Introduction – Causes of Concern
- **1. Interim Director**

    See bookmark "MSU APR: Introduction – Causes of Concern 1. Interim Director"

Condition 1 -- Context and Mission
- What is the program standing among the institution's other programs? The document describes the institution and its offerings. The chair would like to get a better understanding of how the institution perceives the architecture program. Is this program one of your key programs, and what is your outlook for your graduates – local or regional reach?

    See bookmark "MSU APR: Condition 1 Context and Mission Program Standing/Student Outlook"

- Provide a list of ongoing faculty research that involves students, or activities for Focus 2, Goal 3.1. Focus 2 states that: ***Improve Lives and Society through Research, Creativity, and Scholarship Montana State University faculty, staff, and students are known nationally and internationally for discovering, applying, testing, and sharing knowledge and creative works that expand understanding and positively impact lives and society.*** Section 3.1 lists ongoing research dealing with the tribal community under the guidance of the faculty, but in focus 2 the list of research listed only describes work by the faculty and states nothing about students. The chair would like to better understand the program's stated goal.

    See bookmark "MSU APR: Condition 1 Context and Mission Faculty Research Including Students"

Condition 2 -- Shared Values
- **Environmental Stewardship**: Provide further information for 2.2.3 – how are the eight parts measured?

    See bookmark "MSU APR: Condition 2 Shared Values Environmental Stewardship 2.2.3"

- **Lifelong Learning:** Provide clarification on the 2.6.1 graduate electives, focusing on outcomes and how outcomes and commitment are measured.

    See bookmark "MSU APR: Condition 2 Lifelong Learning"

Condition 3 -- Program and Student Criteria
- **PC3:** Provide clarification on the three-year cycle of outcomes assessment and corrections made to counter the deficiencies that were found.

    See bookmark "MSU APR: Condition 3 Program Criteria PC.3"

- **PC4:** Provide the list of readings provided for ARCH 356 and ARCH 457 as stated on page 49. Additionally, provide additional information on the assessment cycle variation mentioned at the end of this section of the APR.

    See bookmark "MSU APR: Condition 3 ARCH 356 and ARCH 457 List of Readings"
    See bookmark "MSU APR: Condition 3 Three Year Assessment Cycle"

- **PC6**: Provide further information on the outcome and status of ARCH 291 and ARCH 452.

  See bookmark "MSU APR: Condition 3 Program Criteria PC.6"

- **SC5:** Provide copies of the external assessment for ARCH 558 and recommendations to the program from their assessment.

  See bookmark "MSU APR: Condition 3 Student Criteria SC.5"

- **SC6:** Provide further clarification and discussion of your response on the APR to better understand your comments in the first paragraph of this section.

  See bookmark "MSU APR: Condition 3 Student Criteria SC.6"

Condition 4 – Curricular Framework

- **4.3.1:** Provide data concerning the number of students that have to repeat studio due to two consecutive C's. Provide an example of a transfer student review documents and assessment from the institution.

  See bookmark "MSU APR: Condition 4 Two Consecutive (C-) Studio Grades"
  See bookmark "MSU APR: Condition 4 Transfer Student Review Documents and Assessment"

- **4.3.3:** Provide data concerning the program's last statement in this section regarding students denied admission to the program.

  See bookmark "MSU APR: Condition 4 Graduate Program - Remediation"

Condition 5 – Resources

- **5.2 —Planning and Assessment**
  a. **5.2.1:** Provide additional data concerning the number of firms participating in the internship program.

  See bookmark "MSU APR: Condition 5 Planning and Assessment 5.2.1 Internship Program"

  b. **5.2.2:** Provide clarification on Goal 1.3 and the incorporation of Bloom's Taxonomy. Additional, for Goal 3.3, provide samples of the SoA learning environment and studio culture survey results and recommendations.

  See bookmark "MSU APR: Condition 5 Planning and Assessment 5.2.2 Bloom's Taxonomy"
  See bookmark "MSU APR: Condition 5 Planning and Assessment 5.2.2 Studio Culture Survey"

- **5.6 – Physical Resources**
  a. **5.6.3:** Provide clarification on long-range plans for space versus student enrollment goals.

  See bookmark "MSU APR: Condition 5 Physical Resources Space versus Student Enrollment"

  b. **5.6.4:** Provide clarification on computer programs available to the students, via VPN or on their own laptops.

  See bookmark "MSU APR: Condition 5 Physical Resources 5.6.4 Student Software"

- **5.8 – Information Resources**
  a. Provide clarification concerning the limited growth of books and journals, conversion to ebooks, or publications.

See bookmark "MSU APR: Condition 5 Physical Resources a. Library Resources"

Architecture Program Report
School of Architecture
Montana State University
Prepared January 15, 2023

Additional Information on:

Introduction – Causes of Concern

- **1. Interim Director:** Update on Director's Search

Since the writing of the APR, the School of Architecture has positive developments to report regarding the Director's search.

In September 2022, Interim Director Christopher Livingston and Leadership Fellow Zuzanna Karczewska met with University Provost, Robert Mokwa, and Dean of the College of Arts and Architecture, Royce Smith, to discuss the School of Architecture's desire to initiate a national search for a full-time director. During that meeting the University Provost agreed with this plan and the School of Architecture received permission to start a formal Director's search.

During the fall semester, the search announcement was revised and reviewed once again by Dean Royce Smith and approved by the faculty and the leadership of the school. In concert with approval of the search announcement, a search committee was formed consisting of a chair from outside the School of Architecture, full professors, associate professors, assistant professors, staff and a student.

The announcement was posted in a variety of venues including the ACSA on December 23rd and candidates are currently applying for the position.

The search schedule is as follows:

February 6th	-the candidate screening process begins
February 16th	-semifinalists' WebEx interviews begin
February 21st	-finalists selected and invited to on-campus interviews
March 7th-20th	-candidates' on-campus interviews
April 4th	-search committee will send recommendations to the hiring authority

Architecture Program Report
School of Architecture
Montana State University
Prepared January 15, 2023

Request for Additional Information on:

<u>**Condition 1 – Context and Mission**</u>
- **Program Standing among other programs at MSU:** What is the program standing among the institution's other programs? The document describes the institution and its offerings. The chair would like to get a better understanding of how the institution perceives the architecture program. Is the program one of your key programs, and what is your outlook for your graduates – local or regional reach?

To better understand the program's standing among the institution's other programs, the School of Architecture contacted the University Provost's office how MSU perceives the architectural program and their role within the state's land-grant mission. Below is their response.

> *Montana State University, the state's land-grant university, integrates education, the creation of knowledge, art, and service to communities. Our vision is to transform lives and communities in the people's interest. We value excellence, integrity, inclusion, collaboration, curiosity, and stewardship as foundational to our efforts.*
>
> *Land-grant institutions were established to promote the liberal and practical education of individuals from the industrial classes in the pursuits and professions in life. The MSU School of Architecture is central to the fulfillment of both our land-grant and institutional missions, vision, and values. In particular, the architecture program is a key to our goal of providing students access to the creative and scientific skills necessary to develop sustainable and healthy buildings and communities. The community design center and it's reach within the state of Montana is a hallmark of the program. Additionally, the breadth of the curricular offerings within the School of Architecture provides an opportunity for students to include a wide array of perspectives in their work, which ultimately enhances the communities in which they live and work.*

The School of Architecture has also been identified as contributing to Montana State Universities strategic plan, "Choosing Promise" https://www.montana.edu/strategicplan/
In the area "Scholarship That Improves Lives", under Intentional Focus 2, Improve Lives and Society through Research, Creativity and Scholarship, the School of Architecture is included in two of the four Grand Challenges of Montana that responds to regional and global needs.
https://www.montana.edu/strategicplan/improvinglives.html

- Caring for our environment: environmental science, design, engineering, architecture and social structure.

- Promoting wellness in our communities: access and equity in education and health outcomes, community-based participatory research, biomedical sciences, and entrepreneurship.

The school of Architecture has contributed directly to the second of these Grand Challenge areas through Professor Ralph Johnson's work with faculty and students in the Bozeman Housing First Village with the HRDC and then again with work on Rural Teacher Housing design.

Additionally, the School of Architecture's Tiny Shelter research was listed as one of 15 partnerships that contributed to MSU receiving a **Carnegie Community Engagement Classification** by the Carnegie Foundation for the Advancement of Teaching. Montana State University is one of 119 universities to receive this classification.

"The 15 partnerships MSU highlighted in its Carnegie Community Engagement Classification application are:

- *Montana County Elected Officials Certification Program – Montana Association of Counties. The MSU Extension Local Government Center works closely with Montana County Elected Officials to provide an intensive 40 hour curriculum-based trained to all newly elected and incumbent county officials.*
- *Montana's Part C Early Intervention Services: A Qualitative Investigation of Parents' Experiences – Montana Department of Public Health and Human Services. The collaborators study the effectiveness of support services for children with disabilities and their families.*
- *Housing First Village – Gallatin Valley HRDC. The collaborators address the growing needs of homeless people in Bozeman and the Gallatin valley."*

See: https://www.montana.edu/news/19558/msu-again-receives-recognition-for-outstanding-community-engagement-from-carnegie-foundation

The outlook that the faculty and staff have for graduates of School of Architecture is at all levels from the local, regional, national and even international. We have graduates working in Bozeman and throughout the state as project architects and partners of firms. Most if not all the leading firms in the state have principals that graduated from MSU. Regionally, there are many firms in the Pacific Northwest that have graduates working as project architects and partners of firms including several firms that have won AIA Architecture Firm Awards. Nationally and internationally, our graduates have become partners at national or international firms including Morphosis Architecture, Olson Kundig, Mithun, LMN, Barkow Leibinger Architects, Cushing Terrell, Fentress Architects, and BCHO Architects Associates.

Our graduates also pursue post-graduate studies in architecture or related fields.   Recently, we have had some of our graduates undertake post-professional graduate studies at Cornell University and TU Delft. We are also aware of our graduates obtaining tenured faculty positions at Louisiana State University, University of Hawaiʻi at Mānoa, and Syracuse University.

Architecture Program Report
School of Architecture
Montana State University
Prepared January 15, 2023

Request for Additional Information on:

<u>**Condition 1 – Context and Mission**</u>
- **Faculty Research Involving Students:** Provide a list of ongoing faculty research that involves students, or activities for Focus 2, Goal 3.1. Focus 2 states that: ***Improve Lives and Society through Research, Creativity, and Scholarship Montana State University faculty, staff, and students are known nationally and internationally for discovering, applying, testing and sharing knowledge and creative works that expand understanding and positively impact lives and society.*** Section 3.1 lists ongoing research dealing with the tribal community under the guidance of the faculty, but in focus 2 the list of research listed only describes work by the faculty and states nothing about students. The chair would like to better understand the program's stated goal.

The following research and activity projects and publications were developed with students enrolled in the School of Architecture.

<u>Assistant Teaching Professor Brian Brush</u>

- Brush, B. W., Echeverio, Y (student)., Stevenson, H. (student), Teply, L. (student)
  Resonance [Public Art] (2020).
  City and County of Denver, Denver Commission on Cultural Affairs - Denver, CO.

- Brush, B. W., Dokken, G. (student), Echeverio, Y. (student), Corah, P. (student), Budahl, C., Crum, C. (student), Stevenson, H. (student), Teply, L. (student), Romine, D. (student),
  Sonarc [Public Art] (2019).
  City of Raleigh - Raleigh, NC.

- Brush, B. W., Corah, P. (student), Teske, H. (student)
  Cirrus and Stratus [Public Art] (2019).
  Department of General Services - Washington, DC.

<u>Associate Professor Susan Cowan</u>

- Susanne Cowan and Larissa Morales (student); ***Trail Usage in Bozeman: A Report for the City of Bozeman Parks Department and the Gallatin Valley Land Trust***, June 2020
  School of Architecture, Montana State University, Bozeman, MT

  Abstract
  This project conducted open space mapping, trail counts, and surveys, to provide data to the City of Bozeman and the Gallatin Valley Land Trust to determine the need for new or improved trail infrastructure. This project engaged 76 students from Montana State University's School of

Architecture in Dr. Cowan's classes Architecture 452: Research Methods in Architecture and Architecture 525: Participatory Open Space Planning.

- Cowan, Susanne, Sarah P. Church, Brennan Radulski (student), Ryen Dalvit (student), Kip Giddings (student), Jack Rosenthal (student), and Joe Peoria (student); ***Investigating Neighborhood Character in the Northeast Neighborhood of Bozeman, MT***, September 2022.
  School of Architecture, Montana State University, Bozeman, MT
  [doi.org/10.15788/202209](doi.org/10.15788/202209)

  Abstract
This study examines the densification and gentrification of the Northeast neighborhood of Bozeman, Montana. Between Spring 2020 and Summer 2022, Cowan led about 50 students in two Montana State University architecture courses, Architecture 452: Research Methods in Architecture and Architecture 523: Issues in City Planning, to conduct and analyze a physical inventory of the built environment, a survey, and interviews of residents. This interdisciplinary research conducted with Dr. Sarah Church received MSU grant funding and produced a report that will be used by the City of Bozeman and the Northeast Neighborhood Association (NENA) to guide future urban planning.

Professor Michael Everts

- Michael Everts; ***Public Architecture for Cultural Sharing: Creating Story Pole Installations for a Fort Peck Indian Reservation Buffalo Trail System;*** School of Architecture, Montana State University, Bozeman, MT, with Cal Tompkins (student)

- Michael Everts; ***The Baha Tata'ga Omaskaska Buffalo Trail Prayer Path***; School of Architecture, Montana State University, Bozeman, MT

- ***Participatory Design with Tribal Colleges*** funded by a College of Arts and Architecture faculty grant

- ***Arch 551 Buffalo Connection Project Community Exhibit in Fort Peck Indian Reservation*** (Wolf Point Library and Fort Peck Community College, Poplar), June – October 2016

- ***Buffalo Connection Outreach and Engagement Committee Grant Poster Presentation and Open House***, MSU Union

Professor Ralph Johnson

- Ralph Johnson; ***Bozeman Housing First Village Construction Phase Adaption of Prototypes*** funded by the Bozeman Human Resource Development Council (HRDC); School of Architecture, Montana State University, Bozeman, MT

10 students participated in the creation of prototypes for the Bozeman Housing First Village

- Ralph Johnson; ***Rural Teacher Housing Design and Cost Analysis*** funded by a grant from Montana State University; School of Architecture, Montana State University, Bozeman, MT

7 students participated in the creation of design proposals and cost estimates

<u>Professor Steve Juroszek</u>

- Steven P. Juroszek, Kay Spokas (student), Hannah Jade Wood (student); ***Stretching the Design Process***; 2018
School of Architecture, Gianforte School of Computing, School of Art, Montana State University, Bozeman, Montana, USA

  Presented and published in the 2018 Design Communication Association Biennial Conference Proceedings, Cornell University.

  Abstract
  The measuring time research project explores the relationship between how students measure the time they spend on various design methods and topics and its impact on the student's design process. Self-reporting of time spent on a project can have a positive impact on a student's design process by providing feedback on where their time is being allocated. To improve the feedback loop and iterative nature of the design process, a web-based application, STRETCH, was developed to transition the measuring time research project into a fully digital process.

<u>Professor Maire O'Neill</u>

- Professor O'Neil offers two courses that are focused on historical research, fieldwork research and documentation. These include:

  - Arch 522; *Traces: Drawing on the Cultural Landscape*
    Focus of course is on fieldwork research and documentation
  - Arch 522; *Traces: Hidden Narratives*
    Focus of course is on historical research

  Numerous students have received Charles E. Peterson Prize award for their field work, HABS documentation, and historical research generated in those courses. The list of awards is included in the last section of this document – "Honors and Awards" by students for their field work, HABS documentation, and historical research.

- Freshman students in Professor O'Neill's Arch 121 Introduction to Design class are asked to write a design essay and enter the international Berkeley Undergraduate Prize for Architectural Design Excellence (BERKELEY PRIZE) competition.
  2021 class generated seven semifinalists and a 2nd place winner
  For the names of the students see the "Honors and Awards" section of this document

<u>Associate Professor Jaya Mukhopadhyay</u>

- **Wilder, R.(student),** Mukhopadhyay, J., Femrite, T., Amende, K. (2019) ***Evaluating Glare in LEED Certified Buildings to Inform Criteria for Daylighting Credits***. *Journal of Green Building*: v. V14 i. N3 p. 21

- **Integrated Design Lab:**
  https://www.montana.edu/idl/
  August 2015 – Present

  The IDL is part of a network of laboratories across the four states in the Pacific Northwest and Intermountain West that are dedicated to the development of high-performance buildings. The contribution of the IDL is primarily through research, education and outreach efforts with students, owners, and professional design and construction teams to transform design practice and keep pace with technologies, materials and methods of construction that best meet the needs of building owners and society in general. Professionals utilizing the services provided by the IDL are given resources and opportunities to design and construct buildings that are more comfortable for people, follow best practice design approaches, require less energy to maintain and operate, and enhance the health and productivity of inhabitants. Students employed at the IDL in MSU have worked on a range of projects helping professionals across Montana to improve the condition of built environment. Projects primarily address building performance evaluation. Examples of such projects include auditing the energy performance and indoor environmental quality, researching technologies that can potentially be integrated into energy codes for Montana, and conducting daylight, energy and lifecycle cost analysis. Under the guidance and mentorship of Professor Mukhopadhyay, students working on projects in the lab are given various opportunities to interact with professionals in the field of architecture and other fields related to the building industry. In some projects, students are given opportunities to work in interdisciplinary teams. These interdisciplinary teams, consisting of students from engineering and architecture, are encouraged to address real world problems by taking insights from the two disciplines, synthesizing their contribution to understanding, and then integrating these ideas into more complete and coherent solutions.

  15 students have been employed in the last 7 years on various projects conducted at the IDL.

  Projects include:
  https://www.montana.edu/idl/projects.html
  - Lamar Buffalo Ranch
  - Brick Breeden Fieldhouse (MSU)
  - Norm Asbjornson Hall
  - Boys and Girls Club of Carbon County
  - Crow Mercantile
  - Downtown Bozeman Community Co-Op
  - Greater Yellowstone Coalition
  - Klos Building
  - Missoula Federal Credit Union
  - Pinnacle Bank
  - Washakie Museum

  https://www.hpbmagazine.org/montana-state-university/
  MONTANA STATE UNIVERSITY'S (MSU) campus in Bozeman, Montana, has become a living laboratory to test building technologies that will achieve low carbon operation. This concept allows MSU to implement and analyze building technologies in conjunction with hands-on student research to inform campus

decisions and the built environment industry. In addition, future campus energy strategy and building system concepts are being shaped by MSU students and industry professionals who are learning from MSU's physical infrastructure.

- **Assessment of Energy Consumption and Indoor Environmental Quality in Tiny Homes:**
  August 2019 – Present
  The concept of the 'Tiny Home' (TH) can be considered as a potential solution to the housing crisis that we face in many of our cities today across the United States. The TH model addresses the design and construction of houses that are smaller than 400 square feet in area. Currently, there are no specifications in the residential energy codes that address issues specific to the TH model. However, given the unique envelope-to-floor-area ratio, the performance of the TH warrants further investigation in terms of both energy consumption and indoor environmental qualities (IEQ) such as thermal comfort and indoor air quality (IAQ). In order to understand the impact of physical characteristics such as building envelope and volume of a TH on the resultant energy consumption and thermal comfort of occupants, my research provides an assessment of some of the first reported measurements of energy use and space conditions in THs located in a cold climate. In addition, an extensive occupant survey was conducted to confirm and validate the results obtained from the measurement experiments. The results obtained from this research contributed to the development of strategies for the construction and operation of building systems that are tailored to the unique configuration of the TH. The research also articulates guidelines for energy efficiency strategies and improved thermal comfort in THs using simulation methods. Using calibrated whole building energy simulation, the study evaluated strategies for envelope, lighting, ventilation as well as active and passive environmental control systems. In evaluating these strategies primarily for their impact on energy consumption, the research assessed the resultant impact on thermal comfort in the TH, which in turn impact health and wellbeing of the occupants. In doing so, the study reassessed the current specifications available in the building codes and recommendations that may not be applicable to the unique configuration of the TH.

  3 students have been employed to work on various aspects of this research in the last 4 years.

- **ASHRAE-1650: 9.1.3.6   Review of Training Requirements for Operation and Maintenance of High-performance Building Systems**
  September 2017 – September 2020
  Research Project – 1650, Training Requirements for Sustainable High-Performance Building Operations investigated the training requirements for operation and maintenance (O&M) practices for high-performance buildings. The goals of this project were to develop knowledge-skill-competencies (KSCs) to properly train key personnel involved in the O&M of high-performance buildings. The goal was also to establish a basis for potential certification and training program to be developed and conducted by ASHRAE that address the current and pertinent issues faced by the building O&M personnel in high-performance buildings.

  1 student was involved in the compilation of literature review for this study.

- **Evaluation of Energy Performance and Indoor Environmental Quality of LEED Certified Buildings**
  September 2018 – September 2019

This project was sponsored by Environmental Protection Agency's - People, Prosperity and the Planet (EPA-P3) Student Design Competition, which is open to teams of college/university students working to design solutions for a sustainable future. The execution of this research project utilizing a classroom format offered students hands-on experience that brings their classroom learning to life, while also allowing them to create tangible changes in their communities. In addition, the guidelines and recommendations provided by this report can potentially be used by professionals from architectural and engineering communities to improve performance of buildings they design and commission. By facilitating appropriate conditions for students to gain holistic knowledge of building performance that they can later use to their benefit as future professionals, and by compiling recommendations that can be utilized by the architectural and engineering communities of professionals involved in green building design, this research project contributes to creation of impactful knowledge that serves local and national audiences. The research develops a suite of guidelines for architects and engineers to ensure adequate Indoor Environmental Quality (IEQ) along with providing measures for reducing energy consumption in the operation of Green buildings. The guidelines prompt designers to account for occupant comfort via means of ensuring adequate IEQ when considering implementation of energy efficiency strategies in Green buildings.

1 student was employed to compile the final report.
5 students were engaged as part of a class and conducted measurements to evaluate the performance of two dorm buildings located on the MSU campus.

- **Retrofit Recommendations for Fork & Spoon Restaurant Bozeman Montana**
  November 2019 – May 2020
  The Fork & Spoon is Montana's first and only pay-what-you-can restaurant operated by the Human Resource Development Council (HRDC). The building was purchased by the HRDC in 1987 and piece meal renovations have been done since then depending on the availability of funds received from donations. Currently, the building is in need of major renovations to the envelope, lighting and HVAC systems, which would enhance building performance in terms of reduced energy consumption and improved IEQ. Following a similar format to the research conducted for the EPA-P3 project, this research project evaluated the current building performance conditions in terms of energy consumption and IEQ. Based on the results of this evaluation, recommendations for retrofitting the envelope, lighting and HVAC systems of the building were proposed with measures that improved energy efficiency and enhanced IEQ. In addition, the impact of implementing the energy efficiency measures on resultant IEQ were assessed. Guidelines and recommendations outlined by this research project could be used by architectural and engineering communities that are engaged in retrofitting and operation of restaurant buildings in cold climates.

3 students were employed to conduct measurements for this project.

Community Design Center

From the School of Architecture website:
The Community Design Center serves the people of Montana by reaching to non-profit organizations and government agencies to provide visioning, planning and conceptual design. The CDC fosters a collaborative interdisciplinary community/university partnership approach that serves the people of Montana in research and design of the built environment.

Fourth year Architecture students participate in the Center's activities while learning to manage their own projects and determine appropriate design proposals, research methods and production schedules with the assistance of the faculty advisors.

Selected Projects Undertaken by Community Design Center

FALL 2022

- ***Bozeman Midtown Master Planning***; instructor: Jordan Zignego, School of Architecture, Montana State University, Bozeman, MT

- ***MSU Innovation Campus Master Plan and Buildings Study***; instructor: Jordan Zignego, School of Architecture, Montana State University, Bozeman, MT

SUMMER 2022

- ***Shelby Housing Study***; instructor: Jordan Zignego, School of Architecture, Montana State University, Bozeman, MT

- ***City of Lincoln Downtown Revitalization Study***; instructor: Jordan Zignego, School of Architecture, Montana State University, Bozeman, MT

FALL 2021

- ***Downtown Livingston Adaptive Reuse Strategies***; instructor: Brian Brush, School of Architecture, Montana State University, Bozeman, MT

- ***Downtown Livingston Urban Asset Inventory***; instructor: Brian Brush, School of Architecture, Montana State University, Bozeman, MT

- ***Gardiner School Teacher Housing***; instructor: Brian Brush, School of Architecture, Montana State University, Bozeman, MT

- ***Multi-generational Recreation Center at the Bozeman Senior Center***; instructor: Brian Brush, School of Architecture Montana State University, Bozeman, MT

- ***Museum of the Rockies Expansion and Renovation***; instructor: Brian Brush, School of Architecture, Montana State University, Bozeman, MT

- ***Rocky Mountain Laboratory Visitor Center***; instructor: Brian Brush, School of Architecture, Montana State University, Bozeman, MT

FALL 2020
- ***Anaconda Streetscape and Facade Beautification***; instructor: Maire O'Neill, School of Architecture, Montana State University, Bozeman, MT

- ***Ronan Fire Station***; instructor: Ralph Johnson, School of Architecture, Montana State University, Bozeman, MT

FALL 2019

- ***Attainable Faculty Housing for Gardiner Public School***; instructor: Brian Brush, School of Architecture, Montana State University, Bozeman, MT

- ***The Neighborhood - Residential Planning in Gardiner***; instructor: Maire O'Neill, School of Architecture, Montana State University, Bozeman, MT

Tiny House

Tiny House is a series of design build projects spearheaded by Professor Ralph Johnson that researched the possibilities offered by small dwellings explored in different contexts. Some of the projects were done in partnership with the Human Resource Development Council (HRDC)

There have been several articles written on various phases of the Tiny House projects. Links to those articles are provided below.

August 28, 2019

MSU programs collaborate on solution for rural teacher housing shortage
https://www.montana.edu/news/18946/msu-programs-collaborate-on-solution-for-rural-teacher-housing-shortage
"Montana State University students are playing an important role in helping them. MSU architecture students are designing and building prototypes for a new program called Housing First Village, a planned community to be built off campus based on the "Housing First" model. The concept behind the project is that people need stable housing before they can find jobs and otherwise turn their lives around.
Partnering with the Human Resource Development Council and the local faith community, MSU students designed and built the first tiny house prototype for the village over three semesters as part of professor Ralph Johnson's "Design for the Community" class in the College of Arts and Architecture."

DECEMBER 21, 2018

Home makers; School of Architecture works with nonprofits on tiny shelter project to house homeless
https://www.montana.edu/news/mountainsandminds/18257/home-makers
"The reality is there are homeless in Bozeman, and Montana State University students are playing an important role in helping them. MSU architecture students are designing and building prototypes for a new program called Housing First Village, a planned community to be built off campus based on the "Housing First" model. The concept behind the project is that people need stable housing before they can find jobs and otherwise turn their lives around."

MAY 4, 2018

MSU architecture students debut tiny shelter prototype for community's homeless
https://www.montana.edu/news/17716/msu-architecture-students-debut-tiny-shelter-prototype-for-community-s-homeless

December 16, 2016
MSU School of Architecture designs small solution for temporary housing for homeless
https://www.montana.edu/news/16591/msu-school-of-architecture-designs-small-solution-for-temporary-housing-for-homeless

Honors and Awards

Charles E. Peterson Prize: Awarded by the National Park Service's Heritage Documentation Programs, The Athenaeum of Philadelphia, the American Institute of Architects (AIA), and the Association for Preservation Technology International (APTI)
Under the guidance of Professor Maire O'Neill:

- Nima Safaeian for HABS record drawings and historical research of "Attanas Viaux Homestead, Gallatin Gateway, MT"; Third Place; 2019

- Kathryn Kennedy-Hubler, Cody Hildreth & Kasey Belzer for HABS record drawings and historical research of "Log Infill Barn, Bozeman, MT". The drawings and research are now housed in the Library of Congress; Honorable Mention; 2018

- Chaundra Monical & Lesley Miller for HABS record drawings and historical research of "Bos Farm Barn, Manhattan, MT". The drawings and research are now housed in the Library of Congress; Second Place; 2017

Berkeley Prize International Design Essay Competition
- 2021 Semifinalists:
	Indigo Mathes
	Jonathan Marrs
	Russell Lake
	Sydnee Lovering
	Timothy Lee
	Zoe Hammond

- 2021 2nd Place winner
	Zoe Hammond

- 2018 Finalist
	Grace Books

- 2018 Semifinalist
	Chace Elings

Design Communication Association Juried Design Communication Exhibition Awards

- 2022 Best of Category Undergraduate Observation Image
	Riley Sampson, White Box

- 2022 Best of Category Graduate Design Image
  - Ethan Brown, Cyberspace and Placelessness #3

- 2020 Award of Distinction /Design Drawing/ Undergraduate / Upper Level
  - Ethan Brown
  - Quinn Bouma
  - Alexandrea Simensen

- 2020 Award of Distinction /Design Drawing/ Undergraduate / Upper Level
  - Matthew Smith
  - Ian Tanninen

- 2018 Best in Category, Award of Distinction / Observational Image / Graduate Student
  - Marley Robb

- 2018 Best in Category Award of Distinction / Design Drawing / Undergraduate Student
  - Sam Bjorklund

- 2018 Award of Distinction / Design Image / Foundations
  - Dylan Kish
  - Finn Loftesnes

- 2018 Award of Distinction / Design Image / Upper Level Student
  - Austin Anderson
  - Geneva Anderson
  - Paul Calabro
  - Nick Joscelyn
  - Chloe Naese

- 2018 Award of Distinction / Observational Image / Undergraduate Upper Level Student:
  - Haley Teske

- 2018 Award of Distinction / Observational Image / Graduate Student:
  - Marley Robb
  - Sarah Burk

AIA COTE Top Ten for Students Design Competition

- 2017; Robin Wilder; The Culture and Production of Home

- 2018; Mary Demro; The Fourth Place

- 2019; Haley Teske; The Happy Place

- 2020; Nicole Anderson**;** Library of Play

Others

- 2017, 37th Annual Best of College Photography competition
  Finalist: Riley Connell, color photograph, (Arch 253 studio, Fall 2016). Published in Photographer's Forum Best of College Photography Annual, November

- 2017 American Society of Architectural Illustrators Architecture in Perspective 33 Award: Student Award of Excellence:
    Michaela Liebel

- 2021 ASHRAE Design Competition
    2nd Place, Brendan Latimer (Architecture student with team of engineering students)

Architecture Program Report
School of Architecture
Montana State University
Prepared January 14, 2023

Request for Additional Information on:

<u>**Condition 2 -- Shared Values**</u>
- **Environmental Stewardship**: Provide further information for 2.2.3 – how are the eight parts measured?

The eight parts that contribute to the learning objectives of ARCH 431 Issues in Sustainability are:

    Part 1 Introduction and Practice of Integrity
    Part 2 Theory
    Part 3 Site Design
    Part 4 Stormwater
    Part 5 Renewables
    Part 6 Building Envelope / Thermal Impacts
    Part 7 Net Zero and Carbon Neutrality
    Part 8 Integration of Sustainable Systems

Course Components Connected to Learning Objectives
As stated, the eight parts of the course contribute to the learning objectives for the course:

    LO1 Identify sustainable techniques and approaches including, but not limited to materials, site selection, landscaping, storm water, envelope, energy efficiency, mechanical approaches, passive solar, photovoltaics and assessment of carbon footprint.
    LO2 Comprehend fundamental principles of sustainable design strategies and to make informed choices with demonstrated ability to incorporate a broad palette of sustainable strategies into architectural projects.
    LO3 Understand sustainable design principles to achieve optimal use of sustainable materials, maximum energy efficiency and reduced carbon footprint.
    LO4 Sufficient knowledge and understanding to effectively communicate with architectural peers, engineers and associated professionals in a team approach to integrative design.

Furthermore, although the segments follow an order, they are not presented linearly in the flow of the class. For example, principles of "Net Zero and Carbon Neutrality" (Part 7) are presented In "Theory" (Part 2). The first three parts (Intro/Integrity, Theory and Site Design) of the course focus on principles and the remaining five parts focus on application of the principles.

Learning Objectives Connected to Assignments
Two assignments (out of the twelve given over the course of the semester) are used for external assessment to measure the extent to which students can: identify sustainable techniques and approaches (LO1); understand fundamental principles of sustainable design strategies (LO2); understand principles of energy efficiency and carbon footprint; and communicate those principles effectively in integrative design (LO3). Assignment #5—Site Selection—comes at the end of Part 3, so it is used for

externally assessing the students' grasp of sustainability principles. Assignment #12—Sustainable Design Principles and Net Zero—is the last assignment of the semester that challenges students on new material they learned throughout the semester (LO4). Assignment #12 focuses on case studies that demonstrate how principles of sustainability are incorporated into built projects.

The first measurement of the educational success of the eight parts, as integrated into the four learning objectives of the course was done in the Spring 2021 semester that the class was taught. There were five total assessment questions. The first three referenced assignment #5, in which reviewers assessed student knowledge of principles of sustainability as they were demonstrated in site selection. The next two questions referenced assignment #12, in which students demonstrated their knowledge of the actual environmental impacts of fuel choice, with backup from the case studies they learned about.

The external review assessed that 100% of the student work evaluated demonstrated "more than adequate" knowledge of the material. The next assessment will be of the spring 2023 course. In addition to the external assessment, the instructor noted that several topics needed to be reinforced in the course:

- Implementation of Sustainable Measures. Multiple campus and off campus field visits, including Passive House, Bridger View Development, Bozeman Co-Op, Container home, MSU Heat Plant have been added to the course. The purpose of these is to further emphasize sustainable practices and to point out elements that are critical to this path and those that are less desirable.
- Carbon Reduction. More focus on carbon calculations, carbon reduction and the impact on sustainable design and construction has been added to the course. The specific added assignment is to calculate carbon footprint on a home.
- Fuel Source. An assignment has been added that guides students to look at fuel source choices as part of design and to be able to make choices in design that impact cost, carbon and environmental impact.
- Photovoltaic Design. After observing unrealistic solar gain expectations on studio design projects, an exercise to calculate aa very basic PV design has been added.

Architecture Program Report
School of Architecture
Montana State University
Prepared January 14, 2023

Request for Additional Information on:

<u>Condition 2 -- Shared Values</u>
- **Lifelong Learning:** Provide clarification on the 2.6.1 graduate electives, focusing on outcomes and how outcomes and commitment are measured.

Student-directed Learning through Graduate Electives
The MSU School of Architecture's 4+1½ year program places the vast majority of the required foundation, technical, history, communication and professional courses occur within our 4-year undergraduate program. By front loading our curriculum in this manner, it allows our three-semester graduate program to have more flexibility and student-directed learning, which has been a characteristic since the school made the transition to a Master of Architecture graduate program. We see the ability for students to direct their graduate education as a key component for students' developing their lifelong interests and learning.

This opportunity for students to direct their education towards their interests and future work opportunities can be seen in the credit distribution of the graduate program. Out of the 42 required credits needed for our Master of Architecture program, 14 of those credits are graduate electives—making up 1/3 of a students' graduate education. Nine of those credits can be non-architecture graduate electives. In addition, the students' professional paper and Masters Studio Project—which are student-directed research and design studio courses—make up 10 credits of a students' graduate credits. Together, the graduate electives and Masters Studio Project sequence account for 57% of our students' graduate education; providing students with the opportunity to study those topics that most interest them and that can influence or shape not only their final design studio exploration but also opportunities beyond their graduate studies.

The list of non-architecture graduate electives was developed as a means to inform students of the opportunities for architecture-related studies in non-architecture disciplines on the MSU campus. The list is intended to provide a starting point for students to explore other perspectives on architecture.

Outcomes
The learning outcomes of each non-architecture course are described and determined by the specific department that is offering the course. However, the student outcomes from students taking these electives would be a broad diversity of topics explored in the student-directed ARCH 575 professional papers and the ARCH 560 Masters Studio Project. The diversity of topics could include not only the research area—i.e. social justice, housing, environmental stewardship, parametric design, virtual reality community design, etc.—but also the project type—i.e. alternative schools, housing, rural community centers, etc.

Taking a medium- to long-range view of the outcomes, having our graduates pursue post-graduate studies in architecture or related fields and/or their pursuit of architectural licensing would be positive outcomes resulting from our students' lifelong learning. Taking a long-range view of the outcomes,

having our graduates progress to leadership roles in their firms and/or in their community would also be positive outcomes.

Measurement and Commitment
The last three M.Arch graduating classes, Fall 2020, Fall 2021 and Fall 2022, have seen a significant increase in the percentage of students taking at least one non-architecture graduate elective—80%, 89% and 85% respectively—versus the cohort graduating in Fall 2019 when only 43% of the graduates took at least one non-architecture graduate elective. The percentage of graduates in the Fall 2021 and Fall 2022 cohorts saw a significant increase in students taking two or more non-architecture graduate electives— 85% and 65% respectively—versus the prior two years, fall 2019 and Fall 2020 having only 10% and 36%, respectively, of the students taking two or more undergraduate non-architecture graduate electives.

We have recently gathered this data, but there has been a significant increase in students taking non-architecture graduate electives in the last two years. We are currently gathering the data on the graduate cohorts from 2014-2018 so that we will have longer period of data to analyze concerning how many students are taking non-architecture graduate electives and what type of electives they are taking. We are seeing a correlation for some students in terms of a connection to their ARCH 560 Masters Studio project types but do not have enough information yet to identify the larger patterns, however, we do see the increase in students exploring non-architecture courses as positive explorations by the students during their graduate studies.

Through NCARB, the school has data regarding licensure rates of our graduates, which have tended to exceed the national passing rate on a regular basis. This data is posted on our website.
https://arch.montana.edu/ARE_Passing_Rates.html

The number of graduates that have undertaken post-graduate studies has been tracked only anecdotally—as we receive requests for letters of recommendation or hear from past graduates. Recently, we have had some of our graduates undertake post-professional graduate studies at Cornell University and TU Delft. We are also aware of our graduates obtaining tenured faculty positions at Louisiana State University, University of Hawai'i at Mānoa, and Syracuse University.

Through our regular Advisory Council meetings, we can determine that our graduates become partners at national or international firms such as Morphosis, Ohlson Kundig, Mithun, LMN, Barkow Leibinger, Cushing Terrell, Fentress Architects, and BCHO Architects Associates. In addition, a significant number of our graduates become partners or owners of firms with a strong regional and local impact.

Related to our commitment toward student-directed learning in the graduate program is the 'Book of Books' publication that each student is given when they graduate with their Master of Architecture degree. The Books of Books is a list of three books from each faculty and staff member that they recommend our graduates read at some point in their life. It is, in many respects, a lifelong reading list based on the faculty and staff's cumulative life experiences.

Architecture Program Report
School of Architecture
Montana State University
Prepared January 10, 2023

Request for Additional Information on:

Condition 3 -- Program and Student Criteria

- **PC3:** Provide clarification on the three-year cycle of outcomes assessment and corrections made to counter the deficiencies that were found.

The 2014 NAAB Visiting Team identified the Student Performance Criteria, Sustainability, as an Area of Concern stating:

> *"The school and the students are very aware of the principles of sustainability. Environmental Controls classes show a good understanding of these principles, and the student projects show knowledge of the complex and innovative systems in use. …. Although there was evidence that this criterion was met, the visiting team would have expected this knowledge to be shown consistently in all work after the subject was introduced to the students, starting with the basic principles of sustainability such as building orientation and solar controls…."*

School of Architecture Response: In response to this area of concern, and its identification of a need for continued demonstration of sustainability principles in subsequent student work, two new courses were developed to address this concern—ARCH 431 Sustainability in Architecture and ARCH 535 Advanced Building Systems Integration. In addition, ARCH 558 Comprehensive Design Studio was also identified as a primary course to demonstrate sustainable strategies being reinforced and applied within the design studio. ARCH 431 demonstrates a level of understanding for the topics of PC.3 Ecological Knowledge and Responsibility and ARCH 535 and ARCH 558 demonstrate its reinforcement in the subsequent courses.

Prior Assessment: In 2018, ARCH 558 studio projects were assessed to determine if sustainable principles were evident. (The aggregate assessment data is included in PC.3 Self-assessment report)

New Assessment Process and Schedule: In 2020, the school responded to the introduction of PC.3 Ecological Knowledge and Responsibility in the 2020 NAAB Conditions by developing a new assessment schedule shown on the following pages.

- AY 2020-21 was a beta test year for a new online course survey
- AY 2021-22 schedule was the initial full implementation of the online course survey
- AY 2022-23 schedule is the first year of a three-year cycle of assessment for each course. This three-year cycle will repeat in AY 2025-26

The courses and assessment schedule that introduce, demonstrate understanding and reinforce PC.3 are shown on the next page:

The courses that introduce, demonstrate understanding and reinforce PC.3 will be assessed as shown below:

AY 2020-21 (beta test of online survey)

Fall 2020	**Spring 2021**
Learning outcomes created	ARCH 254 (Introduce)
	ARCH 332 (Understand)
	ARCH 431 (Understand)

AY 2021-22 (implementation of online survey)

Fall 2021	**Spring 2022**
ARCH 355 (Introduce)	ARCH 254 (Introduce)
ARCH 535 (Reinforce)	
ARCH 558 (Reinforce)	

The following three-year cycle of assessment will repeat again in Fall 2025

AY 2022-23 (year 1 of three-year review cycle)

Fall 2022	**Spring 2023**
ARCH 253 (Introduce)	ARCH 332 (Understand)
ARCH 331 (Understand)	
ARCH 355 (Introduce)	
ARCH 535 (Reinforce)	
ARCH 558 (Reinforce)	

AY 2023-24 (year 2 of three-year review cycle)

Fall 2023	**Spring 2024**
---	ARCH 431 (Understand)

AY 2024-25 (year 3 of three-year review cycle)

Fall 2024	**Spring 2025**
ARCH 355 (Introduce)	ARCH 254 (Introduce)

The review schedule of years 1, 2 and 3 will then be repeated starting in Fall 2025.

A chart showing this schedule is included on the next page.

MSU School of Architecture
Course Assessment Schedule
December 19, 2022

	Initial Year		3-year cycle to be repeated				

Year 1		**Year 2**		**Year 3**		**Year 4** (similar to Year 1)	
Fall 2021		**Fall 2022**		**Fall 2023**		**Fall 2024**	
Arch 322IA	World Arch I	ARCH 253	Arch Design I	ARCH 121IA	Intro to Design	ARCH 151RA	Design Fund II
Arch 355	Arch Design III	**ARCH 331**	**ECS I**	ARCH 261	Arch Graphics I	Arch 322IA	World Arch I
Arch 526	Adv Arch Theory	ARCH 355	Arch Design III	ARCH 343	Arch Structures I	Arch 355	Arch Design III
Arch 535	Adv Bldg System Integrat	ARCH 535	Adv Bldg System Integrat	ARCH 363	Arch Graphics III	Arch 526	Adv Arch Theory
Arch 558	Comp Design Studio	ARCH 558	Comp Design Studio	ARCH 560	Masters Studio Project	US XXX	Leadership
Spring 2022		**Spring 2023**		**Spring 2024**		**Spring 2025**	
ARCH 152IA	Design Fund II	ARCH 241	Bldg Const I	ARCH 262	Arch Graphics II	ARCH 152IA	Design Fund II
ARCH 254	Arch Design III	**ARCH 332**	**ECS II**	ARCH 323IA	World Arch II	ARCH 254	Arch Design III
ARCH 340	Bldg Const II	ARCH 413	Pro Practice	ARCH 344	Arch Structures II	ARCH 340	Bldg Const II
ARCH 356	Arch Design IV	ARCH 452	Research Methods in Arch	**ARCH 431**	**Sustainability in Arch**	ARCH 356	Arch Design IV
ARCH 457	Arch Design V	ARCH 575	Professional Paper	ARCH 551	Adv Arch Studio	ARCH 457	Arch Design V

3-year cycle to be repeated			

Year 5 (same as Year 2)		**Year 6** (same as Year 3)		**Year 7** (same as Year 4)	
Fall 2025		**Fall 2026**		**Fall 2027**	
ARCH 253	Arch Design I	ARCH 121IA	Intro to Design	ARCH 151RA	Design Fund II
ARCH 331	**ECS I**	ARCH 261	Arch Graphics I	Arch 322IA	World Arch I
ARCH 535	Adv Bldg System Integrat	ARCH 343	Arch Structures I	Arch 355	Arch Design III
ARCH 558	Comp Design Studio	ARCH 363	Arch Graphics III	Arch 526	Adv Arch Theory
		ARCH 560	Masters Studio Project	US XXX	Leadership
Spring 2026		**Spring 2027**		**Spring 2028**	
ARCH 241	Bldg Const I	ARCH 262	Arch Graphics II	ARCH 152IA	Design Fund II
ARCH 332	**ECS II**	ARCH 323IA	World Arch II	ARCH 254	Arch Design III
ARCH 413	Pro Practice	ARCH 344	Arch Structures II	ARCH 340	Bldg Const II
ARCH 452	Arch Research Methods	**ARCH 431**	**Sustainablility in Arch**	ARCH 356	Arch Design IV
ARCH 575	Professional Paper	ARCH 551	Adv Arch Studio	ARCH 457	Arch Design V

Color indicates course that Introduces PC.3

Color indicates course that demonstrates Understanding of PC.3

Color indicates course that demonstrates Reinforcement of PC.3

Summary of Assessment Process and Summary of Responses

2014
Assessment
2014 NAAB Visiting Team Report

Summary of Responses between 2014-2020
- Introductory lectures on passive strategies integrated into second year design studios
- Energy and daylighting analysis software introduced and utilized in third year curriculum with continued use in fourth year and graduate year.
- ARCH 431 Sustainability in Architecture required course created
- ARCH 535 Advanced Building Systems Integration required course created
- COTE Top Ten Design Frameworks and/or Triple Bottom Line utilized as a framework for ARCH 558 Comprehensive Design Studio.

2018-2019

Assessment

2018-2019 Internal School of Architecture Assessment as part of the MSU biennial program assessment

- Assessment of ARCH 558 Comprehensive Design student work

Summary of Responses

- Utilize smaller-scale ARCH 558 projects, i.e. 25,000 sf, in ARCH 558 to allow for stronger integration with ARCH 535.
- Utilize common period with ARCH 535 and ARCH 558
- Partner with architectural firm for lectures and reviews to provide additional content.

2020

Assessment

2020 NAAB Conditions for Accreditation implemented

MSU School of Architecture Ad Hoc Curriculum Matrix Committee review of program

Summary of Responses

- NAAB Curriculum Matrix revised to reflect 2020 NAAB Conditions for Accreditation
- Development of Levels of Learning: L1 Introduction, L2 Understanding, L3 Ability, Reinforcement, in the curriculum matrix as a program-wide method to 'ladder' students' learning.
- Revised program learning outcomes and course outcomes created for each year of the program and each course.

Spring 2021

Online Course Assessment—beta test

ARCH 254(Introduce)

ARCH 332 (Understand)

ARCH 431 (Understand)

Summary of Responses

- Add additional assessment questions to ARCH 332 for PC.3
- Expand daylighting analysis
- Continue ARCH 332 integration with design studio project
- Add field trips to view in-place sustainable practices for ARCH 431
- More focus on carbon reduction in ARCH 431
- Add assignment on fuel source choices as part of the decision-making process in ARCH 431
- Add photovoltaic design exercise in ARCH 431

Fall 2021

Online Course Assessment

ARCH 355 (Introduce)

ARCH 535 (Reinforce)

ARCH 558 (Reinforce)

Summary of Responses
- Maintain integration of PC.3 topics in ARCH 355—emphasize topic introduction
- Maintain use of COTE Top Ten Design Frameworks for ARCH 558 design studios
- Emphasize multiple iterations of energy and daylight analysis to inform design decisions

Spring 2022
Online Course Assessment
ARCH 254 (Introduce)

Summary of Responses
- Continue emphasis on site context, site analysis and site placement in ARCH 254
- Adjust lectures on passive design to look at design holistically.

Fall 2022
Online Course Assessment
ARCH 253 (Introduce)
ARCH 331 (Understand)
ARCH 355 (Introduce)
ARCH 535 (Reinforce)
ARCH 558 (Reinforce)

Summary of Responses
The online course assessment of the above five courses will be completed by the end of Spring Semester 2023 at which time an analysis of the data will be undertaken and shared with the faculty.

Spring 2023
Online Course Assessment
ARCH 332 (Understand)

Summary of Responses
The online course assessment of the above course will be completed by the end of Summer 2023 at which time an analysis of the data will be undertaken and shared with the faculty.

Fall 2023
No courses assessed for PC.3

Spring 2024
Online Course Assessment
ARCH 431 (Understand)

Summary of Responses
The online course assessment of the above course will be completed by end of Summer 2023 at which time an analysis of the data will be undertaken and shared with the faculty.

Architecture Program Report
School of Architecture
Montana State University

Prepared January 15, 2023

Request for Additional Information on:

Condition 3 – Program and Student Criteria

- **PC.4:** Provide the list of readings provided for ARCH 356 and ARCH 457 as stated on page 49.

The following are the readings required by faculty teaching ARCH 356 – Architectural Design IV during the spring semester of 2022. (listed alphabetically)

American Institute of Architects, *Bozeman, MT R/UDAT Report, A Vision for the Northeast Neighborhood*, 2017.

Benedikt, Michael, *For an Architecture of Reality*, (New York, NY, Lumen Books, 1987)

DeLanda, Manuel, "Assemblages against Totalities", from *A New Philosophy of Society, Assemblage Theory and Social Complexity*, (Brooklyn, London: Bloomsbury Academic, 2006)

Leski, Kyna, "Unlearning", from *The Storm of Creativity: Simplicity: Design, Technology, Business, Life,* (Massachusetts, The MIT Press, 2015)

Pallasmaa, Juhani, "Emotion and Imagination", from *The Thinking Hand: Existential and Embodied Wisdom in Architecture*, (New York, NY: Wiley, 2009)

The following are the readings required by faculty teaching ARCH 457 – Architectural Design V during the spring semester of 2022. (listed by studio topic)

Deleuze, G., Guattari, F., "1440: The Smooth and the Striated" from, *A Thousand Plateaus: Capitalism and Schizophrenia*, (Minnesota: University of Minnesota Press, 1987)

Hawken, Paul, editor, *Drawdown, The Most Comprehensive Plan Ever Proposed to Reverse Global Warming*, (New York, NY: Penguin Books, 2017)

Mayne, Thom*, "*Six Points of Departure", from *Morphosis: 2004-2018*, (New York, NY: Rizzoli, 2019)

Mayne, Thom, *Combinatory Urbanism*, (Culver City, Stray Dog Café, 2011)

_____

Deplazes, Andrea, editor, *Constructing Architecture: materials, processes, structures. A Handbook*, (Basel, Switzerland: Birkhauser, 2013)

Ford, Edward, *The Details of Modern Architecture, Volume 1*, (Massachusetts, The MIT Press, 2003)

Frampton, Kenneth, John Cava, editor, *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture*, (Massachusetts, The MIT Press, 2001)

Norberg-Schulz, Christian, "Towards an Authentic Architecture", from Architecture: Meaning and Place, Selected Essays, (New York, NY: Rizzoli Press, 1988)

Windeck, George, Larson-Walker, Lisa, editor, Construction Matters, (Brooklyn, NY: powerhouse Books, 2016)

_____

Dobb, Edwin, "Pennies from Hell, In Montana, the bill for America's copper comes due", *Harper's Magazine*, October 1996, pp. 39-54.

Dobb, Edwin, "Location, Occupation, Juxtaposition, Interpenetration: Notes on an Erotics of the Mining City", *Buildings & Landscapes*, Vol. 17, No. 1 (Spring 2010), pp. 1-12

Duffy, Ellie, "A new breed of intelligence", *Building Design*, 31.03.06

Leech, Brian, "Boom, Bust and the Berkeley Pit: How Insiders and Outsiders Viewed the Mining Landscape of Butte, Montana", *The Journal of the Society for Industrial Archeology*, Vol. 37, No. ½, (2011), pp. 153-170.

Leech, Brian James, *The City that Ate Itself, Butte, Montana and its expanding Berkeley Pit*, (Reno & Las Vegas, NV: University of Nevada Press, 2018)

Shovers, Brian, "Remaking the Wide-Open Town: Butte at the End of the Twentieth Century", *Montana: The Magazine of Western History*, Vol. 48, No. 3, (Autumn, 1998), pp. 40-53.

Speaks, Michael, "The Singularity of OMA", *ANY: Architecture New York*, No. 24, 1999, pp. 44-47.

Speaks, Michael, "Theory was interesting… but now we have work", *arq*, vol. 6, no. 3, 2002, pp. 209-212.

Speaks, Michael, "Intelligence After Theory", *Perspecta*, vol. 38, 2006, pp. 103-106.

Architecture Program Report
School of Architecture
Montana State University
Prepared January 15, 2023

Request for Additional Information on:

Condition 3 – Program and Student Criteria

- **PC.4:** Provide additional information on the assessment cycle variation mentioned at the end of this section of the APR.

The School of Architecture has adopted an assessment cycle that reviews all courses on a three-year cycle. The chart below indicates the courses that are reviewed each semester within this cycle.

MSU School of Architecture
Course Assessment Three-Year Review Cycle
December 19, 2022

Initial Year		3-year cycle to be repeated					
Year 1		**Year 2**		**Year 3**		**Year 4** (similar to Year 1)	
Fall 2021		**Fall 2022**		**Fall 2023**		**Fall 2024**	
Arch 322IA	World Arch I	ARCH 253	Arch Design I	ARCH 121IA	Intro to Design	ARCH 151RA	Design Fund II
Arch 355	Arch Design III	ARCH 331	ECS I	ARCH 261	Arch Graphics I	Arch 322IA	World Arch I
Arch 526	Adv Arch Theory	ARCH 355	Arch Design III	ARCH 343	Arch Structures I	Arch 355	Arch Design III
Arch 535	Adv Bldg System Integrat	ARCH 535	Adv Bldg System Integrat	ARCH 363	Arch Graphics III	Arch 526	Adv Arch Theory
Arch 558	Comp Design Studio	ARCH 558	Comp Design Studio	ARCH 560	Masters Studio Project	US XXX	Leadership
Spring 2022		**Spring 2023**		**Spring 2024**		**Spring 2025**	
ARCH 152IA	Design Fund II	ARCH 241	Bldg Const I	ARCH 262	Arch Graphics II	ARCH 152IA	Design Fund II
ARCH 254	Arch Design III	ARCH 332	ECS II	ARCH 323IA	World Arch II	ARCH 254	Arch Design III
ARCH 340	Bldg Const II	ARCH 413	Pro Practice	ARCH 344	Arch Structures II	ARCH 340	Bldg Const II
ARCH 356	Arch Design IV	ARCH 452	Research Methods in Arch	ARCH 431	Sustainability in Arch	ARCH 356	Arch Design IV
ARCH 457	Arch Design V	ARCH 575	Professional Paper	ARCH 551	Adv Arch Studio	ARCH 457	Arch Design V

	3-year cycle to be repeated				
Year 5 (same as Year 2)		**Year 6** (same as Year 3)		**Year 7** (same as Year 4)	
Fall 2025		**Fall 2026**		**Fall 2027**	
ARCH 253	Arch Design I	ARCH 121IA	Intro to Design	ARCH 151RA	Design Fund II
ARCH 331	ECS I	ARCH 261	Arch Graphics I	Arch 322IA	World Arch I
ARCH 535	Adv Bldg System Integrat	ARCH 343	Arch Structures I	Arch 355	Arch Design III
ARCH 558	Comp Design Studio	ARCH 363	Arch Graphics III	Arch 526	Adv Arch Theory
		ARCH 560	Masters Studio Project	US XXX	Leadership
Spring 2026		**Spring 2027**		**Spring 2028**	
ARCH 241	Bldg Const I	ARCH 262	Arch Graphics II	ARCH 152IA	Design Fund II
ARCH 332	ECS II	ARCH 323IA	World Arch II	ARCH 254	Arch Design III
ARCH 413	Pro Practice	ARCH 344	Arch Structures II	ARCH 340	Bldg Const II
ARCH 452	Arch Research Methods	ARCH 431	Sustainablility in Arch	ARCH 356	Arch Design IV
ARCH 575	Professional Paper	ARCH 551	Adv Arch Studio	ARCH 457	Arch Design V

Green color indicates course that demonstrates Understanding of PC.4

The three courses within our curriculum that demonstrate PC.4 History and Theory at the level of understanding (highlighted in green) are ARCH 322IA – World Architecture I, ARCH 323IA – World Architecture II, and ARCH 526 – Advanced Architectural Theory. The assessment cycle for these courses, not all occurring in the same year, is partially due to the way the three-year review cycle was created and the courses that were initially selected to be formally reviewed. It was also thought that the staggering of the World Architecture I & II courses would increase the frequency that the sequence would be assessed, providing more information on how the courses are addressing this program criteria.

While the three courses are not all in separate years, as the APR indicates, it does suggest that sequential courses with diverse topics (ARCH 343/344 – Arch Structures, I & II, Arch 331/332 – ECS I & II) could also be staggered in the future to allow for a greater frequency of review.

Architecture Program Report
School of Architecture
Montana State University
Prepared January 14, 2023

Request for Additional Information on:

Condition 3 – Program and Student Criteria

- **PC.6:** Provide further information on the outcome and status of ARCH 291 and ARCH 452.

Since the writing of the APR, the School of Architecture has been assessing how to address PC.6 Leadership and Collaboration. We have investigated how ARCH 452 – Architectural Research Methods can consistently address PC.6 to the level of understanding, the timeline for ARCH 291/USxxx – Architectural Leadership to receive CORE designation from the University, and if there are other approaches to leadership and collaboration through the Montana State University community.

In the fall we reached out to the MSU Leadership Institute on campus, https://www.montana.edu/leadership/ about programs that might address PC.6 – Leadership and Collaboration. The Leadership Institute suggested that we look to offering, in our first or second year, a leadership foundations course that if combined with a leadership capstone later in the students' program (not required but optional), would allow students to graduate at the termination of their undergraduate program (B.A. Environmental Design) with a MSU Leadership Fellows Certificate. Below are the catalog descriptions for both the Leadership Foundations and the Leadership Capstone courses:

> **HLD 121US Leadership Foundations: 3 Credits (3 Lec)**
> This face-to-face and web-enhanced course provides students with the opportunity to understand and develop leadership skills by examining individual and organizational leadership effectiveness through experiential learning in and out of the classroom. This is an introductory course for students interested in obtaining the MSU Leadership Fellows Certificate, but all students interested in leadership and leader development are welcome.

> **HLD 302 Leadership Capstone: 1 Credits (1 Other)**
> PREREQUISITE: UC 202, Junior standing, and permission of instructor. Capstone course for students completing the requirements of the MSU Leadership Fellows Certificate. Emphasizes leadership development to empower students to become effective agents of change

The Leadership Institute has indicated that they could hire the necessary faculty and provide the additional sections of the course to accommodate our first-year students during the fall and spring semesters for the fall of 2023, although these details will have to be worked through in the coming months. While it is assumed this course would be taken by our students during the first year of our program, it could also be taken in the fall and spring of second year where our curriculum allows CORE credit opportunities. The leadership foundations courses accommodate approximately 21-26 students and consist of students engaged in studies from around the university.

The advantages to incorporating HLD 121US into our curriculum are many. The School of Architecture would have a course in our curriculum that specifically addresses leadership and collaboration, allowing ARCH 452 – Architectural Research Methods to pursue other learning objectives. The course, similar to

the proposed ARCH 291/USxxx – Architectural Leadership, would be a CORE course requirement for our students and with a catalog change in the spring, would allow students to have access to leadership and collaboration in the fall of 2023. The course, located in the first two years of our program, would teach students valuable skills in leadership and specifically collaboration, a skill that all our design studios ask of students. Finally, by taking an additional one-credit course, HLD 302 – Leadership Capstone, students would receive a MSU Leadership Fellows Certificate upon graduation with their Bachelor of Environmental Design degree.

This approach has been conditionally approved by our tenured and tenure-track faculty as many of the details concerning this agreement will need to be worked through by the School of Architecture, the Leadership Institute, and the MSU Administration.

Architecture Program Report
School of Architecture
Montana State University
Prepared January 17, 2023

Request for Additional Information on:

Condition 3 -- Program and Student Criteria

- **SC.5:** Provide copies of the external assessment for ARCH 558 and recommendations to the program from their assessment.

The following external assessment information is taken from our SC.5 Self-assessment Report. A pdf with all of the Fall 2021 external review data is included at the end of this report.

2019-2020 Assessment

External Reviewers of Student ARCH 558 Projects: Five external reviewers were invited to sit on the final reviews for ARCH 558 in Fall 2019. These reviewers were a combination of practitioners and architecture faculty from across the United States: Dan Pohrte, Product Architecture + Design; Drew White, StudioAxis; Rob Corser, University of Washington; Shannon Criss, University of Kansas; Andrew Schachman, Studio Andrew Schachman LLC.

At the conclusion of the reviews, comments and feedback on the student projects were requested by and provided to Ralph Johnson, the Director of the School. These comments were based on reviewers participating in the final reviews.

Feedback from these reviewers included:

Areas of Strengths

- All reviewers commented positively on:
    - the breadth of design responses demonstrated within each studio and across all the studies
    - the quantity of work generally produced by the students
    - the general quality of graphic presentations
    - the students' general success in meeting basic life safety code requirements for exiting and accessibility in building plans
- All reviewers commented that in general the students had identified appropriate precedent for their various sustainable strategies, building envelopes and formal expressions.

- Some reviewers commented that:
    - Pohrte and Schachman were impressed by the general success of the projects in meeting the COTE challenges.
    - Issues of accessibility were generally well resolved.
    - Environmental systems were generally well integrated and responsive to environmental stewardship.

- The ability to make design decisions within a complex architectural project while demonstrating broad integration and consideration of environmental stewardship was effectively achieved in the vast majority of project presentations.
- Students demonstrated an understanding of the theoretical and applied research methodologies and practices used during the design process.

Areas Needing Attention

- All reviewers commented that in general:
  - Students failed to clearly express their evaluative criteria in making decisions about program criteria, building envelope, building systems (structures, systems, lighting, etc.) site orientation and site planning.
- Some reviewers commented that:
  - The projects often illustrated what appeared to be integrated decision making but there was a lack of process documentation explaining why and in what manner the systems were interrelated.
  - Analysis of multiple solutions was not documented.
  - The plan often lacked a clear relationship between the activities proposed and the plan/section character.
  - Existing physical site conditions tended to be well documented, however, off-site socio/cultural and physical conditions were often not addressed, and contour analysis was generally not effective in addressing accessibility

Annual MSU Program Assessment Program Report: Feedback from student meetings and course evaluations revealed that the common course period was not effective from their perspective. Students' perceptions saw this as reducing the time spent on their studio design and that some common course assignments/workshops were out of synch with the studio design process.

School of Architecture Response

- In Fall 2019 and in prior years, final ARCH 558 studio presentations included only the final design solution—it did not include any of the process schemes from Part 1 and Part 2 of the studio. Nor had the final studio presentation included any of the ARCH 535 coursework in which systems were researched and evaluated.
  - Moving forward, more of the ARCH 558 process work should be presented in the final studio presentation so that students' decision-making process can be more accurately assessed.
  - ARCH 535 course work—or appropriate components of it—should be included within the final studio presentation.
- Limit the size of building sites identified for ARCH 558 projects to more effectively focus the time allotted to site analysis and allow students' site analysis to gain greater depth.
- Additional wall sections to be added to project requirements including a combination plan/elevation/section detail.
- Building sections will be better utilized to allow for better relationship with the program activities evident in the building floor plans

- The common course meeting time was discontinued, but ARCH 535 maintained its two lecture periods and its two-hour lab session for workshops.
- ARCH 558 studio meeting times increased by two hours a week to meet MWF for four hours on each of those days to address the concerns of students.

2021-2022 Assessment

Assessment Process: A new online course assessment survey procedure was created using Qualtrics survey, to allow the school to assess the student work from each course.

- An online survey of ARCH 535 and ARCH 558 student work completed in Fall 2021 was undertaken.
    - Student work from ARCH 535 and ARCH 558 were randomly selected with student names removed from the project materials. This resulted in eight student projects being reviewed, two students from each design studio section.
    - External Reviewers
        - Four faculty from the University of Idaho agreed to review the projects using the online survey process—Randall Teal, Professor, Director; Carolina Manrique Hoyos, Associate Professor; Dwain Carver, Assistant Professor; Scott Lawrence, Assistant Professor.
            - These faculty teach comprehensive/integrated design courses at their institution.
        - Four MSU School of Architecture Advisory Council members also reviewed these student projects--Sam Ankeny, Principal, CLB Architects; Luara Dornberger, Partner, Locati Architects; Sid Scott, Partner Scott|Edwards Architecture; Paul East, Founder, Uplift Architecture.
        - Each student's project was reviewed by two University of Idaho faculty and two Advisory Council members—resulting in each student's work being reviewed by four of the external reviewers.

The scoring system used for the course assessment survey ranges from 0 to 2: 0 (No Evidence Shown), 1 (Evidence Shown), 2 (Extensive Evidence Shown).

- Scores of 1.0 or greater are seen as demonstrating ability for the various PC and SCs listed.
- Scores at or above 1.0 are shown with a green-colored field

The aggregate data from the ARCH 535 and the ARCH 558 Fall 2021 online course assessment are shown on the following page.

ARCH 558

Aggregate Data of the External Assessment of ARCH 558 in Fall 2021

ARCH 558 - Fall 21 - External Assessment
(Univ Idaho Faculty + Pracitioners/Advisory Council Members)

PC/SC	Percentage of reviewer scores at 1.0 or greater	Percentage of reviewer average at 1.0	Median	Mean	ARCH 558_SC5_6_Final_Project	
SC5	91%	100%	1.4	1.4	Q3_6	Assessment Criteria - Does student project demonstrates broad synthesis and consideration of users, context, ecology and universal design
SC5	88%	100%	1.4	1.4	Q3_7	Assessment Criteria - Is the synthesis and consideration of user requirements evident in the student project?
SC5	97%	100%	1.3	1.4	Q3_8	Assessment Criteria - Is the synthesis and consideration of regulatory requirements evident in the student project?
SC5	100%	100%	1.5	1.5	Q3_9	Assessment Criteria - Is the synthesis and consideration of site considerations evident in the student project?
SC5	88%	100%	1.2	1.3	Q3_10	Assessment Criteria - Is the synthesis and consideration of accessible design evident in the student project?
SC5	97%	100%	1.5	1.5	Q3_11	Assessment Criteria - Does the student's project address issues of climate change and sustainability?
SC5	100%	100%	1.5	1.5	Q3_12	Assessment Criteria - Does the student's project consider the measurable environmental impacts of their design decisions?

Reviewers' Comments from the External Assessment of ARCH 558 in Fall 2021

Note that ARCH 535 assignments were included and/or incorporated into the materials that the external reviewers looked at for this assessment.

University of Idaho Faculty external reviewer 1

"Generally, very thorough and thoughtful work. I like the COTE 10 framework; it seems to provide a "next-level" in terms of a target for overall design synthesis as well as providing some means towards future aspirations. I like the site research and systems the students are thinking about, although I might suggest more limited sites just so there could be a bit more refinement in the site plans. On that note, perhaps a slight reduction in building scale could also help students [to] circle back a few more times on compositional and detail refinement. Lastly, I would love to see some framing and foundation plans and an HVAC diagram, just to make those systems more explicitly declared.

A final thought on these kinds of projects more broadly -- I am not sure how one would do this, but I think about it on our own projects: it would be nice to capture something how a student has thought about things like accessibility and egress as these things often seem like they get "sticky note" on them saying "I did it" but the decisions/requirements/challenges remain a bit opaque.

Overall, good-comprehensive-work"

University of Idaho Faculty external reviewer 2

"The syllabus provided for all sections constitutes a comprehensive guideline addressing the complex nature of the two courses working together. It might be helpful to include a format of requirements to unify how content is presented (something like the format of a competition). This could help students focus on presenting their work in a clearer way and track missing drawings/diagrams/models that could help demonstrate learning outcomes. This could also help students become more selective and careful in editing content for better readability (e.g., blurred tables and diagrams; excessive amounts of text; scales of drawings for an online/screen format; etc.). We are finding very similar challenges in our comprehensive design studio final submission. It is very impressive the coordination shown between the two courses ARCH 558 & ARCH 535, and the variety of tools used by students in their work."

University of Idaho Faculty external reviewer 3

"Overall very good work. I was especially impressed with professor Watson's project statement and its broad social and philosophical framing of ecology within the context of the design brief. Student 5's synthesis of cultural and ecological issues with regards to building and site design, overall research, integration of systems, and measurable outcomes was an excellent bar to set for the review of the other 3 projects.

In these four cases, I noted the absence of physical modeling and, excepting one, hand drawing. It is my sense that these methods can contribute significantly [to] design synthesis.

Thank you for the opportunity to review this work."

University of Idaho Faculty external reviewer 4

"thank you for this opportunity to take part in this process. The work presented, while conveying the typical range of students success across projects, and across parameters within projects was notable for its consistency in effectively demonstrating the desired learning outcomes. The drawings were clear and easy to review, and conventions used in integration diagrams were well considered. If there was an area of suggested revision to consider, it might be a scaled down project brief to allow for more development of design details, especially at major wall intersections. Although a common refrain in these reviews, more documentation of regulatory requirements (in the form of a code analysis, FAR/ Max building envelope, or other supporting documentation) would be worth including, as would more explanation of universal design employed in the designs. These are not really points of deficiency in the designs, so much as a suggestion for documentation of course efforts."

Advisory Council external reviewer 1

"This Course is comprehensive in [its] approach to integrate all the elements that make architecture. Such Strong importance was placed on the content of the course which is very noticeable. I think there could be some more focus on how that content is presented/represented and ultimately implemented in the final design. It is a wide spectrum of knowledge to show and integrate in a relatively short period of time, and I believe that the overall result is quite impressive"

Advisory Council external reviewer 2

"The amount of work completed into these projects and presented are considerable. There is a good synthesis of overall understanding of architecture and integration of components while creating overall attractive buildings. One criticism of all the presentations is the use of 3d modeling. When it is kept in a more abstract less realistic presentation method it was much more successful. The presentations were very convincing each student had extensive knowledge of steps toward successful comprehensive design."

Advisory Council external reviewer 3

"The amount of work and integration of systems required by this course is impressive. In general, I would call each of these four projects very successful in meeting the requirements, which also means that the structure of the course itself must have been successful. The quality and level of detail in these projects is also clearly enhanced by the ARCH 535 companion course."

Advisory Council external reviewer 4

No comments were left by this reviewer.

School of Architecture Response

The School of Architecture Response to the ARCH 558 External/Internal Assessment and Reviewers' Comments is shown below. All criteria met our goal of a minimum percentage of 80%.

Strengths (>90%)

 ARCH 558 (External %, Internal %)
- Regulatory Requirements (97%, 96%)
- Environmental Impact Change (100%, 96%)

Meets Criteria (>80%)

 ARCH 558 (External %, Internal %)
- Broad Synthesis (91%, 88%)
- User Requirements (88%, 88%)
- Site Considerations (100%, 88%)
- Accessible Design (88%, 96%)
- Address Climate Change (97%, 88%)

Recommendations:

Although the overall percentages in all SC.5 subcategories are at a high level, design synthesis can be improved in the areas of user requirements and site analysis/site considerations, and accessible design.

These areas will be emphasized more in the Fall 2022 course offerings.

- Additional development of site plans
- Review of accessibility issues in floor plans.
- Development of User requirements/experience within the studio program.
- Maintain coordination of course deliverables.
- Add an additional rubric question to assess the overall quality of design synthesis in student work.

2022-2023

MSU School of Architecture Final Reviews Assessment

Two external reviewers were invited to sit on the Fall 2022 final reviews of ARCH 558. The reviewers were Randall Teal, Program Head of the Architecture Program at the University of Idaho; and Rob Corser, Associate Professor, Department of Architecture at the University of Washington. Students presented their work digitally on two large monitors. Students had 40 minutes for their presentations, questions, and reviewer's comments.

The external reviewers were asked to respond to the following three ARCH 558 student learning outcomes based upon the student work they reviewed in the ARCH 558 final reviews.

1. Students will create an architectural project that demonstrates broad integration of building systems, tectonics, theory and regulations. (SC.6)
2. Students will create an architectural project that demonstrates broad synthesis and consideration of users, context, ecology and universal design. (SC.5)
3. Students will create architectural projects that address issues of climate change and sustainability. (SC.5 and SC.6)

Following are the external reviewer's comments for student learning outcomes 2 and 3, which are most appropriate for SC.5. External reviewer 1's comments for question 1 can be found in the SC.6 Self-assessment Report.

Reviewer 1's Comments from the External Assessment of ARCH 558 in Fall 2022

2. **Students will create an architectural project that demonstrates broad synthesis and consideration of users, context, ecology and universal design.**

"In reviewing the work, I found consistent treatment and attention to users and how the perceived needs and desires of these users would influence the programming, adjacencies, and the types of places that were created to foster interaction. Equally, students attended to the environment, from water usage and management to solar orientation, to the flora and fauna that might be cultivated and supported as part of site development. Although the designs I saw, demonstrated awareness of accessibility and universal design (students presented projects that were accessible), the explicit attention and development of UD lacked the sophistication of other aspects of these projects. "

3. **Students will create architectural projects that address issues of climate change and sustainability.**

"I found the projects, across the board, to be highly attuned to the climate and strongly oriented towards sustainability. This attunement and concern show up in nuanced site analysis', high-level use of climate tools, and deployment of metrics to measure such things such as overall building energy usage (leading to design moves aimed at improving EUI), daylighting, and envelope performance. Further, the COTE overlay that many students utilized allowed them to foreground aspects of social sustainability such as the use of ecosystems in placemaking, the promotion of human emotional well-being through spatial, material, and programmatic choices, and the power of design to advance inclusivity within the community."

Reviewer 2's Comments from the External Assessment of ARCH 558 in Fall 2022

"**Structure of the course:**
I was very impressed at how this comprehensive studio was organized -starting from the course syllabus shared by both sections.   This document laid out a very thorough educational sequence divided into four parts: Opportunities, Strategies Synthesizing and Presentation. Clear parameters and goals were set for students to proceed from one part to the next, and a mandatory review after part one seemed a particularly useful gateway for student progress that sent an unequivocal message indicating that this studio demands serious diligence, continuous development and evidence of production. Outcomes and expectations were clearly delineated and the pace seemed geared for students' understanding and success.

Student work:
The projects that I saw at the review were clearly communicated, thorough and showed creativity, technical integration and problem-solving in equal measures at every level. The design prompts were appropriate for the pedagogical goals of the studio and were intellectually challenging as well. Students grappled complex issues that required them to respond to every aspect of design from site planning to logistical access, space planning, accessible circulation, user experience, material economy, energy conservation and architectural expression. While there were some projects that clearly stood out for their excellence, my main takeaway was the overall consistency of completeness and success that every project demonstrated. I saw no projects that failed to meet the requirements set out in the studio syllabus. Drawings were clear and the information was conveyed very well, both graphically and in the students' verbal presentations.

Learning Outcomes:
Among the more outstanding aspects of the work I saw from Arch 558 at MSU was how well students understood building regulations, and did not see these as constraints on creativity, but as opportunities. Similarly, all of the projects were well formulated tectonically -in terms of choice of systems, sizing of layouts and expression of architectural intentions in material and structural terms. Building systems were also very thoroughly researched, carefully selected and very well integrated into the students' final projects. It was clear to me that the studios worked seamlessly and productively with the co-requisite course Arch 535 Advanced Building Systems Integration, and the final projects embodied innovative and holistic consideration of building systems at multiple levels.

These projects were not just thoroughly grounded in technical and constructable terms, but students were also challenged to think deeply about the role of architecture in culture and society. I was impressed by how much the students considered both the immediate campus contexts of their projects, but also the larger ecological impacts their work would entail. Social and natural ecosystems were not only considered, but emphasis was clearly placed on connecting users with their environments in convincing ways. Clear consideration was also given to users of all abilities and I saw evidence of careful design choices to insure universal accessibility from site design to interior layouts and even lighting and acoustic environments.

Finally, students were encouraged to take thoughtful steps toward mitigating global warming and other human-caused aspects of climate change. Low embodied carbon materials were researched and proposed in most cases, and buildings were designed with appropriate insulation, daylighting and

ventilation systems to work toward lowering operational energy consumption as well. Students were cognizant of the relationship of buildings and natural ecosystems along with the potential to not only minimize harmful impacts, but also to weave built and natural environments together for mutual benefit.

Overall, I was very impressed with the quality of teaching in these studios and in the advanced systems integration course. Learning objectives and expected outcomes were clearly articulated and paths for student success were well structured and achievable. The student work I observed was consistent and of a high quality, fulfilling the course objectives for a comprehensive design studio very convincingly.

It was a real pleasure to sit on these reviews~!"

School of Architecture Response

We just received Reviewer 1 and 2's comments within the last ten days and have not yet had the chance to meet and discuss their observations. During the coming weeks, we will analyze the information and develop a response. We will be working on that response and hope to include that response in the SC.5 Self-assessment Report that we will submit to the NAAB Team for their visit.

Future Assessment

ARCH 535 will be assessed for the Fall 2022 and Fall 2025 course offerings.

ARCH 558 will be assessed for the Fall 2022 and Fall 2025 course offerings.

School of Architecture Assessment Process: Student work from the Fall 2022 course offerings of ARCH 535 and ARCH 558 will be assessed in Spring 2023 by three MSU faculty using the online course survey instrument.   ARCH 535 and 558 will continue to be assessed on a three-year cycle after the online assessment review is completed. This is part of our three-year cycle of course and PC/SC assessment. This cycle allows faculty time to make adjustments between assessment years and close the loop on the assessment process while encouraging continual improvement.

NAAB Assessment Process: 2023 NAAB Architecture Program Review (APR) and Site Visit: The 2022 MSU APR was submitted in September 2022 and the NAAB accreditation site visit will take place in Spring 2023. Randomly selected student work from Fall 2022 ARCH 535 and ARCH 558 will be reviewed by the NAAB team as part of this site visit review.

On the following page is the complete dataset from the external assessment undertaken for the Fall 2021 student work of ARCH 535 and ARCH 558 by the University of Idaho faculty and MSU Advisory Council members. The comments from this this assessment are also shown on pp. 4–6 of this document.

ARCH 558 - Fall 21 - External Assessment
(Univ Idaho Faculty + Pracitioners/Advisory Council Members)

surveys completed 5/22; data compiled 7/17/22

• UI R!A refers to Univeristy of Idaho faculty that participated in the Arch 558 Assessment. Each UI faculty reviewed four students--either Students 1, 2, 3 and 4 **or** Students 5, 6, 7, and 08.

• AC R3A refers to Advisory Council members/practitioner that participated in the Arch 558 Assessment. Each AC member reviewed four students--either Students 1, 2, 3 and 4 **or** Students 5, 6, 7, and 08.

ARCH 558_SC5_6_Final_Project

PC/SC	% scores ≥1.0	% avg at 1.0	Median	Mean	Q	Assessment Criteria	S1 UI R1A	S1 UI R2A	S1 AC R3A	S1 AC R4A	S1 AVG	S2 UI R1A	S2 UI R2A	S2 AC R3A	S2 AC R4A	S2 AVG	S3 UI R1A	S3 UI R2A	S3 AC R3A	S3 AC R4A	S3 AVG	S4 UI R1A	S4 UI R2A	S4 AC R3A	S4 AC R4A	S4 AVG	S5 UI R1A	S5 UI R2A	S5 AC R3A	S5 AC R4A	S5 AVG	S6 UI R1A	S6 UI R2A	S6 AC R3A	S6 AC R4A	S6 AVG	S7 UI R1A	S7 UI R2A	S7 AC R3A	S7 AC R4A	S7 AVG	S8 UI R1A	S8 UI R2A	S8 AC R3A	S8 AC R4A	S8 AVG
SC5	91%	100%	1.4	1.4	Q3_6	Does student project demonstrates broad synthesis and consideration of users, context, ecology and universal design	1.8	1.1	1.3	1.5	1.4	1.4	1.5	1.7	1.4	1.5	0.9	1	1.8	1.7	1.4	0.9	1	1.6	1.8	1.3	1.8	1.5	2	1.9	1.8	1.3	1	1.8	1.8	1.5	1.2	0.8	1.3	1.7	1.3	1.2	1	1.8	1.8	1.5
SC5	88%	100%	1.4	1.4	Q3_7	Is the synthesis and consideration of user requirements evident in the student project?	1.9	1	1.9	1.1	1.5	1.4	1.8	1.1	1.2	1.4	0.9	0.8	1.3	1.5	1.1	0.9	0.8	1.1	1.5	1.1	1.8	1	2	1.9	1.7	1.2	1	1.8	1.9	1.5	1.2	1	1.5	1.6	1.3	1.2	1	1.6	1.5	1.3
SC5	97%	100%	1.3	1.4	Q3_8	Is the synthesis and consideration of regulatory requirements evident in the student project?	1.9	1.2	1.1	1.5	1.4	1.3	1.8	1.1	1.2	1.4	0.9	1	1.7	1.6	1.3	1	1	1.2	1.7	1.2	1.7	1	1.5	1.9	1.5	1.2	1	1.8	1.8	1.5	1.2	1	1.1	1.7	1.3	1.2	1	1.6	1.3	1.3
SC5	100%	100%	1.5	1.5	Q3_9	Is the synthesis and consideration of site considerations evident in the student project?	1.5	1.2	1.1	1.3	1.3	1.6	1.5	1.6	1.4	1.5	1.1	1	1.8	1.9	1.5	1.1	1	1.6	1.9	1.4	1.8	1	2	1.9	1.7	1.2	1	2	1.8	1.5	1.2	1	2	1.8	1.4	1.3	1.6	1.6	1.8	1.6
SC5	88%	100%	1.2	1.3	Q3_10	Is the synthesis and consideration of accessible design evident in the student project?	1.7	1	1.7	1.1	1.4	1.6	1.7	1.3	1	1.4	1	0.8	1.3	1.3	1.1	1.1	1	1.4	1.5	1.3	1.7	0.9	1.5	1.5	1.4	1.1	1	1.5	1.3	1.2	1.2	0.8	1.4	1.5	1.2	1.1	0.7	1.6	1.4	1.2
SC5	97%	100%	1.5	1.5	Q3_11	Does the student's project address issues of climate change and sustainability?	1.7	1.3	1.9	1.7	1.7	1.3	1.5	1.7	1.4	1.5	0.9	1	1.4	1.9	1.3	1.3	1	1.5	1.8	1.4	1.8	1.2	2	1.9	1.7	1.2	1.5	1.8	1.8	1.6	1.1	1	1.3	1.6	1.3	1.2	1.8	1.6	1.7	1.6
SC5	100%	100%	1.5	1.5	Q3_12	Does the student's project consider the measurable environmental impacts of their design decisions?	1.8	1.3	1.8	1.5	1.6	1.1	1.8	1.6	1.4	1.5	1.3	1	1.6	1.9	1.5	1.4	1	1.7	1.8	1.5	1.8	1.7	2	1.9	1.9	1.2	1.5	1.8	1.8	1.6	1.2	1.2	1.3	1.4	1.3	1.2	1.3	1.8	1.4	1.6
SC6	97%	100%	1.4	1.5	Q3_1	Does student project demonstrate broad integration of building systems, tectonics, theory and regulations?	2	1.2	1.8	1.3	1.6	1.5	1.5	1.6	1	1.4	1.2	0.8	1.4	1.8	1.3	1.1	1	1.4	1.8	1.3	1.8	1.8	2	2	1.9	1.1	1	1.9	1.8	1.5	1.2	1	1.5	1.6	1.3	1.2	1.5	1.8	1.8	1.6
SC6	100%	100%	1.5	1.5	Q3_2	Is the integration of building envelope systems and assemblies evident in the student project?	1.9	1.3	1.2	1.7	1.5	1.3	1.8	1.6	1.2	1.5	1.2	1	1.3	1.6	1.3	1	1	1.3	1.6	1.2	1.8	2	2	1.9	1.9	1.2	1.2	1.6	1.8	1.5	1.3	1.4	1.8	1.6	1.5	1.1	1.5	1.9	1.7	1.6
SC6	94%	100%	1.5	1.5	Q3_3	Is the integration of structural systems evident in the student project?	1.9	1.2	1.7	1.7	1.6	1.2	1.8	1.3	1.1	1.4	1.1	0.8	1.3	1.8	1.3		0.8	1.3	1.9	1.3	1.7	1.5	2	1.9	1.8	1.2	1.6	1.6	1.6	1.5	1.3	1.5	1.7	1.5	1.5	1.2	1.8	1.9	1.8	1.7
SC6	91%	100%	1.5	1.5	Q3_4	Is the integration of environmental controls systems evident in the student project?	1.9	1.3	1.4	1.5	1.5		1.8	1.4	1.5	1.2	0.8	0.8	1.4	1.8	1.2	1	0.8	1.4	1.8	1.3	1.8	1.7	2	1.9	1.9	1.2	1.7	1.6	1.8	1.6	1.2	1.5	1.5	1.6	1.5	1.1	2	1.8	1.5	1.6
SC6	88%	100%	1.3	1.3	Q3_5	Is the integration of life safety systems evident in the student project?	1.9	1	1.7	1.2	1.5	1.1	1.8	1.3	0.9	1.3	0.7	0.8	1.4	1.4	1.1	0.9	1	1.4	1.8	1.2	1.7	1	1.5	1.8	1.5	1.2	1.5	1.6	1.5	1.5	1.1	1	1.1	1.4	1.2	1.2	0.8	1.6	1.2	1.2
SC6	94%	100%	1.5	1.5	Q3_13	Does the student work demonstrates measurable outcomes of building performance?	1.7	1.3	1.3	1	1.3	1.5	0.8	1.7	1.9	1.5	1.4	0.8	1.7	1.8	1.4	1.8	1.7	2	1.9	1.9	1.1	1.5	1.8	1.7	1.5	1.2	1.2	1.7	1.5	1.4	1.2	1.8	2	1.6	1.7					

Students 01, 02, 03, 04

Comments - UI Faculty

Generally, very thorough and thoughtful work. I like the COTE 10 framework, it seems to provide a "next-level" in terms of a target for overall design synthesis as well as providing some means towards future aspirations.I like the site research and systems the students are thinking about, although I might suggest more limited sites just so there could be a bit more refinement in the site plans. On that note, perhaps a slight reduction in building scale could also help students could circle back a few more times on compositional and detail refinement. Lastly, I would love to see some framing and foundation plans and an HVAC diagram, just to make those systems more explicitly declared.

A final thought on these kinds of projects more broadly -- I am not sure how one would do this, but I think about it on our own projects: it would be nice to capture something how a student has thought about things like accessibility and egress as these things often seem like they get "sticky note" on them saying "I did it" but the decisions/requirements/challenges remain a bit opaque.

Overall, good-comprehensive-work

The syllabus provided for all sections constitutes a comprehensive guideline addressing the complex nature of the two courses working together. It might be helpful to include a format of requirements to unify how content is presented (something like the format of a competition). This could help students focus on presenting their work in a clearer way and track missing drawings/diagrams/models that could help demonstrate learning outcomes. This could also help students become more selective and careful in editing content for better readability (e.g., blurred tables and diagrams; excessive amounts of text; scales of drawings for an online/screen format; etc.). We are finding very similar challenges in our comprehensive design studio final submission. It is very impressive the coordination shown between the two courses ARCH 558 & ARCH 535, and the variety of tools used by students in their work.

Comments - AC

This Course is comprehensive in it's approach to integrate all the elements that make architecture. Such Strong importance was placed on the content of the course which is very noticeable. I think there could be some more focus on how that content is presented/represented and ultimately implemented in the final design. It is a wide spectrum of knowledge to show and integrate in a relatively short period of time, and I believe that the overall result is quite impressive

The amount of work completed into these projects and presented are considerable. There is a good synthesis of overall understanding of architecture and integration of components while creating overall attractive buildings. One criticism of all the presentations is the use of 3d modeling. When it is kept in a more abstract less realistic presentation method it was much more successful. The presentations were very convincing each student had extensive knowledge of steps toward successful comprehensive design.

Comments - Assessment Process

I think the system basically worked pretty well; one thing that was a bit challenging with the sliders focusing "sufficient evidence" there arises a gap in assessing quality, i.e. there might be tons of evidence of a student attending to and understanding, say, the building envelope, but it felt hard to say "but it could be done better" and even harder if it was piece of some larger whole, for example, a question about a material or detailing choice.

That said, for the NAABish questions of in all this, I think the survey and system were fine.

Thank you for the invitation. This process has been very helpful for thinking about our own process towards NAAB assessment and the integration between the comprehensive design studio and technical integration course in our MArch Program.

Overall I found this format largely successful. The video presentations were extremely helpful as well the subsequent discussions from the panel to find the broader context of the projects. I liked to have the deliverable content open on a separate screen so I could zoom into areas that were being described.

Students 05, 06, 07, 08

Comments - UI Faculty

Overall very good work. I was especially impressed with professor Watson's project statement and its broad social and philosophical framing of ecology within the context of the design brief. Student 5's synthesis of cultural and ecological issues with regards to building and site design, overall research, integration of systems, and measurable outcomes was an excellent bar to set for the review of the other 3 projects.

In these four cases, I noted the absence of physical modeling and, excepting one, hand drawing. It is my sense that these methods can contribute significantly design synthesis.

Thank you for the opportunity to review this work.

thank you for this opportunity to take part in this process. The work presented, while conveying the typical range of students success across projects, and across parameters within projects was notable for its consistency in effectively demonstrating the desired learning outcomes. The drawings were clear and easy to review, and conventions used in integration diagrams were well considered. If there was an area of suggested revision to consider, it might be a scaled down project brief to allow for more development of design details, especially at major wall intersections. Although a common refrain in these reviews, more documentation of regulatory requirements (in the form of a code analysis, FAR/ Max building envelope, or other supporting documentation) would be worth including, as would more explanation of universal design employed in the designs. These are not really points of deficiency in the designs, so much as a suggestion for documentation of course efforts.

Coursce Comments - AC

The amount of work and integration of systems required by this course is impressive. In general, I would call each of these four projects very successful in meeting the requirements, which also means that the structure of the course itself must have been successful. The quality and level of detail in these projects is also clearly enhanced by the ARCH 535 companion course.

Comments - Assessment Process

The assessment process was seamless and direct. The directions were absolutely clear. Thank you!

Architecture Program Report
School of Architecture
Montana State University
Prepared January 10, 2023

Request for Additional Information on:

Condition 3 -- Program and Student Criteria

- **SC.6:** Provide further clarification and discussion of your response on the APR to better understand your comments in the first paragraph of this section.

Initial Paragraph in Question:

> **"The School of Architecture MISSION** - to empower students to engage the complexities of social and ecological systems through creative, collaborative, and ethical design of the built environment – to a large degree parallels this Student Criteria 6 Building Integration. We believe that by developing the ability to design in this way students will gain personal agency, undertake self-reflection, and display empathy toward the environment and its users. The issues that are covered by SC.6 are at the core of what we value as a school, and we expose, introduce and require students to engage with those issues throughout the curriculum."

In Spring 2020, then Director Ralph Johnson asked the faculty teaching ARCH 535 Advanced Building Systems Integration and ARCH 558 Comprehensive Design Studio to meet and review, and/or develop, how our learning and teaching approach toward Student Criteria SC.5 and SC.6 supports the School of Architecture's vision and mission statement. The initial paragraph of SC.6 in MSU's Architecture Program Report is an outcome of that effort.

The MSU School of Architecture's vision is:

> "We believe in broad engagement with the cultural and ecological context through architecture's agency in the world."

Our mission statement is:

> "The School of Architecture empowers students to engage the complexities of social and ecological systems through creative, collaborative, and ethical design of the built environment. We instill personal agency, self-reflection, and environmental empathy to educate innovators who challenge and advance the design professions."

The values that guide us in achieving our vision and mission are

> Citizens, Passion, Design, Agility and Experimentation.

As we discussed, assessed and revised our approach to demonstrating SC.5 and SC.6 through ARCH 535 and ARCH 558, we looked at what we want to do in those courses, how we should do it and why we do it. This led to the following understanding of how our mission statement—when split into its different components—helped guide our approach to SC.5 and SC.6.

What we do
The School of Architecture empowers students to engage the complexities of social and ecological systems through…[the] design of the built environment.

How we do it
{Students] undertake the design process in a creative, collaborative, and ethical manner.

Why we do it
[By developing the ability to design in this way] students will gain personal agency, undertake self-reflection, and display empathy toward the environment [and its users]

Expanding on each of these statements we looked at how ARCH 535 and ARCH 558 could help students develop the ability to undertake design synthesis and building integration through the design of their project. The following statements became the aspirations for how ARCH 535 and ARCH 558 can demonstrate SC.5 and SC.6 and support our vision and mission statement. The following explanation became a roadmap for how the courses were developed and revised.

[What]The work undertaken in ARCH 535 and ARCH 558 supports the School of Architecture's vision and mission through the design and testing of a building that addresses a societal need or opportunity and has a positive effect upon the existing and social and ecological conditions. [How]The design process undertaken in ARCH 535 and ARCH 558 will require a commitment toward and demonstration of a sustainable, if not regenerative, building and ecological solution. The design process will require a commitment toward, and demonstration of, an empathetic and universal design solution. Students will undertake aspects of the design process in teams and will participate with a range of practitioners to gain insight and feedback on their proposals. [Why]By developing this design process and testing it with a final building design proposal, students will be prepared to use their education and profession to contribute to solutions that address the issues of climate change and contribute toward the advancement of the communities in which they choose to practice.

[Components: Space, Light, Structure, Skin and Path]
Students in ARCH 535 and ARCH 558 will utilize the tectonic components of architectural design—the building envelope systems and assemblies [Skin], structural systems, [Structure], environmental controls systems [Light, Heat, Water] and life safety systems [Path]—as integral and generative elements of the spatial and experiential design explorations [Space]. It is expected that these architectural components are to be integrated, throughout the process and final solution, in creative and innovative ways to address society's needs.

These integrated components will be explored within a framework of the user requirements [Users], regulatory requirements [Wellness: Health, Safety, Welfare], site conditions [Context], ecological concerns [Sustaining], and accessible design [Universal Design].

Architecture Program Report
School of Architecture
Montana State University
Prepared January 14, 2023

Request for Additional Information on:

Condition 4 – Curricular Framework

- **4.3.1:** Provide data concerning the number of students that have to repeat studio due to two consecutive C's.

Since the last accreditation in 2014, there have been no students who have received two consecutive C- grades in studio courses. There have been instances of students who failed a studio course and then repeated the course to earn a passing grade of a C- or higher prior to moving on into the next studio year.

The MSU School of Architecture also developed in 2014 a summer vertical studio option for 2nd through 4th year studios that allows a student to repeat a studio course for a grade replacement or to take a studio course to remain in sequence, if the student has fallen out of course sequence due to extraordinary circumstances.

Architecture Program Report
School of Architecture
Montana State University
Prepared January 10, 2023

Request for Additional Information on:

Condition 4 – Curricular Framework

- **4.3.1:** Provide an example of a transfer student review documents and assessment from the institution.

The documents that follow describe the process used for students that have taken architecture courses at another institution and wish to transfer into our Bachelor of Arts in Environmental Design. The documents shown were used in evaluating a University of Kansas student's transfer application to the School of Architecture at Montana State University. To maintain confidentiality, the student will be referred to as Student A.

Student A was a student-athlete at the University of Kansas and wished to transfer to MSU to study architecture and to continue their college athletics participation. The transfer process began when the MSU athletics department contacted the MSU School of Architecture about Student A's interest in transferring to MSU (Document A). We were provided with the student's KU transcript (Document A) and met with Student A to have an initial conversation about their KU courses, scheduling needs, and planned start date at MSU. We explained to Student A that we would evaluate their courses and prepare a specific program of study for them to transfer to MSU—as we do for all students transferring to MSU with prior architecture courses.

KU Non-architecture Course Evaluation

The evaluation of Student A's KU non-architecture and general education courses was undertaken by the MSU Office of Admissions. Their Transferring Credit website is shown below.

The MSU Office of Admissions gathered Student A's academic information and then began the evaluation process of her general education courses.

Before Credit Evaluation

Before your transfer credits can be evaluated, the Office of Admissions must receive all of your official transcripts. Your credits will be evaluated after you have been admitted to MSU and you register for orientation.

❓ How should I have my transcripts sent?

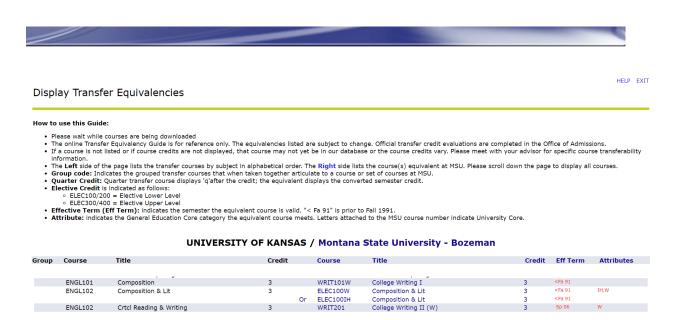Please request official transcripts to be sent directly from all institutions you have attended.

•Send by mail to: MSU Admissions, PO Box 172190, Bozeman, MT 59717-2190.
•Send by email to: MSUadmissionstranscript@sympa.montana.edu.

❓ What qualifies for transfer credit?

•All undergraduate college-level credits from regionally accredited institutions.

•Dual-enrollment credits earned and posted on a college (not high school) transcript.

•Credits earned from Advanced Placement (AP) and International Baccalaureate (IB) scores, which must be sent directly from the testing agency.

•Credits that apply to an AAS degree (maximum of 30 elective credits).

•Military credits (maximum of 30 elective credits).

❓ How will my credits transfer to MSU?

Eligible credits will transfer as direct equivalents to MSU courses or as elective credit with or without CORE. A course must be at least two semester credits and have a grade of C- or higher (with no pass/fail grading) to count for MSU CORE. For more information, please visit our CORE curriculum website.

To see how courses have previously transferred to MSU, go to MyInfo, then choose "Transfer Equivalencies" and the relevant state and institution. If a course is not listed, it will be evaluated directly from your transcript.

•For AP credit, see our AP equivalency guide.

During the evaluation process, the Office of the Admissions has a transfer equivalency website that provides information on some KU courses and their MSU equivalency. Where those evaluations existed for Student A's non-architecture courses, we listed those on their proposed program of study at MSU. An example of the transfer equivalency website is shown below.

HELP   EXIT

Display Transfer Equivalencies

How to use this Guide:

- Please wait while courses are being downloaded
- The online Transfer Equivalency Guide is for reference only. The equivalencies listed are subject to change. Official transfer credit evaluations are completed in the Office of Admissions.
- If a course is not listed or if course credits are not displayed, that course may not yet be in our database or the course credits vary. Please meet with your advisor for specific course transferability information.
- The **Left** side of the page lists the transfer courses by subject in alphabetical order. The **Right** side lists the course(s) equivalent at MSU. Please scroll down the page to display all courses.
- **Group code:** Indicates the grouped transfer courses that when taken together articulate to a course or set of courses at MSU.
- **Quarter Credit:** Quarter transfer course displays 'q'after the credit; the equivalent displays the converted semester credit.
- **Elective Credit** is indicated as follows:
  - ELEC100/200 = Elective Lower Level
  - ELEC300/400 = Elective Upper Level
- **Effective Term (Eff Term):** indicates the semester the equivalent course is valid. "< Fa 91" is prior to Fall 1991.
- **Attribute:** indicates the General Education Core category the equivalent course meets. Letters attached to the MSU course number indicate University Core.

UNIVERSITY OF KANSAS / Montana State University - Bozeman

Group	Course	Title	Credit	Course	Title	Credit	Eff Term	Attributes
	ENGL101	Composition	3	WRIT101W	College Writing I	3	<Fa 91	
	ENGL102	Composition & Lit	3	ELEC100W	Composition & Lit	3	<Fa 91	IH,W
				Or ELEC100IH	Composition & Lit	3	<Fa 91	
	ENGL102	Crtcl Reading & Writing	3	WRIT201	College Writing II (W)	3	Sp 06	W

KU Architecture Course Evaluation

NAAB PC/SC, Learning Outcomes (Document B)

For the KU architecture courses, we requested a copy of the syllabi and schedules for all of the architecture courses that Student A had taken at KU so that we could look at the NAAB Program Criteria (PC)/Student Criteria (SC), course learning outcomes, and course topics assigned to each KU course. We also asked for a design and graphics portfolio of their work at KU.

Professor Steve Juroszek, who has been serving as Recruitment and Transfer Coordinator, undertook this review. For one graphics course, the instructor of the MSU graphics course was asked to review the portfolio to assess whether or not the work at KU was equivalent to MSU's initial graphics course. We also had design studio faculty review Student A's portfolio in order to determine their placement within our design studio sequence.

We compared the PC/SC and learning outcomes of the KU courses to the PC/SC and learning outcomes in the courses at MSU. This allowed us to determine which MSU courses would be waived based upon their equivalency to the courses that Student A had taken at KU. The attached NAAB PC/SC Matrix (Document B) was used as a worksheet to record this evaluation. Some PC/SCs were met through a single course and some PC/SCs were met through a combination of courses. The matrix worksheet allowed us to document and keep track of which KU courses meet the requirements of the MSU courses.

Transfer Comparison (Document C)

The results of this evaluation, and the course documents used to determine the PC/SC, learning outcomes, were listed on the page titled 'transfer comparison, May 24, 2022' (Document C). This list allowed us to make certain that we had looked at all of Student A's KU courses and identify what MSU courses would be waived for Student A's transfer.

Proposed Program of Study (Document D)

The final document included is the 'Proposed Program of Study' (Document D) that was developed and sent to Student A. The upper portion of the Proposed Program of Study document lists the courses taken at KU and their transfer equivalency to MSU courses—both architecture and non-architecture courses.

The middle third of the document identifies the required courses that Student A will need to successfully complete in order to receive a Bachelor of Arts in Environmental Design at MSU. The courses are listed in the semester in which they are offered so that the time-to-graduate for Student A can be clearly seen. Upon receipt of our B.A. in Environmental Design degree, Student A would be eligible to apply for admission to our Master of Architecture program. The bottom portion of the document identifies the courses required for our M.Arch program.

Student A transferred to MSU in Fall 2022. This Proposed Program of Study has been utilized for their subsequent registration and academic advising.

Document A

From:	Buchholz, Cassidy
Sent:	Friday, April 29, 2022 4:47 PM
To:	Ortego, Rachael
Subject:	Architecture Question
Attachments:	FILE_9896.pdf
Follow Up Flag:	Follow up
Flag Status:	Flagged

K.U Transfer
Golf Recruit

Prospective Visit
Wednesday 5/18/22

Hi there!

My name is Cassie and I am an Academic Coordinator in the Athletic department here at MSU. I help oversee academic eligibility for our Golf team and we have a prospective transfer student that I was hoping you could answer some questions about. They are currently at University of Kansas in the 5 year Undergrad/Masters Architectural program, similarly structured to the program in our School of Architecture. However, initially looking at their transcript shows me that almost all of the architecture classes that they have taken thus far would transfer as electives (according to the transfer equivalency sheet). I know our Architecture program is competitive and since they are four semesters into their college career I was wondering if you thought it would even be possible for a transfer student to come in and potentially get into our architecture program? Especially if They are not meeting those base requirements that is required of the Environmental Design BA that students need before the Architecture masters. Have you seen transfer students come in to the program before? I have attached their unofficial transcript if you wanted to take a look and see what you thought. I know They are excited about MSU but is pretty set on majoring in Architecture so I want to give them the best information I can on their ability to do that here.

Thank you!!!

Cassie Buchholz | Academic Coordinator / Learning Specialist
Montana State University | Bobcat Athletics
P: 406-994-4330 | E: cassidy.buchholz@msubobcats.com
#1 Bobcat Circle P.O. Box 173380
Bozeman, MT 59717-3380
msubobcats.com

Document A

No Jayhawk address

786/479-5452
scarletweidig@ku.edu

Academic Summary

Undergrad (UGDL) | Sophomore | 3.71 KU GPA
Architecture&Design Undergrad (ARCHU)
(Effective 2020-05-19) Auto Matriculation
Professional Master of Arch (ARCHR)

Initial KU Term: Fall 2020
Holds/Alerts

Student Athlete Hold

No drops allowed this semester

Admission Data

High School GPA: 3.76

Entrance Exams

SAT		MPT-		MPT-	
ANHSS	27	MPTA	37	MPTA	49
ANSCI	24	2020-06-28		2020-07-06	
CMEVD	11				
EXPID	9				
HRALG	9				
MAT	520				
MATST	26				
PRSLV	5				
PSADM	7				
RDTST	28				
RDWRT	540				
STENG	8				
WDCTX	8				
WLTST	26				
TOTAL	1060				
2019-10-05					

Current Enrollment

Courses

Spring 2022-UGDL, ARCHU, Sophomore
Academic Load: Enrolled Full-Time

ARCH	209	Sustainability, Site, &Context	6	LAB	
ARCH	620	Theory of Urban Design	3	LEC JR/SR	
ARCH	624	Structures II	3	LEC JR/SR	
EVRN	148	Scientfc Princpls Envrnmt Stds GE3N N NB	3 B	LEC	

UGDL: 15 Hrs
Term GPA: 3.00
UGDL: CUM GPA: 3.71

Fall 2021-UGDL, ARCHU, Sophomore
Academic Load: Enrolled Full-Time

ARCH	208	Form and Function	6 A-	LAB
ARCH	524	Structures I	3 B+	LEC JR/SR
ARCH	540	Glbl Hist Arch I:Orig Indst Rv GE3H	3 A-	LEC JR/SR
ARCH	605	Visualizg Site&Nat Evrn Systms	3 B+	LEC JR/SR
ARCH	605	Visualizg Site&Nat Evrn Systms	0	LBN

UGDL: 15 Hrs
Term GPA: 3.54
UGDL: CUM GPA: 3.75

Summer 2021-UGDL, ARCHU, Sophomore
Academic Load: Enrolled Half-Time

| PHSX | 114 | College Physics I LFE QR GE11 GE12 GE3N N NP | 4 A | LEC |
| PHSX | 114 | College Physics I LFE QR GE11 GE12 GE3N N NP | 0 | LBN |

UGDL: 4 Hrs
Term GPA: 4.00
UGDL: CUM GPA: 3.84

Spring 2021-UGDL, ARCHU, Freshman
Academic Load: Enrolled Full-Time

ARCH	109	Architectural Foundations II	6 B+	LAB
ART	101	Drawing I GE3H H	3 A	LAB
ENGL	102	Critical Reading and Writing GE21 U	3 A-	LEC
GEOL	301	Introduction to Oceanography GE3N N	3 A	LEC JR/SR
MATH	115	Calculus I QR GE12 N	3 A	LEC

No Jayhawk address

UGDL: 18 Hrs
Term GPA: 3.72
UGDL: CUM GPA: 3.82

Fall 2020-UGDL, ARCHU,CLASU, Freshman
Academic Load: Enrolled Full-Time

ARCH	103	Introduction to Architecture	3 A	LEC	—
ARCH	108	Architectural Foundations I	6 A	LAB	—
ENGL	101	Composition	3 A-	LEC	—
		GE21 U			
MATH	101	College Algebra:	3 A	LEC	—
		QR GE12 U			

ARCHU HONOR ROLL   **UGDL: 15 Hrs**

CLASU CLAS HONOR ROLL   **Term GPA: 3.94**
                                               UGDL: CUM GPA: 3.94

(handwritten notes in right margin, largely illegible)

Credits

Su 22   3   18
S 22   15   33
F 21   15   33
Su 21   4   37
S 21   18   55
F 20 – 11

Student A   TRANSFER REVIEW 5.24.22   Document B

Montana State University
School of Architecture
Professional Studies
Curricular Matrix for Course
Content Performance Criteria
Based Learning Outcomes
12.2.2020
(updated 8-16-21)
(updated 12-18-21)
(updated 5-10-22)
(updated 5-13-22)

	First Year		Second Year									Third Year								Fourth Year				Graduate Year						All Years
	Fall	Spring	Fall		Spring							Fall			Spring				Fall	Spring			Fall	Spring	Fall		All Semesters				

Course columns: ARCH 121A Introduction to Design, ARCH 151RA Design Fundamentals I, ARCH 152A Design Fundamentals II, ARCH 253 Architectural Design I, ARCH 261 Architectural Graphics I, ARCH 322A World Architecture I, US XXX University Seminar (starting Fall 2022), ARCH 241 Building Construction I, ARCH 254 Architectural Design II, ARCH 262 Architectural Graphics II, ARCH 323A World Architecture II, ARCH 331 Environmental Controls I, ARCH 343 Arch Structures I, ARCH 355 Architectural Design III, ARCH 363 Architectural Graphics III, ARCH 332 Environmental Controls II, ARCH 340 Building Construction III, ARCH 344 Arch Structures II, ARCH 356 Architectural Design IV, Option Studios, ARCH 431 Sustainability in Architecture, ARCH 413 Professional Practice, ARCH 452 Architectural Research Methods, ARCH 457 Architectural Design V, ARCH 526 Advanced Architectural Theory, ARCH 535 Advanced Building Systems Integration, ARCH 558 Comprehensive Design Studio, ARCH 551 Advanced Architectural Studio, ARCH 575 Professional Paper, ARCH 560 Masters Studio Project, Lecture Series – required + assignment, Climate Survey, AIAS, Freedom by Design, Tau sigma De, All Course Syllabi (Learning Culture, Dive)

Category	Items
Shared Values of the Discipline and Profession	
SV1 Design	
SV2 Environmental Stewardship and Professional Responsibility	
SV3 Equity, Diversity, and Inclusion	
SV4 Knowledge and Innovation	
SV5 Leadership, Collaboration, and Community Engagement	
SV6 Lifelong Learning	
CF: Curricular Framework	
3.3 Breadth of Education	
3.4 Depth of Study	
PC Program Criteria	
PC.1 Career Paths	L1 ... L1 L2a L2f ... L2b
PC.2 Design	L2a L2b ... L2d ... L2e ... L2c
PC.3 Ecological Knowledge and Responsibility	L2a ...
PC.4 History and Theory	L1 ... L2a L1 ... L2b L2c
PC.5 Research and Innovation	L1 L1 ... L1
PC.6 Leadership and Collaboration	L2a ... L1
PC.7 Learning and Teaching Culture	L2b ... L2a L2b
PC.8 Social Equity and Inclusive Environments	L2a ... L2b ... L2c ... L2d
SC Student Criteria, Student Learning Objectives and Outcomes	
SC.1 Health, Safety, and Welfare in the Built Environment	L1 ... L2a L2b ... L1 ... L2c ... L2d ... L2b
SC.2 Professional Practice	... L2a ...
SC.3 Regulatory Context	L1 ... L2a ... L1 L1 ... L2c
SC.4 Technical Knowledge	L1 L1 ... L2a L1 ... L1 L2b L2c L2d ... L2d
SC.5 Design Synthesis	L1 ... L1 ... L2a L3a L3b
SC.6 Building Integration	L1 ... L1 ... L2a L3a L3b
MSU Mission	
Social Engagement	
Ecological Systems	
Creativity	
Collaboration	
Ethical Design	
Instill Personal Agency	
Self-reflection	
Environmental Empathy	
Innovation	
Challenge the Design Profession	

Matrix Key

L1	Indicates Learning Index of Introduction/Foundation
L2	Indicates Learning Index of Understanding for an SC that requires Ability be deomonstrated
L2	Indicates Learning Index of Understanding
L3	Indicates Learning Index of Ability
	Indicates that topic is re-introduced and/or reinforced in course

Course Name and Number
Courses to be assessed at end of Fall 2021 (using online survey process).

Document C

Student A

Scarlett Weidig
Transcript comparison
Prepared by Steve Juroszek May 24, 2022

	University of Kansas				**Montana State University**		
Spring 2022	**Rubric**	**Course Description**	**Credits**	**Grade**	**Rubric**	**Course Description**	**Materials Reviewed**
	Arch 209	Susatainability, Site & Context	6		Arch 254	Learning outcomes generally match those of Arch 254, scale of project is similar	Syllabus Review and learning outcomes
	ARCH 624	Structures II	3		Arch 343	Arch Structures I	Syllabus Review
	EVRN 148	Scientific Principls Envmnt Stds	3		BIOE103CS		MSU transfer website
	Arch 620	Theory of Urban Design	3		Elec +PC4	Covers history and theory of urban planning, contributes to history, but may be counted mostly as an elective	Syllabus Review

Fall 2021	**Rubric**	**Course Description**	**Credits**	**Grade**	**Rubric**	**Course Description**	**Materials Reviewed**
	ARCH 208	Form and Function	6		Arch 253	Learning outcomes generally match those of Arch 253, scale of project is similar	Syllabus Review and learning outcomes
	ARCH 524	Structures I	3		Arch 343	Arch Structures I	Syllabus Review
	ARCH 540	Glbl Hist Arch | Orign Indst Rv (GE3F	3		Arch 322IA	World Architecture I	Syllabus review
	ARCH 605	Visualizing Site & Nat Evrn Systems	3		Meets B2 Site Design and B5 Environmental Systems (contributes to ARCH 151 and 152 site conditions and		Syllabus review

Summer 2021	**Rubric**	**Course Description**	**Credits**	**Grade**	**Rubric**	**Course Description**	**Materials Reviewed**
	Summer 2021						
	PHSX 114	College Physics I (with Lab)	4		PHSX 205	College Physics I	MSU Transfer website

Spring 2021	**Rubric**	**Course Description**	**Credits**	**Grade**	**Rubric**	**Course Description**	**Materials Reviewed**
	ARCH 109	Architectural Foundations II	6		Arch 253	meets Arch 152 outcomes and SPV A2, 4 , 5, 6	Syllabus and Learning Outcome Review
	ART 101	Drawing I	3		Elec		
	ENGL 102	Critical Reading and Writing	3		ELEC100IH	Core IH	MSU Transfer website
	GEOL 301	Introcution to Oceanography	3			Elective	?
	MATH 115	Calculus I	3		M161Q	Calculus I	MSU Transfer website

Fall 2020	**Rubric**	**Course Description**	**Credits**	**Grade**	**Rubric**	**Course Description**	**Materials Reviewed**
	ARCH 103	Introduction to Architecture	3		Meets SC1 HSW, SC2 Pro Practice, PC1 Career Paths, PC@ design , PC3 and PC8		
	ARCH 108	Architectural Foudnations I	6		ARCH 151RA	Design Fund I	Syllabus review
	ENGL 101	Compostiion	3		WRIT101W	College Writing I	MSU Transfer website
	Math 101	College Algegra	3		M121Q	College Algegra	MSU Transfer website

Core Requirements			**KU**	**MSU**
Q	Quantitative Reasoning		Math 115	
W	Writing		ENGL 101	
US	University Seminar			need
D	Diversity			need
CS	Contemporary Issues in Science		EVRN 148	
R/IH	Inquiry in Humanities		ENGL 102	MSU to confirm
R/IN	Inquiry in Natural Sciences			
R/IS	Inquiry in Social Sciences			

Montana State University - School of Architecture
Student A - Transfer Student - Proposed Program of Study
Prepared May 31, 2022

Univeristy of Kansas Courses			MSU Equivlaent Course or designation		
ARCH 103	Introduction to Architecture	3	ARCH 121	Introduction to Design	
ARCH 108	Architectural Foundations I	6	ARCH 151RA	Design Fundamentals I	
ENGL 101	Compostiion	3	WRIT101W	College Writing I	
Math 101	College Algegra	3	M 121Q	College Algebra	
ARCH 109	Architectural Foundations II	6	ARCH 152IA	Design Fundamentals II	
ART 101	Drawing I	3	Elective		
ENGL 102	Critical Reading and Writing	3	ELEC 100IH	Inquire Humanities Core	
GEOL 301	Introcution to Oceanography	3	Elective		
MATH 115	Calculus I	3	M161Q	Calculus I	
PHSX 114	College Physics I	4	PHSX 205	College Physics I	
ARCH 208	Form and Function	6	ARCH 253	Architectural Design I	
ARCH 524	Structures I	3	ARCH 343	Architectural Structures I	
ARCH 540	Glbl Hist Arch | Orign Indst Rv	3	ARCH 322IA	World Architecture I	
ARCH 605	Visualizing Site & Nat Evrn Systems	3	Elective		
ARCH 209	Susatainability, Site & Context	6	ARCH 254	Architectural Design II	
ARCH 624	Structures II	3	ARCH 344	Architectural Structures II	
EVRN 148	Scientific Principls Envmnt Stds	3	BIOE103CS	Environmental Science and Society	
ARCH 620	Theory of Urban Design	3	Elective		
ARCH 541	Glbl Hist Arch | Indst Rv to Present	3	ARCH 323IA	World Architecture II	
Total Credits taken at University of Kansas		**70**			

(note: all non-ARCH course equivalencies are taken from MSU Transfer Equivlancy Site and will be confirmed by MSU upon transfer)

Montana State University
Bachelor of Arts in Environmental Design - 126 Credits min. (total undergraduate credits)

Third Year- Environmental Design Program

Fall Semester 2022

ARCH 261	Architectural Graphics I	3
ARCH 331	Environmental Controls I	4
ARCH 355	Architectural Design III	5
ARCH 363	Architectural Graphics III	3
		15

Spring Semester 2023

ARCH 241	Building Construction I	3
ARCH 262	Architectural Graphics II	3
ARCH 332	Environmental Controls I	4
	Univ. Core (US, D, R/ IN, or R/ IS)	3
		13

Summer Semester 2023

| ARCH 356 | Architectural Design IV | 5 |
| | | 5 |

Fourth Year- Environmental Design Program

Fall Semester 2023

Arch 450	Community Design Center	5
ARCH 431	Sustainability in Architecture	3
	Univ. Core (US, D, R/ IN, or R/ IS)	6
		14

Spring Semester 2024

ARCH 340	Building Construction II	4
ARCH 413	Professional Practice	3
ARCH 452	Research Methods in Architecture	3
	Univ. Core (US, D, R/ IN, or R/ IS)	3
		13

Summer Seester 2024

| ARCH 457 | Architectural Design V | 5 |
| | | 5 |

| **Total Undergraduate Credits taken at MSU** | **65** |
| **Total Undergraduate credits taken at MSU and KU** | **135** |

Master of Architecture- 42 Graduate Credits

Graduate Year- Master of Architecture program

Fall Semester 2024

ARCH 558	Comprehensive Design Studio	6
ARCH 535	Advanced Building Systems Integration	3
ARCH 526	Advanced Architectural Theory	3
	Graduate Elective	3
		15

Spring Semester 2025

ARCH 551	Advanced Architectural Studio	6
ARCH 575/577	Professional Paper	4
	Graduate Electives	5
		15

Fall Semester 2024

ARCH 560	Master Studio Project	6
	Graduate Electives*	6
		12

Architecture Program Report
School of Architecture
Montana State University
Prepared January 14, 2023

Request for Additional Information on:

Condition 4 – Curricular Framework

- **4.3.3:** Provide data concerning the program's last statement in this section regarding students denied admission to the program.

The language in the APR included below ***Graduate Program – Remediation*** has been updated to the following:

Graduate Program – Remediation
Once accepted to the graduate program – whether provisional admission or full admission – students must maintain a cumulative GPA of 3.0 and must receive a grade of B or better in each design studio in order to proceed to the next studio in the sequence. Students who fail to maintain a cumulative GPA of 3.0 will be subject to academic suspension by the MSU Graduate School. Suspended students may continue to attend MSU in non-degree status to remediate their GPA standing. A student in non-degree status may take up to 9 credits of four-hundred or five-hundred level department approved credits and earn a grade of "B" or better in those credits. Upon receipt of grades "B" or better, the student may be reconsidered for re-admission to the Master of Architecture program. A maximum of 6 credits of course work earned in non-degree graduate status may be counted towards graduation requirements.

Since the last accreditation visit in 2014, three graduate students have been suspended from the Master of Architecture graduate program and utilized the non-degree status option to remediate their GPA and reapply, successfully re-entering the graduate program. Two of the students successfully completed their degree requirements and graduated with the Master of Architecture degree. The third student has successfully remediated their GPA and is currently in the final semester of the program.

Architecture Program Report
School of Architecture
Montana State University

Prepared January 15, 2023

Request for Additional Information on:

Condition 5 – Planning and Assessment

- **5.2.1:** Provide additional data concerning the number of firms participating in the internship program.

The School of Architecture internship program takes place during the summer and fall semester of each year. The following architectural firms have participated in our program since 2019.

Fall 2022 – ARCH 498 – Internship participating firms:

National

1. Architects Alaska, Anchorage, AK
2. GSG Architecture, Casper, WY
3. HKS Inc., Phoenix, AZ
4. JZW Architects, Layton, UT
5. Williams Partners Architects, Ketchum, ID
6. Quattrocchi Kwok Architects, Santa Rosa, CA

Regional

7. Cushing Terrell, Billings, MT
8. Cushing Terrell, Missoula, MT
9. Mosaic Architecture, Helena, MT

Local

10. A&E Design, Bozeman, MT (two students)
11. Brechbuhler Architects, Bozeman, MT
12. Faure Halvorsen Architects, Bozeman, MT
13. JLF Architects, Inc., Bozeman, MT
14. Locati Architects, Bozeman, MT
15. Love | Schack Architecture, Bozeman, MT
16. Minarik Architecture, Bozeman, MT
17. Plum Architecture, Bozeman, MT
18. Thruline Partners, Bozeman, MT

Fall 2021 – ARCH 498 – Internship participating firms:

<u>National</u>

1. Architeer Architecture& Engineering, Portland, OR

<u>Regional</u>

2. Slate Architecture, Helena, MT (2 students)
3. CDFEY Architects, Missoula, MT

<u>Local</u>

4. Legends Studio, Bozeman, MT
5. SMA Architecture & Design, Bozeman, MT
6. A&E Design, Bozeman, MT (2 students)
7. Brechbuhler Architects, Bozeman, MT

Fall 2020 – ARCH 498 – Internship participating firms:

<u>National</u>

1. Ryan Companies, Minneapolis, MN
2. T.W. Beck Architects, Estes Park, CO

<u>Regional</u>

3. Mosaic Architecture, Helena, MT
4. MMW Architects, Missoula, MT

<u>Local</u>

5. Faure Halvorsen Architects, Bozeman, MT
6. Miller Roodell Architects, Bozeman, MT
7. Locati Architects, Bozeman, MT
8. Brechbuhler Architects, Bozeman, MT
9. Thinkone Architects, Bozeman, MT

Fall 2019 – ARCH 498 – Internship participating firms:

<u>National</u>

1. EV Studio, Denver, CO

<u>Regional</u>

2. Nelson Architects, Great Falls, MT

<u>Local</u>

3. Reid Smith Architects, Bozeman, MT
4. Faure Halvorsen Architects, Bozeman, MT
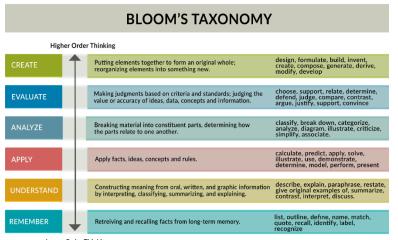5. Jackola Engineering and Architecture, Bozeman, MT (2 students)

Architecture Program Report
School of Architecture
Montana State University
Prepared January 16, 2023

Clarifications to the Architectural Program Report

Condition 5 – Planning and Assessment

- **5.2.2:** Provide clarification on Goal 1.3 and the incorporation of Bloom's Taxonomy.

In Bloom's Taxonomy, as shown in the diagram below, skills are placed on a scale of increasing cognitive complexity. Skills in the areas of Remember, Understand, and Apply develop students' foundational knowledge in which to later perform more complex tasks. Following this, skills in the areas of Analyze, Evaluate, and Create require students to develop an understanding of the subject matter and successfully integrate prior knowledge with new knowledge to achieve the highest order of thinking.

https://www.sph.emory.edu/rollins-tlc/teach-learn-principles/blooms-taxonomy/index.html

The School of Architecture has used a modified version of Bloom's Taxonomy for its program learning outcomes in both studio and non-studio courses. This is most evident in the studio sequence where foundational knowledge, gained in the first- and second-year studios, is integrated with new knowledge in studios later in the program. This is best illustrated in a document developed by the School of Architecture in 2020 looking at program and course learning outcomes, and assessment methods, included below:

Program and Course Learning Outcomes and Assessment Methods
Developed by the 2020 AdHoc NAAB Conditions/Curriculum Matrix Committee and presented to the Director on July 20, 2020, and to the faculty at Fall 2020 Faculty/Staff Startup Meeting

These learning outcomes were revised developed based upon the committee's review of our existing course/program materials and the 2020 Conditions for Accreditation Professional

Studies Curricular Matrix. Information in this document came from course syllabi and the Curriculum Matrix Chart developed for the design studios and presented to faculty on April 14, 2019.

- Green text is used for Year identification and program learning outcomes.
- Black text is used to identify information taken from the April 14, 2019, Curriculum Matrix Chart.

First Year   (Arch 121, 151, and 152)
Design Thinking - Systems Thinking - Ordering Systems - Communication Skills

- Introduce and Understand Design Thinking
- Understand and Analyze Ordering Systems
- Introduce and Understand Systems Thinking
- Understand and Analyze Abstract Relationships
- Introduction to Professional Communication Skills

Program Learning Outcome Students will understand and apply design thinking to analyze natural and formal ordering systems, abstract critical relations and inform three-dimensional design decisions.

Second Year   (Arch 253, 261, 322, 254, 262, 323, 241)
Organizational Principles - Environmental Principles - Site/Context – Materials

- Use formal organizational and environmental principles to create two- and three-dimensional design
- Analyze, evaluate, and apply precedents to inform design
- Understand and apply site/context responses to inform design
- Learn, understand, and apply basic life-safety and accessible standards

Program Learning Outcome Students will understand and apply basic life safety systems, accessible design, and passive environmental principles in a series of projects which demonstrate the understanding of the poetic and practical relationships between site, place, and structure. They will utilize historical, cultural, and physical examination of the site and precedent to influence design proposals. They will develop and utilize various graphic techniques appropriate to the discovery of a suitable agenda for the design.

Third Year   (Arch 331, 332, 343, 344, 340, 355, 356 and 363)
Tectonics - Context - Systems - Stewardship – Integration

- Synthesize the design qualities of light, space, structure, skin, and movement
- Create buildings with well-integrated systems
- Gather, assess, and evaluate information and performance to inform design
- Apply and analyze environmental principles to create sustainable building and site designs

- Comprehend constructability

Program Learning Outcome Students will work with the physical and perceived qualities of light, space, structure, and skin (enclosure) in their design studio projects, working towards well integrated systems. Constructability is stressed as a goal. Students build upon information introduced in technical companion courses including structures, passive/active systems, building assemblies and building envelopes. Projects typically increase in scale and complexity both in the project size and the site context that includes an introduction and exploration of urban sites.

Fourth Year   (ARCH 457, 452, 413, and 431)
Pre-Professional Synthesis

- Analyze and evaluate design complexity including sustainable design strategies to create design process/solutions
- Graphic, Research and Professional Practice competencies

Program Learning Outcomes: Students will integrate and synthesize social, theoretical, technical, and/or environmental issues into architectural projects that demonstrate broad understanding of design process and complexity, integrating graphic and research skills. Students will understand professional ethical, regulatory, and business processes relevant to architectural practice.

Graduate Year 1 (ARCH 526, 535, 551, 558, and 575)
Research - Concept - Comprehensive Design – Sustainability

- Understand and apply theoretical and applied research to create architectural solutions
- Synthesize variables from diverse and complex systems into an integrated architectural solution
- Evaluate options and respond to environmental stewardship goals

Program Learning Outcome Students will utilize research and evaluation methods to analyze and design architectural projects that demonstrate broad integration and synthesis of social, theoretical, technical, and/or environmental issues.

Graduate Year 1.5 (ARCH 560)
Research - Hypothesize – Design

- Analyze topics and issues
- Generate a hypothesis
- Create a methodology to test
- Design as a means for analysis, evaluation, and conclusions

Program Learning Outcome Students will analyze topics and issues in order to formulate and test a hypothesis through critical architectural design thinking and outcomes.

In this document, the program learning outcomes generally increase in complexity from understanding and applying design thinking to evaluating options and creating methods in which to test design solutions. New information is continually being added, seen through levels of understanding appearing throughout the program years, as well as asking students to create new information. In this way Bloom's Taxonomy can be seen through students gaining an understanding of the subject matter and then integrating prior knowledge with new knowledge.

This system can also be seen in the Curricular Matrix for Course Content Performance Criteria developed by the School of Architecture in 2020, included below. In the Matrix Key, the areas of Introduction, Understanding, Integration, Ability and Reinforcing are used both to illustrate the level of learning in each course but to also show the development of each Program and Student Criteria throughout the program.

Montana State University School of Architecture Professional Studies Curricular Matrix for Course Content Performance Criteria Based Learning Outcomes 7.20.2020

	First Year Fall	First Year Spring	Second Year Fall			Second Year Spring				Third Year Fall				Third Year Spring				Fourth Fall	
	Intro to Design	Design Fund. I	Design Fund. II / Arch Design I	Arch Graphics I	World Arch I	Building Constr I	Arch Design II	Arch Graphics II	World Arch II	Env Controls I	Arch Structures I	Arch Design III	Arch Graphics III	Env Controls II	Building Constr II	Arch Structures II	Arch Design IV	Opt	Sustainability in Arch

Shared Values of the Discipline and Profession
- Design
- Environmental Stewardship and Professional Responsibility
- Equity, Diversity, and Inclusion
- Knowledge and Innovation
- Leadership, Collaboration, and Community Engagement
- Lifelong Learning

CF: Curricular Framework
- 3.3 Breadth of Education
- 3.4 Depth of Study

PC Program Criteria

Criteria	Values
PC.1 Career Paths	
PC.2 Design	L1 (Arch Design I); L2 (Arch Design III); L2 (Arch Design IV); R (Opt)
PC.3 Ecological Knowledge and Responsibility	L1 (Arch Design I); L2 (Env Controls I); L2 (Arch Design III); L2 (Env Controls II); L2 (Arch Design IV)
PC.4 History and Theory	L1 (Arch Design I); L1 (World Arch I); L1 (Arch Design II); L1 (World Arch II); R (Arch Design III); R (Arch Design IV)
PC.5 Research and Innovation	L1 (World Arch II)
PC.6 Leadership and Collaboration	L1 (Building Constr I); L1 (Building Constr II)
PC.7 Learning and Teaching Culture	L1 (Arch Design I); L1 (Arch Design II)
PC.8 Social Equity and Inclusive Environments	L1 (World Arch I); L1 (Arch Design II); L1 (World Arch II)

SC Student Criteria, Student Learning Objectives and Outcomes

Criteria	Values
SC.1 Health, Safety, and Welfare in the Built Environment	L1 (Building Constr I); L1 (Arch Design II); L2 (Arch Design III); L1 (Building Constr II); L2 (Arch Design IV)
SC.2 Professional Practice	L1 (Building Constr I); L1 (Building Constr II)
SC.3 Regulatory Context	L1 (Building Constr I); L1 (Arch Design III); L1 (Arch Design IV)
SC.4 Technical Knowledge	L1 (Building Constr I); L1 (Arch Design II); L2; L1, L1, L2 (Env Controls I, Arch Structures I, Arch Design III); L1, L2, L1, L2 (Env Controls II, Building Constr II, Arch Structures II, Arch Design IV); L1 (Sustainability)
SC.5 Design Synthesis	L1 (Arch Design I); L1 (Arch Design II); L2 (Arch Design III); L1, L2 (Building Constr II, Arch Design IV)
SC.6 Building Integration	L2 (Arch Design III); L1, L2 (Building Constr II, Arch Design IV); L1 (Sustainability)

MSU Mission
- Social Engagement
- Ecological Systems
- Creativity
- Collaboration
- Ethical Design
- Instill Personal Agency
- Self-reflection
- Environmental Empathy
- Innovation
- Challenge the Design Profession

Matrix Key

	In PC and SC color indicates topic is introduced in course
	In Values and Mission, color indicates that course/acitivity contributes to identified value or mission topic
L1	Indicates Learning Index of Understanding
L2	Indicates Learning Index of Integration
L3	Indicates Learning Index of Ability
R	Indicates Learning Level is Reinforced in course

Each of these levels of learning are also included in a document (see below), created in 2020, to define the various levels of learning with each course/program and student criteria.

Professional Studies Matrix of Learning Outcomes Index
(Modified Blooms Taxonomy)
Revised and updated 7-20-2020

Each course identified in the Matrix must have a level of learning related to an assigned Performance Criteria and a strategy for Self-Assessment by the SOA. Not all courses are expected to address all Performance Criteria in the desired leaning outcomes for the course.

Introduce-   A topic to be presented and discussed for the first time.
- Assessment requires documentation of the student's recognition of the material being introduced.

L.1   Understanding-   _NAAB definition: Students demonstrate the capacity to classify, compare, summarize, explain and/or interpret information._
- A topic is considered and explored by students in depth during the semester.
- A topic is considered from multiple points of view requiring the student to make and substantiate decisions.
- Assessment requires an evaluative tool to be utilized so that students can demonstrate that they understand the topic.
- Assessment requires the documentation of the student's examination of the various impacts of different possible approaches.

L.2   Integration-   Multiple topics presented simultaneously that require the students to analyze and evaluate the consequences of various scenarios and propose an integrated solution to a complex set of circumstances.
- Assessment requires the documentation of multiple scenarios and illustration of the decision-making criteria utilized.

L.3   Ability-   _NAAB definition: Proficiency in using specific information to accomplish a task, correctly selecting the appropriate information, and accurately applying it to the solution of a specific problem, while also distinguishing the effects of its implementation._
- Assessment must document the quantitative and qualitative characteristics of the whole as an assembly of integrated components.

Reinforce-   An approach or methodology introduced that requires the student to apply previously learned knowledge in consequential ways.
- Assessment requires demonstration that a knowledge area, previously demonstrated at the understanding or ability level, is used to greater breadth or depth.
Note: Greater breadth means that the knowledge/process could be applied to a different context or project. Greater depth means the knowledge could be applied to a greater level of detail.

In the current Curricular Matrix for Course Content Performance Criteria (shown below) the levels of learning; Introduction/Foundation, Understanding, Ability, and Reinforce are still present with the exception of Integration, which has been replaced by 'Understanding working towards Ability'.

We continue to examine, through the assessment process, the current Curricular Matrix from the perspective of how each studio builds on the previous studios, and how the support courses provide information to generate new knowledge. Along with the development of the studio sequence, we have also been examining each Program and Student Criteria and how these develop from Introduction/Foundation to Ability and then to Reinforcing knowledge throughout the program.

Montana State University School of Architecture Program and Student Criteria Matrix
September 7, 2022

Criteria	ARCH 121A	ARCH 151BA	ARCH 152A	ARCH 253	ARCH 261	ARCH 122A	US XXX	ARCH 241	ARCH 254	ARCH 262	ARCH 123A	ARCH 331	ARCH 343	ARCH 355	ARCH 363	ARCH 332	ARCH 340	ARCH 344	ARCH 356	Option Studios
First/Second/Third Year	Intro to Design	Design Fundamentals I	Design Fundamentals II	Architectural Design I	Architectural Graphics I	(World Architecture I)	Architectural Leadership: University Seminar (US)	Building Construction I	Architectural Design II	Architectural Graphics II	(World Architecture II)	Environmental Controls I	Architectural Structures I	Architectural Design III	Architectural Graphics III	Environmental Controls II	Building Construction II	Architectural Structures II	Architectural Design IV	
Shared Values of the Discipline and Profession																				
SV1 Design																				
SV2 Environmental Stewardship and Professional Responsibility																				
SV3 Equity, Diversity, and Inclusion																				
SV4 Knowledge and Innovation																				
SV5 Leadership, Collaboration, and Community Engagement																				
SV6 Lifelong Learning																				
PC Program Criteria																				
PC.1 Career Paths	L1																			L1
PC.2 Design		L2a	L2b	L2c					L2d	L1				L2e						
PC.3 Ecological Knowledge and Responsibility				L1					L1			L2a		L1		L2b				
PC.4 History and Theory	L1					L2a			L1		L2b									
PC.5 Research and Innovation										L1	L1			L1	L1					
PC.6 Leadership and Collaboration					L2a													L1		
PC.7 Learning and Teaching Culture																				
PC.8 Social Equity and Inclusive Environments	L1				L2a						L2b	L2c								
SC Student Criteria																				
SC.1 Health, Safety, and Welfare in the Built Environment				L1				L2a	L2b					L1						L2c
SC.2 Professional Practice																		L1		
SC.3 Regulatory Context				L1				L2a	L1							L1	L1			L2b
SC.4 Technical Knowledge								L1	L1			L2a	L2b		L1	L2c	L2d	L2e		
SC.5 Design Synthesis			L1						L1					L1						L1
SC.6 Building Integration			L1						L1					L1						L1

Matrix Key

Symbol	Meaning
L1	Indicates Learning Index of Introduction/Foundation
L2	Indicates Learning Index of Understanding for an SC that requires Ability be demonstrated
L2	Indicates Learning Index of Understanding
L3	Indicates Learning Index of Ability
(green)	Indicates that a topic is re-introduced and/or reinforced in course
ARCH 253	Indicates Course Name, Number or Non-Curricular Activity
(blue)	Indicates Shared Values within a Course

Architecture Program Report
School of Architecture
Montana State University

Prepared January 16, 2023

Request for Additional Information on:

Condition 5 – Planning and Assessment

- **5.2.2:** For goal 3.3, provide samples of the SoA learning environment and studio culture survey results and recommendations.

The following is assessment data for the demonstration of PC.7 Learning and Teaching Culture within our program and the student responses from the 2019, 2021 and 2022 surveys.

2019-2022 Assessment

MSU School of Architecture
Learning and Teaching Environment and Climate Survey
Comparison of Data for Assessment of PC7 Learning and Teaching Culture

Pedagogy

A range of design process approaches is encouraged	Always	Most of the Time	About half of the time	Sometimes	Never		Combined: Always & Most of Time
Spring 2019	18.03%	21.31%	36.89%	18.85%	4.92%		39.34%
Spring 2021	25.68%	41.53%	19.67%	12.02%	1.09%		67.21%
Spring 2022	30.17%	35.20%	20.11%	11.73%	2.26%		65.37%

Varying points of view are encouraged	Always	Most of the Time	bout half of the time	Sometimes	Never		Combined: Always & Most of Time
Spring 2019	13.93%	19.67%	42.62%	19.67%	4.10%		33.60%
Spring 2021	31.69%	39.34%	14.75%	11.48%	2.73%		71.03%
Spring 2022	37.29%	39.55%	10.73%	10.17%	2.26%		76.84%

Creative and innovative design are encouraged	Always	Most of the Time	bout half of the time	Sometimes	Never		Combined: Always & Most of Time
Spring 2019	24.79%	35.54%	27.27%	10.74%	1.65%		60.33%
Spring 2021	29.51%	51.91%	10.38%	6.01%	2.19%		81.42%
Spring 2022	53.37%	34.27%	7.87%	3.93%	0.56%		87.64%

Learning from the examples of other students is encouraged	Always	Most of the Time	bout half of the time	Sometimes	Never		Combined: Always & Most of Time
Spring 2019	28.69%	34.43%	26.23%	9.84%	0.82%		63.12%
Spring 2021	35.52%	45.90%	9.84%	7.65%	1.09%		81.42%
Spring 2022	46.63%	37.08%	12.36%	2.25%	1.69%		83.71%

Academic Environment

I feel a sense of community with other students in the School of Architecture	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree		Combined: Strongly Agree & Agree	
Spring 2021	34.78%	46.74%	10.87%	6.52%	1.09%		81.52%	
Spring 2022	43.26%	41.01%	9.55%	3.93%	2.25%		84.27%	

The faculty and staff of the School of architecture create a climate that is inclusive of students from all demographic groups	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree		Combined: Strongly Agree & Agree	
Spring 2021 (Staff)	32.61%	49.46%	15.22%	1.09%	1.63%		82.07%	
Spring 2021 (faculty)	33.33%	47.54%	14.21%	3.28%	1.64%		80.87%	
Spring 2022	35.39%	40.45%	18.54%	4.49%	1.12%		75.84%	

The students in the School of Architecture create a climate that is inclusive of students from all demographic groups	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree		Combined: Strongly Agree & Agree	
Spring 2021	35.33%	44.57%	17.39%	1.63%	1.09%		79.90%	
Spring 2022	30.90%	47.75%	15.73%	3.37%	2.25%		78.65%	

I feel respected as an individual by the faculty and staff of the School of Architecture	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree		Combined: Strongly Agree & Agree	
Spring 2021	28.80%	45.11%	20.11%	4.89%	1.09%		73.91%	
Spring 2022	30.90%	48.88%	11.24%	6.18%	2.81%		79.78%	

I feel that I am treated equitably compared to other students	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree		Combined: Strongly Agree & Agree	
Spring 2021	29.89%	46.20%	17.39%	3.80%	2.72%		76.09%	
Spring 2022	32.77%	47.46%	11.86%	4.52%	3.39%		80.23%	

Perspectives

I feel my opinion matters within the School of Architecture	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	I don't know		Combined: Strongly Agree & Agree
Spring 2019	7.38%	41.80%	0.00%	23.77%	13.93%	13.11%		49.18%
Spring 2021	6.08%	45.30%	18.78%	19.89%	3.87%	6.08%		51.38%
Spring 2022	7.95%	46.59%	28.41%	10.23%	4.55%	2.77%		54.54%

Students have the latitude to develop personal approaches in higher level studios	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	I don't know		Combined: Strongly Agree & Agree
Spring 2019	13.33%	60.00%	0.00%	13.33%	0.00%	13.33%		73.33%
Spring 2021	14.04%	50.00%	2.81%	16.29%	1.69%	15.17%		64.04%
Spring 2022	20.45%	45.45%	16.48%	5.11%	1.70%	10.80%		65.90%

The column on the far right combined the two response columns on the far left (Always/Most of the Time or Strongly Agree/Agree) in order to compare the trends and effectiveness more easily. The blue shading

in a field indicates the highest percentage for the combined percentage column—allowing us to see if the effectiveness of our efforts is trending up or down.

School of Architecture Analysis of Data from Spring 2019-2022 Climate Survey

The wording of questions on the above charts is taken from the most recent survey, Spring 2021. The wording of some questions had changed slightly from 2019 to 2022 but their intent was similar, and they were included in the same category. Some questions were added in 2021 so there was no data from 2019. In Spring 2021 the question concerning faculty and staff were separate questions, so the results are shown for each question. Those separate questions were combined into one question in Spring 2022.

In the majority of cases, the trend in student responses relative to having a positive, creative, inclusive, engaging and sharing learning and teaching environment have continued to improve from 2019 (pre-COVID) to 2022 (post COVID). Areas that demonstrated continued improvement in these traits within our program include:

Pedagogy
- Varying points of view are encouraged, 76.84% combined
- Creative and innovative design are encouraged, 87.64% combined
- Learning from the examples of other students is encouraged, 83.17% combined

Academic Environment
- I feel a sense of community with other students in the School of Architecture, 84.27%
- I feel respected as an individual by the faculty and staff of the School of Architecture, 79.78% combined
- I feel that I am treated equitably compared to other students, 80.23% combined

Perspectives
- I feel my opinion matters within the School of Architecture, 54.54% combined
- Students have the latitude to develop personal approaches in higher level studios, 65.90% combined

Most of these areas are viewed positively by over 75% of the students but the intent is to keep increasing those perceptions. In the area of Perspectives, the overall scores are lower—still in a majority but only at 54% or 65% respectively. These percentages could be improved.

Areas related to PC.7 within the survey in which the trend did not improve in 2022 include:

Pedagogy
- A range of design process approaches is encouraged 65.37% (2 percent drop)

Academic Environment
- The faculty and staff of the School of Architecture create a climate that is inclusive of students from all demographic groups 75.84% (5-7% drop)
- The students in the School of Architecture create a climate that is inclusive of students from all demographic groups, 78.65% (1.25% drop)

In two of the areas above the percentage is still above 75%. These three areas saw a drop, small in some cases, but we would still like to see the trend be reversed. The survey took place in the semester following some issues that had occurred in the third-year studio (described further in responses below). This could account for some of the declines in the 2022 survey responses.

At the August 2022 Fall Start-up meeting, a discussion about final review schedules brought up the issue of student attendance at final reviews that are not their own studio—wanting to increase student attendance. It was recommended that the studio final review scheduled be compressed into a single week to increase visibility and accessibility to the reviews.

School of Architecture Response

At our December 2022 faculty meeting, we reviewed the activities that had been undertaken over the previous two years to assess their impact on the program's learning and teaching culture.

The previous director, Ralph Johnson, instituted a student advisor council with a representative from each design studio section that met monthly. These regular meetings with student representatives provided students with a means to share concerns, bring up issues or reinforce activities that contribute to their education.

In Fall 2021, there were issues within a particular cohort of students that was creating a negative working environment within the studios. Ralph Johnson met with this group of students to address the issue. He also met with the student cohort from each year and explained what happened, how it was dealt with and how students could help in the future with fostering a positive working environment. In addition, an anonymous reporting system was set up for students throughout the College of Arts & Architecture providing a means for students' voice and concerns to be heard.

The meetings with individual cohorts were also undertaken by Interim Director Chris Livingston, Leadership Fellow Zuzanna Karczewska, and Academic Advisory Allie Frazier in Fall 2022. These meetings replaced the typical all school start-up meeting and were well received by the students— providing a more direct connection between students and the school's administration and staff.

In Fall 2022, difficulties with an instructor arose within a third-year design studio section. Interim Director Livingston met with the students, and subsequently with the faculty member, on a number of occasions to find an acceptable solution. Other faculty within the third-year curriculum were also brought into the process to assist with reaching a solution.

The MSU AIAS chapter has remained active within the community of the school—helping to promote a collegial, collaborative and empathetic learning environment. AIAS continues to oversee a Material Share program where course supplies can be loaned out to students who may be struggling with the cost of drawing or modeling equipment; all-school picnics at the start of the year, professional workshops/lectures on various topics and skills. The AIAS chapter has continued to play a positive role within the learning and teaching culture of the school.

Most recently, the School's Advisory Council is working with the school to create a mentorship program between the AC members and the second-year cohort of students. This is seen as a very positive program to implement.

The school is continuing to work on standardizing the syllabi in all courses so that students and faculty are aware of the resources and policies available to develop and maintain a positive working environment—i.e., learning and teaching culture policy, diversity and inclusion, health and wellness, etc. This process is still on-going and as we review course syllabi, any missing items are identified, and the appropriate faculty are notified.

Fall 2022 final reviews for second year through graduate year design studios were held during the last week of classes for Fall semester. The initial assessment of this switch is that more students did attend other reviews—some students participated in the comments as well. It made for a very packed and busy week. The faculty elected to maintain this single week of reviews for Spring 2023 and continue to assess the outcomes, which have appeared to be positive thus far. If this schedule should become permanent, modifications to our Learning and Teaching Culture policy will need to be made.

Architecture Program Report
School of Architecture
Montana State University
Prepared January 16, 2023

Clarifications to the Architectural Program Report

Condition 5 – Planning and Assessment

- **5.6.3:** Provide clarification on long-range plans for space versus student enrollment goals.

Since the APR was submitted in September of 2022, the school has been able to re-examine the Fall 2023 and Fall 2024 projected student enrollment and space needs. The intent of the re-examination was to make certain that we were answering the right questions using the most current data. The APR's Fall 2022 student enrollment numbers were projections and tallied prior to the 15th day of the semester. With actual Fall 2022 student enrollment numbers coming in lower than originally listed in the APR (188 students versus the projected 227)—and current Spring 2023 enrollments becoming solidified (currently at 193 students)--we have revised the Fall 2023 and Fall 2024 projected enrollment and space needs. The numbers indicate that while additional space is needed in the future, the projected amount is less than previously thought. Below are revised student numbers for the figures found on P. 112, 113 of the APR.

Students	Actual Fall 2022	Projected Fall 2023	Projected Fall 2024
2nd year	71	94	94
3rd year	56	61	79
4th year	21*	20*	22*
Graduate #1	18	40	45
Graduate #2	22	21	35
Total Students	**188**	**236**	**275**

> *While approximately 1/3rd of the 4th year students were studying abroad or enrolled in an internship off campus it would appear that trends show a growing number of our students are finding opportunities in foreign study or internships, upwards of 50-60%.

The figure above is a truncated version of the student enrolled and projected numbers from Fall 2022 to Fall 2024.

Average Square Feet Per Workstation	Actual Fall 2022	Projected Fall 2023	Projected Fall 2024
	188	236	275
	83 SF/WS	**57 SF/WS**	**49 SF/WS**

The figure above is a truncated version of the actual and projected square footage/work station from Fall 2022 to Fall 2024.

Year	Square Feet Required	Existing SF	SF Needed to reach 75 SF/WS
2022	14,100 SF	15,675 SF	-1,575 SF
2023	17,700 SF	15,675 SF	2,025 SF
2024	20,625 SF	15,675 SF	4,950 SF

The figure above is a truncated version of the projected square footage needs from Fall 2022 to Fall 2024.

It is evident that with the projected growth, the student population will continue to push the student number threshold of the building. The school continues to look at strategies for addressing these projected needs—with the possibility of a two-pronged approach addressing both the addition of physical space and student enrollment. The school is currently gathering data on the retention and graduation rates of students entering the second year of the program to determine whether or not the current minimum GPA requirement of 2.7, versus a higher GPA, is an effective baseline for our students in terms of retention and graduation rates.

As stated in the APR, the School of Architecture did locate graduate students in Reid 306, a classroom building located in the center of campus, to the east of Cheever Hall, during the fall semester. This space of approx. 2,150 SF accommodated graduate students in the last semester of our program. After the end of the semester, it was determined that this space was not appropriate for our program. There are a variety of reasons for this including real and perceived student safety, the lack of availability to undergraduate students as the majority of the graduate students were teaching assistants, and a general desire for all of the students to be located in Cheever Hall. For the spring semester we will not be utilizing Reid Hall, creating studio space for all of our students (193) in Cheever Hall, achieving for the semester 70 SF/WS, below the recommended 75 SF/WS. We have yet to determine whether a replacement for Reid Hall is available on campus and if so, how a new space might mitigate some of the factors mentioned above.

Given all of this information, the outstanding questions remain our second-year admission standards, additional short-term space on campus, and a long-term study of potential square footage in Cheever Hall. These will continue to be explored through our internal review of second-year admissions, meetings with the MSU Registrar, University Planning, Design & Construction, and our Advisory Council looking at both short-term and long-term space needs, and more closely monitoring our actual student numbers to update our student and space projections.

Architecture Program Report
School of Architecture
Montana State University
Prepared January 10, 2023

Clarifications to the Architecture Program Report
5.6 – Physical Resources

5.6.4: Provide clarification on computer programs available to the students, via VPN or on their own laptops

Students are required to have a notebook computer for the Spring Semester of the Second Year of our program. They are also required to download and install the following software applications that are provided to them by the university, the School of Architecture or through free software license program by companies.

University provided software that can be downloaded for use on students' notebook computer:
- Microsoft Office 365
  - Microsoft Word, Excel, PowerPoint and Outlook
- Adobe Creative Cloud https://www.montana.edu/uit/students/adobe/index.html
  - Acrobat Pro DC
  - Illustrator
  - InDesign
  - Photoshop
  - Premier
  - Bridge
  - Additional Adobe software applications are available.
- OneDrive cloud storage access
  https://www.montana.edu/office365/onedrive/index.html

School of Architecture provided software that can be downloaded for use on students' notebook computer:
- 3D Rhinoceros (3d modeling). Licensing is done through a network license, but the software runs on the students' notebook computer.
  - Grasshopper (parametric software) is included with the 3D Rhino software
  - Elk, Ladybug, Honeybee and other grasshopper plugins are also downloaded by students
- SketchUp Pro (3d modeling). Licensing is done through a network license, but the software runs on the students' notebook computer

Free student software provided by various companies and installed by students for use on their notebook computers. Students have access to other Autodesk software in addition to those below:
- Autodesk Revit
- Autodesk AutoCAD
- Autodesk 3ds Max
- Autodesk Maya
- Cove.tool (Energy and Daylighting Analysis software)

- Enscape (Rendering software)
- Google Earth Pro
- Lumion (Rendering software)

While the above software is available to students to install and use on their personal notebook computer, additional software is located in our 10-workstation School of Architecture computer lab and the University's student computer labs.

Architecture Program Report
School of Architecture
Montana State University
Prepared January 14, 2023

Clarifications to the Architecture Program Report
5.8 – Physical Resources
   a. Provide clarification concerning the limited growth of books and journals, conversion to ebooks, or publications.

The School of Architecture reached out to the MSU Library to confirm the numbers indicated in the APR regarding the **limited growth of books and journals**. The MSU Library reported that as of January 2023, the Library holds 7,942 (as opposed to the 5,500 indicated in the APR) books, videos, drawings, and other materials in the Architecture subject area. There are 294 journal subscriptions in the architecture field and 59 titles from "Gardens, Landscape Architecture, and Parks" as classified in the journal system. Additionally, the Library participates in worldwide interlibrary loaning and borrowing efforts that allows the Library to provide access to information beyond its owned collections. In addition to commercially acquired sources, the Library created in 2005 a Montana Architectural Drawings database which has citations of over 3,300 architectural drawing sets housed in the Montana State University Library Archives & Special Collections in Bozeman, Montana and the University of Montana Library Archives in Missoula, Montana. Users can search this database by building type, project title, date, city, architect, or address. Collections include drawings of businesses, churches, colleges, governments, hospitals, organizations, parks, residences, and schools. School of Architecture students and faculty have the benefit of broad information in the databases mentioned earlier as well as this Montana-specific database for research.

The Library also subscribes to over 320 databases including a number of databases that directly support the architecture program:
   - Avery Index to Architectural Periodicals
   - Building Types Online
   - Art & Architecture in Video (Alexander Street Press Video)
   - Digital Sanborn Maps of Montana
   - Building Green
   - MADCAD
   - LinkedIn Learning
   - ProQuest Dissertations and Theses: Full-Text
   - ARTstor
   - Art Full Text (Ebsco)
   - JSTOR
   - Sage Online Journals
   - Springer Ebooks
   - Bibliography of the History of Art
   - InfoTrac PowerSearch
   - ARAS Online
   - Entertainment Industry Magazine Archive
   - Proquest Central
   - Web of Science

- International Bibliography of Art
- Oxford Reference Online
- Oxford Scholarship Online E-books
- Humanities and Social Sciences Index Retrospective
- ASTM Compass

The MSU Library also responded to the request for clarifications regarding **conversion to ebooks, or publications**. The MSU Library works with a book distributor to be notified about publications in areas which support all of the research and teaching at Montana State University, including architecture. It has a program that offers links to e-books for Library users from its website that will not be purchased until the item is opened and used for a certain length of time. This "Demand-Driven Acquisitions" allows the Library to have materials instantly available to users and provides the Library with more data on the types of information needed by users. The Library also regularly reviews circulation data of physical materials and usage data of online resources to help inform purchase and subscription decisions.

The nature of publishing is that materials continue to move from print publication to electronic. Journals were at the forefront of this transition and books have seen increasing shifts in this area. Because of the visual nature of architecture materials, the Library has maintained a large physical collection, while balancing that with substantial offerings of electronic material so that users can access quality information from anywhere with an internet connection. All MSU students, faculty, and staff can access the Library's electronic subscriptions seamlessly on-campus, and with a login using their MSU ID number from off-campus.