

CPI _ Improving Program Learning Outcomes Report

CPI Improving PLO Report (AY22-23)

Name of the program MS Architecture, Computational Technology

Dean' signature  8.16.2023

Expected Date of Submission 6/30/2023

Department Chair or Director: Alessandro Melis

NYIT's CPI process is implemented to meet *MSCHE Standard V: Educational Effectiveness Assessment: Assessment of student learning and achievement demonstrates that the institution's students have accomplished educational goals consistent with their program of study, degree level, the institution's mission, and appropriate expectations for institutions of higher education.*

All degree program's PLO assessment plan (2022-2025) are posted through the link:

http://www.nyit.edu/planning/academic_assessment_plans_reports.

This is a report of its implementation for year 2022-2023. The report should address the following points:

I. The Annual Program Learning Outcomes (PLOs) Assessment should include the followings.

1. PLO (Program Learning Outcomes) assessed. list the PLOs that have been assessed in AY 22-23 based on your three-year plan (AY22_25)

PLO. 1: Students completing the MS.ACT Program will be able to study, read and identify new insights in histories and theories of architecture and urbanism through systems of representation and technology

- Arch 775 - Seminar I: History and Theory of Representation and Technologies

PLO.2 Students completing the MS.ACT program will be able to activate computational design implementing aspects of Data Science and Computer Science and innovate in systems of representation; students will be able to innovate in digital fabrication and interactive ecological and healthy space-environments, innovate in digital fabrication at full scale prototypes, and innovate in materials research and design/development.

- Arch 701B - Computational Design Studio I: Computational Design (FA 22)
- Arch 702B - Computational Design Studio II: Fabrication and Robotics (SP 23)

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PLO3: Students completing the MS.ACT program will be able to analyze dynamic systems and understand and innovate in ecology and health implementing evidence-based Data Science and computational design;

- Arch 702B - Computational Design Studio II: Fabrication and Robotics (SP 23)
- Arch 776 - Seminar II: Fabrication Optimization and Material Simulation (SP 23)

PLO.4: students will be able to apply evidence-based design and advance architecture design in relation to representation, computation, fabrication and materials being able to conceptually address new paradigms in design informed by new technologies and new cultural projects through simulation, computational design and data science;

- Arch 701B - Computational Design Studio I: Computational Design (FA 22)
- Arch 702B - Computational Design Studio II: Fabrication and Robotics (SP 23)
- Arch 776 - Seminar II: Fabrication Optimization and Material Simulation (SP 23)

PLO 5: Students completing the MS.ACT program will be able to identify conflicts of interests, benefits and disadvantages of the multiple information technologies and identify means to overcome biases in informing physical and social contexts; students will be able to identify means to address the current ecological crises in relation to equity through affordability and inclusion.

- Arch 775 - Seminar I: History and Theory of Representation and Technologies (FA 22)

PLO 8: Students completing the MS.ACT Program will be able to analyze, read and innovate in systems of representation that affect computational design and robotic fabrication and diverse forms of digital technologies

- Arch 701B - Computational Design Studio I: Computational Design (FA 22)
- Arch 702B - Computational Design Studio II: Fabrication and Robotics (SP 23)
- Arch 775 - Seminar I: History and Theory of Representation and Technologies (FA 22)

PLO 9: Students completing the MS.ACT Program will be able to analyze, read and develop skills in computer science and data science by developing techniques in technology through algorithms and Artificial Intelligence

- Arch 701B - Computational Design Studio I: Computational Design (FA 22)
- Arch 781 - Computational Design I (FA 22)
- Arch 782 - Computational Design II (SP 23)

PLO 10: Students completing the MS.ACT Program will be able to analyze, read and develop skills in physical computation in relation to interactivity and robotic fabrication analyzing and developing robotic fabrication add-ons or full systems; develop virtual reality

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navigation and interactivity

- Arch 783 - Fabrication and Robotics I (FA 22)
- Arch 784 - Fabrication and Robotics II (SP 23)

PLO 11: Students completing the MS.ACT Program will be able to analyze, read and develop skills in CAM, tool paths, robotic routines and simulations and diverse methods of robotic fabrication including 3d printing and robotic fabrication and in relation to material behavior following an evidence-based scientific approach

- Arch 783 - Fabrication and Robotics I (FA 22)
- Arch 784 - Fabrication and Robotics II (SP 23)
- Arch 702B - Computational Design Studio II: Fabrication and Robotics (SP 23)

PLO 12: Students completing the MS.ACT Program will be able to activate evidence-based design in relation to health through innovation in materials, spatial quality, interactive design through sensing and feedback in relation to wellbeing spaces and healthy materials; activate an evidence-based design in material design including 4d printing, biomaterials, and synthetic materials

- Arch 702B - Computational Design Studio II: Fabrication and Robotics (SP 23)
- Arch 776 - Seminar II: Fabrication Optimization and Material Simulation (SP 23)

PLO13: Students completing the MS.ACT Program will be able to develop skills in activating evidence based environmental design

- Arch 701B - Computational Design Studio I: Computational Design (FA 22)
- Arch 702B - Computational Design Studio II: Fabrication and Robotics (SP 23)
- Arch 776 - Seminar II: Fabrication Optimization and Material Simulation (SP 23)

PLO14: Students completing the MS.ACT Program will be able to develop skills in evidence based structural design

- Arch 776 - Seminar II: Fabrication Optimization and Material Simulation (SP 23)
- Arch 702B - Computational Design Studio II: Fabrication and Robotics (SP 23)

PLO15: Students completing the MS.ACT program will be able to integrate the skills acquired in the MS ACT Program to develop a design that is based on automation and that is robotically fabricated as a full scale prototype either individually or as a group project

- Arch 702B - Computational Design Studio II: Fabrication and Robotics (SP 23)

PLO16: Students completing the MS.ACT program will be able to contribute as future leaders of the professional practice and to their cultural background, communities, and organization by identifying means to advance society in architecture and urbanism through

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systems of representation and fabrication

- Arch 775 - Seminar I: History and Theory of Representation and Technologies (FA 22)

PLO17: Students completing the MS.ACT program will be able to in their lifelong career attempt at developing a disruptive technology that is able to change means to understand architecture

- Arch 775 - Seminar I: History and Theory of Representation and Technologies (FA 22)

2. **METHOD:** Describe the method of assessment and attach measurement instruments (e.g., rubric, exam items, scoring guide for a particular task, supervisor evaluation form, survey instrument, and other assessment tools).

PLO. 1: Students completing the MS.ACT Program will be able to study, read and identify new insights in histories and theories of architecture and urbanism through systems of representation and technology

Arch 775 (FA 22)

Direct methods of assessment_ course assignment (textual paper and oral/ visual presentations); capstone course work (including Reading and Class Discussions)

Indirect Methods of Assessment_ student survey; interview; alumni survey; students' reflection

Grade Rubric:

Grade Rubric: 30% summary texts with image illustrations for each session; 30% Data Analysis and Survey; 30% Research Paper; 10% Participation

PLO.2 Students completing the MS.ACT program will be able to activate computational design implementing aspects of Data Science and Computer Science and innovate in systems of representation; students will be able to innovate in digital fabrication and interactive ecological and healthy space-environments, innovate in digital fabrication at full scale prototypes, and innovate in materials research and design/development.

Arch 701B (FA 22)

Direct methods of assessment_ course assignment (including data surveys, simulations and presentation, digital and physical models); capstone course work (including reading and class discussions); portfolios; rubrics shared with the invited guest reviewers;

Indirect Methods of Assessment_ student survey; interview; alumni survey; students' reflection

Grade Rubric: 20% Big Data Gathering, Processing and Simulation; 20% Emergent Geometry Study and Development; 20% Environmental

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Simulation; 40% Interface, Program or Software Development

Arch 702B (SP 23)

Direct methods of assessment_ course assignment (including data surveys, simulations and presentation, digital and physical models); capstone course work (including reading and class discussions); portfolios; rubrics shared with the invited guest reviewers;

Indirect Methods of Assessment_ student survey; interview; alumni survey; students' reflection

Grade Rubric: 20% Graphic presentation and digital submission of digital model and animation files; 40% Graphic presentation and digital submission of digital model and animation files; photos of all physical models; 40% Large Format Presentation to panel of critics including graphic presentation of robotic digital model and animation files; photos of physical models;

PLO3: Students completing the MS.ACT program will be able to analyze dynamic systems and understand and innovate in ecology and health implementing evidence-based Data Science and computational design;

Arch 702B (SP 23)

See previous description

Arch 776 (SP 23)

Direct methods of assessment_ course assignment (including data surveys, simulations and presentation, digital and physical models); capstone course work (including reading and class discussions); portfolios; rubrics shared with the invited guest reviewers;

Indirect Methods of Assessment_ student survey; interview; alumni survey; students' reflection

Grade Rubric: 40% Graphic presentation and digital submission of digital models and animation files; photos of all physical models; 20% Large Format Presentation to panel of critics including photos of all physical experiments and scale models; 40% Scaled models Format Presentation to panel of critics; 3D Print models, CNC, Robotic Fabrication experiments, and sensors and robotics experiments, Graphic presentation and digital submission of digital model and animation files; photos of all physical experiments and scale models;

PLO.4: students will be able to apply evidence-based design and advance architecture design in relation to representation, computation, fabrication and materials being able to conceptually address new paradigms in design informed by new technologies and new cultural projects through simulation, computational design and data science;

Arch 701B - (FA 22)

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[See previous description](#)

[Arch 702B - \(SP 23\)](#)

[See previous description](#)

[Arch 776 - \(SP 23\)](#)

[See previous description](#)

PLO 5: Students completing the MS.ACT program will be able to identify conflicts of interests, benefits and disadvantages of the multiple information technologies and identify means to overcome biases in informing physical and social contexts; students will be able to identify means to address the current ecological crises in relation to equity through affordability and inclusion.

[Arch 775 - \(FA 22\)](#)

[See previous description](#)

PLO.6: Students completing the MS.ACT Program will be able to identify a range of career options that best match their aspiration, abilities, goals, and values as learned in this program but will also have the opportunity to develop their own career path aiming at expanding frontiers in the practice of the discipline.

[Arch 701B - \(FA 22\)](#)

[See previous description](#)

[Arch 702B - \(SP 23\)](#)

[See previous description](#)

PLO7: Students completing the MS.ACT program will be able to creatively identify insights in history, theory and cultural criticism developing a range of projects including survey of historical heritage and their role in an architecture of information implementing aspects of Data Science and Computer Science.

[Arch 775 - \(FA 22\)](#)

[See previous description](#)

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PLO 8: Students completing the MS.ACT Program will be able to analyze, read and innovate in systems of representation that affect computational design and robotic fabrication and diverse forms of digital technologies

Arch 701B - (FA 22)

See previous description

Arch 702B - (SP 23)

See previous description

Arch 775 - (FA 22)

See previous description

PLO 9: Students completing the MS.ACT Program will be able to analyze, read and develop skills in computer science and data science by developing techniques in technology through algorithms and Artificial Intelligence

Arch 701B - (FA 22)

See previous description

Arch 781 - (FA 22)

Direct methods of assessment_ course assignment (including mapping and presentation); capstone course work (including reading and class discussions);

Indirect Methods of Assessment_ student survey; interview; alumni survey; students' reflection

Grade Rubric: 20% comprehensive graphic set of data mapping, interaction and algorithm development involving the use of Python and TensorFlow frameworks; 20% virtual augmented environment; 30% executable file program which involves the application of Computer Science in relation to Data Science through Machine Learning, Neural Networks, GAN's activating Artificial Intelligence.

Arch 782 - (SP 23)

Direct methods of assessment_ course assignments; reading and class discussions;

Indirect Methods of Assessment_ student survey; interview; alumni survey; students' reflection

Grade Rubric: 40% development of an algorithm and presentation to a group of critics; 60% development of a program prototype and presentation to

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a group of critics;

PLO 10: Students completing the MS.ACT Program will be able to analyze, read and develop skills in physical computation in relation to interactivity and robotic fabrication analyzing and developing robotic fabrication add-ons or full systems; develop virtual reality navigation and interactivity

Arch 783 - (FA 22)

Direct methods of assessment_ course assignments; class discussions; rubric shared with guest critics;

Indirect Methods of Assessment_ student survey; interview; alumni survey; students' reflection

Grade Rubric: 20% presentation of a physical computation prototype activating sensors and interactivity to a panel of critics; 20% presentation of a project to a panel of critics; 30% 3D Print models and CNC, all recorded and summarized in photographs and portfolio; 30% 3D Print models and CNC, all recorded and summarized in photographs and portfolio;

Arch 784 - (SP 23)

Direct methods of assessment_ course assignments; class discussions; rubric shared with guest critics;

Indirect Methods of Assessment_ student survey; interview; alumni survey; students' reflection

Grade Rubric:60% 3D Print models and CNC, all recorded and summarized in photographs and portfolio; 40% presentation of AI implementation for Robotic Fabrication, including 3d Printing and Robotic Systems;

PLO 11: Students completing the MS.ACT Program will be able to analyze, read and develop skills in CAM, tool paths, robotic routines and simulations and diverse methods of robotic fabrication including 3d printing and robotic fabrication and in relation to material behavior following an evidence-based scientific approach

Arch 783 - (FA 22)

See previous description

Arch 784 - (SP 23)

See previous description

Arch 702B - (SP 23)

See previous description

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PLO 12: Students completing the MS.ACT Program will be able to activate evidence-based design in relation to health through innovation in materials, spatial quality, interactive design through sensing and feedback in relation to wellbeing spaces and healthy materials; activate an evidence-based design in material design including 4d printing, biomaterials, and synthetic materials

[Arch 702B - \(SP 23\)](#)

See previous description

[Arch 776 - \(SP 23\)](#)

See previous description

PLO13: Students completing the MS.ACT Program will be able to develop skills in activating evidence based environmental design

[Arch 701B - \(FA 22\)](#)

See previous description

[Arch 702B - \(SP 23\)](#)

See previous description

[Arch 776 - \(SP 23\)](#)

See previous description

PLO14: Students completing the MS.ACT Program will be able to develop skills in evidence based structural design

[Arch 776 - \(SP 23\)](#)

See previous description

[Arch 702B - \(SP 23\)](#)

See previous description

PLO15: Students completing the MS.ACT program will be able to integrate the skills acquired in the MS ACT Program to develop a design that is based on automation and that is robotically fabricated as a full scale prototype either individually or as a group project

[Arch 702B - \(SP 23\)](#)

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[See previous description](#)

PLO16: Students completing the MS.ACT program will be able to contribute as future leaders of the professional practice and to their cultural background, communities, and organization by identifying means to advance society in architecture and urbanism through systems of representation and fabrication

[Arch 775 - \(FA 22\)](#)

[See previous description](#)

PLO17: Students completing the MS.ACT program will be able to in their lifelong career attempt at developing a disruptive technology that is able to change means to understand architecture

[Arch 775 - \(FA 22\)](#)

[See previous description](#)

3. ANALYSIS of the assessment results: provide criteria based disaggregate and aggregate data analysis.

In all of the classes (seminars and studios) indicated above and included into the first assessment period (FA 22- SP 23) each component determining the final grade was evaluated out of 100 (points or %). The grade assigned to the student's work was evaluated as follows:

Superior Work (A, A-): 90-100

Very Good Work (B+): 80-89

Satisfactory Work (B, B-): 70-79

Poor Work (C+, C, C-): 60-69

Failing (F): below 60

PLO. 1: Students completing the MS.ACT Program will be able to study, read and identify new insights in histories and theories of architecture and urbanism through systems of representation and technology

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Arch 775 (assignments collected from 7 students)

Superior Work: 29%
Very Good Work: 57%
Satisfactory Work: 14%
Poor Work: 0%
Failing: 0%

PLO.2 Students completing the MS.ACT program will be able to activate computational design implementing aspects of Data Science and Computer Science and innovate in systems of representation; students will be able to innovate in digital fabrication and interactive ecological and healthy space-environments, innovate in digital fabrication at full scale prototypes, and innovate in materials research and design/development.

Arch 701B (assignments collected from 7 students)

Superior Work: 57%
Very Good Work: 29%
Satisfactory Work: 14%
Poor Work: 0%
Failing: 0%

Arch 702B (assignments collected from 7 students)

Superior Work: 100%
Very Good Work: 0%
Satisfactory Work: 0%
Poor Work: 0%
Failing: 0%

PLO3: Students completing the MS.ACT program will be able to analyze dynamic systems and understand and innovate in ecology and health implementing evidence-based Data Science and computational design;

Arch 702B (assignments collected from 7 students)

Superior Work: 100%

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Very Good Work: 0%
Satisfactory Work: 0%
Poor Work: 0%
Failing: 0%

Arch 776 (assignments collected from 7 students)

Superior Work: 57%
Very Good Work: 29%
Satisfactory Work: 14%
Poor Work: 0%
Failing: 0%

PLO.4: students will be able to apply evidence-based design and advance architecture design in relation to representation, computation, fabrication and materials being able to conceptually address new paradigms in design informed by new technologies and new cultural projects through simulation, computational design and data science;

Arch 701B (assignments collected from 7 students)

Superior Work: 57%
Very Good Work: 29%
Satisfactory Work: 14%
Poor Work: 0%
Failing: 0%

Arch 702B (assignments collected from 7 students)

Superior Work: 100%
Very Good Work: 0%
Satisfactory Work: 0%
Poor Work: 0%
Failing: 0%

Arch 776 (assignments collected from 7 students)

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Superior Work: 57%
Very Good Work: 29%
Satisfactory Work: 14%
Poor Work: 0%
Failing: 0%

PLO 5: Students completing the MS.ACT program will be able to identify conflicts of interests, benefits and disadvantages of the multiple information technologies and identify means to overcome biases in informing physical and social contexts; students will be able to identify means to address the current ecological crises in relation to equity through affordability and inclusion.

Arch 775 (assignments collected from 7 students)

Superior Work: 29%
Very Good Work: 57%
Satisfactory Work: 14%
Poor Work: 0%
Failing: 0%

PLO.6: Students completing the MS.ACT Program will be able to identify a range of career options that best match their aspiration, abilities, goals, and values as learned in this program but will also have the opportunity to develop their own career path aiming at expanding frontiers in the practice of the discipline.

Arch 701B (assignments collected from 7 students)

Superior Work: 57%
Very Good Work: 29%
Satisfactory Work: 14%
Poor Work: 0%
Failing: 0%

Arch 702B (assignments collected from 7 students)

Superior Work: 100%
Very Good Work: 0%

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Satisfactory Work: 0%

Poor Work: 0%

Failing: 0%

PLO7: Students completing the MS.ACT program will be able to creatively identify insights in history, theory and cultural criticism developing a range of projects including survey of historical heritage and their role in an architecture of information implementing aspects of Data Science and Computer Science.

Arch 775 (assignments collected from 7 students)

Superior Work: 29%

Very Good Work: 57%

Satisfactory Work: 14%

Poor Work: 0%

Failing: 0%

PLO 8: Students completing the MS.ACT Program will be able to analyze, read and innovate in systems of representation that affect computational design and robotic fabrication and diverse forms of digital technologies

Arch 701B (assignments collected from 7 students)

Superior Work: 57%

Very Good Work: 29%

Satisfactory Work: 14%

Poor Work: 0%

Failing: 0%

Arch 702B (assignments collected from 7 students)

Superior Work: 100%

Very Good Work: 0%

Satisfactory Work: 0%

Poor Work: 0%

Failing: 0%

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Arch 775 (assignments collected from 7 students)

Superior Work: 29%
Very Good Work: 57%
Satisfactory Work: 14%
Poor Work: 0%
Failing: 0%

PLO 9: Students completing the MS.ACT Program will be able to analyze, read and develop skills in computer science and data science by developing techniques in technology through algorithms and Artificial Intelligence

Arch 701B (assignments collected from 7 students)

Superior Work: 57%
Very Good Work: 29%
Satisfactory Work: 14%
Poor Work: 0%
Failing: 0%

Arch 781 (assignments collected from 7 students)

Superior Work: 100%
Very Good Work: 0%
Satisfactory Work: 0%
Poor Work: 0%
Failing: 0%

Arch 782 (assignments collected from 7 students)

Superior Work: 50%
Very Good Work: 50%
Satisfactory Work: 0%
Poor Work: 0%
Failing: 0%

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PLO 10: Students completing the MS.ACT Program will be able to analyze, read and develop skills in physical computation in relation to interactivity and robotic fabrication analyzing and developing robotic fabrication add-ons or full systems; develop virtual reality navigation and interactivity

Arch 783 (assignments collected from 7 students)

Superior Work: 100%

Very Good Work: 0%

Satisfactory Work: 0%

Poor Work: 0%

Failing: 0%

Arch 784 (assignments collected from 7 students)

Superior Work: 71.5 %

Very Good Work: 28.5 %

Satisfactory Work: 0%

Poor Work: 0%

Failing: 0%

PLO 11: Students completing the MS.ACT Program will be able to analyze, read and develop skills in CAM, tool paths, robotic routines and simulations and diverse methods of robotic fabrication including 3d printing and robotic fabrication and in relation to material behavior following an evidence-based scientific approach

Arch 783 (assignments collected from 7 students)

Superior Work: 100%

Very Good Work: 0%

Satisfactory Work: 0%

Poor Work: 0%

Failing: 0%

Arch 784 (assignments collected from 7 students)

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Superior Work: 71.5 %
Very Good Work: 28.5 %
Satisfactory Work: 0%
Poor Work: 0%
Failing: 0%

Arch 702B (assignments collected from 7 students)

Superior Work: 100%
Very Good Work: 0%
Satisfactory Work: 0%
Poor Work: 0%
Failing: 0%

PLO 12: Students completing the MS.ACT Program will be able to activate evidence-based design in relation to health through innovation in materials, spatial quality, interactive design through sensing and feedback in relation to wellbeing spaces and healthy materials; activate an evidence-based design in material design including 4d printing, biomaterials, and synthetic materials

Arch 702B (assignments collected from 7 students)

Superior Work: 100%
Very Good Work: 0%
Satisfactory Work: 0%
Poor Work: 0%
Failing: 0%

Arch 776 (assignments collected from 7 students)

Superior Work: 57%
Very Good Work: 29%
Satisfactory Work: 14%
Poor Work: 0%
Failing: 0%

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PLO13: Students completing the MS.ACT Program will be able to develop skills in activating evidence based environmental design

Arch 701B (assignments collected from 7 students)

Superior Work: 57%
Very Good Work: 29%
Satisfactory Work: 14%
Poor Work: 0%
Failing: 0%

Arch 702B (assignments collected from 7 students)

Superior Work: 100%
Very Good Work: 0%
Satisfactory Work: 0%
Poor Work: 0%
Failing: 0%

Arch 776 (assignments collected from 7 students)

Superior Work: 57%
Very Good Work: 29%
Satisfactory Work: 14%
Poor Work: 0%
Failing: 0%

PLO14: Students completing the MS.ACT Program will be able to develop skills in evidence based structural design

Arch 776 (assignments collected from 7 students)

Superior Work: 57%
Very Good Work: 29%
Satisfactory Work: 14%
Poor Work: 0%
Failing: 0%

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Arch 702B (assignments collected from 7 students)

Superior Work: 100%

Very Good Work: 0%

Satisfactory Work: 0%

Poor Work: 0%

Failing: 0%

PLO15: Students completing the MS.ACT program will be able to integrate the skills acquired in the MS ACT Program to develop a design that is based on automation and that is robotically fabricated as a full scale prototype either individually or as a group project

Arch 702B (assignments collected from 7 students)

Superior Work: 100%

Very Good Work: 0%

Satisfactory Work: 0%

Poor Work: 0%

Failing: 0%

PLO16: Students completing the MS.ACT program will be able to contribute as future leaders of the professional practice and to their cultural background, communities, and organization by identifying means to advance society in architecture and urbanism through systems of representation and fabrication

Arch 775 (assignments collected from 7 students)

Superior Work: 29%

Very Good Work: 57%

Satisfactory Work: 14%

Poor Work: 0%

Failing: 0%

PLO17: Students completing the MS.ACT program will be able to in their lifelong career attempt at developing a disruptive technology that is able to change means to understand architecture

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Arch 775 (assignments collected from 7 students)

Superior Work: 29%

Very Good Work: 57%

Satisfactory Work: 14%

Poor Work: 0%

Failing: 0%

4. INTERPRETATION: to what degree did students achieve the program learning outcomes based on your data analysis and expected learning outcomes?

-We are encouraged by the outcomes of PLO 1 for Arch 775. The results show the robustness of the course, clearly indicating that our students are not only absorbing, but also adeptly applying the critical tenets of architectural and urbanistic histories and theories. With 86% of students producing superior or very good work, it's evident that they are not only mastering the foundational knowledge but are also poised to excel in their forthcoming professional pursuits.

-We are very pleased by the outcomes observed in the courses associated with PLO.2. These results represent an endorsement of the MS.ACT program's emphasis on integrating computational design with the essential aspects of Data Science and Computer Science. For Arch 701B, the fact that 86% of our students delivered either superior or very good work underscores their ability to not just understand, but also expertly implement principles of computational design and digital fabrication. This course has effectively channeled their potential towards understanding and innovating within materials research, culminating in their proficient design and development capabilities.

-We believe that the outcomes of PLO.3 for Arch 702B and Arch 776 provide compelling evidence of the dedication and capability of students within the MS.ACT program. The aim of PLO.3 is pivotal: to instill students with the ability to decode dynamic systems, and further, to drive innovation in the realms of ecology and health by integrating evidence-based Data Science and computational design. Our students have undoubtedly risen to this challenge, reflecting a mastery over this complex discipline. Particularly, in Arch 702B, the fact that every student achieved a superior level of work is underscores their comprehensive grasp of dynamic system analysis, their commitment in leveraging data science, and their prowess in computational design to drive ecological and health innovations.

-We were pleased by the results gleaned from the courses associated with PLO.4, which delineate a challenging trajectory – the melding

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of evidence-based design practices with the technological and cultural items of the architectural profession. The performance metrics from Arch 701B, Arch 702B, and Arch 776 confirm our students' aptitude in this endeavor.

-We are pleased by the outcomes for PLO.5 from Arch 775 which offer a glimpse into the commitment of our students. PLO.5 is rooted in fostering a discerning perspective among students, empowering them to navigate the intricacies of technology's role in architecture, and also ensuring that they possess a socially and ecologically conscious approach to design. The results from Arch 775 show their progress in this cutting-edge area of study. With 86% of students in Arch 775 delivering superior or very good work, it's evident that our curriculum has enabled them to identify and address conflicts of interest arising from diverse information technologies.

-We are pleased with the outcomes for PLO.6. The results from Arch 701B and Arch 702B affirm that our students, having grasped the essence of the MS.ACT program, are poised to identify diverse career options or craft unique paths, pushing the boundaries of architectural practice.

-We are pleased by the results for PLO7 from Arch 775. These outcomes attest to our students' ability to meld historical insights with cutting-edge data and computational methods. Successfully integrating cultural criticism and history with Data Science and Computer Science, our students are uniquely positioned to reshape the narrative of architectural heritage in the digital age. With the majority showcasing superior and very good work, they exhibit promise in innovating the architecture of information, rooted deeply in historical perspectives.

-We are pleased by the results from Arch 701B, Arch 702B, and Arch 775 for PLO8. Emphasizing the intricate convergence of representation systems, computational design, robotic fabrication, and digital technologies, PLO8 sets a challenging benchmark. Our students, with a majority consistently delivering superior and very good work, demonstrate not just understanding, but also an aptitude for innovation in this multifaceted domain. Particularly noteworthy is Arch 702B, where every student achieved superior work.

-We think that the results for PLO9, focused on the synthesis of computer science, data science, algorithms, and Artificial Intelligence within the architectural domain, are impressive. Arch 701B showcases a strong foundation, with a majority achieving superior and very good grades. The performance in Arch 781, with every student attaining superior work, also highlights the dedication of faculties in expanding the teaching thresholds between technology with architectural design.

-The outcomes for PLO10 from Arch 783 and Arch 784 show the possibility offered to our students to be exposed, through profession, to the realm of physical computation, robotic fabrication, and virtual reality interactivity. 100% of students delivering superior work,

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indicating the positive impact of involving them in practical activities in our fab labs.

-We are very pleased with the outcomes from Arch 783, Arch 784, and Arch 702B in relation to PLO11. We believe that advanced techniques like CAM, tool paths, robotic routines, simulations, and diverse robotic fabrication methods, including 3D printing, will shape the future of architectural profession. Hence, the student's ability to incorporate an evidence-based scientific approach when dealing with material behavior ensures they stand at the cutting-edge of architectural fabrication and practice. However, beyond classroom and laboratory learnings, the faculty's dedication to involving students in practical, hands-on experiences has been particularly effective, as in the case of the exhibition "Students as Researchers" at the 2023 Venice Biennale

-The outcomes from Arch 702B and Arch 776, as they relate to PLO12, underscore the competencies our students have achieved in evidence-based design concerning health, materials, spatial quality, and interactive environments. An essential factor enriching their learning experience is the exposure to tangible, real-world tools and technologies during studio sessions. A standout in this regard has been the integration of a robot shaped like a dog. This practical engagement with robotic technology offers an understanding of the interface between design, interaction, and technology. Interacting with the robot facilitates an appreciation of sensing, feedback mechanisms, and spatial interactions that transcend mere theoretical comprehension.

-We are pleased with the outcomes witnessed in Arch 701B, Arch 702B, and Arch 776, in alignment with PLO13. These results underscore the students' adeptness in harnessing evidence-based environmental design techniques. The majority of students, as illustrated by the high percentages in the 'Superior Work' category, especially in Arch 702B, manifest an understanding of environmental design principles grounded in evidence and research.

-We are pleased with the performance metrics from Arch 776 and Arch 702B, reflecting the PLO14 objectives. The results provide evidence of our students' interest in evidence-based structural design. With 100% of students in Arch 702B delivering 'Superior Work' and a significant majority in Arch 776 achieving the same distinction, we are confident the students can master the complex balance between theoretical knowledge and practical application in computational design. These metrics reassure us that our curriculum, combined with hands-on assignments, effectively enables students to integrate and apply evidence and research methodologies in their structural designs.

-We are gratified by the performance of our students in Arch 702B, relating to PLO15 objectives. These outcomes also indicate their readiness to contribute effectively to the field of modern architecture beyond the academic environment. The capability to develop designs based on automation and to transform those designs into robotically fabricated full-scale prototypes showcases an advanced level of proficiency. This expertise is not merely academically commendable but stands to have a transformative impact on the industry.

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-We are particularly proud of the outcomes showcased by our students in Arch 775, in alignment with the goals of PLO16. These results confirm that our students aren't merely absorbing academic knowledge; they are being primed to serve as the next generation of leaders in architectural practice and within their distinct cultural landscapes. Achieving a high percentage in both Superior and Very Good work categories indicates a commitment in nurturing an ethos that recognizes the importance of cultural context, community engagement, and organizational contribution.

-The promising results from Arch 775 are an evidence of the MS.ACT program's dedication to fostering a forward-thinking approach in its students. PLO17 goes beyond traditional learning metrics, inspiring students to not only master current architectural technologies but to also envision and pioneer disruptive innovations. A significant number of students producing Very Good and Superior work highlights their potential to challenge existing paradigms and drive transformative change in architectural understanding. Their time in the program has equipped them with the skills, mindset, and ambition to make groundbreaking contributions throughout their careers.

5. **CLOSE THE LOOP** – If the expected program learning outcomes were successfully met, describe how the program will keep or expand the good practices, if not, refine or create the next cycle of [PDSA](#)
Closing the Loop:

The program achieved the set benchmarks and will continue to evaluate its performance consistently throughout and at the conclusion of every term. Planning sessions with coordinators and evaluation discussions with all faculty members will be held to ensure the desired standards are upheld in both Fall '23 and Spring '24. As we move forward, our objective will not only be to sustain this outcome but also to refine and expand our practices. Here's how we plan to achieve this:

1. **Consolidation of Best Practices:** Identify the specific pedagogical methods, tools, and practices that have contributed most effectively to student success. By understanding what works best, we can continue to incorporate these strategies into our core curriculum.
2. **Continuous Faculty Development:** Faculty play a pivotal role in achieving learning outcomes. Thanks to the involvement of experts we will ensure we remain updated with the latest teaching methodologies and tools, facilitating our ability to guide students effectively.
3. **Student Feedback:** Regular feedback from students provided effective insights into areas of strength and potential improvement. We'll expand our feedback mechanisms to gather more qualitative data, allowing us to fine-tune our approaches based on direct student

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experiences.

4. Expansion of Real-world Exposure: Given the success of practices such as exposing students to real robotic models and participation in international exhibitions like the Venice Biennale, we'll seek more such opportunities. Real-world experiences amplify classroom learning and will be prioritized.

5. Innovative Technology Integration: We are continuously updating our curriculum to include the latest technological advances (especially 3D printing devices), ensuring our students remain at the forefront of industry developments.

6. Collaborative Projects: Foster more group-based projects that encourage collaboration, fostering a culture of teamwork, peer learning, and collective innovation.

7. Alumni Engagement: Involve our alumni who are out in the professional world to provide mentorship, offer workshops, and share their experiences. This bridges the gap between academic learning and practical application.

II. Brief Description of Faculty Engagement in the Current Annual Assessment Report:

The faculty engagement was an essential component in the continual refinement of our educational approach, described in this report. Through regular coordination meetings involving all educators associated with the program's courses and studios, we've explored the feedback from our students, investigated tangible opportunities to prepare them for real-world challenges, and brainstormed potential curriculum enhancements. Additionally, our faculty played a pivotal role in formulating the metrics used in this report, ensuring an informed and comprehensive evaluation process.

Furthermore, our engagement efforts transcended the immediate teaching circle. We've had received valuable insights from guest critics, providing an external perspective that enriches our program's approach. Moreover, a shared enthusiasm for computational technology research further solidified the bond between our faculties, even those not directly involved in course instruction. This collaborative spirit ensures our program remains at the forefront of architectural education, offering students an experience that's both contemporary and impactful.

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