture (Monica Ponce de Leon, ed.) ORO Editions 2009
New Affinities in Science and Art (Andrea Grover, ed.) 2011
Conflict Kitchen, Ongoing Installation Collaboration with Jon Rubin
Machine Drawing Drawing Machines, CNC Drawing Research

Professional Memberships:
None
Faculty Resume

Jonathan Golli  Adjunct Assistant Professor

Course Taught (two years prior to visit):
- 48-100  Architecture Design Studio: Foundation I
- 48-105  Architecture Design Studio: Foundation II
- 48-305  Architecture Design Studio: Advanced Construction

Educational Credentials:
- 2004  MArch  University of Toronto
- 1996  BSME  Pennsylvania State University

Teaching Experience:
- 2008 -  Adjunct Assistant Professor, Carnegie Mellon University
- 2002-2004  Teaching Assistant, University of Toronto

Professional Experience:
- 2006 -  Graduate Architect, EDGE Studio, Pittsburgh PA
- 2005-1006  Graduate Architect, Steven Lombardi Architect, San Diego CA
- 2002-2003  Summer Intern, Perkins Eastman Architects, Pittsburgh PA

Licenses/ Registration:
None

Selected Publications and Recent Research:
None

Professional Memberships:
Pittsburgh Architectural Club
Faculty Resume

Mark Gross PhD Professor

Course Taught (two years prior to visit):
48-477 Making Things Interact (Undergraduate)
48-583 Design Thinking Seminar
48-710 Tangible Interactction Design Studio
48-730 Readings in Tangible Interaction
48-736 Making Thing Interact (Graduate)

Educational Credentials:
1986 PhD, Design Theory & Materials Massachusetts Institute of Technology
1978 BS, Architectural Design Massachusetts Institute of Technology

Teaching Experience:
2004 - Professor, Carnegie Mellon University
2002-2004 Assistant Professor, University of Washington
1999-2002 Associate Professor, University of Washington
1996-1999 Assistant Professor, University of Colorado
1990-1996 Associate Professor, University of Colorado

Professional Experience:
2008-Present Research Director, Modular Robotics
1987-1990 Consultant, Design Technology Research

Licenses/ Registration:
None

Selected Publications and Recent Research:

Professional Memberships:
IEEE Computer Society
Association for Computing Machinery
Association for Computer Aided Design In Architecture
Faculty Resume

Kai Gutschow PhD  Associate Professor

Course Taught (two years prior to visit):
48-200  Architecture Design Studio: Composition
48-340  Modern Architecture & Theory, 1900-1945
48-341  History of Architectural Theory
48-350  Postwar Modern Architecture & Theory

Educational Credentials:
2005  Columbia University  PhD, Art & Architectural History
1993  University California at Berkeley  MArch
1986  Swarthmore College  BA, Art History

Teaching Experience:
2008 -  Associate Professor, Carnegie Mellon University
2000-2008  Assistant Professor, Carnegie Mellon University
1998-2000  Visiting Assistant Professor, Carnegie Mellon University
1996  Visiting Assistant Professor, Washington State University

Professional Experience:
1980-1992  Research Associate at Canadian Center for Architecture; Environ. Design

Selected Publications and Recent Research:

Professional Memberships:
Society of Architectural Historians (SAH)
College Art Assoc. (CAA)
German Studies Assoc. (GSA)
Historians of German and Central European Art (HGCEA)

Licenses/ Registration:
None
Faculty Resume

Volker Hartkopf  PhD  Professor

Course Taught (two years prior to visit):
48-415  Advanced Building Systems

Educational Credentials:
1989  PhD  University of Stuttgart
1972  MArch  University of Texas, Austin
1969  Dipl. Ing  University of Stuttgart

Teaching Experience:
1975 -  Professor, Carnegie Mellon University
2010 -  Academic Advisor, EcoCommercial Building Program, Bayer Material
2007 -  Chair, United Nations Environmental Programme (UNEP) Sustainable
1981 -  Director, Center for Building Performance and Diagnostics, CMU
1981-1985  Executive Interchange Scholar, Public Works Department, Ottawa, Canada

Professional Experience:
1981-  Director, Center for Building Performance and Diagnostics, Carnegie
1981-1985  Executive Interchange Scholar, Public Works Department, Ottawa, Canada,
Chair, United Nations Environmental Programme (UNEP) Sustainable
1975-1981  Director, Advanced Building Studies Program, CMU

Licenses/ Registration:
None

Selected Publications and Recent Research:
Hartkopf, V., Loftness V., “Strategies for sustainable built environments”, Pages 170-181 in Connected Real
Estate, Essays from innovators in real estate, design, and construction, Edited by Kevin O'Donnell and
Wolfgang Wagener, CISCO, June 2007. Published by Torworth Publishing, United Kingdom.
Hartkopf, V., Loftness V., ”Designing Smart Offices and Homes”, Pages 111-115 in Perfect Power, Editors

Hartkopf, V., Loftness, V., Aziz, Azizan, The Robert L. Preger Intelligent Workplace and the Building as
Power Plant/Invention Works at Carnegie Mellon University, Chapter 19, Pages 319-333, in Creating The
Productive Workplace (second edition), Edited by Derek Clements-Croome, Taylor & Francis 2006.
Hartkopf, V., Archer, D.H., Loftness, V., Building As Power Plant (BAPP), Pages 55-74 in Smart &

Streitz, Norbert A., J. Seigel, V. Hartkopf, and S. Konomi (Eds.). Lecture Notes in Computer Science #1670:
Cooperative Buildings: Integrated Information, Organizations and Architecture. Berlin, Germany: Springer,
1999. Including 2 chapters:

Hartkopf, V., Loftness, V., Aziz, Azizan, Hua, Y., Intelligent Buildings-Professional and Educational
Implications of Innovations in Building and Construction Pages 551-558 in CIB-W78 Conference July 19-21,
2005, invited presentation/paper, Editors Scherer, R.J., Katranuschkov, P., Schapke, S.-E., Published by:

Professional Memberships:
None
Faculty Resume

Hal Hayes  RA, AIA  Adjunct Associate Professor

Course Taught (two years prior to visit):
48-400  Architecture Design Studio: Occupancy
48-405  Architecture Design Studio: Systems Integration
48-408  Theater Design Seminar for Arch & Drama

Educational Credentials:
1982  BArch  Carnegie Mellon University

Teaching Experience:
2008 - Adjunct Associate Professor, Carnegie Mellon University
2004  Visiting Professor, Roger Williams University
2003 - Visiting Critic, New Jersey Institute of Technology

Professional Experience:
2001 - H3 Architecture, Principal
1995-2001  HOK, Vice President, Director of Aviation Design
1987-1995  SOM, Associate

Licenses/ Registration:
New York

Selected Publications and Recent Research:
Strategic Design for Incremental Development, Heathrow Central Terminal Area (Presented at Passenger Terminal World Conference, Hamburg, February 1999)

Professional Memberships:
American Institute of Architects
Faculty Resume

**Kelly Hutzell**  AIA, LEED AP  Assistant Teaching Professor

Course Taught (two years prior to visit):
- 48-576  Mapping Urbanism
- 48-405  Architecture Design Studio: Systems Integration
- 48-453  Urban Design Methods
- 48-500  Architecture Design Studio: The Urban Laboratory

Educational Credentials:
- 2002  MS Architecture & Urban Design  Columbia University
- 1996  BArch  Roger Williams University

Teaching Experience:
- 2008 -  Assistant Teaching Professor, Carnegie Mellon University, joint Lucian and Rita Caste Chair Visiting Assistant Professor, Carnegie Mellon
- 2005-2008  Lucian and Rita Caste Chair Visiting Assistant Professor, Carnegie Mellon

Professional Experience:
- 2006-Present  Adjunct Assistant Professor
- 2003-2005  Project Designer, Machado and Silvetti Associates, Boston, Massachusetts
- 1998-2000  Intern, HOLST Architecture, Portland, Oregon
- 1997-1998  Intern, ADC, Haverhill, Massachusetts

Licenses/ Registration:
- Pennsylvania

Selected Publications and Recent Research:

Professional Memberships:
Faculty Resume

Donald Johnson  AIA Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-100  Architecture Design Studio: Foundation I

Educational Credentials:
2000  MArch Yale University
1998  BArch Carnegie Mellon University

Teaching Experience:
2006 - 2010  Adjunct Assistant Professor, Carnegie Mellon University

Professional Experience:
Perkins Eastman  2007 - 2009
Robert A.M.  2000 -2006

Licenses/ Registration:
New York

Selected Publications and Recent Research:
CAC Hadid Studio Yale: Contemporary Art Center Zaha Hadid Studio 2000 Yale School of Architecture
Retrospecta, 1999

Professional Memberships:
American Institute of Architects
Faculty Resume

Jeffrey King  AIA  Adjunct Associate Professor

Course Taught (two years prior to visit):
48-400  Architecture Design Studio: Occupancy

Educational Credentials:
MArch  Tulane University
BArch  Tulane University
Aegina, Greece Study Abroad Program  Study Abroad Program, Aegina, Greece

Teaching Experience:
Adjunct Professor, Carnegie Mellon University
Adjunct Professor, Boston Architectural Center
Adjunct Professor, Catholic University
Visiting Professor, Tulane University

Professional Experience:
2002-Present  EDGE Studio Architects
1996-2002  The Office of Peter Rose, Cambridge, MA
1994-1995  Agrest and Gandelsonas Architects, NY
1990-1994  Richard Meier and Partners, NY

Licenses/ Registration:
Pennsylvania, New York, Massachusetts

Selected Publications and Recent Research:
None

Professional Memberships:
American Institute of Architects
Central Northside Leadership Council
Mexican War Streets Society
Federal North Development Committee
Faculty Resume

Jonathan Kline  Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-500  Architecture Design Studio: The Urban Laboratory
48-706  Urban Design Studio
48-708  Sustainable Urbanism Studio

Educational Credentials:
2005  MFA Penn State University
1998  BArch Carnegie Mellon University

Teaching Experience:
2002 -  Adjunct Assistant Professor, Carnegie Mellon University
2006-2007  Instructor, The Pennsylvania State University

Professional Experience:
2007 -  Research Associate, Remaking Cities Institute, Carnegie Mellon University
2007 -  Principal, Studio for Spatial Practice, Pittsburgh
1998-2002  Assistant Design Team Leader, Urban Design Associates

Licenses/ Registration:
None

Selected Publications and Recent Research:

Professional Memberships:
None
Faculty Resume

Ramesh Krishnamurti PhD Professor

Course Taught (two years prior to visit):
62-175 Descriptive Geometry
48-624 Parametric Modeling
48-724 Parametric Design
48-749 Parametric Modeling with BIM

Educational Credentials:
PhD University of Waterloo, Ontario, Canada

Teaching Experience:
1989 - Professor, School of Architecture, Carnegie Mellon University
Track Chair, Graduate Program in Computational Design

Professional Experience:
CAD Consultant

Licenses/ Registration:

Selected Publications and Recent Research:
Automated LEED Data Sheets from BIM, Consultant, US Army Corp CERL-ERDC, 2010-11
AUTOPILOT: An Approach to generalized Shape Grammar Interpretation. Principal Investigator. US Army Corp CERL-ERDC, 2008-09

Professional Memberships:
International Society for Mathematical and Computational Aesthetics
Faculty Resume

Kristen Kurland  Teaching Professor

Course Taught (two years prior to visit):
48-568  Advanced AUTOCAD, BIM, & 3D Visualization
48-569  GIS / CAFM

Educational Credentials:
1989  BA in Arch Studies  University of Pittsburgh

Teaching Experience:
1999 -  Carnegie Mellon University, Teaching Professor
1994-1998  Carnegie Mellon University, Adjunct Assistant Professor

Professional Experience:
1992 -  President, Computer Technical Services Pittsburgh, PA
1989-1992  CAD Instructor Computer Research, Inc. Pittsburgh, PA
1988-1989  Project Architect, CAD Designer, Galt Industries/HOOGOVENS U.S.A.,
1988-1991  Intern, Smith, Howard, and Johnson, Phoenix, AZ

Licenses/ Registration:
None

Selected Publications and Recent Research:

Professional Memberships:
IFMA - International Facilities Management Association
Urban and Regional Information Systems Association, Central Appalachian Chapter, Past President (2000) and
Faculty Resume

Khee Poh Lam  PhD, RIBA  Professor

Course Taught (two years prior to visit):
48-405  Architecture Design Studio: Systems Integration
48-410  Environment II: Light
48-116  Building Physics
48-413  Building Acoustics
48-599  Independent Study
48-722  Building Performance Modeling

Educational Credentials:
1994  PhD  Carnegie Mellon University
1982  BArch  Nottingham University, UK
1979  BA, Architecture & Environmental  Nottingham University, UK

Teaching Experience:
2003-2007  Director of Graduate Program, Carnegie Mellon University
2000-2002  Head, Department of Building, National University of Singapore
1998-2000  Dean, Faculty of Architecture, Building and Real Estate, National University
1998-1999  Director, Graduate School of the Built Environment

Professional Experience:
2009-2010  Tiong Seng Properties Ptd. Ltd, Singapore Tiannjin Eco-City Residential
2009  NBBJ, Columbus, OH 43204

Licenses/ Registration:
UK

Selected Publications and Recent Research:
Dong, B, and K P Lam, Occupant behavior pattern detection based on a large scale environmental sensor network. Eco-City and Green Buildings No. 5, 2011. pp.50-55.

Professional Memberships:
Chartered Member, Royal Institute of British Architects, UK
Faculty Resume

Stephen Lee  AIA, LEED AP  Professor and Head

Course Taught (two years prior to visit):
48-305  Architecture Design Studio: Advanced Construction

Educational Credentials:
1977  MArch Carnegie Mellon University
1975  BArch Carnegie Mellon University

Teaching Experience:
2000 -  Professor, Carnegie Mellon University
1996 - 2000  Associate Professor, Carnegie Mellon University
1989 - 1996  Special Faculty, Carnegie Mellon University
1993  Visiting Associate Professor, University of Tokyo; RCAST Endowed Chair
1981 - 1989  Adjunct Faculty, Carnegie Mellon University

Professional Experience:
1981 - 1988  Professor
1976 - 1981  Associate, Urban Design Associates

Licenses/ Registration:
Pennsylvania, New York (Inactive), West Virginia (Inactive)

Selected Publications and Recent Research:

Professional Memberships:
American Institute of Architects
Faculty Resume

Nick Liadis  Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-200  Architecture Design Studio: Composition
48-300  Architecture Design Studio: Site

Educational Credentials:
2008  MArch  University of Detroit Mercy

Teaching Experience:
2011 -  Adjunct Assistant Professor, La Roche College
2010 -  Adjunct Assistant Professor, Carnegie Mellon University

Professional Experience:
2008 -  Project Designer, Desmone and Associates Architects, Pittsburgh, PA

Licenses/ Registration:
None

Selected Publications and Recent Research:
Adaptive Re-use of Churches, Cleveland AIA, co-presented Lecture with Luke Desmone, 2009
A Need for Resilience: The Banana and the Building, Robert Morris University Sustainability Conference, Guest Lecturer, 2011

Professional Memberships:
None
Faculty Resume

Cindy Limauro  Professor

Course Taught (two years prior to visit):
48-587 Architectural Lighting Design

Educational Credentials:
1978 MFA in Lighting Design Florida State University
1974 BA, Theatre and English University of Michigan

Teaching Experience:
2001 - Professor, Carnegie Mellon University
2005-2019 Visiting Professor, Henry van de Velde Higher Institute of Architectural
1992-2001 Associate Professor, Carnegie Mellon University
1987-1992 Assistant Professor, Carnegie Mellon University

Professional Experience:
Designed lighting for over 200 productions in theatre, opera and dance
Award winning architectural lighting design projects include:

Licenses/ Registration:
None

Selected Publications and Recent Research:
Prague Quadrennial, USA Juried Design Exhibit, 2007
Lighting Design for The Threepenny Opera
World Stage Design Exhibit, Toronto, 2005
Lighting Design for A Woman of No Importance
Lighting design work is published in the following text books and lighting journals:
Stage Lighting: Fundamentals and Applications by Richard Dunham
Scene Design and Stage Lighting by Parker, Wolf and Block

Professional Memberships:
IALD (International Association of Lighting Designers)
United Scenic Artists, Lighting Design Union for Broadway and Regional Theatre
USITT, Association of Design, Production and Technology Professionals in the Entertainment
OISTAT, US Representative on the International Education Commission, 2005-2010
Faculty Resume

Vivian Loftness  FAIA, LEED AP  University Professor

Course Taught (two years prior to visit):
48-315  Environment I: Climate and Energy
48-405  Architecture Design Studio: Systems Integration
48-729  Productivity, Health and the Quality of Buildings
48-732  Thesis: Master of Science in Sustainable Design

Educational Credentials:
1975  MArch  Massachusetts Institute of Technology
1974  BS  Massachusetts Institute of Technology
1975-76  Rotary International Scholar  Otaniemi Technical University, Finland

Teaching Experience:
2004 -  University Professor, Carnegie Mellon University
1994-2004  Head of School, Carnegie Mellon University
1990-2004  Professor, Carnegie Mellon University
1986-1990  Associate Professor, Carnegie Mellon University
1981-1986  Assistant Professor, Carnegie Mellon University

Professional Experience:
Sustainability Design & Policy Consultant: Pelli, BCJ, LBNL, Architect of the
1980-1981  Energy & Design Project Manager  Interatom/Siemens for the SV3 Solar
1976-1978  Researcher, AIA Research Corporation

Licenses/ Registration:
Maryland

Selected Publications and Recent Research:
A Sustainable and Healthy Built Environment, Chapter 10 Science and Technology of the Sustainable Built
Research reports 2009-present for: DOE, Electricité de France, Bank of America, DOD, Siemens, General Services
Administration, Heinz Foundation.
Energy Savings and Performance Gains in GSA Buildings: Seven Cost-Effective Strategies, GSA Public Building
Service publication, 2010.
Where Windows Become Doors, Chapter 9 in Biophilic Design: Theory, Science and Practice, editors Kellert,
The Field of Building Climatology, 60 page encyclopedic entry in The Handbook of Climatology, Editor Oliver,

Professional Memberships:
American Institute of Architects
Faculty Resume

Arthur Lubetz  AIA  Adjunct Professor

Course Taught (two years prior to visit):
48-200  Architecture Design Studio: Composition
48-205  Architecture Design Studio: Materials
48-451  Incompletion and the Embodied Mind in Architecture
48-497  Thesis I
48-505  Architecture Design Studio: Thesis II/ Studio X

Educational Credentials:
  BArch  Carnegie Mellon University

Teaching Experience:
1988-Present  Adjunct Professor, School of Architecture, Carnegie Mellon University

Professional Experience:
2009 -  Principal, Front Studio Architects, LLC
1967-2009  Founding Partner, Lubetz Architects, AIA
1970-1975  Principal, Environmental Design Collaborative

Licenses/ Registration:
Pennsylvania, Ohio, New York, New Jersey

Selected Publications and Recent Research:
The National Academy Museum, Exhibition Catalogue with Stephen Holl and James Wines of SITE
A Past Still Alive by Walter Kidney
Landmark Architecture: Pittsburgh and Allegheny County by Walter Kidney
Pittsburgh Characters, Walk-in Sculpture by Abby Mendelson
Pittsburgh: An Urban Portrait by Dr. Franklin Toker
Architecture: Bennett Place, housing for the elderly, Secaucus, New Jersey

Professional Memberships:
American Institute of Architects
**Faculty Resume**

**Jennifer Lucchino** AIA Adjunct Associate Professor

**Course Taught (two years prior to visit):**
- 48-205 Architecture Design Studio: Materials
- 48-200 Architecture Design Studio: Composition
- 48-400 Architecture Design Studio: Occupancy

**Educational Credentials:**
- 1994 MArch Rice University
- 1988 BA, Interdisciplinary Studies Georgetown University
- 1989 Diplome Annuel de Langue et Cours de Civilisation Francaise de la Sorbonne
- 1988 BA Interdisciplinary Studies, Minor: Georgetown University

**Teaching Experience:**
- 2010- Adjunct Associate Professor, School of Architecture, Carnegie Mellon
- 2004-2009 Adjunct Assistant Professor, School or Architecture, Carnegie Mellon

**Professional Experience:**
- 2004- Owner/Principal, inter*ARCHITECTURE
- 2001-2004 Project Architect, Damianosgroup
- 1994-1999 Project Manager/Intern, Astorino

**Selected Publications and Recent Research:**
- 2005-07 Selected Articles, Architectural Record

**Professional Memberships:**
- American Institute of Architects
- ASGBC
Faculty Resume

Kelly Lyons  Program Director, Architecture Explorations

Course Taught (two years prior to visit):
48-332  Architecture Explorations: Teaching and Learning

Educational Credentials:
Pending  PhD Candidate  Carnegie Mellon University
2006  MSED  Duquesne University
1999  BArch  Carnegie Mellon University

Teaching Experience:
2010-  Adjunct Instructor, Carnegie Mellon University

Professional Experience:
2004-  Program Director, Architecture Explorations Carnegie Mellon University
January 2006-  Interim Academic Advisor, School of Architecture Carnegie Mellon
July 2006-March 2004  Interim Coord. of Student Programs, School of Architecture Carnegie Mellon
2003-2004  Ombudsman, School of Architecture Carnegie Mellon University

Licenses/ Registration:
None

Selected Publications and Recent Research:
The Heinz Endowments: interim principal investigator, program coordinator
Awarded to support Urban Design Regional Employment Action for Minorities (UDream), a combined academic program and internship for recent graduates in architecture and urban planning. The goal of
National Endowment for the Arts: author and principal investigator
Awarded to fund Architecture Building Communities, a program in which intergenerational teams of elementary, high school, and college students work together with recent college graduates and professionals
Buhl Foundation: author and principal investigator
Awarded to fund the development of hands-on architecture workshops at Fallingwater.
2007: $5,000
Grable Foundation: author and principal investigator
Awarded to fund a program in which high school students design a project for a vacant lot in their community.
2007: $5,000 and 2006: $5,000
McFeeley-Rogers Foundation: author and principal investigator
Awarded to fund a program in which high school students design an architectural project for their school.
2006: $10,000
American Architectural Foundation, Accent on Architecture: author and principal investigator
Awarded for general operating support of Architecture Explorations.
2006: $2,500 and 2005: $3,000

Professional Memberships:
PHLF
Faculty Resume

Gerry Mattern  P.Eng  Adjunct Professor

Course Taught (two years prior to visit):
48-412  Environment II: Mechanical Systems

Educational Credentials:
1958  BSEE Rose Polytechnic Institute

Teaching Experience:
1982 - Carnegie Mellon University, Dept. of Arch
1962-1968  Penn State University, PE Review Class
1982 - American Institute of Architecture, Professional Review Class, ME/E

Professional Experience:
1968 - Consulting Engineer
1962-1963  Pittsburgh Reflector Co, Manager, Electric Heating
1958-1962  West Penn Power Company
1955-1958  Yeager Architects

Licenses/ Registration:
Pennsylvania, West Virginia, Indiana

Selected Publications and Recent Research:
None

Professional Memberships:
None
Faculty Resume

Mick McNutt  AIA  Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-205  Architecture Design Studio: Materials
48-400  Architecture Design Studio: Occupancy

Educational Credentials:
2004  MArch  Syracuse University
1995  BArch  University of Pittsburgh

Teaching Experience:
2007 -  Adjunct Assistant Professor, Carnegie Mellon University
2001-2004  Graduate Teaching Assistant, Syracuse University

Professional Experience:
2006 -  Project Architect, EDGE studio
2004-2006  Architectural Designer, Pfaffmann + Associates
2002  Architectural Designer, Astorino
1999-2001  Architectural Designer, VEBH Architects

Licenses/ Registration:
Pennsylvania

Selected Publications and Recent Research:
Swanson School of Engineering, University of Pittsburgh, 2006-present

Professional Memberships:
American Institute of Architects
Faculty Resume

Becky Mingo  RA  Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-452  Real Estate Design and Development
48-725  Real Estate Design and Development

Educational Credentials:
1991  BArch  Carnegie Mellon University

Teaching Experience:
2010 -  Adjunct Assistant Professor, Carnegie Mellon University

Professional Experience:
2006-2009  Real Estate Development Specialist, Friendship Development Associates,
1992-1995  Project Architect, The Design Alliance Architects,
1992  Director, Fineview Citizen’s Council

Licenses/ Registration:
Pennsylvania

Selected Publications and Recent Research:
None

Professional Memberships:
Leadership Pittsburgh, Class XVI, 2001, Friendship Preservation Group, Member, 1992-present
Faculty Resume

Christine Mondor  AIA, LEED AP  Adjunct Associate Professor in Practice

Course Taught (two years prior to visit):
48-300  Architecture Design Studio: Site
48-312  Site Engineering and Foundations
48-341  History of Architectural Theory

Educational Credentials:
1993  BArch  Carnegie Mellon University
1991  Denmark Institute of Study

Teaching Experience:
2004 -  Adjunct Lecturer, Thesis Advisor, Chatham University, Pittsburgh
2010 -  Adjunct Faculty, Slippery Rock University, Slippery Rock, PA
1999 -  Adjunct Associate Professor in Practice, Carnegie Mellon University

Professional Experience:
2004 -  Adjunct Instructor
2000 - 2002  Project Architect, Marketing Manager, Hanson Design Group, Pittsburgh,
1997 - 2000  Project Architect, partner track, Gardner & Pope Architects, Pittsburgh, PA
1993 - 1997  Designer, TAI + LEE Architects, Pittsburgh, PA

Licenses/ Registration:
Pennsylvania

Selected Publications and Recent Research:
“Building Up to Organizational Sustainability” Principal Author. 2009, expected publication 2012, MIT Press
“Environmental Education in the Early Undergraduate Curriculum.” Coauthor. Luce Foundation Grant. 2005
Guidelines for Creating High Performance Green Buildings Coauthor. PA Department of Environmental Protection.
Governor’s Going Green Council. 1999
Buildings-In-Operation, A Case Study for the David L. Lawrence Convention Center, Pittsburgh, PA, 2011
Center for Sustainable Landscapes Living Building, Pittsburgh, PA, 2009-2012
Treehouse at Frick Park Environmental Center, Pittsburgh, PA, 2011

Professional Memberships:
American Institute of Architects
Community Design Center of Pittsburgh, Board Chair 2009-2011, Member 2006-Present
AIA National Committee on Design Award, extended stay prototype house, AIA National, 2008
US Green Building Council, LEED accredited professional, member
Faculty Resume

Jason Morris  AIA, LEED AP  Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-100  Architecture Design Studio: Foundation I
48-105  Architecture Design Studio: Foundation II
48-400  Architecture Design Studio: Occupancy

Educational Credentials:
2004  MArch  Illinois Institute of Technology
1996  BArch  University of Tennessee

Teaching Experience:
2005 - Adjunct Assistant Professor, Carnegie Mellon University, Pittsburgh, PA

Professional Experience:
2009 - Project Architect, Bohlin Cywinski Jackson, Pittsburgh, PA
2008-2009  Principal, Jason Morris Architect, Pittsburgh, PA
2004-2007  Principal, SO-AD, Pittsburgh, PA
2005-2006  Project Consultant, DGGP (now 4080), Pittsburgh, PA

Licenses/ Registration:
Pennsylvania, Illinois

Selected Publications and Recent Research:
None

Professional Memberships:
American Institute of Architects
Faculty Resume

Gary Moshier  AIA, LEED AP BD+C  Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-405  Architecture Design Studio: Systems Integration

Educational Credentials:
1980  BArch  Carnegie Mellon University

Teaching Experience:
2008 -  Carnegie Mellon University, Adjunct Assistant Professor

Professional Experience:
2003 -  Partner, Moshier Studio
1987-2003  Sr. Associate, KSBA Architects
1985-1987  Project Manager, Damianos + Associates
1981-1985  Project Manager, Interspace Incorporated

Licenses/ Registration:
Pennsylvania

Selected Publications and Recent Research:
None

Professional Memberships:
American Institute of Architects
The American Institute of Architects  Pittsburgh, 1986–present, co-founder of Committee on the Environment
Green Building Alliance: Board Member  2005–2007, 2008-2011; ad-hoc formation group; initial long range planning
US Green Building Council, 2002–present
Faculty Resume

Cherie Moshier  AIA, LEED AP BD+C  Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-405 Architecture Design Studio: Systems Integration

Educational Credentials:
1982  BArch Carnegie Mellon University

Teaching Experience:
2010 - Carnegie Mellon University, Adjunct Assistant Professor

Professional Experience:
2003 - Partner, Moshier Studio
1998-2003 Principal, Cherie H. Moshier AIA
1981-1998 Principal, The Design Alliance

Licenses/ Registration:
Pennsylvania, West Virginia, Maryland

Selected Publications and Recent Research:
None

Professional Memberships:
American Institute of Architects
The American Institute of Architects Pittsburgh
Green Building Alliance
US Green Building Council
Faculty Resume

Irving Oppenheim PhD, P.Eng Professor

Course Taught (two years prior to visit):

48-210 Statics
48-217 Structures
12-100 Introduction to Civil and Environmental Engineering
12-212 Statics

Educational Credentials:

1972 PhD Cambridge University
1970 MS Lehigh University
1968 BE The Cooper Union

Teaching Experience:

1990 - Carnegie Mellon University, Professor
1977-1990 Carnegie Mellon University, Associate Professor
1972-1977 Carnegie Mellon University, Assistant Professor

Professional Experience:

1980-1981 Senior Consultant, Romualdi, Davidson & Associates
1980-1981 Senior Staff Engineer, GAI Consultants

Licenses/ Registration:

Pennsylvania (PE)

Selected Publications and Recent Research:


Professional Memberships:

American Society of Civil Engineers; American Society of Mechanical Engineers; University Earthquake Engineering Research Institute; SPIE.
Faculty Resume

Eve Picker  Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-500  Architecture Design Studio: The Urban Laboratory

Educational Credentials:
1982  MArch & Urban Design  Columbia University
1979  BArch  University of NSW, Sydney
1977  BS  University of NSW, Sydney

Teaching Experience:
2010 -  Adjunct Associate Professor, Carnegie Mellon University

Professional Experience:
2009 -  Founder & CEO, cityLAB
2007 -  Co-founder, cityLIVE!
2005-2007  Founding Publisher, Pop City
2003 -  Founder & CEO, we do property management, inc.

Licenses/ Registration:
None

Selected Publications and Recent Research:
None

Professional Memberships:
None
Faculty Resume

Matthew Plecity  RLA  Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-300  Architecture Design Studio: Site

Educational Credentials:
2004  MArch  Virginia Tech
1998  BA Landscape Architecture  Virginia Tech

Teaching Experience:
2006 -  Adjunct Assistant Professor, Carnegie Mellon University
2002-2004  Teaching Assistant, Virginia Tech

Professional Experience:
2004 -  Associate / Project Manager, Bohlin Cywinski Jackson
1999-2001  Architect, Olin Partnership (now OLIN Studio)
1998-1999  Landscape Architect, Slater Associates, Columbia, MD

Licenses/ Registration:
Delaware (Landscape)

Selected Publications and Recent Research:
None

Professional Memberships:
The American Society of Landscape Architects
Faculty Resume

**Thomas Price** AIA Adjunct Assistant Professor

Course Taught (two years prior to visit):
- 48-205 Architecture Design Studio: Materials

Educational Credentials:
- 2002 MArch University of Virginia
- 1999 BS Architectural Studies University of Illinois @ Urbana Champaign

Teaching Experience:
- 2008 - Adjunct Assistant Professor, Carnegie Mellon University
- 2000-2002 Design Studio Teaching Assistant, University of Virginia,

Professional Experience:
- 2001 - Associate, Strada Architecture LLC, Pittsburgh, PA
- 1998-2000 Intern, Perkins Eastman, Pittsburgh, PA

Licenses/ Registration:
- Pennsylvania

Selected Publications and Recent Research:
- None

Professional Memberships:
- American Institute of Architects
- Zoning Office, Ben Avon Heights Borough, Pittsburgh, PA 2008-present
Faculty Resume

Paul Rosenblatt  AIA, NCARB  Adjunct Associate Professor

Course Taught (two years prior to visit):
48-595  Under the Influence

Educational Credentials:
1984  MArch  Yale University
1981  BA  Yale University

Teaching Experience:
1987-1997  Adjunct Associate Professor/ Associate Professor, Carnegie Mellon
Lectures/Adjunct Courses: Yale, Harvard, City College of New York,

Professional Experience:
2001 -  Founding Principal, SPRINGBOARD Design
1997-2001  Principal, Damianosgroup
1987-1997  Principal, Bruce Lindsey Paul Rosenblatt Architects
1985-1987  Project Architect, Margaret Helfand Architects

Licenses/ Registration:
Pennsylvania, Florida

Selected Publications and Recent Research:
Book: Every Building a Museum (Fall, 2011)
Paper: ‘Writing Down Your Crazy: On Social Media and Architecture’ (Podcamp 6, September, 2011)
Monograph: Omnivorous: The Art and Architecture of Paul Rosenblatt and SPRINGBOARD (West Virginia University, 2005)

Professional Memberships:
American Institute of Architects
NCARB
ICC
Faculty Resume

Charles L. Rosenblum  PhD  Assistant Teaching Professor

Course Taught (two years prior to visit):
48-448  History of Sustainable Architecture
48-534  Architectural Theory Since 2000
62-100  Critical Histories of the Arts (College-wide required course)

Educational Credentials:
2009  PhD  University of Virginia
1998  MAH  University of Virginia
1987  BA  Yale University

Teaching Experience:
1998 -  Adjunct Assistant Professor, Carnegie Mellon University
1999-2001  Adjunct Assistant Professor, Indiana University of Pennsylvania
1995-1996  Teaching Assistant, University of Virginia

Professional Experience:
1999 -  Architecture Critic, Pittsburgh City Paper
1992 -  Free-lance journalist

Licenses/ Registration:
None

Selected Publications and Recent Research:

Professional Memberships:
Society of Architectural Historians
College Art Association
Pittsburgh History and Landmarks Foundation
Preservation Pittsburgh
Facility Resume

Diane Shaw  PhD  Associate Professor

Course Taught (two years prior to visit):
48-240 Historical Survey of World Architecture & Urbanism
48-348 Architectural History of Mexico & Guatemala
48-371 American House and Housing
48-440 American Regions & Regionalism

Educational Credentials:
1998  PhD  University of California at Berkeley
1990  MA  George Washington University
1982  BA  Smith College

Teaching Experience:
2006 -  Associate Professor, Carnegie Mellon University
1996-2006  Assistant Professor, Carnegie Mellon University
1996-1996  Visiting Assistant Professor, Washington State University

Professional Experience:
2011, 2009  Session Commentator, Society of American City and Regional Planning
2010, 2009  Outside reviewer for Tenure Cases:
2011  Committee Chair, “John W. Reps Dissertation Prize,” Society of American

Licenses/ Registration:
None

Selected Publications and Recent Research:
City Building on the Eastern Frontier: Sorting the New Nineteenth-Century City (Baltimore: Johns Hopkins University Press, 2004)
National Endowment for the Humanities, Summer Stipend Grant, supporting research on New England village improvement movement, 2010.

Professional Memberships:
CAF Vernacular Architecture Forum
SACRPH Society of American City and Regional Plannign History
SAH Society of Architectural Historians
Faculty Resume

Scott Smith  Shop Director

Course Taught (two years prior to visit):
48-100  Architecture Design Studio: Foundation I
48-470  Exploring Pattern Through Lamination
48-473  Hand and Machine Joiner, New Directions

Educational Credentials:
1973  MFA Cranbrook Academy of Art
1971  BFA Carnegie Mellon University

Teaching Experience:
1983 -  Shop Director, Carnegie Mellon School of Architecture

Professional Experience:
1980-1989  Smith Works- Sole Proprietorship in Furniture, Cabinets and Art
1976-1979  Scott Smith- Artist, Designer, Craftsman, Sole Proprietorship
1973-1975  Process Innovators, Fabrication Partnership (residential and commercial)

Licenses/ Registration:
None

Selected Publications and Recent Research:
Barns of Western Pennsylvania, Vernacular to Spectacular, lead students in the construction of two highly detailed hardwood models for the Carnegie Museum of Arts Heinz Architectural Center.
Development of a shelving system combining thin plywood and rolled sheet metal to achieve substantial load bearing capability over medium to long spans, 2008
Reinterpretation of traditional Adirondack seating using solid hard wood, thin ply, and rolled sheet metal, 2008
Investigation of new clamping methods for stick assemblies involving compound angles, 2009-2010

Professional Memberships:
The Furniture Society
Faculty Resume

Kent Suhrbier  AIA, LEED AP  Adjunct Associate Professor

Course Taught (two years prior to visit):
48-300  Architecture Design Studio: Site
48-400  Architecture Design Studio: Occupancy

Educational Credentials:
1992  BArch Carnegie Mellon University

Teaching Experience:
2004 -  Adjunct Assistant Professor, Carnegie Mellon School of Architecture
2000-2006  Adjunct Assistant Professor, Carnegie Mellon School of Design

Professional Experience:
2006 -  Principal, dggp Architecture
2004-2006  Principal, evolve Environment :: Architecture
1997-2004  Associate, Bohlin Cywinski Jackson Architects
1993-1997  Project Manager, Davis+Gannon Architecture

Licenses/ Registration:
Pennsylvania

Selected Publications and Recent Research:
None

Professional Memberships:
American Institute of Architects
US Green Building Council
Faculty Resume

Francesca Torello  PhD  Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-338  European Cities in the XIX Century
48-368  Rediscovery of Antiquity
48-577

Educational Credentials:
2003  PhD  Politecnico di Torino, Italy
2003  Master, "Metropolis"  Universitat Politecnica Catalunya, Barcelona, Spain
1998  BArch  Politecnico di Torino, Italy

Teaching Experience:
2007 - Adjunct Assistant Professor, Carnegie Mellon
2003-2007  Post-doc Research Associate, Politecnico di Torino

Professional Experience:
2004  Assistant Professor
2001  "Leonardo" (EU financed) Internship, Kimla+Rohringer, Vienna, Austria
1999-2000  International Relations, Politecnico di Torino, Italy

Licenses/ Registration:
None

Selected Publications and Recent Research:

Professional Memberships:
Faculty Resume

Kevin Wagstaff  AIA, LEED AP  Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-405  Architecture Design Studio: Systems Integration

Educational Credentials:
1988  MArch  Princeton University
1986  BS in Architectural Studies  University of Virginia

Teaching Experience:
2008 -  Adjunct Assistant Professor, Department of Architecture, Carnegie Mellon
1990-1992  Professor, School of Architecture, Savannah College of Art and Design

Professional Experience:
1994 -  Perfido Weiskopf Wagstaff + Goettel, Pittsburgh, Principal since 2004
1993-1994  WTW Architects, Pittsburgh
1990  Perkins and Will, New York
1988-1990  SOM, New York

Licenses/ Registration:
New York, Pennsylvania, West Virginia

Selected Publications and Recent Research:
None

Professional Memberships:
American Institute of Architects
Faculty Resume

Spike Wolff  Adjunct Assistant Professor

Course Taught (two years prior to visit):
48-095  Architecture for Non-Majors
48-105  Architecture Design Studio: Foundation II

Educational Credentials:
1990  MArch  SCI-Arc Southern California Institute of Architecture
1984  BFA  Carnegie Mellon University

Teaching Experience:
2003 - Adjunct Assistant Professor of Architecture, Carnegie Mellon University

Professional Experience:
2000-2009  Designer, spikestudio, Pittsburgh PA
2006  Designer, Lubetz Architects, Pittsburgh PA
1990-1992; 1994  Designer, Marmol+Radziner Architecture, Los Angeles CA

Licenses/ Registration:
None

Selected Publications and Recent Research:
Wats:ON Festival Across the Arts, Curator, Carnegie Mellon University 2009-present
School of Architecture Lecture Series, curation and organization, Carnegie Mellon University 2009-present
The Hurricane, design of temporary jazz club, Pittsburgh PA 2007-2009
Hurricane at the Hothouse, design of exhibition, Pittsburgh PA 2007
The Frick Art Museum, design for Felix de la Concha exhibition, Pittsburgh PA 2004

Professional Memberships:
None
Course Description

**48-100 Architecture Design Studio: Foundation I** 12 Units

Short problems are given to introduce the complexities of visual communication and the design act; to develop skills of spatial manipulation; to build self-confidence in making valid decisions within set time limits; to develop skills of graphic presentation necessary for interpreting and communicating architectural intentions; and above all, to instill the ability to combine insight with the rigorous analytical study in a “design process” that is efficient and personally effective.

**Goals & Objectives:**
- to work fluidly between media, tools, methods, and modes of learning
- to understand the fundamentals of space making and definition
- to make connections between courses (knowledge domains)
- to set the basis for an interdisciplinary / broad / liberal education

**Student Performance Criteria:**
- A.1 Communication Skills
- A.3 Visual Communication Skills
- A.5 Investigative Skills
- A.6 Fundamental Design Skills
- A.7 Use of Precedents

**Secondary SPC**
- A.1, A.2, A.3, A.5, A.6, A.8

**Topical Outline:**
- Communication Skills 5%
- Design Thinking Skills 10%
- Visual Communication Skills 35%
- Investigative Skills 10%
- Fundamental Design Skills 20%
- Use of Precedents 10%
- Ordering Systems Skills 10%

**Prerequisites:**
None

**Books/ Learning Resources:**
- Architectural Graphics by Ching
- Design Drafting by Ching
- Architecture: Form, Space + Order By Ching
- LeCorbusier by Boesiger

**Offered:**
Fall; Annually

**Faculty Assigned:**
- Damiani (Adj)
- Arscott (Adj)
- Golli (Adj)
- Johnson (Adj)
- Aziz (Adj)
- Croce (Adj)
- Cochran (Adj)
- Calisti (Adj)
Course Description

48-105 Architecture Design Studio: Foundation II  12 Units
This foundation Studio course emphasizes the representational challenges of designing full-scale future architecture through conventional and unconventional modes of architectural representation.

Goals & Objectives:
• Understand/execute a variety of representational paradigms
• Work in a collaborative environment with teams of varying sizes
• Foster better communication skills, through representational media and verbal presentations
• Introduce tectonic and environmental considerations
• Better understand individual design processes
• Expand the vocabulary of a student’s workflow through a variety of tools and media
• Learn to self-critique

Student Performance Criteria:
A.2  Design Thinking Skills
A.8  Ordering Systems Skills
C.1  Collaboration

Secondary SPC
A.1, A.3, A.5, A.6, C.2

Topical Outline:
This studio expands on basic skills learned in 48-100, (first year/first semester studio). Four short projects focus on issues of scale and dimensional translation from reduced-scale models and drawings to full-scale installations. Students learn/apply various representational techniques from analog to digital to fine-craft woodshop projects. Throughout the semester, either individually or collaboratively, students learn the relationship between space, form and their representation in a variety of media. The course also prepares for advanced tectonic exploration in future years through large-scale model building and physical performance of spatial and formal systems.
• Lectures on representational paradigms (10%)
• Woodshop/craft projects (20%)
• Studio projects relating to scale and translation (60%)
• Collaborative projects (10%)

Prerequisites:
48100

Books/ Learning Resources:
N/A

Offered:
Spring; Annually

Faculty Assigned:
Garcia (F/T)  Arscott (Adj)
Cochran (Adj)
Golli (Adj)
Johnson (Adj)
Morris (Adj)
O'Toole (Adj)
Wolff (Adj)
48-116 Building Physics  9 Units
This course introduces theoretical foundations and computational approaches about two major fields of building physics: building lighting performance and building thermal performance.

Goals & Objectives:
• Building lighting performance will introduce fundamental lighting principles in the context of performance-based architectural design and diagnostics.
• Building thermal performance will introduce fundamental thermal principles in the context of performance-based architectural design and diagnostics.
• Topics include a review of basic theory of heat transfer, thermal dynamics, thermal comfort and building HVAC systems, analytical and numeric methods for the prediction of building thermal load and energy consumption, and application of computer-aided thermal simulation tools for building thermal design.

Student Performance Criteria:
B.8 Environmental Systems
B.3 Sustainability
A.11 Applied Research
A.3 Visual Communication Skills

Secondary SPC
A.1, A.2, A.4, A.8, B.10, B.12

Topical Outline:
Building Lighting Performance Introduction
Overview of lighting in architecture
Lighting Physics 1: Photometry- quantification of light
Lighting Physics 2: Photometry- quantification of light
Lighting Fixtures: Color and electric lighting, polar curves
Lighting Performance 1: Visual Performance, Contrast, CRI
Lighting Performance 2: Uniformity and distribution, UGR; Lighting Design & Benchmarks 1: Design approaches – case studies; Lighting Design & Benchmarks 2: LEED Credit 8.1 and 8.2, ASHRAE 90.1
Building Thermal Performance Introduction and Outdoor Thermal Environment
Indoor Thermal Environment, Thermal Dynamics, Thermal Zoning
Heat Transfer: Conduction, Convection, Radiation
Building Load Analysis
Thermal Measurement

Prerequisites:
None

Books/ Learning Resources:
P. Tregonza and D. Loe, the Design of Lighting, 1998; R. Ganslandt and H. Hofmann, ERCO Guide - Designing with light – Summary, 1992. For complete list of resources, readings, samples of work, refer to the detailed course handout on Blackboard.

Offered:
Spring; Annually

Faculty Assigned:
Lam (F/T)
Course Description

48-120 Introduction to Digital Media I  6 Units
This course introduces students to digital media applications in architecture through instructional lab periods, lectures on digital concepts and crossover with their studio projects.

Goals & Objectives:
- Understand current and potential applications of digital media in architecture
- Learn commercially available software packages (Adobe, AutoDesk, Rhino, Sketchup, etc.)
- Learn workflow procedures (both in practice and in school) with software and hardware

Student Performance Criteria:
A.3 Visual Communication Skills

Secondary SPC
A.2, C.1

Topical Outline:
This course introduces architecture students to the basic commercially-available software relevant to design. Starting with two-dimensional representation in Adobe and related platforms, students use studio design projects as the basis for digital explorations. The course closes with basic three-dimensional software (AutoDesk, Rhino, Sketchup) in support of the final design studio project (48-100). Throughout the course, lectures and assignments reflect on the history and theory of "digital culture", and how the portable technologies, advanced interactivity and social dimension to digital systems evolved and what the future of these technologies may be.

- Digital-analog relationships (15%)
- Learn 2D Digital Media (60%)
- Learn 3D Digital Media (15%)
- Crossover with studio design projects (10%)

Prerequisites:
None

Books/ Learning Resources:
None

Offered:
Fall; Annually

Faculty Assigned:
Garcia (F/T)
Course Description

48-125 Introduction to Digital Media II  6 Units
This course serves as the second component of the introductory digital media stream that is focused upon Imparting students with a repertoire of digital design techniques and critical thinking skills to better leverage the design potential of digital media throughout their education.

Goals & Objectives:
• Apply various digital and analog tools in the context of design problems
• Understand and apply basic concepts of digital fabrication
• Understand the relationships between two and three-dimensional geometry in digital modeling software
• Apply laser cutting to produce physical objects from virtual models
• Understand methods to construct three-dimensional form from planar material, facilitated through digital fabrication
• Apply advanced rendering tools to produce realistic architectural simulations including natural and artificial light
• Apply time-based modeling software to generate design iterations

Student Performance Criteria:
A.3  Visual Communication Skills

Secondary SPC
A.1, A.2, A.5, A.6, A.7

Topical Outline:
This is the second component in the digital media introductory course sequence within the School of Architecture. The course content and projects build upon the lessons of last semester and are principally focused on the various forms of translation between 2D and 3D, as well as virtual and physical models. IDM2 addresses topics such as digital drafting, construction drawings, advanced 3D modeling and an introduction to digital fabrication.

Prerequisites:
48-120

Books/ Learning Resources:
Course reader, Course website can be found at:
http://www.andrew.cmu.edu/course/48-125/IDM2/IDM2HOME.html

Offered:
Spring; Annually

Faculty Assigned:
Ficca (F/T)
Course Description

48-130 Architectural Drawing I: A Tactile Foundation  9 Units
A studio drawing course introducing general life-drawing and architectural drawing conventions. All drawings are free hand and build on the work of Kimon Nicholaides, The Natural Way to Draw.

Goals & Objectives:
• To introduce basic conventions of architectural representation: orthographic, axonometric and perspective projection.
• To understand the relationship of each to what is represented.
• To understand ways in which line and tone can be used to represent properties of space: shape, surface, depth and volume.
• To develop skillful and expressive graphic capabilities.

Student Performance Criteria:
A.3    Visual Communication Skills

Secondary SPC
A.2, A.8

Topical Outline:
• Visual contour 30%: Deriving perspective from the contours in the visual field. Using contour in perspective, axonometric and orthographic drawing. Varying line-weight to understand and convey spatial properties such as depth and overlap. Media: pen, soft pencil, conté crayon.
• Volume 30%: Using line and tone to represent volumetric properties such as surface, shape and overlap. Media: charcoal, prisma color, conté crayon.
• Mass 30%: Using tone to represent surface and figural space—a more sculptural interpretation of volume is introduced. Media: charcoal, conté crayon, ball point pen.
• Use of drawing in design practice 10%. Constructing a free-hand perspective section of the final project submission in 48-100 Introduction to Architecture. Assignment is a joint submission.

Prerequisites:
None

Books/ Learning Resources:
Drawing and Perceiving, Doug Cooper, John Wylie and Sons
Book contains CD with numerous demonstrations of techniques used in the course.

Offered:
Fall; Annually

Faculty Assigned:
Cooper (F/T)
Course Description

48-135 Architectural Drawing II: Appearance  9 Units
A studio drawing course building understanding of the underlying order of appearance—why objects and spaces appear as they do—and skill in the use of drawing to represent spatial properties. Course uses both constructed and free-hand drawing and builds principally upon J.J. Gibson's early work in discussing the psychology of perception.

Goals & Objectives:
- To gain ability in 3D visualization: how 2D representations relate to 3D conditions.
- To understand and represent how material textures—surfaces and their contours—contribute to spatial perception.
- To understand and represent properties of light, dark and color.
- To be able to distinguish between actual properties and their appearances: e.g. the actual color of a material and its appearance under different lighting conditions.

Student Performance Criteria:
A.3 Visual Communication Skills

Secondary SPC
A.2, A.8

Topical Outline:
- Perspective 30%: Constructing perspectives from plans and elevations. Constructing free-hand perspectives from observation and as part of design process. Media: soft pencil.
- Shade, shadow and Light 30%: Constructing shadows in isometric, orthographic and perspective projection. Ciaroscuro Drawing: observing and representing the play of light on surfaces: how shade and shadow imply volume. Media: charcoal, water color, brush and ink, prisma color.
- Color 30%: Observing and representing light and material in color. Media: pastel.
- Use of drawing in design practice 10%. Joint projects conducted jointly with 48-105 Introduction to Architecture.

Prerequisites:
48-130

Books/Learning Resources:
Drawing and Perceiving, Doug Cooper, John Wylie and Sons
Book contains CD with numerous demonstrations of techniques used in the course.
Sequential Powerpoint demonstrations of drawing process are posted on Blackboard.

Offered:
Fall; Annually

Faculty Assigned:
Cooper (F/T)
Course Description

48-200 Architecture Design Studio: Composition  18 Units
This studio is the third semester of a foundation sequence in architectural design. It introduces the role that program, context, and the physical "elements of architecture" play in creating meaningful architectural experiences.

Goals & Objectives:
• To continue to develop in each student a rigorous design process that remains flexible and able to adapt to changing project directives and goals.
• To understand constraints as positive forces that help shape the design process.
• To explore composition as a basic tool that bridges across the arts and defines arrangement in all aspects of the design process from first ideas to final details.
• To harness the embodied knowledge of students and focus on the role of making, construction and
• To use structure, program and environmental context as a way to organize space, elements, ideas and experiences.
• To introduce elementary issues of sustainability, accessibility and life safety as concepts integral to the design process, even on conceptual buildings.
• To explore and inspire the most effective means of communication of ideas and compositions through multiple media at a variety of scales for each particular situation.

Student Performance Criteria:
A.2 Design Thinking Skills
A.6 Fundamental Design Skills
A.8 Ordering Systems Skills

Secondary SPC
A.7, B.1, B.2, C.1, C.2, C.9

Topical Outline:
The studio normally consists of two major design projects that are the same for all students, and are carefully choreographed by the faculty team: a small, personal space in a more natural setting, and a larger, cultural program in a more urban context. Most semesters begin with a short Charette that focuses on small installations on or near campus, and one project is always a group project. In every project we focus on developing challenging architectural ideas, well-structured spatial sequences, and effective ways of communicating them in order to explore architecture's potential for creating poetic expressions, appropriate shelter, or exalted experiences, as well as its ability to embody ideas and impart meaning to the world around us.

Prerequisites:
48-100, 48-105

Books/ Learning Resources:
No central textbook, but many required readings. Required purchases include Ching's Building Construction Illustrated. A complete list of resources, readings, samples of work, see course website at http://www.andrew.cmu.edu/course/48-200/

Offered:
Fall; Annually

Faculty Assigned:
Gutschow (F/T)  Lubetz (Adj)
Arscott (Adj)
Lucchino (Adj)
King (Adj)
Suhrbier (Adj)
Brooks (Adj)
Course Description

48-205 Architecture Design Studio: Materials  18 Units
This foundational design studio focuses on the material and tectonic component of architecture. Hands on engagement of material processing provides a context through which students explore the integration and utilization of materials at various scales.

Goals & Objectives:
- Impart students with a working methodology engaged in the material reality of architecture
- Promote material manipulation over material selection
- Explore the spatial, technical and social component of material use
- Promote a holistic understanding of the design process in which multiple factors are simultaneously in play and interdependent
- Allow conception (what) and implementation (how) to inform each other
- Explore the affect of design instruments upon the design process
- Explore the historical affects of technological and material advances upon architecture

Student Performance Criteria:
A.6   Fundamental Design Skills
B.12   Building Materials and Assemblies

Secondary SPC
A.1, A.2, A.3, A.4, A.5, A., B.1, B.4, B.10, C.1

Topical Outline:
Building on the fall studio, the spring semester is concerned with more in-depth understanding and development of designs for small-scale buildings, now informed by greater knowledge related to materials, fabrication, and the act of construction. Following the New Materiality evident in architecture today, and acknowledging the importance of materials and assembly techniques for sustainable design, we seek to explore the aesthetic and experiential meaning of materials (WHY?), and the technical knowledge related to the use of materials and the processes of construction (HOW?). The creative opportunities and design implications of using varied materials, structural systems, fabrication and assembly techniques--both analogue and digital--are elaborated, especially as they determine the artistic, conceptual, poetic, creative, spatial and experiential aspects of architecture.

Prerequisites:
48-200

Books/ Learning Resources:
Course reader

Offered:
Spring; Annually

Faculty Assigned:
Ficca (F/T)      Bucco (Adj)
Gwin (Adj)       King (Adj)
Lucchino (Adj)   McNutt (Adj)
Price (Adj)
Course Description

48-210 Statics  9 Units
Equilibrium of force vectors is applied to bodies corresponding to building structures. Internal forces are analyzed and form the basis for structural design.

Goals & Objectives:
Ability to work with:
  • Vector mechanics, 25%
  • Force vectors and moment vectors
  • Equilibrium of rigid bodies
  • Loads and reactions on structures
  • Sections and internal forces
  • Analysis of trusses
  • Analysis of beams
  • Stress, strain and elasticity
  • Bending stress
  • Beam design

Student Performance Criteria:
B.9  Structural Systems

Secondary SPC

Topical Outline:
Vector mechanics, 25%; loads and reactions, 20%; truss analysis, 15%; beam analysis, 15%; stresses in solids, 10%; member design, 15%.

Prerequisites:
48-116

Books/ Learning Resources:

Offered:
Fall; Annually

Faculty Assigned:
Oppenheim (F/T)
48-215 Materials and Assembly  9 Units
This course is an introduction building materials and their associated logics of assembly with emphasis on wood, steel, concrete, masonry structural and envelope systems.

Goals & Objectives:
• To cultivate the practical application of a material ethic and the ability to exercise creative thought.
• To develop a more graceful and precise mode of thinking that leads to a powerful aesthetic, an aesthetic derived from performance.
• To understand the parameters involved in material selection for framing and envelope systems.
• To develop an understanding of construction process through full-scale prototypes.
• Ability to work in groups and resolve conflict.

Student Performance Criteria:
A.4  Technical Documentation
B.12  Building Materials and Assemblies

Secondary SPC
A.2, B.10

Topical Outline:
A4- 25% concise drawing sets are prepared
B10- 15% principles of rain-screen cladding systems are studied through successful and forensic case studies
B12- 40% building materials and methods of assembly (wood, steel, concrete and masonry) are studied through successful and forensic case studies. Appropriate material selection is covered from Living Building Challenge standards.
A2- 20% iterative modeling and evaluation techniques

Prerequisites:
None

Books/ Learning Resources:
Fundamentals of Building Construction: Materials and Methods, Edward Allen, Wiley

Offered:
Spring; Annually

Faculty Assigned:
Clifford (F/T)
Course Description

48-217 Structures  9 Units
Complete (3-D) structural systems are synthesized for orthogonal buildings. Geometric structures, such as cables, membranes and shells, are studied from principles of statics.

Goals & Objectives:
Ability to analyze and synthesize:
• Hierarchical one-way systems and load paths for gravity load;
• Lateral load systems (shear wall, braced frame, moment frame)
• Seismic design requirements
• Long-span systems
• Cables, cable trusses and cable nets
• The membrane equation, prestressed surfaces and air-supported structures
• Arches and shells

Student Performance Criteria:
B.9  Structural Systems

Secondary SPC

Topical Outline:
Gravity load systems, 20%; lateral load systems, 20%; seismic design 10%; long-span systems, 10%; tension structures, 25%; arches and shells, 15%.

Prerequisites:
48-210

Books/ Learning Resources:
Handouts; recommended readings from Schueller, The Design of Building Structures, Prentice Hall, 1996, and from Schierle, Structure and Design, University Readers, 2008; development of an e-sketchbook on topics chosen by the student.

Offered:
Spring; Annually

Faculty Assigned:
Oppenheim (F/T)
Course Description

48-240 Historical Survey of World Architecture & Urbanism  9 Units
A one-semester introduction to the historical traditions of architecture around the world, cutting a wide chronological and geographical swath through history.

Goals & Objectives:
As a result of this course, students should be able to:
• use the correct terms to describe architectural and urban design concepts and elements
• identify building styles, building types and urban plans from a broad geographic and chronological spectrum
• discuss the cultural, intellectual and aesthetic contexts surrounding the creation of those buildings and sites
• compare and contrast the formal and cultural differences among two or more examples
apply their knowledge of documented examples in order to make educated deductions about “unidentified” examples
• write clearly and persuasively about the historic built environment via short answers or longer essays
• retain the content and skills from this course as a base that permits more intensive study in upper level courses
• develop the habit of using sketching and words to build a notebook of architectural examples and

Student Performance Criteria:
A.1  Communication Skills
A.9  Historical Traditions and Global Culture
A.10  Cultural Diversity

Secondary SPC

Topical Outline:
• 1/3 Ancient and early architecture; emphasis on world religions and foundation of architectural typologies
• 1/3 Medieval period through Neoclassicism; emphasis on architects, styles,
• 1/3 19th & 20th centuries; emphasis on approaches to modernism, inc. materials, theories, types

Prerequisites:
None

Books/ Learning Resources:

Offered:
Fall; Annually

Faculty Assigned:
Shaw (F/T)
Course Description

**48-300 Architecture Design Studio: Site** 18 Units
This studio explores the dynamic relationship between site systems and human systems and structures.

**Goals & Objectives:**
Each student will demonstrate an understanding that landscape is a series of related systems, including:
- Spatial Systems: Spatial, formal and experiential landscape elements are the core to design and require theoretical frameworks and technical capacity to skillfully manipulate them
- Living Systems: Ecological systems are the foundation of every landscape, thus we must understand our relationship with the landscape through concepts such as sustainability and regenerative design
- Cultural Systems: Place is the result of intricately connected cultural and landscape systems, thus we recognize that design is not a singular process but is value laden and must be critically examined
- Time and Change: Our landscape is always changing, hence we must become aware of the fluid cycles of change and design within a dynamic framework

**Student Performance Criteria:**
B.4 Site Design

**Secondary SPC**

**Topical Outline:**
- RECORDING: (2/15 weeks 13% of the course)
- MEASURING: (5/15 weeks 3% of the course)
- MAKING: (5/15 weeks 10% of the course)
- FIELD VISIT: (5/5 weeks 3% of the course)
- FINAL STUDIO PROJECT: (9/15 weeks 60% of the course)

**Prerequisites:**
48-205

**Books/ Learning Resources:**
John Ormsbee Simonds, Landscape Architecture, Fourth Edition
S. Strom and K. Nathan, Site Engineering for Landscape Architects
J.W. Thompson and K. Sorvig, Sustainable Landscape Construction
May Theilgaard Watts, Tree Finder

**Offered:**
Fall; Annually

**Faculty Assigned:**
Mondor (Adj)  Brill (Adj)
Plecity (Adj)  Liadis (Adj)
Gallagher (Adj)  Clifford (F/T)
Tajima (Adj)
Course Description

48-305 Architecture Design Studio: Advanced Construction  18 Units
This studio challenges students to demonstrate the cumulative abilities that they have developed in their five previous semesters of architectural in a comprehensive fashion.

Goals & Objectives:
The basis for the CMU studio course sequence is the expectation that the student retains and applies knowledge gained each semester to current assignments in the studio. The spring semester of the third year of architectural studies at Carnegie Mellon University is concerned with the detailed development and refinement of an architectural design as informed by aesthetics and the technical knowledge of multiple systems - structural, material, environmental, enclosure and life safety - and the process of construction. The student is expected to articulate concepts and develop designs with more precision and in greater detail than done in previous studios. The final product is intended to fulfill the requirements of the comprehensive studio as defined by NAAB.

Student Performance Criteria:
A.4 Technical Documentation
B.5 Life Safety
B.6 Comprehensive Design

Secondary SPC

Topical Outline:
- Lecture Series (10%)
- Site Investigation (10%)
- Conceptual Design (10%)
- Design Development (30%)
- Design Documentation (40%)

Prerequisites:
48.300

Books/ Learning Resources:
Sennett, Richard; The Craftsman; Yale University Press; 2009 ISBN: 978-0-300-15119-0.

Offered:
Spring; Annually

Faculty Assigned:
Lee (F/T) Calisti (Adj)
Croce (Adj)
Davis (Adj)
Fineout (Adj)
Zieske (Adj)
Gwin (Adj)
Sullivan (Adj)
Course Description

48-312 Site Engineering and Foundations  6 Units
Site Engineering and Foundations covers materials related to the issues of surface and its manipulation (grading, road alignment and stormwater), soils (fundamentals of soil mechanics) and structures (fundamentals of foundation design).

Goals & Objectives:
• Students will be able to demonstrate an understanding of site engineering issues that support the design process
• Students should be able to identify major elements of site design including landform and grading, water management, planting and living systems, and movement systems, and their role and influence in design through precedent study and field observation
• Students will develop skills in these areas which will enable them to estimate the behavior of materials and components
• Students will be able to apply these skills to make judgments and recommendations in their own design and that of their peers
• Students will have an understanding of the role of complimentary professions and be familiar with the means and methods that related professionals may use as a member of their project team

Student Performance Criteria:
B.4 Site Design

Secondary SPC

Topical Outline:
• LANDFORM: (2/10 weeks 20% of course)
• WATER: (2/10 weeks 20% of course)
• PLANTS: (2/10 weeks 20% of course)
• MOVEMENT: (2/10 weeks 20% of course)
• FOUNDATIONS: (2/10 weeks 20% of course)

Prerequisites:
48-217

Books/Learning Resources:
S. Strom and K. Nathan, Site Engineering for Landscape Architects
Thompson, J.W. and Sorvig, K, Sustainable Landscape Construction

Offered:
Fall; Annually

Faculty Assigned:
Mondor (Adj)
Course Description

**48-315 Environment I: Climate and Energy** 9 Units
This required course introduces climate responsive design, energy conservation, passive heating and cooling, sustainability goals and metrics, ensuring qualitative and quantitative abilities for environmentally responsive design.

**Goals & Objectives:**
- Understanding climate and human comfort as a generator of architectural design and detailing.
- Understanding the importance of effective siting, massing, organization of spaces, enclosure and system design for managing heat loss and heat gain.
- Understanding the importance of effective siting, massing, organization of spaces, enclosure and system design for optimizing passive heating and cooling energies.
- Exploring the integration of innovative energy conserving, passive and active systems in professional practice today.
- Investigating an existing building's energy use and potential, with technical documentation, energy calculations, retrofit specification and recommendations and simple payback calculations.

**Student Performance Criteria:**
B.8 Environmental Systems

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Secondary SPC

**Topical Outline:**
- Climate Responsive Design of Site and Buildings (20%)
- Energy Conservation Design, Calculations and Detailing (30%)
- Passive Heating and Cooling Design, Calculations and Detailing (30%)
- Sustainability Goals and Standards (10%)
- Hybrid Environmental Systems (10%)
- Professional Consultants Analysis, Recommendations and Simple Payback for SFD

**Prerequisites:**
33-106, 48-116

**Books/ Learning Resources:**
Mechanical and Electrical Systems in Buildings
Sun, Wind and Light

**Offered:**
Fall; Annually

**Faculty Assigned:**
Loftness (F/T)
**Course Description**

**48-327 Modeling Moderns**  9 Units

The purpose of this course is to compare methodological and ideological differences between contemporary architectural computer modeling with mid C20th orthographic drawing.

**Goals & Objectives:**
- Over the semester the class of eighteen students will work both in groups and individually to each write an essay, make a class presentation, analyze the construction detailing of one house using the archive drawings and specification, learn to build a computer model in Revit and work collaboratively to build a physical model of the whole or an aspect of the house.

**Student Performance Criteria:**
A.4 Technical Documentation

**Secondary SPC**
A.1, A.2, A.7, A.9 A.9

**Topical Outline:**
- Study of historical context 10%
- House observation 10%
- Theoretical context 10%
- Design Process + construction 20%
- BIM model construction 40%
- Physical model making 10%

**Prerequisites:**
None

**Books/ Learning Resources:**
- Scan copies of archive drawings of buildings studied. (eg Frank House 1939, Walter Gropius from Harvard Gallery archive)
- Visit to the building studied.
- Instruction in class from Autodesk in best practice with Revit, (visit coordinated with UDBS course).
- Workshop and DFab lab for model making.

**Offered:**
Spring; Annually

**Faculty Assigned:**
Arscott (Adj)
Course Description

48-328 Detailing Architecture  9 Units
This course examines the role of the architectural detail in the formation/thematic development of a work of architecture and how the detail reinforces the theoretical position of the architect.

Goals & Objectives:
• The emphasis of the course is on the making of architecture through an understanding of the detail as a complete assembly and how it may help to inform the whole.
• Each architectural example is understood through the relation among its materials and their assembly.
• Comparisons are developed between important examples through an analysis of the relationship of the materials and related details.
• Each student will create a minimum of two highly refined analytical drawings demonstrating how the detail reinforces the thematic intent of the architect in his or her own time and culture.

Student Performance Criteria:
A.2  Design Thinking Skills
A.3  Visual Communication Skills
A.4  Technical Documentation
A.7  Use of Precedents

Secondary SPC

Topical Outline:
• Design Thinking Skills 10%
• Visual Communication Skills 30%
• Technical Documentation 30%
• Use of Precedents 20%
• Use of Precedents 10%

Prerequisites:
None

Books/ Learning Resources:
Extensive list includes but is not limited to:
Semper, Gottfried, Style in the technical and tectonic arts, or, Practical aesthetics
Hobhouse, Christopher, 1851 and the Crystal Palace; being an account of the Great Exhibition and its contents
Wright, Frank Lloyd, Frank Lloyd Wright and Viollet-le-Duc: organic architecture and design from 1850 to

Offered:
Spring; Annually

Faculty Assigned:
Damiani (Adj)
Course Description

48-329 FilmSpace 9 Units
This architecture elective examines the way architectural spaces have historically been represented in commercial and experimental films.

Goals & Objectives:
• Learn the methods and processes of filmmaking, with particular attention to camera types and editing techniques.
• Apply established architectural representation techniques to time-based media
• Develop experimental processes for describing temporal conditions in architecture

Student Performance Criteria:
A.1 Communication Skills
A.2 Design Thinking Skills
A.3 Visual Communication Skills
A.5 Investigative Skills
A.7 Use of Precedents
C.1 Collaboration

Secondary SPC

Topical Outline:
• Precedent study/Film Screenings (30%)
• Discussion/Readings (20%)
• Film-based project assignments (30%)
• Collaborative projects (20%)

Prerequisites:
None

Books/ Learning Resources:
Hunt Library Film/Media Center

Offered:
Spring; Annually

Faculty Assigned:
Garcia (F/T)
Course Description

48-332 Architecture Explorations: Teaching and Learning  6 Units
In this course, students will learn about effective strategies for teaching architecture and the built environment. Topics include the cognitive differences between novices and experts, instructional techniques and goal alignment. As part of the coursework, each student will implement these teaching strategies to design and teach a lesson. Elements of developmental psychology, learning theories and classroom practices will inform the architectural education lesson.

Goals & Objectives:
Students will be able to:
• use critical inquiry, debate and reflection to discuss course themes by raising questions, identifying relationships across content and synthesizing new information with prior knowledge
• deconstruct a learning goal into smaller knowledge components
• deconstruct an activity/project into smaller components for teaching
• align educational goals with assessment and instruction
• apply knowledge from course themes to inform WHAT should be taught to children of specific ages
• apply knowledge from course themes to inform HOW children of specific ages should be taught
• adapt lessons to make them more or less challenging as needed by individual students
• identify challenges of teaching children in groups and methods of dealing with these challenges
• evaluate instruction based on a synthesis of knowledge gained from course
• use instructional techniques to teach a lesson

Student Performance Criteria:
A.1 Communication Skills
A.2 Design Thinking Skills

Secondary SPC

Topical Outline:

Prerequisites:
None

Books/ Learning Resources:

Offered:
Spring; Annually

Faculty Assigned:
Lyons (F/T)
Course Description

48-338 European Cities in the XIX Century 9 Units
The course presents the historical context and impact of the XIX century transformations on the structures, culture and image of European cities.

Goals & Objectives:
The students at the end of the course should be able to:
• identify XIX century transformations in European cities
• interpret these aspects in the historical context
• explore, organize and compare documentation from different media
• independently research missing information
• identify points of view, position of different actors/writers and discuss them critically
• synthesize, explain and present the results of personal elaboration

Student Performance Criteria:
A.1 Communication Skills
A.5 Investigative Skills
A.9 Historical Traditions and Global Culture

Secondary SPC

Topical Outline:
• The course is structured in lectures - in class presentations of case-study cities (60%) and discussions regarding readings and students work (40%). Cities presented in class usually include Paris, Vienna, Budapest, Barcelona, London, Berlin, Munich, Athens, Rome and Istanbul/Constantinople.

Prerequisites:
48-240

Books/ Learning Resources:

Offered:
Fall; Annually

Faculty Assigned:
Torello (Adj)
Course Description

48-340 Modern Architecture & Theory  9 Units

An architectural history lecture course that surveys the modern buildings and intellectual history of the age, focusing primarily on Europe but extending also to non-western countries.

Goals & Objectives:

• To introduce the most important movements, ideas, design principles, and texts from 1900-1945, the revolutionary period that gave rise to what we now so easily call "modern architecture."
• To uncover the diversity of ideas and design occurring at any given time and within each movement.
• To differentiate 20th-century "modern" architecture from the "modern" of previous eras.
• To form one's own critical judgments about the legacies of the past century that still surround us, so that these discourses can be continued into the present.
• To learn to read texts critically, to discuss and debate the core issues methodically.
• To write a "college level" term paper with interpretation of existing scholarship and a unique argument that helps us reinterpret the period.

Student Performance Criteria:

A.1  Communication Skills
A.5  Investigative Skills
A.9  Historical Traditions and Global Culture

Secondary SPC

Topical Outline:

• The course includes lectures, readings, and discussions about a broad range of issues and how they affected the conception, design, building, and reception of modern architecture, including 1) Formal tendencies; 2) Theoretical issues; 3) the National traditions; 4) Biographical Sketches; 5) Technologies and materials; 6) Political motivations; and 7) Social & cultural influences. Emphasis is be placed on the relationship of buildings to the more general cultural, intellectual and historical circumstances in which they were created. Special attention is devoted throughout the course to the important manifestoes, theoretical, and critical writings that so determined the project of modern architecture.
• Work for the course falls into four categories: 1) attendance, discussions & participation (30%); 2) readings of primary and secondary sources, with several extra credit "reading reports" to help students engage in the reading more critically; 3) two short mid-term exams, with slide ID to test your knowledge and retention of course materials (30%); and 4) a focused, well-developed 10-15pp. research paper comparing two buildings (40%).

Prerequisites:
48-240

Books/ Learning Resources:
Wm. Curtis, Modern Architecture Since 1900 3rd ed; U. Conrads, ed., Programs & Manifestoes in Modern Architecture; Le Corbusier, Towards a New Architecture; and many articles on reserve. For complete list of resources, readings, samples of work, see course website at http://www.andrew.cmu.edu/course/48-340/

Offered:
Fall; Annually

Faculty Assigned:
Gutschow (F/T)
Course Description

48-341 History of Architectural Theory  9 Units
An intensive architectural history seminar that surveys in roughly chronological order some of the major theories and theoreticians of architecture, from Vitruvius to Postmodernism.

Goals & Objectives:
• To develop an understanding of what “theory” is, how definitions and the format of theory has changed over time, and its ever-changing relationship to design and construction
• To familiarize students with some of the most important theoretical tracts of architectural history up to the present, and how they build on the past, and continue to be discussed
• To understand the relationship of modern theory to older theoretical ideas
• To develop skills of critical thinking, quality research, information management, and clear communication through readings, class presentations, discussions, and a research project.

Student Performance Criteria:
A.1  Communication Skills
A.5  Investigative Skills
A.9  Historical Traditions and Global Culture

Secondary SPC

Topical Outline:
• The seminar is based around extensive, in-depth discussions about the readings, on the following weekly topics: 1) Introduction: What is Theory?; 2) Vitruvius & Ancient Orders; 3) Gothic & Renaissance Ideals of Classicism; 4) Baroque & Modern Expressions; 5) Enlightenment Neoclassicism & the Greek Ideal; 6) Character & Revolutionary Architects; 7) Picturesque Theory & Sublime; 8) Type; 9) Social Critique & Morality: Pugin, Ruskin, Morris; 10) Structural Rationalism: Viollet, Durand, Ecole; 11) German Tectonics: Schinkel, Semper, Boetticher; 12) Space, Empathy & Psychology: Schmarsow, Lipps; 13) Heroic Modernism of the 1920s; 14) Postwar Modern; 15) Postmodernism & Critique of Modernism
• Work for the weekly seminar will involve extensive readings, active class discussions, and a term paper on pre-20th-century architectural theory and how it relates to contemporary ideas.

Prerequisites:
48-240

Books/ Learning Resources:
The reading will consist primarily of excerpts of original (translated) texts to be found on reserve in Hunt Library and on Blackboard, as well as from H.F Mallgrave, Architectural Theory Vol.1, from Vitruvius to 1878 (2005) and H.F. Mallgrave, Architectural Theory Vol.II, from 1871-2005 (2009). For complete list of resources, readings, samples of work, see course website at http://www.andrew.cmu.edu/course/48-341/

Offered:
Spring; Annually

Faculty Assigned:
Gutschow (F/T)
Course Description

48-348 Architectural History of Mexico & Guatemala  9 Units

Surveys the architecture and urbanism of Mexico and Guatemala from prehistory to modern times, focusing on three critical periods: Mesoamerican, Spanish Colonial, 20th-Century Modernism.

Goals & Objectives:

Architectural history courses emphasize a mastery of both the historic subject matter and the architectural history methods of critical thinking, research, reading and writing. By the end of the course, students should be able to:

• use specific examples and case studies in order to explain the historical development of Pre-Columbian, Spanish Colonial, and 20th-Century Modern architecture in Mexico and Guatemala, including the identification and analysis of building types, uses, styles, iconography, and imagery
• explain the ways in which architecture and urban planning are products of religious, social, cultural, political practices and agendas
• identify and explain the origins, causes, and effects of architectural fusion and synthesis during the major eras of change
• communicate critical understanding through analytical writing
• complete an independent research paper on that demonstrates the ability to conceive of a topic, frame a thesis statement that guides the inquiry, conduct in-depth research from a variety of scholarly sources, and write clearly and persuasively.

Student Performance Criteria:
A.1  Communication Skills
A.5  Investigative Skills
A.9  Historical Traditions and Global Culture

Secondary SPC

Topical Outline:

• 1/3 Mesoamerica (Olmec, Teotihucano, Maya, Aztec)
• 1/3 Spanish Colonial (architecture, urbanism, high style, vernacular)
• 1/3 Modern (muralism, nationalism, functionalism, plastic integration, emotionalism, localism)

Prerequisites:
48-240

Books/ Learning Resources:


Offered:

Spring; Annually

Faculty Assigned:

Shaw (F/T)
Course Description

48-350 Postwar Modern Architecture & Theory  9 Units
An architectural history lecture course surveys the modern buildings, movements and architectural theory of the post-World War II period.

Goals & Objectives:
• To introduce the most important movements, ideas, design principles, and texts from the so-called “Postwar” period, 1945-1975, and to discern the special nature of this time period & architecture.
• To understand how modernism in architecture changed fundamentally from the prewar heroic period to the “anxious modernism” of the Cold War era.
• To uncover the diversity of ideas and design occurring at any given time and within each movement.
• To form one's own critical judgments about the legacies of the past century that still surround us, and thereby acquire the knowledge of our profession’s past, which is vital to understanding and working today.
• To learn to read texts critically, to discuss and debate the core issues methodically, and to write about them in a professional and analytical manner.
• To improve college-level research and critical thinking skills, particularly with respect to historical information and questions.

Student Performance Criteria:
A.1 Communication Skills
A.5 Investigative Skills
A.9 Historical Traditions and Global Culture

Secondary SPC

Topical Outline:
• The course begins with the cataclysm of WWII and the fundamental shifts it caused on the conception of modernism, technology, cities and geo-politics. It proceeds to investigate themes such as rebuilding and reconstruction after the “zero-hour,” grand modern masters such as Mies, Kahn and Corbu, the fascination with technology, megastructures, and utopian thought, the need for monumentality, meaning, and regional identity, and the dissemination of modernism from corporate America to the third world. It ends with the rupture in modernism associated with the social revolutions and the rise of a post-modern architecture in the late 1960s and early 1970s. A constant thread throughout is Pittsburgh’s rich heritage of postwar architecture.
• Work for the course falls into four categories: 1) attendance, participation, discussions, and brief student presentations; 2) readings of primary and secondary sources; 3) a take-home midterm exam; 4) a multi-part research project focusing on Pittsburgh’s "Postwar Modern" architecture. It will include archival research, building documentation, and writing a college-level research paper to contextualize the Pittsburgh scene within international developments, etc.

Prerequisites:
48-240

Books/ Learning Resources:

Offered:
Spring; Annually

Faculty Assigned:
Gutschow (F/T)
48-351 Human Factors in Architecture  9 Units
Human Factors in Architecture explores how human factors influence the design, construction and occupancy of the spaces we create.

Goals & Objectives:
• Students will be able to identify and analyze the various scales of human engagement, including physiological functioning, sensory experience and perception, cognition, behavioral theory, and social and community development
• Students will be able to evaluate how the design of form and space result from both positive and normative theory about human engagement. Students will interpret a range of methods for knowledge creation, from Jon Lang’s positive theory and evidence based design, to Lang’s normative or value-driven positions
• Students will be able to recognize and explain issues of environment and human factors as they relate to other fields including design, human-computer interaction, psychology, and anthropology
• Students will be able to classify, propose and evaluate methods of engagement for users or designed environments, including he pre-design observation and data gathering, development of the design process and post occupancy evaluation.

Student Performance Criteria:
A.10 Cultural Diversity
A.11 Applied Research
B.2 Accessibility
C.2 Human Behavior
C.6 Leadership

Secondary SPC

Topical Outline:
• Body & Senses: (2/10 weeks 20% of course)
• Perception & Cognition: (2/10 weeks, 20% of course)
• Behavior & Environment: (2/10 weeks 20% of course)
• Design[ing] Research: (2/10 weeks 20% of course)
• Social & Community: Students will investigate the question of “How does our environment relate to the social bonds we create?” Students will also study group behavior and environment, community definition and formation, fundamentals of proxemic theory such as privacy, territoriality, defensible space, propinquity, case studies of housing, urban environments, work spaces and other environments where social bonds are critical, co-development of virtual environments, “hardware v. software” – social norming, events and physical environments, and fun theory, flash mobs, etc.

Prerequisites:
48-205

Books/ Learning Resources:
Neumann, Eckhard. Bauhaus and Bauhaus People; Appleyard, Donald. Why Buildings Are Known.

Offered:
Spring; Annually

Faculty Assigned:
Mondor (Adj)
48-355 Perspective  9 Units

A studio drawing course building knowledge and skill in free-hand perspective drawing against a background of three theories of perception: Transactionalist, Ecological and Gestalt.

Goals & Objectives:
• To gain skill and speed in using perspective to visualize architectural space. Spatial armatures are used throughout the course to generate the appearance of objects and spatial conditions.
• To be able to draw expressively.
• To be able to draw analytically.
• To understand multiple theories of spatial perceptual theory.

Student Performance Criteria:
A.3 Visual Communication Skills

Secondary SPC
A.2, A.8

Topical Outline:
• Perspective Drawing as a Way of Experiencing Space 30%: Built around Transactionalist theory, media and direction of view, and the interaction of the viewer with the visual world are emphasized.
• The order of Appearance 30%: Built around the work of J.J. Gibson, perspective is considered as a fact of the visual field.
• Perspective as an Artificial Construct 30%: Built loosely upon Gestalt psychology, perspective is considered as imposed order.
• Generating Worlds 10%. A final project in which perspective is used to generate a landscape of non-rectangular forms.

Prerequisites:
48-130, 48-135

Books/ Learning Resources:
Drawing and Perceiving, Doug Cooper, John Wylie and Sons
Book contains CD with numerous demonstrations of techniques used in the course.

Offered:
Fall; Annually

Faculty Assigned:
Cooper (F/T)
Course Description

48-356 Color Drawing 9 Units
A studio course building knowledge and skill in using three media, pastel, colored pencil and water color, in representing appearance.

Goals & Objectives:
- To gain understanding of the usefulness of limited color palettes in imparting structure and order to what is seen and what is represented.
- To gain skill in using limited palettes to order relationships of hue, value and temperature.
- To deepen ability to distinguish between actual properties and their appearances: e.g. the actual color of a given material and its appearance under different lighting conditions.

Student Performance Criteria:
A.3 Visual Communication Skills

Secondary SPC
A.2, A.8

Topical Outline:
- Pastel and colored pencil 40%: Pastel is used against gray backgrounds, colored pencil sticks against white.
- Water color 40%: a moderate dry-brush technique is used.
- Neighborhood study 20%. A final project, principally in water color, considering the color and material properties of a neighborhood.

Prerequisites:
48-130, 48-135

Books/ Learning Resources:
No text is used. The instructor posts numerous step by step examples of color drawings on the course Blackboard.

Offered:
Spring; Annually

Faculty Assigned:
Cooper (F/T)
Course Description

48-368 Rediscovery of Antiquity  9 Units  
The course focuses on the rediscovery of classical antiquity and the reception of classical culture in the modern era (late XVIII to early XX century)

Goals & Objectives:
The students at the end of the course should be able to:
• identify the events connected with the rediscovery of antiquity (political events, travel, publication of texts and drawings, archeological finds…)
• interpret the meaning of these events in their historical context
• compare the roles of the different actors (archaeologists, architects, intellectuals, artists, historians, politicians, promoters…)
• explore and compare documentation from different sources
• synthesize in personal research work, explain and discuss critically

Student Performance Criteria:
A.1 Communication Skills
A.5 Investigative Skills
A.9 Historical Traditions and Global Culture

Secondary SPC

Topical Outline:
• Mostly lecture based, the course includes a research paper on one of the casts of the Hall of Architecture at the Carnegie Museum of Art, in collaboration with the museum curators (45% of final grade). Topics of classes include: the culture of the antiquarians, the Grand Tour, Pompeii, Herculaneum, opening of Greece, Winckelmann, the classics in German culture, enterprises of discovery and excavation, the role of the architects, the foundation of archeology, the creation of national schools and competition; the displacement of the treasures of the classical world; the reception of classical culture in the United States.

Prerequisites:
48-240

Books/ Learning Resources:

Offered:
Fall; Annually

Faculty Assigned:
Torello (Adj)
Course Description

48-371 American House and Housing 9 Units
Examines the development of American house and housing, focusing on issues of urbanization, suburbanization, class, race and gender, as well as style and type.

Goals & Objectives:
Architectural history courses emphasize a mastery of both the historic subject matter and the architectural history methods of critical thinking, research, reading and writing. By the end of the course, students should be able to:
• critically evaluate the historical development of housing types, styles, interiors and settings, understanding not only what happened but also why it happened that way.
• integrate what they have learned in class and in readings with what they see and experience in the real world, including scheduled field trips
• communicate that critical understanding through a variety of analytical looking, researching and writing exercises
• complete an independent research paper on a historical housing subject that demonstrates the ability to conceive of a topic, frame a thesis statement that guides the inquiry, conduct in-depth research from a variety of scholarly sources, and write clearly and persuasively.

Student Performance Criteria:
A.1 Communication Skills
A.5 Investigative Skills
A.9 Historical Traditions and Global Culture

Secondary SPC

Topical Outline:
• The course is arranged roughly chronologically, beginning circa 1850 with changing attitudes towards the role of nature, the rise of urban parks, the rural cemetery movement, early experiments in suburbs and then follows various threads including house types and styles, urban and suburban settings, issues of race and gender, and concludes with 1960s New Town movement and recent New Urbanism. Within the chronological framework the course can be divided into three main subject categories.
  1/3 single family dwelling (styles, interiors, settings, notions of domesticity, family life)
  1/3 urban housing (tenement, apartments, reform legislation, race)
  1/3 suburbs (urbanization and suburbanization, automobile, community planning)

Prerequisites:
48-240

Books/ Learning Resources:
Field Trips using Pittsburgh as a touchstone for national trends

Offered:
Fall; Annually

Faculty Assigned:
Shaw (F/T)
Course Description

48-377 Egypt from the ancient to the contemporary  9 Units
This two week study abroad course examines the 5,000-year legacy of architecture and urbanism in Egypt in situ through reading, observation, drawing and a design charette.

Goals & Objectives:
• Increase knowledge and appreciation of Egyptian architecture, urbanism and landscape;
• Develop ability to record observations in sketch form in the field;
• Engage with client and stakeholder groups in charette format

Student Performance Criteria:
A.1 Communication Skills
A.5 Investigative Skills
A.9 Historical Traditions and Global Culture

Secondary SPC

Topical Outline:
• Readings and discussions 20%
• Site sketches 30%
• Design Charette 50%

Prerequisites:
None

Books/ Learning Resources:
Anon. Description de L’Egypte, (Koln: Taschen) 2001

Offered:
Summer

Faculty Assigned:
el Samahy (F/T)
Course Description

48-387 The Tourist  9 Units
This course—part of a Summer Study Away program to Scandinavia—critically examines historical representation methods related to tourism and its application to contemporary architectural production.

Goals & Objectives:
• Understand the history of touristic representations (postcards, travel guides, etc.)
• Critically analyze the contemporary shifts in touristic representations in the digital age
• Produce conceptually-driven representations of the Scandinavian touristic experiences and relate it to potential architectural representation

Student Performance Criteria:
A.1 Communication Skills
A.2 Design Thinking Skills
A.3 Visual Communication Skills
C.1 Collaboration

Secondary SPC

Topical Outline:
• Reading/Discussion (20%)
• Case Study Projects (50%)
• Sketchbook Studies (30%)

Prerequisites:
None

Books/ Learning Resources:
None

Offered:
Summer

Faculty Assigned:
Garcia (F/T)
Course Description

48-388 Architectural Assembly  9 Units
This course—part of a Summer Study Away program to Scandinavia—examines methods of architectural construction found in Scandinavia from medieval to contemporary times.

Goals & Objectives:
• Understand cultural, environmental and historical forces behind architectural production methods in Scandinavia
• Critically analyze the detailing and construction methods while standing within a completed project

Student Performance Criteria:
A.1 Communication Skills
A.2 Design Thinking Skills
A.3 Visual Communication Skills
A.5 Investigative Skills
B.12 Building Materials and Assemblies
C.1 Collaboration

Secondary SPC

Topical Outline:
• Reading/Discussion (20%)
• Case Study Projects (50%)
• Sketchbook Studies (30%)

Prerequisites:
None

Books/ Learning Resources:
None

Offered:
Summer

Faculty Assigned:
Garcia (F/T)
Course Description

48-389 Scandinavian Architecture Theory  9 Units
This course—part of a Summer Study Away program to Scandinavia—uses site visits and first-hand experience to study historical and regional trends in Scandinavian architectural production.

Goals & Objectives:
• Understand the history of architecture in Scandinavia, focusing on specific time periods (medieval, 18th C., 19th C., Modern period, contemporary).
• Prepare and develop building case studies

Student Performance Criteria:
A.1 Communication Skills
A.3 Visual Communication Skills
C.1 Collaboration

Secondary SPC

Topical Outline:
• Reading/Discussion (20%)
• Case Study Projects (50%)
• Sketchbook Studies (30%)

Prerequisites:
None

Books/ Learning Resources:
None

Offered:
Summer

Faculty Assigned:
Garcia (F/T)
Course Description

**48-400 Architecture Design Studio: Occupancy**  18 Units

This studio examines the critical relationship between architecture and its occupants: their well-being, their activities and lifestyles, their perceptions, social relationships and cultural context.

**Goals & Objectives:**
- Programming: ability to assemble and use a basic program for an architecture project, including the assessment of client and user needs, inventory of space and equipment requirements, identification and analysis of relevant standards, including design assessment criteria
- Code Analysis and Compliance: ability to identify code requirements relevant to a project and to design both site and building to comply with codes and standards
- Visualization of people occupying the designed environment: use of techniques (narrative, annotation and digital collage) to represent future occupants’ behaviors to inform design
- Engagement: use of tools to improve design outcomes by involving people in the design process
- Understanding (Theoretical Framework)
- Concept of Occupancy in Architecture: basic ideas and principles and their implications for design
- Role of Knowledge in Design Process: re• conceiving design as a learning process
- Sources of Knowledge about Occupants: value of multiple types of knowledge, including theoretical, situational, experiential, and professional
- Awareness (Issues to be confronted)
- Human Diversity: diversity of needs, values, behavioral norms, and social and spatial patterns that characterize different individuals and cultures, and implications of this diversity for the architect’s societal roles and responsibilities

**Student Performance Criteria:**
B.1  Pre-Design
B.2  Accessibility
B.5  Life Safety
C.2  Human Behavior
C.3  Client Role in Architecture

**Secondary SPC**
A.2, A.6, A.10, A.11

**Topical Outline:**
- Programming and occupant research 25%
- Design conceptualization and development 60%
- Design critique 15%

**Prerequisites:**
48-305

**Books/ Learning Resources:**
No textbook. Readings, field trips, interviews, and guest critics.

**Offered:**
Fall; Annually

**Faculty Assigned:**
Danes (Adj)  Hayes (Adj)
Lucchino (Adj)  McNutt (Adj)
Morris (Adj)
48-405 Architecture Design Studio: Systems Integration 18 Units

This studio explores the integration of building systems for ensuring technical and environmental performance and as a generator of architectural place-making and detailing.

Goals & Objectives:
- Understanding the potential of building system integration as a generator of architectural place-making and detailing.
- Understanding the importance of effective integration of structure, enclosure, HVAC, interior, life safety, and site systems towards ensuring thermal, air, visual, acoustic and spatial quality, as well as energy, material and water resource management.
- Understanding the importance of collaborative design, engaging multiple disciplines and diverse client groups towards visioning integrated systems for advanced building performance.
- Exploring the integration of innovative energy conserving, passive and active systems for heat, cooling, light, air, energy and water generation and conservation.

Student Performance Criteria:
B.3 Sustainability
B.6 Comprehensive Design
B.10 Building Envelope Systems

Secondary SPC
B.3, B.5, C.1, A.11

Topical Outline:
Innovative Systems Lecture Series (10%)
Site/Precedent Investigation (10%)
Conceptual Design (10%)
Design Development with Integrated Systems (30%)
Design Documentation with Integrated Systems (40%)

Prerequisites:
48-400, 48-415

Books/ Learning Resources:
Graphic Standards: Student Edition
Green Building Studio Companion
Building Systems Integration Handbook

Offered:
Spring; Annually

Faculty Assigned:
Loftness (F/T)
Folan (F/T)
Loftness (F/T)
Hayes (Adj)
Moshier, C. (Adj)
Moshier, G. (Adj)
Wagstaff (Adj)
Course Description

48-408 Theater Design Seminar for Arch & Drama  6 Units
Technical and experiential research in theater design, including faculty and outside specialists lectures, space planning/programming, peer design review and performance venue tours/evaluations.

Goals & Objectives:
- Understanding of the historical development of the theater as a building type.
- Understanding the different forms and styles of performances and venues.
- Understanding of technical & spatial requirements of contemporary performance art forms and new developments in the field.
- Understanding of required specialty equipment, e.g. lighting, sound, scenery, etc.
- Ability to research and analysis techniques to discover occupant needs.
- Ability to evaluate program requirements in planning and design exercises.
- Ability to evaluate and integrate technical and site requirements.
- Ability to critically evaluate design solutions from conception through development.

Student Performance Criteria:
A.5  Investigative Skills
C.1  Collaboration
C.3  Client Role in Architecture

Secondary SPC
A.1, A.2, A.3, A.7, A.10, B.1, B.2, B.5, C.2

Topical Outline:
- Building Typology & History – 12.5%
- Theater Programming & Planning – 25%
- Theater Precedent & Student Design Review & Critique – 25%
- Theater Performance Attendance and Review – 25%
- Theater Set & Venue Installation Participation – 12.5%

Prerequisites:
48:400

Books/ Learning Resources:
- Theater Design And Modern Architecture, George C. Izenour
- Space For Dance; An Architectural Design Guide, Leslie Armstrong AIA & Roger Morgan
- The End of the Affair, Graham Greene (Script, 2011 class)
- When the Rain Stops Falling, (Script, 2010 class)

Offered:
Fall; Annually

Faculty Assigned:
Hayes (Adj)
Course Description

48-410 Environment II: Light  6 Units
This course introduces fundamental lighting principles in the context of performance-based architectural design and diagnostics. The course will cover relevant aspects of building physics that affect the physiological and psychological experience of buildings, performance metrics, design and benchmarking methods, and contemporary simulation tools.

Goals & Objectives:
• Review of physiological and psychological response to the visual environment, analytical and numeric methods for the prediction of lighting conditions in interior spaces, lighting engineering and design methods, and application of computer-aided lighting simulation tools in architectural design.

Student Performance Criteria:
B.8  Environmental Systems

Secondary SPC

Topical Outline:
• The course comprises Lectures, Recitations and Ecotect/Radiance Software Demo sessions. Course assessment will be based on TWO Tests and A Project Assignment.
• The lectures will introduce fundamental qualitative and quantitative principles and methods in architectural lighting design.
• Recitation sessions will be held to go through WORKSHEETS (worked examples) in detail. These will be held on Thursdays 6:30-8:00 pm (according to schedule below) in IW, MMCH 415.

Prerequisites:
None

Books/ Learning Resources:

Offered:
Spring; Annually

Faculty Assigned:
Lam (F/T)
Course Description

48-412 Environment III: Mechanical Systems  9 Units
A study of the mechanical systems required to heat, cool, wire and plumb a building. Course parallels the AIA professional license examination requirement.

Goals & Objectives:
- Understand heat/loss calculations
- Calculate operating costs
- Design a mechanical system for various building types
- Design a plumbing system
- Design an electrical system
- Perform a building energy audit
- Look at the future of energy

Student Performance Criteria:
B.11 Building Service Systems

Secondary SPC

Topical Outline:
- Heat Loss and Gain Calculations, 20%
- System design, 30%
- Electrical design, 10%
- Plumbing design, 10%
- Operating cost calculations, 20%
- Future energy study, 10%

Prerequisites:
None

Books/ Learning Resources:

Offered:
Fall; Annually

Faculty Assigned:
Mattern (Adj)
Course Description

48-413 Building Acoustics  6 Units
This course introduces theoretical foundations, computational approaches and design methods in architectural acoustics (building and room acoustics).

Goals & Objectives:
- Review of physiological and psychological response to the acoustical environment
- Predictions of outdoor and indoor air-borne sound propagation
- Sound transmission between rooms, design methods in room acoustics
- Applications of computer-aided simulation tools for room acoustical design.

Student Performance Criteria:
B.8 Environmental Systems

Secondary SPC

Topical Outline:
- Introduction and Physics of Sound
- Sound measurement and hearing
- Sound reflection and absorption
- Acoustics measurement
- Modeler Software Introduction
- Air-borne and Impact sound insulation
- Modeler Application Lab; Room acoustics
- Design for speech and music.

Prerequisites:
None

Books/ Learning Resources:

Offered:
Fall; Annually

Faculty Assigned:
Lam (F/T)
Course Description

48-415 Advanced Building Systems  6 Units
This required course introduces advanced building systems and integrated design practices for delivering the highest levels of building performance towards ensuring healthier, more creative and more sustainable built environments.

Goals & Objectives:
• to understand design innovations for long term building performance, in which systems integration achieves comprehensive thermal, acoustic, visual, air quality and spatial goals, as well as building integrity over time; demonstrated through the studio design project.
• to demonstrate design application of performance simulation tools learned in prior classes.
• to integrate human performance goals with resource effectiveness, designing integrated solutions that demonstrate the sustainable use of energy, water and materials.
• to understand the importance of collaborating with allied building disciplines throughout the design process to embrace emerging societal goals including design for individual and organizational productivity, technological adaptability and environmental sustainability.

Student Performance Criteria:
B.3 Sustainability
B.10 Building Envelope Systems
B.11 Building Service Systems

Secondary SPC
B.12, B.8, A.11, C.1, C.2, A.5, A.8

Topical Outline:
Readings, Quizzes and Class Participation: 10%
Precedent Study of Systems Integration for Performance: 15%
Systems Overlay of Studio Design Concept: 15%
Quantified Analysis of the Performance of Studio Design Development: 15%
Critical System details for performance of studio design: 15%
Final Studio Submission and the Resolution of Advanced Building Systems: 30%

Prerequisites:
48-315, Co-requisite 48-405

Books/ Learning Resources:
Building Systems Integration Handbook, Wiley
Class Notes

Offered:
Spring; Annually

Faculty Assigned:
Hartkopf (F/T)
Course Description

48-431 Bio Logic_Responsive Building Technology  9 Units
This course is designed to develop responsive building technologies via the transfer knowledge from the
domain of biology to the field of architecture.

Goals & Objectives:
• To better understand the porous boundary between living and non-living systems
• To understand that complexity is based on simple rule sets
• To design simple systems that respond to environmental fluctuation
• To understand the properties and applications shape memory alloys and silicone casting techniques

Student Performance Criteria:
A.5  Investigative Skills

Secondary SPC
A.6, A.7

Topical Outline:
A5- 40% students apply research of scientific disciplines to architecture.
A6- 30% emphasis is placed on iterative drawing and modeling techniques to develop novel environmental
building technology.
A7- 30% coursework is directed to develop environmental building technology based on study of biological
and architectural precedents

Prerequisites:
None

Books/ Learning Resources:
Scientific American, Nature_ various articles
Mechanical Design in Organisms, Stephen Wainwright
On Growth and Form, D’arcy Thompson

Offered:
Fall; Annually

Faculty Assigned:
Clifford (F/T)
Course Description

48-440 American Regionalism 9 Units
Examines the historical development of landscapes patterns in the American built environment, focusing on how intersections of time, place, and culture create distinctive regional building types, styles and settlements.

Goals & Objectives:
Architectural history courses emphasize a mastery of both the historic subject matter and the architectural history methods of critical thinking, research, reading and writing. By the end of the course, students should be able to:
• understand the historical development of regional differences in the U.S. built environment
• use specific examples in order to discuss and write about the variables that place (topography, climate, resources, relationship to other sites), time (era, waves of settlement), and culture (native, immigrant) have on shaping regionally distinctive built environments
• compare and contrast regional patterns, the processes, and the reasons for those differences
• apply your knowledge of documented, studied examples in order to make educated deductions about “unidentified” examples
• communicate that critical understanding through a variety of analytical looking, researching and writing exercises
• complete an independent research paper on a historic regional pattern that demonstrates the ability to conceive of a topic, frame a thesis statement that guides the inquiry, conduct in-depth research from a variety of scholarly sources and write clearly and persuasively.

Student Performance Criteria:
A.1 Communication Skills
A.5 Investigative Skills
A.9 Historical Traditions and Global Culture

Secondary SPC

Topical Outline:
Each unit approximately 1/5 of the course: Southwest; Chesapeake & South; New England & Mid-Atlantic; Westward Expansion & Great Plains; California. There is variation within each unit, but usually a unit follows a chronological arc with classes on colonial and pre-industrial cultural landscapes, distinctive building types including residential and religious, particular urban plans or systems of land distribution, 19th and/or 20th century regional evolutions.

Prerequisites:
48-240

Books/ Learning Resources:

Offered:
Spring; Annually

Faculty Assigned:
Shaw (F/T)
Course Description

48-448 History of Sustainable Architecture  9 Units

This course assesses current issues of sustainability in theory and practice and identifies significant precursors throughout architectural history in terms of energy flows, solar orientation, climate, use of natural resources, and building systems.

Goals & Objectives:

• Recognize fundamentals of environmental thinking, including basic concepts in ecology, systems design, flows of energy and capital, etc.
• Apply these principles to contemporary and historical design and construction conditions and prioritize them within those contexts.
• Incorporate values of ecologically conscious design as part of critical assessments of architectural history.
• Connect ideological movements and theories of design and the environmental issues that influenced them.
• Recognize the various scales of interaction with environment, from individual well being, to cultural environment to ecological complexities
• Understand the theoretical evolution from which practitioners draw and to which they contribute.
• Identify ways that various architectural movements and projects have addressed issues of sustainability

Student Performance Criteria:

A.1 Communication Skills
A.5 Investigative Skills
A.9 Historical Traditions and Global Culture

Secondary SPC

Topical Outline:
Architecture separate from nature is an unusual outlook specific to the Industrial Revolution and its adherents. Before industrialization, rich, disparate and changing concepts of nature were fundamental elements in understanding the both the theory and practice of building. The course examines designs and texts created either before or in response to the Industrial Revolution that productively inform today’s renewed efforts to build with minimal impact of the natural environment. Topics include Defining Sustainability and Historiography; Cities and Landscape; Nature in Classicism – Ancient Rome and Renaissance Italy; Natural Man, Natural Architecture – 17th and 18th centuries; The Question of Industry –19th Century France and Germany; The Industry of Anti-Industry – The Arts and Crafts Movement, Environmental Efficiency in Early Modernism; Modernism’s Regional Response; The Age of Aquarius; Green Tech.

Prerequisites:
48-240

Books/ Learning Resources:
4 to 6 articles per week throughout the semester. Authors include Vitruvius, Alberti, Laugier, Morris, Ruskin, Banham, Gropius, LeCorbusier, Wright, Aalto, McDonough, Hawken, Foster, Lethaby, Pevsner, Semper, Summers, Viollet-le-Duc, Tony Garnier, Ebenezer Howard, Clarence Stein, Anthony Vidler, Adrian Forty, Alina Payne and others.

Offered:
Fall; Annually

Faculty Assigned:
Rosenblum (F/T)
Course Description

48-451 Incompletion and the Embodied Mind in Architecture  9 Units
Through application of the studies of philosophy, architectural theory, and concepts about the brain, we will trace the genesis of human embodied experience and produce engaging and memorable architectural experiences.

Goals & Objectives:
• To THINK
• To engage in discussion.
• To further your understanding of the Incomplete and embodied experience through study and research of both issues
• To familiarize you with theoretical tracts on the Incomplete and the embodied experience.
• To develop skills of critical thinking, quality research, information management and clear communication through readings, class presentations, discussions, research paper and reaction project.

Student Performance Criteria:
C.2   Human Behavior

Secondary SPC

Topical Outline:
• Memory, The Body, and Architecture (30%)
• The Embodied Mind in Architecture (40%)
• Fragmentation and the Incomplete in Architecture (30%)

Prerequisites:
None

Books/ Learning Resources:
On architecture (Fred Rush)
Memory, The key to consciousness (Richard F Thompson & Stephen A.Madigan)
Encounters, Architectural Essays (Juhani Pallasmaa)
Atlas of emotion (Giulana Bruno)Supermodernism :Architecture in the age of globalization –(Hans Ibelings)

Offered:
Spring; Annually

Faculty Assigned:
Lubetz (Adj)
Course Description

48-452 Real Estate Design and Development  9 Units
Investigate the real estate development process. Explore the interdependence of development drivers and the design process. Introduce market and financial analysis including budgeting and valuation.

Goals & Objectives:
Students will understand the key components of real estate development.
• Process and principals– how we build the environment;
• Participants – who is involved and what role do they play;
• Market forces – what drives the deal and how does the market (demand and supply) function in housing, retail and office space.

Students will have a basic understanding of real estate development financing.
• For-sale verses income property; present value of money, cash flow, return on investment & internal rate of return; valuation and sources of funds: equity, debt and investment.
• Students will study how market demand, tenant requirements, site constraints, and available capital affect feasibility, and through this the ultimate design solution.
• Students will explore innovation and change-makers: in community-based, place-based & ground up development; sustainable real estate development; and, public and private partnerships.

Student Performance Criteria:
B.1  Pre-Design
B.6  Comprehensive Design

Secondary SPC

Topical Outline:
• Real Estate Development Finance (40%)
• Real Estate Process & Practice (20%)
• Case Studies & Practitioner Lectures (20%)
• Applied Real Estate Development Projects: Site/Market Study and Mock Development Project (40%)

Prerequisites:
48-305

Books/ Learning Resources:

Offered:
Spring; Annually

Faculty Assigned:
Mingo (Adj)
Course Description

**48-453 Urban Design Methods** 9 Units

A co-requisite of the Urban Laboratory studio, this lecture course introduces urban design history, theory and methods with a focus on issues affecting the contemporary city and urban sustainability.

**Goals & Objectives:**
- Understand the emergence and evolution of the urban design discipline.
- Expand investigative and visual communication skills in urban design analysis and design.
- Develop ability to identify and design diverse settlement patterns and block structures as well as public space, street and building typologies.
- Enhance ability to critically read and analyze text, in particular regard to urbanism and the growth of contemporary cities and suburbs.
- Develop ability to apply appropriate research methods.
- Understand urban issues related to population growth and sustainability.
- Understand urban issues related to the role of architects, urban designers and planners in a global context.

**Student Performance Criteria:**
A.7 Use of Precedents

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**Secondary SPC**

**Topical Outline:**
- 3 weeks Urban design history (global & local)
- 4 weeks Analysis and fundamental design skills in regard to block, building, public space and street typologies.
- 8 weeks Theory and Practice

**Prerequisites:**
48-500

**Books/ Learning Resources:**
Course reader including seminal urban design texts

**Offered:**
Fall; Annually

**Faculty Assigned:**
Hutzell (F/T)
Course Description

**48-462 Venice Biennale: Contemporary Architectural Issues**  6 Units
The Venice Biennale 12th International Architecture Exhibition will serve as inspiration and structure for a course that addresses contemporary issues in architecture.

**Goals & Objectives:**
- To become knowledgeable about the Venice Biennale Architecture Exhibition, its history and themes as well as the 2010 exhibition;
- To understand how the ideas presented at the Biennale fit within the context of architectural thought / debate;
- To acquire in-depth knowledge about a specific topic presented at this year’s Biennale.

**Student Performance Criteria:**
A.1,
A.9,
C.1  Collaboration

**Secondary SPC**

**Topical Outline:**
1st Exhibition, 1980, Paolo Portoghesi, Director, “The Presence of the Past”
2nd Exhibition, 1982, Paolo Portoghesi, Director, “Architecture of Islamic Countries”
3rd Exhibition, 1985, Aldo Rossi, Director, “Progetto Venezia”
5th Exhibition, 1991, Francesco dal Co, Director
7th Exhibition, 2000, Massimiliano Fuksas, Director, “Less Aesthetics, More Ethics”
8th Exhibition, 2002, Dejan Sudjic, Director, “Next”
9th Exhibition, 2004, Kurt W. Forster, Director, “Metamorph”
11th Exhibition, 2008, Aaron Betsky, Director, Out There: Architecture Beyond Building”
12th Exhibition, 2010, Kazuyo Sejima, Director, “People Meet in Architecture”

Assigned Readings Based on Exhibitions / Synopses, Presentation & Discussion – 50%
Exhibition Research / Research Project / Trip to 2010 Exhibition – 50%

**Prerequisites:**
48-305

**Books/ Learning Resources:**
Exhibition Catalogue, Venice Biennale, 1st – 12th International Architecture Exhibition, 1980 - 2010
Selected Articles
Web Resources

**Offered:**
Fall 2010

**Faculty Assigned:**
Lucchino (Adj)
Course Description

**48-470 Exploring Pattern Through Lamination**  6 Units

In this course the form of projects develop from process. That is, the visual character of the object is achieved through choices each student is required to make at each stage of fabrication.

**Goals & Objectives:**
- To review and renew the shop experience of the Introduction to Architecture shop component for each student.
- To give students an opportunity to further develop their fabrication and design skills.
- To learn more about the basic qualities of materials by their direct use.
- To acquire and improve the organizational, hand/machine skills necessary for good craft.
- To understand how the choice of process and the limitations of materials affect design.
- To develop a general knowledge of attitudes and approaches to woodwork and design in contemporary studio furniture.
- To develop a design sense which is informed by the fabrication process so that forms, structure and details speak about the methods with which they are made.

**Student Performance Criteria:**
A.2  Design Thinking Skills
A.3  Visual Communication Skills
A.8  Ordering Systems Skills

**Secondary SPC**

**Topical Outline:**

**Prerequisites:**
Introduction to Architecture shop training

**Books/ Learning Resources:**
- Required: Miscellaneous handouts
- Recommended: 
  - Tage Frid Teaches Woodworking, Book 1-Joinery, The Taunton Press
  - Understanding Wood by Bruce Hoadley, The Taunton Press
  - The Nature and Art of Workmanship by David Pye, Cambridge University Press

**Offered:**
Fall; Annually

**Faculty Assigned:**
Smith (F/T)
Course Description

**48-473 Hand and Machine Joiner | New Directions**  6 Units
This mini course will distill the broad array of wood joints that have been used in furniture through centuries into a collection of joints appropriate to contemporary woodworking and modern style.

**Goals & Objectives:**
- To review and renew the shop experience of the Introduction to Architecture shop component for each student.
- To give students an opportunity to further develop their fabrication and design skills.
- To introduce new methods and techniques, and to incorporate these methods as part of their design vocabulary.
- To learn more about the basic qualities of materials by their direct use.
- To acquire and improve the hand and machine skills necessary for good craft.
- To understand how the choices of process and the limitations of materials affect design.
- To develop a general knowledge of attitudes and approaches to woodwork and design in contemporary studio furniture.
- To develop a design sense which is informed by the fabrication process so that forms, structure and details speak about the methods with which they are made.
- To review and renew the shop experience of the Introduction to Architecture shop component for each student.
- To give students an opportunity to further develop their fabrication and design skills.
- To introduce new methods and techniques, and to incorporate these methods as part of their design vocabulary.

**Student Performance Criteria:**
A.2  Design Thinking Skills
A.3  Visual Communication Skills
A.8  Ordering Systems Skills

**Secondary SPC**

**Topical Outline:**

**Prerequisites:**
Introduction to Architecture shop training

**Books/ Learning Resources:**
Required: Miscellaneous handouts
Recommended:
Tage Frid Teaches Woodworking, Book 1-Joinery, The Taunton Press
Understanding Wood  by Bruce Hoadley, The Taunton Press
The Nature and Art of Workmanship by David Pye, Cambridge University Press

**Offered:**
Fall; Annually

**Faculty Assigned:**
Smith (F/T)
48-477 Making Things Interactive  9 Units

Hands-on learning about physically embedded computation: basic electronics, microcontroller programming, material and mechanical design. Students design, develop, debug, demonstrate, and document microcontroller-based physically embedded systems.

Goals & Objectives:
- to consider through hands-on experience, how embedded computing may change our built environment.
- to learn and practice basic analog and digital electronics, circuits,
- to learn and practice lab skills: wiring, soldering, using a multimeter, testing and debugging
- to learn and practice basic microcontroller programming, coding, testing and debugging
- to learn and practice basic mechanical design
- to learn and practice debugging hardware and software
- to learn and practice design and design development
- to learn and practice documentation and presentation skills

Student Performance Criteria:
A.1 Communication Skills
A.4 Technical Documentation
A.5 Investigative Skills
A.6 Fundamental Design Skills
A.7 Use of Precedents
A.11,

Secondary SPC

Topical Outline:
The course begins with a survey of precedents in the field of tangible interaction, exploring the design space of "physical computing". Students collect examples of tangible interaction projects, which are reviewed and discussed in class. Then students, working in teams of two, produce a stop-motion animation movie illustrating a "what if" scenario for tangible interaction. Together these two components constitute 10% of the time spent in the course. Students then learn, through a series of weekly exercises, specific skills in electronics (analog and digital) design and implementation (20%), microcontroller programming and debugging (20%) and physical and mechanical design and development (20%). The remaining 30% of the course comprises the design, development, debugging, demonstration and documentation of a project of each student's choosing.

Prerequisites:
None

Books/ Learning Resources:
See class website at http://mtifall10.wordpress.com/wp-admin/
World Wide Web – distributed resources
Igoe T. & Sullivan D., Physical Computing, O'Reilly
ACM Digital Library, specifically Proc. ACM Conf. Tangible Embedded, Embodied Interaction

Offered:
Fall/Spring; Annually

Faculty Assigned:
Gross (F/T)
Course Description

48-478 Digital Tooling  6 Units
In depth exploration of Digital Fabrication techniques and methodologies applicable towards Architectural Education utilizing Physical CNC Equipment and Digital CAD/CAM Programming Environments.

Goals & Objectives:
• Provide in depth overview of various methods of Digital Fabrication
• Provide in depth overview and tutoring advanced programming languages
• Create a better understanding of CAD/CAM Programs and Digital File Preparations
• Create a better understanding of how Digital Equipment functions
• Create a better understanding, thus improving Digital Processes/Workflow/Methods
• Assist in discovering boundaries and limitations of Digital Equipment and Processes
• Provide a safe working and learning environment where Equipment limitations can be discovered; and furthermore-testing and possibly breaking these boundaries.

Student Performance Criteria:
B.12  Building Materials and Assemblies

Secondary SPC

Topical Outline:
Project 1 : Porous Entity – (12%)
Project 2 : Slotted Furniture – (22%)
Project 3 : Texture Tiling – (16.5%)
Project 4 : Texture Mapping – (16.5%)
Project 5 : Topography Preparation – (11%)
Project 6 : Benedict[ion] – (22%)

Prerequisites:
Equipment Experience on Laser and CNC Systems; Program Experience with 3D Modeling Environments.

Books/ Learning Resources:
All Learning Resources are provided by Instructor. Multiple .pdf and Video Tutorials are available. No Textbook necessary.

Offered:
Fall

Faculty Assigned:
Ali (Adj)
Course Description

48-497 Thesis I  6 Units
Through a rigorous examination of proposal, process, program, and place, students should enter their last semester well-positioned for their final design project.

Goals & Objectives:
• Develop a position, by formulating a thesis question and a thesis proposal;
• Develop and articulate a working method that includes conventional research methods as well as design as a means of testing and calibration;
• Investigate issues of program; that includes both function and typology
• Investigate issues of place, that includes both context and site;

Student Performance Criteria:
A.5 Investigative Skills

Secondary SPC

Topical Outline:

Prerequisites:
Successful completion of 8 semesters of studio

Books/ Learning Resources:
Selected readings including:
“How to Draw Up a Project” Jose Luis Mateo
“The Muses Are Not Amused” Jorge Silvetti GSD News
“Defining Urban Sites” from Site Matters, by Carol Burns, Andrea Kahn from Site Maters
“Program Primer v 1.0: A Manual for Architects” Dan Wood & Amale Andraos Praxis 8

Offered:
Fall; Annually

Faculty Assigned:
el Samahy (F/T)  Lubetz (Adj)
Course Description

48-500 Architecture Design Studio: The Urban Laboratory  18 Units

The Urban Lab is a design studio that expands students’ design skills in architecture and introduces new skills in urban design, community leadership, and planning.

Goals & Objectives:

- Introducing new community leadership & planning skill sets:
- Community Leadership
- Expanding and building upon existing design skill sets:
- Architecture & Urban Design
- Public Space Infrastructure & Landscape Design

Student Performance Criteria:

C.1 Collaboration
C.6 Leadership
C.8 Ethics and Professional Judgment
C.9 Community and Social Responsibility

Secondary SPC

Topical Outline:

- 4 weeks Phase 1: Analysis, followed by Community Meeting #1
- 4 weeks Phase 2: Urban Design Framework followed by Community Meeting #2
- 7 weeks Phase 3: Urban Design Project followed by Final Community Meeting, School-Wide Peer Critique and Final Report

Prerequisites:

48-405, 48-453

Books/ Learning Resources:
Carnegie Mellon University | School of Architecture

- Cities X Lines: Approaches to City and Open Territory Design by Joan Busquets
- Community meetings and charrettes, Stakeholder interviews, Presentations to public officials

Offered:

Fall; Annually

Faculty Assigned:

Hutzell (F/T)  Hutzell (F/T)
el Samahy (F/T)  Kline (Adj)
Picker (Adj)
Course Description

48-505 Thesis II/ Studio X  18 Units
The Thesis Studio is devoted to rigorous design inquiry, testing and development of architectural prospects - in relation to the thesis preparation started in the prior semester. The project-based thesis demands creative understanding, spatial experimentation, architectural consolidation and is to be enriched by the dynamic process of discovery.

Goals & Objectives:
• The thesis is to be a speculative proposition that one continually tests throughout the design process.
• The thesis proposal should emerge from a body of research within a specific area of investigation.
• From this research and analysis, a refined a speculative proposition, i.e. a thesis statement is established
• A program and site investigation pertinent to the thesis is tested and developed.
• It is essential that the thesis not abandon the students academic training as they formulate and execute a thesis solution.
• The thesis is the conclusion of our professional degree and should demonstrate our students best thinking, design process, intellectual effort and creative output.

Student Performance Criteria:
A.11  Applied Research

Secondary SPC
A.1, A.2, A.3, A.6, A.10

Topical Outline:
Communication Skills 10%
Design Thinking Skills 10%
Visual Communication Skills 20%
Investigative Skills 10%
Fundamental Design Skills 20%
Cultural Diversity 10%
Applied Research 20%

Prerequisites:
48.500, 48.497

Books/ Learning Resources:
The Metapolis Dictionary of Advanced Architecture, by Actar
On Architecture, Fred Rush, Routledge Press
Verb Crisis, Verb Natures, Verb Conditioning, Verb Connection and Verb Matters by Actar

Offered:
Fall; Annually

Faculty Assigned:
Damiani (Adj)  Clifford (F/T)
Lubetz (Adj)
Course Description

48-510 Café 524: Construction Administration I  9 Units
This course is the first in a sequence of two that will focus on the realization of a funded and developed demonstration project which is currently under construction by CMU's Urban Design Build Studio. Students will review and refine contract documents, prototype all connections and systems at multiple scales, develop and/or review shop drawings, and work with mfg’s, consultants, and contractors on the realization of the catalytic demonstration project.

Goals & Objectives:
• Facilitate the realization of a catalytic demonstration project developed by the Urban Design Build Studio (UDBS).
• Understand the relationship between design, economics, construction, methodology, contract form, and client service in the realization of a catalytic demonstration project.
• Refine abilities with the use of Building Information Modeling (BIM) in facilitating construction

Student Performance Criteria:
A.4  Technical Documentation
B.12  Building Materials and Assemblies

Secondary SPC

Topical Outline:
This course provides time in service of delivering a project as defined in specific grant contracts. Demands and foci shift throughout the semester as specific needs related to delivering the project gain clarity. Work with consultants requires that schedules adjust periodically to fulfill collaborative responsibilities. The class meets for three hours twice a week for the collaborative development of pre-construction and construction materials. The intervening time between those sessions is utilized to address seven areas of focus: 1) Prototyping, 2) Shop Drawings, 3) Procurement, 4) Scheduling, 5) Physical Analysis, 6) Economic Analysis, and 7) Process Documentation.

Prerequisites:
48-500, 48-505

Books/ Learning Resources:

Offered:
Fall

Faculty Assigned:
Folan (F/T)
48-511 Café 524: Construction Administration II  9 Units

This course is the second in a sequence of two that will focus on the realization of a funded and developed demonstration project which is currently under construction by CMU’s Urban Design Build Studio. Students will review and refine contract documents, prototype all connections and systems at multiple scales, develop and/or review shop drawings, and work with mfg’s, consultants, and contractors on the realization of the catalytic demonstration project.

Goals & Objectives:
• Facilitate the realization of a catalytic demonstration project developed by the Urban Design Build Studio (UDBS).
• Understand the relationship between design, economics, construction, methodology, contract form, and client service in the realization of a catalytic demonstration project.
• Refine abilities with the use of Building Information Modeling (BIM) in facilitating construction

Student Performance Criteria:
A.4   Technical Documentation
B.12   Building Materials and Assemblies

Secondary SPC

Topical Outline:
This course provides time in service of delivering a project as defined in specific grant contracts. Demands and foci shift throughout the semester as specific needs related to delivering the project gain clarity. Work with consultants requires that schedules adjust periodically to fulfill collaborative responsibilities. The class meets for three hours twice a week for the collaborative development of pre-construction and construction materials. The intervening time between those sessions is utilized to address seven areas of focus: 1) Prototyping, 2) Shop Drawings, 3) Procurement, 4) Scheduling, 5) Physical Analysis, 6) Economic Analysis, and 7) Process Documentation.

Prerequisites:
48-500, 48-505, 48-510

Books/ Learning Resources:

Offered:
Fall

Faculty Assigned:
Folan (F/T)
Course Description

48-531 Fabricating Customization  9 Units
This course explores emerging themes of “digital tectonics” and “digital materiality” afforded through digital fabrication processes. The discourse will enable students to critically apply a foundational understanding of methods of digital fabrication to increasingly complex design projects. These methods of material processing will distinctly transform everyday materials in a manor that seeks to move beyond formal novelty to meaningful architectural impact.

Goals & Objectives:
• Provide a contemporary overview of the relationships between technology, production and design.
• Utilize digital fabrication workflows to develop novel methods of component creation and material assembly.
• Utilize digital design and fabrication workflows to develop a geometric logic that is capable of transformation in response to specific site / program conditions.
Students enrolled in this course will:
• Apply various digital fabrication tools in the context of design problems to transform standard materials
• Understand and apply basic concepts of digital fabrication and digital workflows
• Develop and fabricate a component system to express the potential of the equipment at hand

Student Performance Criteria:
B.12   Building Materials and Assemblies

Secondary SPC
A.1, A.2, A.3, A.4, A.5, A.11, B.12

Topical Outline:
Ongoing advancements in digital fabrication are facilitating the realization of architectural speculations invested in geometric complexity, material performance and emergent tectonics. Here, the “physical” is infused with characteristics of its “digital” origins, resulting in novel methods of construction and alternative conceptions of tectonics. The schism of the previous decade between digital design and realization is giving way to an ever-increasing collection of architecture reliant upon the most advanced methods of digital design, yet firmly residing in the physical realm. Furthermore, the allure of one-off customization (mass customization) offered through the use of digital fabrication tools is calling into question the long-standing reliance upon systems of mass production and standardized building components. The convergent impact of these interrelated streams is radically transforming the discourse and practice of architecture while ushering in a phase of architectural investigation and production that relishes in the complexity afforded through the use of sophisticated software and hardware tools.

Prerequisites:
48-125

Books/ Learning Resources:
Course reader

Offered:
Spring; Annually

Faculty Assigned:
Ficca (F/T)
Course Description

48-532 Digital Tectonics: Robotic Fabrication  9 Units
This course explores emerging themes of “digital tectonics” and “digital materiality” afforded through semi-automated robotic fabrication and assembly. Through a series of design and fabrication investigations student groups will develop a comprehensive understanding of the robotic fabrication workflow relating to subtractive and additive digital design processes. The 7-axis robotic work cell will serve as the principle instruments of the exploration.

Goals & Objectives:
• Provide an applied overview of industrial robotic fabrication processes.
• Provide a contemporary overview of the relationships between technology, production and design.
• Utilize robotic fabrication workflows to develop novel methods of component creation and material assembly.
• Utilize digital design and fabrication workflows to develop a geometric logic that is capable of transformation in response to specific site / program conditions.

Students enrolled in this course will:
• Apply various digital fabrication tools in the context of design problems to transform standard materials
• Understand and apply basic concepts of digital fabrication and digital workflows
• Develop and fabricate a component system to express the potential of the equipment at hand

Student Performance Criteria:
B.12  Building Materials and Assemblies

Secondary SPC
A.1, A.2, A.3, A.4, A.5, A.11, B.12, C.1

Topical Outline:
This course is conducted as an advanced research seminar in which design, prototyping and fabrication are interrelated and complimentary endeavors. It provides you an opportunity to engage in prescient research into emerging methods of robotic fabrication. The various course projects fit within the overarching course theme and serve as an opportunity to explore new territory while building upon the research from previous semesters. Robust digital fabrication tools such as the industrial robot provide an opportunity to engage and exploit materials. The design projects of this course seek to utilize digital fabrication workflows as a means to utilize and express inherent material characteristics. As such, materials will not serve as a proxy for those that are more expensive or “resistant”. Rather they will be addressed in light of what they offer. This subtle, yet significant distinction will allow a more meaningful engagement of materiality.

Prerequisites:
48-125

Books/ Learning Resources:
Course reader

Offered:
F’10

Faculty Assigned:
Ficca (F/T)
Course Description

48-544 Spatial Representation: Projection Systems  9 Units
This architecture elective examines the variety of projection methods fundamental to architectural representation. Through projects and historical research, students experiment with the analog precedent of digital representation methods.

Goals & Objectives:
- Research historical methods of architectural and spatial representation
- Draw and experiment with analog drawing methods
- Apply analog techniques to digital technologies

Student Performance Criteria:
A.1  Communication Skills
A.2  Design Thinking Skills
A.3  Visual Communication Skills
A.5  Investigative Skills
A.7  Use of Precedents
C.1  Collaboration

Secondary SPC

Topical Outline:
- Readings/Discussion (20%)
- Drawing assignments (30%)
- Individual design assignments (30%)
- Collaborative projects (20%)

Prerequisites:
None

Books/ Learning Resources:
None

Offered:
Spring; Annually

Faculty Assigned:
Garcia (F/T)
Course Description

48-546 The Storefront Project  9 Units
This interdisciplinary elective—offered through the Schools of Art and Architecture—offers students the opportunity to design and build, at full scale, a public space in an empty storefront in a Pittsburgh neighborhood.

Goals & Objectives:
• Understand demographics and neighborhood characteristics
• Develop design ideas to facilitate fast (10 week) construction timetables.
• Work collaboratively with students of different disciplines.
• Develop new program concepts for engaging urban populations

Student Performance Criteria:
A.1 Communication Skills
A.3 Visual Communication Skills
C.9 Community and Social Responsibility

Secondary SPC

Topical Outline:
• Pre-Design Concept Development (10%)
• Design Development (20%)
• Project Construction (70%)

Prerequisites:
None

Books/ Learning Resources:
None

Offered:
Spring; Annually

Faculty Assigned:
Garcia (F/T)
**Course Description**

**48-550 Issues of Practice** 9 Units

An examination of central and contingent conditions that inform the structure and content of contemporary professional practice in architecture. Emphasis is placed on establishing critical awareness and broad understanding of the mediating factors that inform the intelligent resolution of architecture and construction. Theory, case studies, analytical exercises and representational investigation are utilized as a means of developing knowledge in the contractual, legal, fiscal and representational contexts.

**Goals & Objectives:**
- Understanding leadership responsibilities in project execution from project inception through contract administration, including selection and coordination of allied disciplines, post-occupancy evaluation, and facility management.
- Contractual Understanding contract forms, different methods of project delivery and the respective implications through the comprehensive analysis of responsibilities assumed by the Architect, Owner, Contractor, and affiliated parties under different professional service contracts.
- Understanding of the evolving legal regulatory dimension within which architects practice and of the laws pertaining to professional practice.
- Understanding of building economics and cost control strategies. The relationship between budget evaluation, project scope, construction quality, and schedule is investigated and understood through applied analysis.

**Student Performance Criteria:**
- Financial Considerations (B.7)
- Project Management (C.4)
- Practice Management (C.5)
- Legal Responsibilities (C.7)
- Ethics and Professional Judgment (C.8)
- Community and Social Responsibility (C.9)

**Secondary SPC**

**Topical Outline:**
This course is structured utilizing three parallel components. Lectures form the first component and are utilized to introduce concepts and content pertinent to the articulated course objectives. This component is reflective in nature and requires completion of assigned readings to perpetuate in-class discussion. The second component of the course structure is a full term applied research project that enables testing and implementation of concepts and strategies reviewed in the lecture component and build upon knowledge established earlier in the curriculum. The third/final component of the course structure contextualizes the term project within productive and constructive economic parameters. Unit Value Assessment and Unit Construction Cost Management are employed as the mechanisms for the integration with the full term applied research project.

**Prerequisites:**
48-351

**Books/ Learning Resources:**

**Offered:**
Fall

**Faculty Assigned:**
Folan (F/T)
Course Description

48-551 Ethics and Decision Making in Architecture  9 Units
Ethical dilemmas and adjudication strategies in architecture are discussed through case-studies, which students interpret and then prepare new ones. Ethics theory provides support for case-studies.

Goals & Objectives:
\* Exposing students to decision making knowledge.
\* Expose students to principles of applied ethics.
\* Use case-studies as a principal instrument of instruction.
\* Connect the theory of decision making and ethics to the case-studies.
\* Form a bridge to professional courses in the curriculum: Human Factors, Design Economics, and Issues of Practice.
\* Build on an understanding of the issues of occupancy, economics, ethics, and practice provided by preceding courses.
\* Demonstrate both an understanding and practice of high standards in professional conduct.

Student Performance Criteria:
C.2  Human Behavior
C.4  Project Management
C.6  Leadership
C.7  Legal Responsibilities

Secondary SPC
A.1, A.2, A.5, A.10, A.11, B.7, B.12, C.3, C.5, C.8, C.9

Topical Outline:
C.7. (15%); C.8. (50%); C.9. (8%)

Prerequisites:
Good standing in the third year studios

Books/ Learning Resources:
ETHICAL DECISION MAKING IN ARCHITECTURE© ALL RIGHTS RESERVED BY OMER AKIN, CONTENTS: General Introduction to Decision Making; General Introduction to Applied Ethics; Citicorp Case: Coordination of the Design Project and Virtue Ethics; Hancock Tower Case: Planning Downstream Issues and Ethical Relativism; Kansas City Hyatt Regency Case: Design Regulations and Teleology; Pruitt-Igoe Case: Cost-Benefit Analysis and Social Justice; Crystal Palace Case: Competitions and

Offered:
Spring; Annually

Faculty Assigned:
Akin (F/T)
Course Description

48-564 Furniture Design and Construction  9 Units
This course is for students who already have a basic knowledge of hand tools and machines, and standard fabrication methods. Wood is the primary material, although other supplemental materials are permitted. One functional project will be built during the semester.

Goals & Objectives:
• To learn more about the basic qualities of materials by their direct use.
• To acquire and improve the hand and machine skills necessary for good craft.
• To understand how the choice of process and the limitations of materials affect design.
• To develop a general knowledge of attitudes and approaches to woodwork and design in contemporary studio furniture.
• To develop a design sense which is informed by the fabrication process so that forms, structure and details speak about the methods with which they are made.
• To make a well constructed and designed functional object.
• To help the student plan a project that is within the scope of the course in terms of time and technique.

Student Performance Criteria:
A.2  Design Thinking Skills
A.3  Visual Communication Skills
A.6  Fundamental Design Skills
A.8  Ordering Systems Skills
A.11 Applied Research

Secondary SPC

Topical Outline:

Prerequisites:
48470 or 48473

Books/ Learning Resources:
Required: Miscellaneous handouts
Recommended:
The Unknown Craftsman by Soetsu Yanagi    Fine Woodworking on Joinery, The Taunton Press
The Fine Art of Cabinet Making by James Krenov, Van Nostrand Reinhold Co.
The Art of Making Furniture by John Makepeace, Sterling Publishing Co.

Offered:
Fall; Annually, Spring, Annually

Faculty Assigned:
Smith (F/T)
Course Description

48-568 Advanced AUTOCAD, BIM, & 3D Visualization  9 Units
This course introduces students to advanced CAD, BIM, and 3D visualization commands using AutoCAD 3D, 3D Studio MAX, and REVIT Architecture.

Goals & Objectives:
- Setting up and manipulating 2D CAD projects and creating integrated CAD, BIM, and 3DS models
- Developing 3D CAD models and animations
- Learning about parametric modeling using BIM
- Applying materials, lighting, and rendering to CAD, BIM, and 3D studio objects

Student Performance Criteria:
A.3 Visual Communication Skills
A.4 Technical Documentation
A.6 Fundamental Design Skills
A.8 Ordering Systems Skills

Secondary SPC

Topical Outline:
The course meets once a week in a CMU computer lab. AutoCAD 2D and 3D (4 weeks), Autodesk Revit (5 weeks), 3D Studio MAX (5 weeks). Students will be graded on participation in lab sessions and on-line discussion boards (4%), weekly homework assignments (60%), 3 projects (CAD, BIM, 3DS) (36%).

Prerequisites:
48305

Books/ Learning Resources:
AutoCAD Release 2012 for Windows/AutoCAD 3D By Kristen Kurland

Offered:
Fall; Annually

Faculty Assigned:
Kurland (F/T)
Course Description

48-569 GIS / CAFM  9 Units
This course introduces students to spatial analysis for architecture, public policy and urban planning using GIS and teaching facility management basics using CAFM.

Goals & Objectives:
- Learning about underlying geographic concepts (world coordinate system and projections, vector map topology, tiled and layered maps), map design and outputs; how to create geodatabases and how to import spatial and attribute data; how to digitize vectors in GIS and geocode
- Learning about spatial data processing, and advanced spatial analysis.
- Other topics such as raster integration, Internet enabled GIS, network and 3D analysis will also be addressed.
- Learning about facility management topics of space management, asset management, building operations, real property and lease management using CAFM software

Student Performance Criteria:
A.3  Visual Communication Skills
A.4  Technical Documentation
A.6  Fundamental Design Skills
A.8  Ordering Systems Skills
C.2  Human Behavior
C.9  Community and Social Responsibility

Secondary SPC

Topical Outline:
GIS (10 weeks) CAFM (5 weeks). The course meets twice a week. One session is dedicated to GIS and CAFM lectures and discussions which review concepts related to the weekly topic. Lab sessions are used to complete weekly tutorials related to the specific software, review advanced concepts and troubleshoot difficulties with assignments. Students are graded on participation in lectures and lab sessions (4%), weekly homework assignments (72%), and quizzes (24%).

Prerequisites:
48120

Books/ Learning Resources:

Offered:
Spring; Annually

Faculty Assigned:
Kurland (F/T)
**Course Description**

**48-574 Alternative Delivery Methods: Process & Performance**  9 Units

This elective course explores emergent, process based, methodologies employed by practices that incorporate collective intelligence and nonhierarchical production structures. Case study analysis and applied research in productive representation/scalar fabrication are utilized as the primary vehicles in the examination of interconnected conditions that reside within the transforming context of contemporary practice.

**Goals & Objectives:**

- Understand the relationship between design process, fabrication process, assembly process and cost in the delivery of a built project.
- Develop collaborative skills in the execution of a client based design and construction project.
- Develop technical representation, building simulation and prototyping skills.
- Engender ethical reasoning skills necessary in the development of critical methodological processes related to production and fabrication.
- Establish critical, hierarchical, evaluative reasoning skills through the understanding of four principle ethical theories relevant to architectural practice: Teleology, Deontology, Virtue, and Contract Theory.

**Student Performance Criteria:**

A.4  Technical Documentation  
A.5  Investigative Skills  
C.4  Project Management  
C.5  Practice Management

**Secondary SPC**

**Topical Outline:**

This semester is organized as a series of alternating cycles of reflective and applied research. The reflective research is engaged through Displaced Analysis and Consolidated Analysis. Displaced Analysis is engaged in lecture and seminar format, though the investigation of archetypical emergent practices and their associative methodologies utilized in building delivery. The case studies focus specifically on the generative representational techniques utilized in fostering shared intelligence, construction modality and underlying contractual relationships. Consolidated Analysis is executed in concert with applied research in the commissioned fabrication of finite building elements that are incorporated into a collectively developed assemblage. Reviews of prototype development associated with commissioned fabrication occur each week. The Consolidated Analysis is produced as a critical narrative documenting the process from project inception through commissioned fabrication and ultimately onto assemblage.

**Prerequisites:**

48-300

**Books/ Learning Resources:**

Architecture in the Digital Age – Design and Manufacturing, Kolarevic, Branko; Taylor and Francis; Refabricating Architecture: How Manufacturing Methodologies Are Poised To Transform Building Construction, Kieran, Stephen and Timberlake, James; The McGraw Hill Companies; Manufacturing Processes for Design Professionals; Thompson, Robert; Thames and Hudson.

**Offered:**

Spring

**Faculty Assigned:**

Folan (F/T)
Course Description

48-576 Mapping Urbanism  9 Units
This seminar focuses on urban history, theory, visual thinking and information design through the study of
global city typologies – e.g. the classic city, the shrinking city, the growing city and the megalopolis.

Goals & Objectives:
• Urban History: Analyze growth and trends in urban design (e.g. original settlement locations and
  international influences on city planning, governmental and economic influences on city and infrastructure
  development, immigrant populations and migration patterns, climatic and sustainability issues)
• Urban Theory: Gain greater historical perspective in terms of urban development, comprehend rural life
  versus urbanization, assess positive and negative aspects of globalization, developing world issues of
  population growth and sustainability
• Visual Thinking: Read and analyze maps, diagrams and documents and provide critical written
  responses, especially in terms of the author’s agenda and the author’s cultural background
• Information Design: Design and create a compelling body of visual graphic representations that
  comprehensively and cohesively translate statistical data

Student Performance Criteria:
A.1 Communication Skills
A.3 Visual Communication Skills
A.5 Investigative Skills
C.9 Community and Social Responsibility

Secondary SPC

Topical Outline:
50% Urban History and Theory; Global Culture, Cultural Diversity
50% Visual Communication Skills (analysis, mapping, diagramming)

Prerequisites:
300 and 400 level undergraduate students and graduate students

Books/ Learning Resources:
Excerpts from the following texts:
  Delirious New York, Rem Koolhaas
  Stalking Detroit, Georgia Daskalakis, Charles Waldheim, and Jason Young
  Learning from Las Vegas, Robert Venturi, Steven Izenour, Denise Scott Brown
  Great Leap Forward, Chihua Judy Chung, Jeffrey Inaba, Rem Koolhaas, Sze Tsung Leong

Offered:
Fall

Faculty Assigned:
Hutzell (F/T)
48-579 Middle Eastern Cities: Case Studies from Two Centuries  9 Units
The course examines a series of Middle Eastern cities in a case study mode with an eye to a number of particular themes, including rapid growth, sprawl, migration, squatter settlements, as well as the urban effects of war, occupation and reconstruction.

Goals & Objectives:
• Increase students’ knowledge of the region’s urban conglomerations
• Develop students’ ability to think about urbanism critically, through both writing and drawing

Student Performance Criteria:
A.9 Historical Traditions and Global Culture
A.10 Cultural Diversity

Secondary SPC

Topical Outline:
• Introduction to region 10%
• City case study presentations 60%
• Final project 30%

Prerequisites:
None

Books/ Learning Resources:
Selected readings including:

Offered:
Spring; Annually

Faculty Assigned:
el Samahy (F/T)    Torello (Adj)
Course Description

48-587 Architectural Lighting Design  9 Units
Through hands-on exploration in the light lab, students will develop a design process for lighting people and architecture. Final designs will include full-scale lighting mock-ups.

Goals & Objectives:
• To understand the importance of lighting as an equal partner to architecture
• To explore all aspects of light as a visual design element
• To learn to “see” light by studying and applying the physical properties in design applications
• To understand that the way a person or an object is lit affects our perception of what we are seeing
• To learn the difference between lighting that is merely functional and lighting that aesthetically enhances an environment

Student Performance Criteria:
B.8  Environmental Systems

Secondary SPC

Topical Outline:
• Analyzing light in nature, art, film and theatre – 5%
• Color theory in light – physiological, psychological, cultural – 5%
• Experimentation with the physical properties of light: angle, intensity, color, movement – 30%
• Using light to create focus, contrast and mood – 10%
• Design objectives in lighting people and architecture – 10%
• How to analyze a space – interiors and exteriors – 10%
• Methods of lighting – 10%
• Technical tools: lamps, luminaires, control and dimming – 10%
• Communication of Ideas including lighting mock-ups – 10%

Prerequisites:
None

Books/ Learning Resources:
Fully equipped Light Lab with theatrical and architectural lighting fixtures including LED sources and control.

Offered:
Spring; Annually

Faculty Assigned:
Limauro (F/T)
**Course Description**

**48-595 Under the Influence  9 Units**

This interdisciplinary theory course explores the relationship and overlap found in art and architectural practice today through an examination of a series of architects and artists who blur the barriers that traditionally separate these disciplines.

**Goals & Objectives:**
- To better understand the many ways that art influences architecture and vice versa
- To develop vocabulary to introduce art concepts and strategies into architectural production
- To read and discuss several important texts related to the themes of this course
- To view and respond to a number of influential films
- To practice critical and analytical writing and discussion skills

**Student Performance Criteria:**
A.1 Communication Skills  
A.5 Investigative Skills

**Secondary SPC**

**Topical Outline:**
50% Art / 25% Film / 25% Architecture

**Prerequisites:**
Second Year Standing

**Books/ Learning Resources:**
Instructor’s Handouts collected into a compendium include extracts and recommended readings from Ellen Broderick, Bruce mau, Gio Ponti, Charles Moore, Kenneth Frampton, Giuseppe Zambonini, Aaron Copland, Laurence Shyer, Barbara Luderoski, Andreas Bluhm, Aaron Betsky, Karl Foster and others.

**Offered:**
Spring; Annually

**Faculty Assigned:**
Rosenblatt (Adj)
48-596 LEED Buildings and Green Design  6 Units

48-795/48-596 introduces holistic, integrated strategies for sustainable building design, construction and operation. Emphasis on concepts underlying LEED credits and on substantive improvement in building performance.

Goals & Objectives:
- Understand buildings’ energy and environmental impact nationally and globally
- Understand the energy and environmental concepts underlying LEED credits for new construction, existing buildings, homes and neighborhood development
- Be able to distinguish an integrated design and delivery process from more conventional processes and understand the impacts of an integrated process
- Be able to review and understand the sustainable strategies implemented in a LEED certified building
- Understand a range of building performance indicators and have a rudimentary ability to evaluate a building’s post-occupancy performance against its design goals
- Gain a fundamental understanding of how policies, codes and incentives can support sustainable design and development

Student Performance Criteria:
A.7 Use of Precedents
B.8 Environmental Systems
C.2 Human Behavior
C.6 Leadership

Secondary SPC

Topical Outline:
- Introduction to LEED & the Need for High Performance Buildings 7%
- Sustainable Sites 12%
- Water Efficiency 12%
- Energy & Atmosphere 15%
- Materials & Resources 12%
- Indoor Environmental Quality 12%
- Innovation in Design & Region Priorities 6%
- Programs & Policies that Support Sustainable Design 6%
- Making the Case for Sustainability to Your Client 6%
- Topical Discussions in Sustainable Design (Sustainable Design Ethics, Green Design/Construction Process, COMNET: Standardizing Energy Simulation, Precautionary Principle, LEED Costs and Results) 12%

Prerequisites:
48-315

Books/ Learning Resources:
Multiple LEED certified buildings on CMU campus and within Pittsburgh; architects, engineers, contractors and owners/occupants of those buildings

USGBC/GBCI: LEED Checklists & Basic LEED 2009 Guidance for New Construction, Existing Buildings, Homes, Neighborhood Development; Davis Langdon: Cost of LEED Revisited; Chapters from:

Offered:
Spring; Annually

Faculty Assigned:
Baird (Adj) Aziz (Adj)
Cochran (Adj)
Course Description

**48-624 Parametric Modeling**  6 Units
To prepare students to model freeform architectural designs using parametric schemes. Supplies the basis for understanding parametric geometry construction mechanisms.

**Goals & Objectives:**
- To think visually
- To represent geometry parametrically
- To solve spatial problems
- To develop skills in using modeling software for architectural application

**Student Performance Criteria:**
A.3 Visual Communication Skills

**Secondary SPC**
A.4

**Topical Outline:**
Course introduces the structure of parametric design processes, their characteristics and reusable approaches, concepts in computational geometry that can be applied to parametric architectural geometry modeling, and on hands-on techniques that can be applied to the design process, to extend the efficiency and productivity of work during the process. The six lecture topics, which are complemented by hands-on modeling instruction, include:
- Basics of geometric modeling: coordinates and transformations
- Surface Construction: Freeform curves to surfaces
- Surface Development: surface offsets, sweeping and evolutions
- Deformations, Visualization and Analysis
- Discretization: Converting surfaces to meshes
- Digital Prototyping and Fabrication and Geometry Reconstruction

Grade is based on three assignments.

**Prerequisites:**
Junior year and upwards

**Books/ Learning Resources:**
- Grasshopper, a graphical editor for form generations, (http://grasshopper.rhino3d.com/)

**Offered:**
Spring; Annually

**Faculty Assigned:**
Krishnamurti (F/T)  Tsung-hsien Wang, Adjunct
48-722 Building Performance Modeling  12 Units
This course introduces fundamentals and computational methods in building performance modeling.

Goals & Objectives:
• To introduce foundations of modeling and representation with an overview of thermal domain knowledge.
• To understand the integration of performance simulation in computer-aided design
• To form necessary expertise for the application of advanced computational building simulation tools with special focus on energy simulation.
• To gain familiarity with the concept of Building Information Model (BIM) in the domain of architectural design and analysis
• To improve graduate level research abilities through design assignments and case studies on the application of simulation in the evaluation and improvement of building performance.

Student Performance Criteria:
B.8  Environmental Systems

Secondary SPC

Topical Outline:
Introduction to computational modeling in building design - industry motivation; Performance-based design; Introduction to modeling tools #1 (Green Building Studio); Environmental aspects of building design – laws of thermodynamics; Introduction to modeling tools #2 (eQUEST); Informational needs for thermal performance modeling - outdoor and indoor conditions and building description; Heat transfer theory – conduction, convection, radiation; Informational needs for thermal modeling - mechanical system; Advanced heat transfer theory; Introduction to modeling tools #3A (Design Builder); Introduction to modeling tools #3B (EnergyPlus); Existing energy simulation tools and use in industry; Dialectics of process and tool; Integrated performance modeling environments; Building information model: gbXML (green building extensible markup language); Building information model: IFC (industry foundation classes); Simulation case studies; Predictive modeling

Work for the course falls into four categories: 1) attendance, participation, discussions and lab classes on the use of simulation tools; 2) graduate-level two page essays based on reading from related sources; 3) a midterm exam; 4) three course assignments focusing on building energy modeling and simulation. These assignments include simulation studies, parametric analysis with post-processing of simulated data as an aid to design decision support, and composing a graduate-level research paper based on the findings of simulation exercises.

Prerequisites:
None

Books/ Learning Resources:

Offered:
Fall; Annually

Faculty Assigned:
Lam (F/T)
Course Description

48-724 Parametric Design 6 Units
To prepare students to model advanced parametric applications through programming. Supplies the basis of applying fundamental object-oriented programming principles to geometric construction.

Goals & Objectives:
• To think visually
• To represent geometry parametrically
• To solve spatial problems
• To develop skills in extending modeling software for architectural application

Student Performance Criteria:
A.3 Visual Communication Skills
A.8 Ordering Systems Skills

Secondary SPC
A.4

Topical Outline:
The course introduces fundamental principles of using Object-Oriented programming languages and applicable computational algorithms, such as procedural modeling techniques. Lecture will focus on customizing procedures for generative design via programming. The topics covered in this course are:
• Object-oriented programming in Visual C# & RhinoCommon
• Geometric Construction—Voronoi Cells, Quad Meshing
• Procedural Modeling—Fractal, L-Systems
• Generative Algorithms—Game of Life & Swarm Intelligence

Grade is based on two programming assignments and course project.

Prerequisites:
48-624

Books/ Learning Resources:
Grasshopper, a graphical editor for form generations, (http://grasshopper.rhino3d.com/)
Software: Rhino, Grasshopper, Visual C#, .NET framework, RhinoCommon

Offered:
Spring; Annually

Faculty Assigned:
Krishnamurti (F/T) Tsung-hsien Wang, Adjunct
48-729 Productivity, Health and the Quality of Buildings  9 Units

This elective explores the relationship of quality buildings, building systems, and land-use to productivity, health, well-being and the environment. The course engage students in the research and journals that relate building design decisions to cost/performance outcomes as well as life cycle decision-making and triple bottom line calculations to support long term investments in the quality of the built environment.

Goals & Objectives:
• Understanding quality differences in enclosure, HVAC, lighting, IT and interior systems, as well as community design and land-use.
• Exploring performance outcomes that impact the bottom line of organizational, including energy, facilities management, organizational change, technological change, attraction/retention (quality of life) of employees, individual productivity, organizational productivity, salvage/ waste, tax/ insurance/ litigation and health.
• Exploring the research literature linking attributes of the built environment to performance outcomes, from controlled experiments to portfolio studies.
• Summarizing research and statistical methods and quantifying the economic, environmental and human cost benefits for investing in quality buildings and communities.

Student Performance Criteria:
A.11   Applied Research
A.5    Investigative Skills
B.3    Sustainability

Secondary SPC

Topical Outline:
Quality Differences in the Built Environment, System by System (30%)
Cost-Benefits of Quality from Economics to Health and Productivity (20%)
In-depth Queries of Research Literature Linking Design Decisions to Outcomes (30%)
Summarization of Literature and Quantification of Cost Benefits (10%)
Submissions and Presentations for Peer Review (10%)
Notebook with no less than 3 robust research studies and life cycle calculations linking quality design to environmental, health, productivity and other gains.

Prerequisites:
None

Books/ Learning Resources:
BIDS™ on-line data set of existing research and life cycle analyses.
Building system specific references
CMU Library LIS Scholars research toolkit

Offered:
Fall; Annually

Faculty Assigned:
Loftness (F/T)
Course Description

48-738 Special Topics: Ecological Footprints  9 Units

An ecological footprint is the amount of land and water area a person or a human population would need to provide the resources required to sustainably support itself and to assimilate its wastes, given prevailing technology. This elective is focused on identifying comparative metrics at national, regional, metropolitan, urban, neighborhood and building scales for our resource needs and use, and establishing the critical balance required for achieving true sustainability.

Goals & Objectives:

- Understanding national and international developments for quantifying ecological footprints for individuals, communities and nations.
- Exploring solutions, best practices, tools and philosophies for minimizing ecological footprints given the range of economic and cultural variations between countries.
- Exploring specific applications of ecological footprint analysis for projects on the CMU campus or in the region, towards the development of strategic actions to minimize impact.
- Summarizing research and analysis in a written report with graphics to ensure critical attention.

Student Performance Criteria:

A.11  Applied Research
B.3   Sustainability
C.2   Human Behavior
C.6   Leadership
C.8   Ethics and Professional Judgment
C.9   Community and Social Responsibility

Secondary SPC

Topical Outline:

- Through readings and homework, demonstrate growing understanding of the varying definitions and metrics of Ecological Footprint (20%)
- In a series of lectures by topical experts in energy, water, land, and other indices of Ecological Footprint,
  - participate in class discussions to refine principles and metrics (20%)
  - Demonstrate Understanding through application of Ecological Footprint principles and metrics to a campus or regional project analysis, with design and policy recommendations (60%)

Prerequisites:
None

Books/ Learning Resources:


Offered:
Fall; Annually

Faculty Assigned:
Hartkopf (F/T)
Course Description

48-749 Parametric Modeling with BIM  6 Units
To prepare students to model advanced architectural applications through building information models (BIM) and parametric modeling.

Goals & Objectives:
- To think visually
- To understand and apply digital representations via building information models
- To develop skills in parametric modeling
- To extend capabilities of BIM software for architectural applications

Student Performance Criteria:
A.3  Visual Communication Skills
A.8  Ordering Systems Skills

Secondary SPC
B.3

Topical Outline:
Course introduces concepts of building information modeling, capabilities of current BIM tools and their applicability in the AEC domain. Case studies involving lighting variations following sun path, water use, quantity schedules and costs, sustainable building evaluation, fabrication are illustrated. Lectures focus on hands-on techniques that can be applied to the design process, to extend the efficiency and productivity of work during the process. Topics covered include: BIM; Modeling Parametric Families; Encoding Design Rules; Evaluating Preliminary Design for Sustainability; and Applications (Embodied Carbon Calculation, Water Use and Fabrication).
Grade is based on three modeling assignments (6 units) + one programming assignment (3 units) and a course project (3 units).

Prerequisites:
Junior year and upwards

Books/Learning Resources:
- Aubin, Paul F. Mastering Autodesk Revit Building, 2006, Thomson Delmar Learning

Offered:
Fall; Annually

Faculty Assigned:
Krishnamurti (F/T)
Course Description

48-752 Zero Energy House  9 Units

48752 explores the meaning and demands of residential net zero site and source energy performance, and design, construction and operation strategies for achieving this specific quantitative limit while maintaining occupant comfort and satisfaction.

Goals & Objectives:
• Understand the components of residential energy consumption and national and global residential energy consumption trends
• Understand the meaning of net zero energy performance at a site and source level
• Know the fundamental design strategies for achieving net zero performance in a range of climates
• Be able to quantify heat loss and heat gain manually and to quantify and identify improvements for the energy performance of a residential building envelope, conditioning equipment, appliances and plug loads using energy simulation and auditing software
• Understand the fundamental function and performance of renewable energy systems and how to size them for residential use
• Know current energy-related standards and guidelines for US residential buildings
• Become familiar with a wide variety of references and information sources for future use

Student Performance Criteria:
A.5 Investigative Skills
A.7 Use of Precedents
B.3 Sustainability
B.10 Building Envelope Systems
B.11 Building Service Systems
C.9 Community and Social Responsibility

Secondary SPC

Topical Outline:
• Defining zero energy performance 6%
• Residential energy consumption basics 6%
• Codes, standards and rating systems 6%
• Load calculations & thermal envelope design  24%
• Residential conditioning, active & passive 18%
• Domestic hot water including solar, appliances, plug loads and metering 12%
• Generating electricity on site 6%
• Energy simulation & auditing software 7%
• Zero energy development and case study presentations 9%
• Final design presentations & reviews 6%

Prerequisites:
48-315, 48-412

Books/ Learning Resources:
Current net zero energy literature and multiple reports/printed resources on course topics (Blackboard site), tours of Pittsburgh Zero Energy Lab House, CMU Solar Decathlon house, IBACOS High Performance Residential Façade Demonstration Lab, and Solar Power Industries (local solar cell manufacturer); blower door; REM/Rate software; Watts Up meter, Know Watt?

Offered:
Fall; Annually

Faculty Assigned:
Baird (Adj)
February 24, 2006

Jared L. Cohon, President
Carnegie Mellon University
5000 Forbes Avenue
Pittsburgh, PA 15213

Dear President Cohon:

At the February 2006 meeting of the National Architectural Accrediting Board (NAAB), the Board reviewed the Visiting Team Report for the Carnegie Mellon University School of Architecture. As a result, the professional architecture program:

Bachelor of Architecture

was formally granted a six-year term of accreditation. The accreditation term is effective January 1, 2006. The program is scheduled for its next accreditation visit in 2012.

Accreditation is subject to the submission of Annual Reports. Annual Reports are due by June 1 and must include a response to each condition identified as not met in the Visiting Team Report, a response to each of the causes of concern in the Visiting Team Report, a brief summary of changes that have been made or may be made in the accredited program, and the two-page statistical report. If an acceptable Annual Report is not submitted to the NAAB by the time of its fall board meeting, the NAAB may consider advancing the schedule for the program’s next accreditation sequence. A complete description of the Annual Report process can be found on pages 14–15 of the NAAB Procedures for Accreditation, 2005 Edition.

NAAB encourages public dissemination of information about each school contained in both the school’s Architecture Program Report and the Visiting Team Report. If the Visiting Team Report is made public, then it is to be published in its entirety.

The visiting team has asked me to express its appreciation for your gracious hospitality.

Very truly yours,

C. William Bevins, FAIA
President

Enc. Visiting Team Report

cc: Laura Lee, FAIA, Head
    Donna V. Robertson, FAIA, Team Chair
    Visiting Team Members
The National Architectural Accrediting Board (NAAB), established in 1940, is the sole agency authorized to accredit U.S. professional degree programs in architecture. Because most state registration boards in the United States require any applicant for licensure to have graduated from an NAAB-accredited program, obtaining such a degree is an essential aspect of preparing for the professional practice of architecture.
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Summary of Team Findings

1. Team Comments

The School of Architecture at Carnegie Mellon University profits from a productive and valuable faculty, an energetic and intelligent student body, and a caring, committed staff. Its recent progress to establish new administrative leadership, faculty continuity, a redesigned curricular agenda and to obtain more resources for faculty and students has opened an era of renewal and promise. The program is fortunate to be situated in an excellent university as a full member of a vibrant artistic community in its College of Fine Arts (CFA). The School figures centrally in the University's physical setting, and is respected and valued by its College and University. The combination of a strong College of Fine Arts with strong components in Engineering and Science offers unique opportunities for architectural studies.

Students possess strong analytic skills, are articulate, and enjoy the chance for intellectual and creative development. The First and Second Year studios synergize well with the other coursework in those semesters, reinforcing learning in conceptual and applied ways. The interdisciplinary setting encourages study in other related disciplines, and many students pursue minors. Students are exposed to a wide range of significant lecturers and visitors, and many have the opportunity to study abroad. There is a deep respect for professionalism and advanced technologies, with many expecting to become architects, but also interested in the reaches of architectural creativity beyond traditional practice. Critical writing, thinking and speaking are encouraged, exploration and community involvement are undertaken, and the graduates appear to have wide opportunities for successful careers.

The School is housed in the College of Fine Arts and the Margaret Morrison Carnegie Halls. The CFA building is a venerable, historic structure housing upper-level studios and administrative offices. Morrison Hall provides other commodious studio spaces for the core studios, faculty offices and classrooms. The School has designed a new wing for Morrison Hall, but given the fund-raising horizon and the University's priorities, this may not be a near-term realizable dream. Resources supporting the design work are very good for woodworking, but need to be enlarged and expanded to allow modeling and mock-ups in other materials. As well, the School hopes to increase its capacity in digital 3-D modeling production.

The Faculty consists of both recognized, senior research architects and younger, rising practitioners, offering students access to both advanced technologies and real world applications. The tenured faculty represents excellent research enterprises in sophisticated technologies, computational design, and building performance and diagnostics, and these enrich the graduate programs; in addition, this faculty teaches substantial courses for the undergraduates' education. Design studio education is delivered by a significant number of local professionals, bringing a real world commitment to design matters and social responsibility. The integrated studio curriculum in the early years produces thoughtful work; the adjacent professional coursework is serious intellectually. Especially impressive are the courses in collaborative techniques, human behavior, site conditions, ethics and professional judgment. Students enjoy communicative, mutually supportive relationships with their faculty, who give a great deal for each individual.

The program would profit from more liberal studies in the degree requirements, and the upward progression of the new "integrated design" approach in upper-level studio work. The current Strategic Plan recognizes this, and plans to systematically address a comprehensive needs list. This visit occurs only 14 months after the start of the new School Head's term, and the Team congratulates her on the progress achieved to date, and on the promise of her administration and Carnegie Mellon's exciting opportunities.
2. Progress Since the Previous Site Visit

There were no conditions not met by the school during the previous visit.

3. Conditions Well Met

Condition 1.5  Architectural Education and Society
Criteria 12.6  Collaborative Skills
Criteria 12.7  Human Behavior
Criteria 12.15 Site Conditions
Criteria 12.37 Ethics and Professional Judgment

4. Conditions Not Met

Condition 5.0  Human Resources
Condition 7.0  Physical Resources
Condition 11.0  Professional Degrees and Curriculum
Criteria 12.14 Accessibility
Criteria 12.29 Comprehensive Building Design

5. Causes of Concern

Graphic skills in the upper-level studio work are not as comprehensive or descriptive as one would wish, for a program so highly regarded.

The University and the School of Architecture both highlight diversity as a major strategic goal, and the School has made admirable strides through targeted recruitment and scholarship programs in its summer programs. While many types of diversity are fostered within the School of Architecture and the University at large, some groups are underrepresented at all levels. Walking around campus one does not see the “melting pot” one would expect to find in an institution with Carnegie Mellon’s reputation, resources and history. The team emphasizes the critical need for outreach to achieve a student body that is representative of the society in which we live and provides opportunities for historically underserved groups.
II. Compliance with the Conditions for Accreditation

1. Program Response to the NAAB Perspectives

Programs must respond to the relevant interests of the five constituencies that make up the NAAB: education (ACSA), members of the practicing profession (AIA), students (AIAS), registration board members (NCARB), and public members.

1.1 Architecture Education and the Academic Context

The program must demonstrate that it both benefits from and contributes to its institutional context.

Met [X] Not Met [ ]

1.2 Architecture Education and Students

The program must demonstrate that it provides support and encouragement for students to assume leadership roles during their school years and later in the profession, and that it provides an interpersonal milieu that embraces cultural differences.

Met [X] Not Met [ ]

1.3 Architecture Education and Registration

The program must demonstrate that it provides students with a sound preparation for the transition to internship and licensure.

Met [X] Not Met [ ]

1.4 Architecture Education and the Profession

The program must demonstrate how it prepares students to practice and assume new roles within a context of increasing cultural diversity, changing client and regulatory demands, and an expanding knowledge base.

Met [X] Not Met [ ]

1.5 Architecture Education and Society

The program must demonstrate that it not only equips students with an informed understanding of social and environmental problems but that it also develops their capacity to help address these problems with sound architecture and urban design decisions.

Met [X] Not Met [ ]
A major focus of the School is the design of buildings and environments which are sound and responsive to the best concepts of energy conservation and sustainable design. The important research produced in this arena by a distinguished faculty is highly regarded internationally. These concepts are very well integrated into many facets of the School's course work.

The curriculum demonstrates significant emphasis on human factors in design, with very detailed and sensitive analyses of existing spaces and how they affect the lives and well-being of their users. On-site observations and case studies are excellent.

The Urban Laboratory, working with community groups and public officials, imparts lifetime skills in civic leadership and public service. These skills reside not only with the students but also with an educated citizenry.

The Pre-College program has become a successful outreach to young people who are searching for validation of their interest in architectural education.

2. Program Self-Assessment

The program must provide an assessment of the degree to which it is fulfilling its mission and achieving its strategic plan.

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3. Public Information

The program must provide clear, complete and accurate information to the public by including in its catalog and promotional literature the exact language found in appendix A-2, which explains the parameters of an accredited professional degree program.

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4. Social Equity

The program must provide all faculty, students, and staff—irrespective of race, ethnicity, creed, national origin, gender, age, physical ability, or sexual orientation—with equitable access to a caring and supportive educational environment in which to learn, teach, and work.

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5. Human Resources

The program must demonstrate that it provides adequate human resources for a professional degree program in architecture, including a sufficient faculty complement, an administrative head with enough time for effective administration, administrative and technical support staff, and faculty support staff.

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This Visiting Team, as did the last, found the School to be overly dependent on adjunct faculty with little evidence that substantial improvement has been made since the previous visit. This concern is exacerbated by the fact that the tenured faculty is involved in the pursuit of valuable but highly specialized areas of research which require them to expend from 30 to 50% of their time with graduate programs. The Team felt that the correlation between the excellent courses taught by the tenured faculty, and the lack of evidence that such knowledge was applied in the studio, was at least partly due to the tenured faculty's reliance on the adjunct faculty. The Team believes that if the School is to maintain its position as a leader in the field of architecture, it must increase the number of full-time faculty that teach in the design studios.

The Team also found a weak design aesthetic in the upper level studios and believes that the search for new faculty should focus on persons able to improve that aspect of the program. The School does not yet have a full-time, endowed Chair to be occupied by someone who could provide creative leadership for the design faculty and inspiration to the students.

6. Human Resource Development

Programs must have a clear policy outlining both individual and collective opportunities for faculty and student growth within and outside the program.

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7. Physical Resources

The program must provide physical resources that are appropriate for a professional degree program in architecture, including design studio space for the exclusive use of each full-time student; lecture and seminar spaces that accommodate both didactic and interactive learning; office space for the exclusive use of each full-time faculty member; and related instructional support space.

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Again, following comments found in the 2000 Visiting Team Report, the Team found a shop that is still too small and is limited to wood-working, providing no access to metal, plastic, a paint booth, physical modeling, or the other elements associated with a well-equipped shop.

Also, the program would profit from consolidating the studio spaces into one building, with neighboring adjacencies to enhance peer-to-peer learning and the new mentoring system of the “I AM” program, in which upper-level students support younger students’ acclimation and degree progress. This team felt this consolidation to be more compelling than the cachet of having certain studios in the CFA Hall, since other classes and advising needs will still bring students there for interaction with the other Fine Arts disciplines.

Equipment resources need to expand to provide digital 3-D modeling capability. Remedies are planned by the School, however wider institutional commitment is pending.
8. Information Resources

The architecture librarian and, if appropriate, the staff member in charge of visual resource or other non-book collections must prepare a self-assessment demonstrating the adequacy of the architecture library.

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9. Financial Resources

Programs must have access to institutional support and financial resources comparable to those made available to the other relevant professional programs within the institution.

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10. Administrative Structure

The program must be a part of, or be, an institution accredited by a recognized accrediting agency for higher education. The program must have a degree of autonomy that is both comparable to that afforded to the other relevant professional programs in the institution and sufficient to assure conformance with all the conditions for accreditation.

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11. Professional Degrees and Curriculum

The NAAB only accredits professional programs offering the Bachelor of Architecture and the Master of Architecture degrees. The curricular requirements for awarding these degrees must include three components—general studies, professional studies, and electives—which respond to the needs of the institution, the architecture profession, and the students respectively.

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The professional degree does not require a sufficient number of courses in the liberal arts and sciences, in favor of extensive requirements in architecture studies. The School has a plan to reverse this imbalance, however the stated plan may not be quite aggressive enough to meet either NAAB's old requirement of a 40/60% distribution ratio between non-architecture and architecture courses, or the up-coming requirement (in the 2004 Conditions) of 45 credit hours of general studies (or 135 units, in CMU's course-credit system.)

The Team also recommends finding "room" in the early years of study for students to take their University Elective and general educations courses. In the current situation, these electives are taken in the last 3 years of study, meaning that the student is inclined to take the upper-level courses that the majors in other disciplines might take, yet they cannot qualify for the courses, not being majors and not having taken the introductory survey courses. Room for University Electives in the early years allows them to take the introductory courses and establish interests in other disciplines to set up a minor or other specialty in other programs of study.
12. Student Performance Criteria

The program must ensure that all its graduates possess the skills and knowledge defined by the performance criteria set out below, which constitute the minimum requirements for meeting the demands of an internship leading to registration for practice.

12.1 Verbal and Writing Skills

Ability to speak and write effectively on subject matter contained in the professional curriculum

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12.2 Graphic Skills

Ability to employ appropriate representational media, including computer technology, to convey essential formal elements at each stage of the programming and design process

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12.3 Research Skills

Ability to employ basic methods of data collection and analysis to inform all aspects of the programming and design process

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12.4 Critical Thinking Skills

Ability to make a comprehensive analysis and evaluation of a building, building complex, or urban space

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12.5 Fundamental Design Skills

Ability to apply basic organizational, spatial, structural, and constructional principles to the conception and development of interior and exterior spaces, building elements, and components

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12.6 Collaborative Skills

Ability to identify and assume divergent roles that maximize individual talents, and to cooperate with other students when working as members of a design team and in other settings

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The Team was impressed to find that students are working together in teams on studio projects, required courses and elective courses at all levels in the program. It is obvious that this collaborative environment is fostering development of the critical thinking, verbal and social skills needed to be successful in the field of architecture. The school is to be applauded for investing in opportunities for the students to use these skills in a real world setting, through programs such as the Solar Decathlon, Urban Lab design studio and the professional development course offered in their fifth year. There is no question that a graduate of the program would transition easily into an office environment.

12.7 Human Behavior

Awareness of the theories and methods of inquiry that seek to clarify the relationships between human behavior and the physical environment

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The Human Factors in Architecture (48-351) course builds an expansive base of knowledge of Human Behavior issues and the demands these issues place upon the physical environment's design. Students study social and cultural variables, conduct field research, carry out detailed behavioral analysis, and compose in-depth reports for resulting design recommendations. The course is impressive in the breadth of awareness it fosters and the depth of inquiry it facilitates.

12.8 Human Diversity

Awareness of the diversity of needs, values, behavioral norms, and social and spatial patterns that characterize different cultures, and the implications of this diversity for the societal roles and responsibilities of architects

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12.9 Use of Precedents

Ability to provide a coherent rationale for the programmatic and formal precedents employed in the conceptualization and development of architecture and urban design projects

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12.10 Western Traditions

Understanding of the Western architectural canons and traditions in architecture, landscape, and urban design, as well as the climatic, technological, socioeconomic, and other cultural factors that have shaped and sustained them

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12.11 Non-Western Traditions

Awareness of the parallel and divergent canons and traditions of architecture and urban design in the non-Western world

Met Not Met
[X] [ ]

12.12 National and Regional Traditions

Understanding of the national traditions and the local regional heritage in architecture, landscape, and urban design, including vernacular traditions

Met Not Met
[X] [ ]

12.13 Environmental Conservation

Understanding of the basic principles of ecology and architects' responsibilities with respect to environmental and resource conservation in architecture and urban design

Met Not Met
[X] [ ]

12.14 Accessibility

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

Met Not Met
[ ] [X]

Although the appropriate subject matter is covered in classroom work, its application in studio work is either weak or non-existent. Very similar comments were seen in the previous VTR and the continued failure to address this issue was of concern to this Team.

12.15 Site Conditions

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

Met Not Met
[X] [ ]

Course materials, work in progress in the studios, and the finished products of the studios convincingly demonstrated an unusually thorough treatment of site engineering and improvements, and of landscape design. Students showed a strong ability in observation and documentation, and good resolution of problems relating to actual site conditions. There is an excellent balance of technical knowledge learned and three dimensional design results. Graphic presentations are both attractive and easy to understand. There is continuity between material covered early in the course of study and its application in the work of later years.
### 12.16 Formal Ordering Systems

Understanding of the fundamentals of visual perception and the principles and systems of order that inform two- and three-dimensional design, architectural composition, and urban design

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### 12.17 Structural Systems

Understanding of the principles of structural behavior in withstanding gravity and lateral forces, and the evolution, range, and appropriate applications of contemporary structural systems

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### 12.18 Environmental Systems

Understanding of the basic principles that inform the design of environmental systems, including acoustics, lighting and climate modification systems, and energy use

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### 12.19 Life-Safety Systems

Understanding of the basic principles that inform the design and selection of life-safety systems in buildings and their subsystems

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### 12.20 Building Envelope Systems

Understanding of the basic principles that inform the design of building envelope systems

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### 12.21 Building Service Systems

Understanding of the basic principles that inform the design of building service systems, including plumbing, electrical, vertical transportation, communication, security, and fire protection systems

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12.22 Building Systems Integration

Ability to assess, select, and integrate structural systems, environmental systems, life-safety systems, building envelope systems, and building service systems into building design

Met [X] Not Met [ ]

12.23 Legal Responsibilities

Understanding of architects' legal responsibilities with respect to public health, safety, and welfare; property rights, zoning and subdivision ordinances; building codes; accessibility and other factors affecting building design, construction, and architecture practice

Met [X] Not Met [ ]

12.24 Building Code Compliance

Understanding of the codes, regulations, and standards applicable to a given site and building design, including occupancy classifications, allowable building heights and areas, allowable construction types, separation requirements, means of egress, fire protection, and structure

Met [X] Not Met [ ]

12.25 Building Materials and Assemblies

Understanding of the principles, conventions, standards, applications, and restrictions pertaining to the manufacture and use of construction materials, components, and assemblies

Met [X] Not Met [ ]

12.26 Building Economics and Cost Control

Awareness of the fundamentals of development financing, building economics, and construction cost control within the framework of a design project

Met [X] Not Met [ ]

12.27 Detailed Design Development

Ability to assess, select, configure, and detail as an integral part of the design appropriate combinations of building materials, components, and assemblies to satisfy the requirements of building programs.

Met [X] Not Met [ ]
12.28 Technical Documentation

Ability to make technically precise descriptions and documentation of a proposed design for purposes of review and construction

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12.29 Comprehensive Design

Ability to produce an architecture project informed by a comprehensive program, from schematic design through the detailed development of programmatic spaces, structural and environmental systems, life-safety provisions, wall sections, and building assemblies, as may be appropriate; and to assess the completed project with respect to the program's design criteria

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The Team could not find sufficient evidence that students were able to use the technical and environmental knowledge gained in their first three years of education to inform the design process in the projects produced in their fourth and fifth year studios. This Team, as did the previous team, found little evidence that students were retaining the knowledge gained in various "technical" courses and making it a part of what should become their growing design vocabulary. This observation was reinforced in discussions with both students and faculty and was characterized by student comment that there is not much continuity between the classroom and the studio.

12.30 Program Preparation

Ability to assemble a comprehensive program for an architecture project, including an assessment of client and user needs, a critical review of appropriate precedents, an inventory of space and equipment requirements, an analysis of site conditions, a review of the relevant laws and standards and an assessment of their implications for the project, and a definition of site selection and design assessment criteria

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12.31 The Legal Context of Architectural Practice

Awareness of the evolving legal context within which architects practice, and of the laws pertaining to professional registration, professional service contracts, and the formation of design firms and related legal entities

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12.32 Practice Organization and Management

Awareness of the basic principles of office organization, business planning, marketing, negotiation, financial management, and leadership, as they apply to the practice of architecture

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12.33 Contracts and Documentation

Awareness of the different methods of project delivery, the corresponding forms of service contracts, and the types of documentation required to render competent and responsible professional service

Met [X] Not Met [ ]

12.34 Professional Internship

Understanding of the role of internship in professional development, and the reciprocal rights and responsibilities of interns and employers

Met [X] Not Met [ ]

12.35 Architects' Leadership Roles

Awareness of architects' leadership roles from project inception, design, and design development to contract administration, including the selection and coordination of allied disciplines, post-occupancy evaluation, and facility management

Met [X] Not Met [ ]

12.36 The Context of Architecture

Understanding of the shifts which occur—and have occurred—in the social, political, technological, ecological, and economic factors that shape the practice of architecture

Met [X] Not Met [ ]

12.37 Ethics and Professional Judgment

Awareness of the ethical issues involved in the formation of professional judgments in architecture design and practice

Met [X] Not Met [ ]

The Team finds that coursework in this area exceptionally demonstrates that students are not only fully gaining an awareness of critical issues necessary to formulate sound judgmental and ethical decisions, but students also go above and beyond awareness by reaching an understanding of this material that cultivates responsibility and team work.
III. Appendices

Appendix A: Program Information

1. History and Description of the Institution

The following text is taken from the 2005 Carnegie Mellon University Architecture Program Report:

Carnegie Mellon is a national research university of about 7,500 students and 3,000 faculty, research, and administrative staff. The institution was founded in 1900 in Pittsburgh by industrialist and philanthropist Andrew Carnegie, who wrote the time-honored words, "My heart is in the work," when he donated the funds to create Carnegie Technical Schools. Carnegie's vision was to open a vocational training school for the sons and daughters of working-class Pittsburghers for employment in the region's growing industries.

Arthur A. Hamerschlag served as the school's first president, and Carnegie Technical Schools' faculty was comprised of 12 professors and six administrators. These educators served the vision of Carnegie by organizing into four faculties: the School of Science and Technology, the School of Fine and Applied Arts, the School of Apprentices and Journeymen, and the Margaret Morrison Carnegie School for Women. During this time, the institution served primarily part-time and undergraduate students. The faculty, many of whom did not have doctor's degrees, focused on teaching and curriculum development.

When the school was renamed Carnegie Institute of Technology in 1912, it took another important step in its transition into one of the nation's leading private research universities. Research efforts began as early as 1916 when the Division of Applied Psychology of the Carnegie Institute of Technology developed rating scales for job placement. This rating system was used to classify two million men for placement in the armed forces during World War I. Research bureaus were organized in coal mining, nuclear physics, applied chemistry and metallurgy. And by granting the nation's first undergraduate degree in drama in 1917, the institution began a tradition of leadership in the arts that spanned the century.

Through research and the education of its students during the administration of President Thomas S. Baker in the 1920s and '30s, the institution began its strong tradition of transferring knowledge and skills to industry and government.

Building on this firm foundation, the administration of President Robert E. Doherty introduced a new approach to education that would be used as a model by similar institutions around the nation. The Carnegie Plan for Professional Education, initiated in 1939-40, required engineering and science students to take a quarter of their courses in a new Humanistic and Social Relations sequence. In addition, its curriculum focused on teaching students problem-solving techniques, a hallmark of the Carnegie Mellon educational experience today.

While the Doherty administration has been credited with this educational innovation, it also oversaw growth in the institution's research capability. Between 1936 and 1950, the number of graduate students grew from 36 to more than 260. The research budget ballooned from $156,000 to $1 million.

Recognized largely as a small engineering school in western Pennsylvania, Carnegie Tech was spreading its influence throughout higher education and into secondary
schools. Many colleges and universities sent delegations to Tech to learn about the Carnegie Plan Under President John G. Warner, who succeeded President Doherty in 1950, the principles of the Carnegie Plan, including its focus on problem-solving skills, were disseminated into secondary schools in the 1950s, the newly formed Graduate School of Industrial Administration, endowed by William Lanman Mellon, emerged as one of the three or four best business schools in the nation.

The Warner administration oversaw the institution's burgeoning research enterprise. This period of research growth was aided by the work of the institution's Computation Center, founded in 1956 to provide computing services to the campus. A major grant from benefactor Richard K Mellon in 1965 aided the establishment of a Computer Science Department, a department which would be the genesis of Carnegie Mellon's worldwide reputation in computer science.

By the end of the Warner administration and the start of the administration of President H. Guyford Stever in 1966, Carnegie Tech had most elements of a university. Its merger in 1967 with the Mellon Institute created Carnegie Mellon University and brought a $60 million endowment, extensive research facilities, and renowned research personnel to the institution.

Five years later; President Richard M. Cyert (1972-90) began a tenure that was characterized by unparalleled growth and development. The university's research budget soared from about $12 million annually in the early 1970s to more than $110 million in the late 1980s. The work of researchers in new fields such as robotics and software engineering helped the university build on its reputation for innovative ideas and pragmatic solutions to the problems of industry and society. Carnegie Mellon began to be recognized as a truly national research university able to attract students from across the nation and around the world.

The Cyert administration stressed strategic planning and comparative advantage, pursuing opportunities in areas in which Carnegie Mellon could outdistance its competitors.

An archetypal example of this approach was the introduction of the university's "Andrew" computing network in the mid-1980s. This pioneering network, which linked all computers and workstations on campus, set the standard for educational computing and firmly established the university as a leader in the uses of technology in education and research.

Education and teaching also benefited in this period with the establishment of a University Teaching Center to improve faculty teaching and the renovation of many of the university's classrooms.

Cognizant of the university's heritage, President Robert Mehrabian (1990-97) invited alumni from the era of the institution's first president, Arthur A. Hamerschlag, to attend his inauguration in 1990. President Mehrabian emphasized Carnegie Mellon's traditional strengths in education, research, and service to society while focusing on initiatives for leadership in the 21st century.

With the appointment of the university's first Vice Provost for Education, President Mehrabian placed renewed emphasis early in his administration on the quality of undergraduate education. He also moved aggressively to complete the most ambitious campus building plan since the Warner era. The University Center, which opened in August 1996, and the Purnell Center for the Arts, completed in
the fall of 1999, were keys to enhancing the quality of life on campus, another priority of the Mehrabian administration.

Confronted by shrinking governmental support of university research, President Mehrabian diversified the university's research agenda. He stressed the need to build strong relationships with the business world, matching industry's needs with the university's areas of research strength. He also put new emphasis on productivity, improvement of administrative services, and strategic management of university resources.

President Mehrabian established strong, new partnerships with the greater Pittsburgh community. He led a community-wide economic development initiative, spurred collaboration with primary and secondary schools, and worked closely with local community groups.

On April 15, 1997, Dared L. Cohen, former dean of Yale University's School of Forestry and Environmental Studies, was elected by the university's Board of Trustees to succeed President Mehrabian.

The university today consists of seven colleges and schools, the Carnegie Institute of Technology (engineering), the College of Fine Arts, the College of Humanities and Social Sciences, the Mellon College of Science, the Graduate School of Industrial Administration, the School of Computer Science and the H. John Heinz III School of Public Policy and Management.

Carnegie Mellon is a diverse blend of academic disciplines, including nationally recognized programs in cognitive psychology, management and public policy, writing and rhetoric, applied history, philosophy and biological sciences. And it has become a national leader in technological fields such as computer science, robotics and engineering. Its position of leadership in the arts and in technology is unusual in higher education today.

Carnegie Mellon is recognized as a pioneer in the uses of computing in education. Its "Andrew" computing network, named for benefactors Andrew Carnegie and Andrew Mellon, is among the most advanced on any campus today.

2. Institutional Mission

The following text is taken from the 2005 Carnegie Mellon University Architecture Program Report:

To create and disseminate knowledge and art through research and artistic expression, teaching and learning; and to transfer intellectual products to society.

To serve our students by teaching them problem-solving, leadership and teamwork skills, and the value of a commitment to quality, ethical behavior, society and respect for one another.

To pursue the advantages provided by a diverse and relatively small university community, open to the exchange of ideas, where discovery, creativity, and personal and professional development can flourish.
Carnegie Mellon will continue to develop as a distinctive research university, one in which research and education are integral. Our faculty share with one another and with their students the excitement of creative inquiry, discovery, and expression. However, we are interested not only in theory and practice, but also in production, or making - for example, making devices and processes, art, hardware and software, new management tools, and literary works.

To fully achieve our goals, we cannot limit our focus to internal concerns. We must also nurture a concern for the welfare of others and a commitment to improve the world. Through our education, research, and creative expression, the university relates to an unusual extent to the world beyond our campus. Our activities have impact by creating knowledge, improving the quality of life, enhancing culture, and advancing economic and environmental sustainability.

Our research-based graduate programs aim to develop future leaders for academia, industry and government. Doctoral education represents an essential component of our mission as a research university and of our contribution to society. The development of Ph.D. students is as important as the research products themselves.

The development of problem-solving skills within a liberal-professional framework is a hallmark of a Carnegie Mellon education. Our undergraduate programs prepare our students to become accomplished professionals who are broadly educated, independent, and humane leaders. A Carnegie Mellon education challenges students to create intellectual depth and breadth, as well as professional skills. We must provide a social environment that reinforces academic objectives and the personal development of students.

A diverse academic environment is essential to enrich intellectual exchanges and to enhance cultural understanding. Likewise, it is important for the diversity of our community to reflect our regional, national and global constituencies. We must be more successful than we have been in realizing and nurturing a diverse community.

3. Program History

The following text is taken from the 2005 Carnegie Mellon University Architecture Program Report:

Architecture has been an integral part of education at Carnegie since its beginnings in 1905. The school, founded in 1900 by a grant of funds by the Scottish immigrant industrialist Andrew Carnegie, was to be known as Carnegie Technical Schools and was to train mechanics and professionals for careers in industry. A competition in 1904 produced the winning campus plan by Palmer and Hornbostel. In the fall of 1905, under the Presidency of Arthur Hammerschlag, classes began in parts of what is now Porter Hall. In addition to a school for the training of journeymen and apprentices in the mechanical trades, there was a school of Applied Science and a School of Applied Design of which architecture was a central component.

The founder and patrons of the Carnegie Technical Schools saw it as their goal to create a particularly American fusion of the Ecole Polytechnique (founded in Paris to train engineers and technicians) and the Ecole des Beaux-Arts (founded in Paris to train artists and architects). Carnegie Tech's first Professor of Architecture, Henry Hornbostel, was himself a student at the Paris Ecole des Beaux-Arts (in 1895-97). Hornbostel graduated in 1891 from the School of Mines of Columbia University and
soon after began a successful architectural practice with William Palmer. In addition to the regular daytime education, a night school was established which was "particularly adapted for training in architectural design of students already employed as draftsmen in the offices of architects". Fifty-eight students attended the night course in Architecture in 1906-7.

The Architecture curriculum was four years in length with the first year taken in common with students in the School of Applied Science (Math, Physics, Chemistry, Drawing, and Shop Practice). In the next three years, design courses were complemented with practical training courses such as plumbing, masonry/bricklaying, and electrical wiring. The Architectural Program was "patterned after the Atelier system of Paris, France, with modifications adapted to American needs". In 1908-9, the departmental "Beaux-Arts Chair" was established, which was to be filled with a graduate of the Paris Ecole des Beaux-Arts.

Several scholarships were offered for each year, the most coveted of which were the Paris and Rome prizes (the first for three years of study at the Ecole, the second for three years of study at the American Academy in Rome). Since French language ability was necessary for successful study at the Paris Ecole, two years of French language study was required at Carnegie Tech until 1928, when the requirement was changed to a "Modern Language", and later became optional.

In 1912 structural engineering was added to the curriculum, a necessary corrective in the country which had invented the steel frame skyscraper and whose major commissions involved an increasing number of high-rise office buildings and industrial structures. In 1912-13, Carnegie Technical Schools (a diploma granting institution) became Carnegie Institute of Technology with the authority to award academic degrees. Sculptural Modeling was a part of the Architectural curriculum from the beginning and remained so into the 1930's by the sculptor, August Zeller, who had studied at the Paris Ecole and with Rodin. By 1912, a typically Beaux-Arts curriculum had been established, notable for the emphasis, in addition to Architectural Design, on the various aspects of drawing and modeling and on history (and notable for the relative neglect of structural theory and structural materials). Until 1916, when Hornbostel provided for a handsome Library Hall for the Arts within CFA, students had to use the Carnegie Library in Oakland.

There had been a few women in the day course almost from the beginning, never more than one or two admitted in any class. That pattern continued into the 1930's, with several years in the late 20's in which there were no women graduates. By 1922, there were two career options in the department, in addition to a small graduate program allowing students to earn an M. Arch degree for a year of advanced design work with a thesis project. Option 1, leading to a B.A. in Architecture, was for a career in Architectural Design. Option 2, ending in A &S., emphasized construction processes as distinguished from the aesthetic and artistic. Courses in Commercial Law and the making of working drawings were added to the curriculum, as was a course in Professional Ethics and Office Organization, taught by members of the Pittsburgh Chapter of the AIA and occasionally by the peripatetic Hornbostel.

By the end of the 40's, the teaching of Architectural Design did not emphasize the Beaux-Arts established principles of beauty and order, but the observation of human behavior and needs in relation to the human environment. The 1939-40 catalogue stated that education must be directed more toward self-realization and realistic practice of architecture in a changing and industrial world". "Habits of investigation
and discovery" were to be encouraged. It is not the meritorious drawings of collegiate days that count but the ability to investigate and correlate parts of the problem.

During WWII, a four year course in Architectural Engineering was introduced and most of the Art courses were eliminated in an effort to train students' to build temporary war-time structures not expected to be beautiful or permanent. No new students were to be admitted to this program after the end of the war. Following the war, Department Head, John Knox Shear, introduced formally listed visiting critics including alumni Mario Celli and John Schurko, and lecturers in special fields such as landscaping. Landscape planning was offered as a course in the early 1960's. In the mid 1960's, an-experimental urban design program was offered; but lasted for only a few years. Kenneth Johnstone, Dean of CFA from 1945-52, introduced a two-year Liberal Arts sequence. Department Head Shear emphasized the student's ability to communicate "What he learns, thinks, and wants" both verbally and graphically.

In the 1960s, under the direction of Paul Schweikher, the undergraduate program was a five-year, fixed-length program. As was common elsewhere during this period, it consisted of an introductory year of basic design followed by four years of architectural design. A long list of distinguished visitors and lecturers were introduced during Paul Schweikher's tenure (1956-69) included George Collins (Columbia), Robert Engman (Yale), Jane Jacobs, Louis Kahn, Kevin Lynch, Thomas Maldonado, Sibyl Moholy-Nagy, Herbert Ohl (Ulm), Nelson Wu (CMU M.Arch '51), Pierre Zoelly (Zurich), and Ludwig Meis van der Rohe.

In 1960-61, Kent Bloomer, a sculptor, began an innovative introductory design program for freshmen focused on "Problems in form, space, and color, the design of main structures in wood, steel, masonry, and concrete" which led to "a synthesis of these in complex programmatic planning". Structural theory and analysis, materials and methods were given as parallel studies to design.

The appointment of Charles M. Eastman in 1967 as Assistant Professor of Architecture and Computer Design marked a departure prophetic of new departmental directions. Eastman developed a Ph.D. program in the new science of Computer-Aided Design. The appointment of Volker Hartkopf in 1972 as Assistant Professor of Architecture broadened the graduate program into an M.S. and Ph.D. offering in Building Science or Computational Design.

In 1967, the Carnegie Institute of Technology merged with the privately sponsored Mellon institute of Research on Fifth Avenue and became Carnegie Mellon University.

in the 1970s and into the 1980s with Delbert Highlands, Robert Taylor, and Louis Sauer as head, the program developed into a four-level, variable-length program. Distinctive characteristics of the program during these years were: the introductory course in architecture, which was developed as an alternative to courses in basic design; the four-level design sequence which defined skills necessary for advancement through the program; the technology sequence which structured architectural technology in a manner parallel to architecture design; and the possibility (never more than 10-15% of all students) of completing the program in a period of four years.

Delbert Highlands, who was Department Head from 1969-75, began a Master of Architecture Program in the early 1970s, admitting students with Bachelors Degrees in other fields to a three-year first Professional Architectural Degree Program.
Highlands appointed many young graduates to the Architecture Department faculty. Among those appointed were Frank Adkins, Louis Gilberdi, Gordon Ketterer, Arne Larson, Roger Mallory, Richard Pohlman, John Ritzu, and Andrew Tesoro, who all taught design. Adjunct instructors included Walter Boykowycz, Michael Hull, Ann Ketterer, and Leonard Pertido. Louis Sauer, Department Head from 1978-81, developed, with help from Omer Akin, a new semi-autonomous structure for the first Professional Degree Masters Program. One of its more interesting components is a design/build studio in which students, guided by architect Michael Chirigos, (CMU B.Arch'56) carry a small building project through construction.

Omer Akin became Department Head in 1981 a position he held until 1988. After nearly a decade of experimentation with the level system, Omer Akin introduced a fixed five-year BArch curriculum, which is still in place today.

After acting Department Heads Ulrich Flemming and Irving Oppenheim, John Eberhard was appointed Head of Architecture in 1989, stepping down as director of the Building Research Board of the National Academy of Science to take the position. With the support of Associate Head Douglas Cooper, the program was revised to build stronger coursework in the areas of history, technology, and design sciences, by relying upon pre-requisite coursework within other departments of Carnegie Mellon. John Eberhard reinforced the graduate programs in the Department and strengthened the commitment to research, both fundamental and applied. The M.Arch program was discontinued in 1992 to ensure the strength of commitment to the B.Arch. and MS/PhD programs.

In the fall of 1994, Vivian Loftness was appointed Head of the Department and was joined by Bruce Lindsey as Associate Head in 1995. Building on the curricular efforts led by Doug Cooper and the entire full-time faculty, a revised curriculum was adopted that called for creative, technical, environmental, and historical competence. At the heart of the curriculum is a studio sequence organized around critical knowledge areas: Design, Drawing and Digital Media, History/Theory, Technology, Practice. In 1998, the Department Architecture was re-designated the CMU School of Architecture to reflect the strength of its conservatory-based professional practice degree program.

In July 2004 Laura Lee was appointed Head of the School of Architecture.

4. Program Mission

The following text is taken from Prof. Laura Lee’s most recent version of the Mission and Strategic Plan document, received 27 September 2005.

INTEGRATED DESIGN
The mission of the School of Architecture is to educate outstanding professional leaders with design creativity, global environmental consciousness, historical perspective, social responsibility, and technical competence.

Defining Interests:
Undergraduate Program
Integrated Design and Media
Interdisciplinary / International Education
Professional Practice / Internship Experience
History / Theory / Criticism
Building Technology / Design Build
Graduate Program
Integrated Design Knowledge
Hands-on practice

Site-based experience
Systems thinking approach

Application of advanced technology
Case based instruction
Complex problem solving
Experience over image orientation
Inter-disciplinary / inter-cultural experience
Personal engagement and service orientation
Process over product approach

Communication and Media Skills
Building (in the shop with wood and other materials)
Drafting (by hand)
Drawing Freehand (including journaling and sketchbook)
Modeling Digitally
Modeling Physically
Reading Critically
Researching (including reporting and recording)
Speaking Publicly
Thinking Critically
Writing Critically

Strengths [defined as of 15 April 2005]
Faculty: diversity, reputation, and impact of practicing faculty in teaching design
Students: intelligent and hard-working
Academic, government and industry partnerships
Integrated design and media approach
Integration of education, practice, research, scholarship
Interdisciplinary collaboration
International network
Graduate research applied to undergraduate education
Multi-cultural community: faculty and students with diverse backgrounds
Practice education / preparing students for the profession
5.1 Strategic Plan | School of Architecture  
5.2 Measures of Success of Strategic Plan  
5.3 Time Line for Execution of Strategic Plan

**Carnegie Mellon University**  
[CMU]

**Strategic Goals**
- University Education
- Information Science and Technology
- Environmental Science and Technology
- Biotechnology for Health and the Environment
- Ensuring International Leadership
- Fostering Diversity
- Promoting Regional Strength

**Partners**
- Carnegie Institute of Technology
- College of Fine Arts
- College of Humanities and Social Sciences
- Heinz School of Public Policy and Management
- Mellon College of Science
- School of Computer Science
- Tepper School of Business
- University Libraries

**College of Fine Arts**  
[CFA]

**Strategic Goals**
- Endow the Conservatories
- Build the Invention Works
- Create DaVinci's
- Research in the Arts

**Partners**
- School of Art
- School of Drama
- School of Design
- School of Music
- Bachelor of the Humanities and the Arts Program  
  [BHA]
- Bachelor of the Sciences and the Arts Program  
  [BSA]
- Center for Arts in Society  
  [CAS]
- Entertainment Technology Center  
  [ETC]
- Studio for Creative Inquiry  
  [SCI]
- Regina Gouger Miller Gallery

**School of Architecture**  
[SoA]

<table>
<thead>
<tr>
<th>10 Administrative Targets for the Strategic Plan</th>
<th>( \text{introduce portfolio / test / interviews} )</th>
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<tbody>
<tr>
<td>Admissions Process</td>
<td>develop sustainable strategy</td>
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<tr>
<td>Alumni Relations, Fundraising</td>
<td>publish criteria, review regularly</td>
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<tr>
<td>Assessment (curriculum, faculty, student dev.)</td>
<td>coordinates and maintain program</td>
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<tr>
<td>Communication: external, internal, website</td>
<td>promote growth and collegiality</td>
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<tr>
<td>Comm. / Intellectual Climate: lecture/series/ visitors</td>
<td>provide latest technology</td>
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<tr>
<td>Computing Environment (hardware, software, space)</td>
<td>assess and develop phased plan</td>
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<tr>
<td>Curr. Revisions for Integrated Design (BArch-MArch)</td>
<td>offer competitive package</td>
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<tr>
<td>Faculty and Student Diversity, Recruitment &amp; Support</td>
<td>develop materials for dissemination</td>
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<tr>
<td>Identity and Promotion Publications</td>
<td>provide latest technology</td>
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<tr>
<td>Facilities and Materials/Wood Shop Equipment</td>
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