

**This plan provides the PLO/SLO assessment plan for AY 2022-2025**

**Name of the program:** Master of Science in Architecture, Computational Technologies (MS.ACT), School of Architecture and Design (SoAD), New York Institute of Technology (NYIT)

**Plan for AY 2022-2023, 2023-2024, 2024-2025**

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**Contact:** Pablo Lorenzo-Eiroa, Director, MS ACT Program, Associate Professor School of Architecture and Design, New York Institute of Technology; (1855 Broadway New York, NY 10023, phone: 646-273-6214, email:pablo.eiroa@nyit.edu)

*To ensure NYIT's CPI process meeting 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. In this CPI report, each department is requested to create a three-year assessment/evaluation plan to improve student learning for each degree programs. Reports should address the following points:*

### **Program's Student Learning Outcome Assessment Plan**

1. PLO: State/update each degree program's learning outcomes. The original PLO are here:  
[http://www.nyit.edu/planning/academic\\_assessment\\_plans\\_reports](http://www.nyit.edu/planning/academic_assessment_plans_reports)

MS. ACT Program's Student Learning Outcomes (PLOs) Based on NYSED submitted Program Criteria (PC) & Student Criteria (SC)

#### Program Criteria (PC):

- A- PC.1 History, Theory, Cultural Criticism: Representation and Technology**—histories, theories and cultural criticism in architecture and urbanism, in relation to systems of representation and technology; understanding critical relationships between cultural political centers, the periphery and underrepresented civilizations

**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**

## CPI\_STUDENT/PROGRAM LEARNING OUTCOMES

- B- PC.2 Research and Innovation**— Innovate in Architecture through Computational Design implementing aspects of Data Science and Computer Science; including research and development on Systems of Representation; Innovate in Architecture through Digital Fabrication for Interactive Spaces-Environments (ecology and health), Prototypes, and Full Scale Projects; including research and development on Robotics; Innovate in Architecture through Materiality

**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.**

- C- PC.3 Ecology and Health**— Analyze, read and innovate on alternative economic systems and address innovative correlations between ecological architecture and urbanism in relation to health implementing evidence based Data Science and computational design

**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**

- D- PC.4 Evidence Based Architecture Design**— understand the shift of the conception of design in relation to architecture representation, computation, fabrication and materials in relation to structures, materials and the environment; address design creatively through evidence based scientific approach and advancement.

**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**

- E- PC.5 Collaboration, Equity, and Inclusion**—identify means to collaborate in multidisciplinary teams, diverse government, institutional and private sectors understanding conflict of interests and means to work towards a goal; identify the role of Computational Design in emerging Artificial Intelligence in relation to its role in informing physical and social contexts; identify the role of digital fabrication within the current ecological crisis and in relation to equity.

**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;**

## CPI\_STUDENT/PROGRAM LEARNING OUTCOMES

students will be able to identify means to address the current ecological crises in relation to equity through affordability and inclusion.

- F- **PC.6 Alternative Means of Practice**— Innovate in Architecture Representation and Construction to develop innovation exploring new ranges of possible career opportunities that innovate into the discipline’s skills and knowledge.

**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.**

### Student Criteria (SC)- Student Learning Objectives and Outcomes:

- G- **SC.1 History, Theory, Cultural Criticism: Representation and Technology**— cross relate assumed historical and theoretical studies in relation to new surveyed evidence implementing aspects of Data Science and Computer Science

**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.**

- H- **SC.2 Research and Innovation**— analyze, read and innovate in systems of representation that affect computational design and robotic fabrication and diverse forms of digital technologies

**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**

- I- **SC.3 Computational Design, Programming, Bid Data and AI**— analyze, read and activate computer science and data science; develop skills in programming, computational design algorithms and apply Artificial Intelligence

**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**

- J- **SC.4 Physical Computation and Interactivity VR**— analyze, read and activate physical computation in relation to interactivity and

robotic fabrication in design; develop interactive virtual reality

**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**

- K- SC.5 Robotic Fabrication**— analyze, read and activate robotic fabrication and in relation to material behavior following an evidence-based scientific approach while innovating creatively in design and interactivity

**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**

- L- SC.6 Health and Materials**— analyze, read and activate health in design following an evidence-based scientific approach while innovating creatively in design and interactivity in human interaction and wellbeing and materials through fabrication

**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 well being spaces and healthy materials; activate an evidence based design in material design including 4d printing, biomaterials, and synthetic materials**

- M- SC.7 Environmental Evidence Based Design**— analyze, read and activate ecological environmental computational design following an evidence-based scientific approach while innovating creatively in design

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

- N- SC.8 Structural Evidence Based Design**— analyze, read and activate structural computational design following an evidence-based scientific approach while innovating creatively in design

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

- O- SC.9 Integrated Automation in Fabrication Architecture Full Scale Prototype**— integrate the knowledge and skills acquired in

the MS ACT Program to develop an automated AI design architecture that is fully physically built as a prototype implementing robotic fabrication

**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**

**P- SC.10 Professional Leadership and Community Contribution**— provide means to critique and advance professional practice through innovation and to society through systems of representation, inclusion and innovation

**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**

**Q- SC.11 Lifelong Career Disruptive Technological Innovation** that is able to provide new parameters in computational design, robotics and materials.

**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**

2. Matrix: provide/update the assessment matrix that indicate which learning outcomes are assessed in which set of courses. The original matrix is here: [http://www.nyit.edu/planning/academic\\_assessment\\_plans\\_reports](http://www.nyit.edu/planning/academic_assessment_plans_reports)

# CPI\_STUDENT/PROGRAM LEARNING OUTCOMES

## PROGRAM AND STUDENT CRITERIA MATRIX

	Year 1						Year 1	Extra Curricular Activities																		
	Fall			Spring			Summer																			
	Course ARCH 701B	Course ARCH 761	Course ARCH 775	Course ARCH 781 or ARCH 783 or	Course ARCH 702B	Course ARCH 762 or ARCH 762A	Course ARCH 776	Course ARCH 782 or ARCH 784 or ARCH 788	Course ARCH 703B	Computational Design Studio	Studio Workshop 1: Computational Design I	Core Seminar 1: History & Computational Design I	Computational Design Studio	Studio Workshop 2: Fabrication	Core Seminar 2: Fabrication	Elective Seminar 2: Computational Design II	or Elective Seminar 2:	Computational Technology	SoAD Lecture Series	SoAD Atmosphere F	MS ACT Lecture Ser	MS ACT Open Semil	Workshops	MS ACT Publication		
<b>Shared Values</b>																										
Design																										
Env. Stewardship & Professional Responsibility																										
Equity, Diversity & Inclusion																										
Knowledge & Innovation																										
Leadership, Collaboration & Community Engagement																										
Lifelong Learning																										
<b>MS.ACT Program Criteria</b>																										
PC.1 History, Theory, Cultural Criticism: Representation and Technology																										
PC.2 Research and Innovation																										
PC.3 Ecology and Health																										
PC.4 Evidence Based Architecture Design																										
PC.5 Collaboration, Equity, and Inclusion																										
PC.6 Alternative Means of Practice																										
<b>MS.ACT Student Criteria</b>																										
SC 1 History, Theory, Cultural Criticism: Representation and Technology																										
SC 2 Research and Innovation																										
SC 3 Computational Design, Big Data, VR, AI																										
SC 4 Physical Computation and Interactivity VR																										
SC 5 Robotic Fabrication																										
SC 6 Health and Materials																										
SC 7 Environmental Evidence Based Design																										
SC 8 Structural Evidence Based Design																										
SC 9 Integrated Automation in Fabricated Architecture Full Scale Prototype																										
SC 10 Professional Leadership and Community Contribution																										
SC 11 Lifelong Career: Disruptive Technology Innovation																										

## CPI\_STUDENT/PROGRAM LEARNING OUTCOMES

3. **METHOD:** Describe the method of assessment, and measurement instruments (e.g., rubric, exam items, scoring guide for a particular task, supervisor evaluation form, and standardized assessment tool). Note: direct learning outcome assessment is required. Both direct and indirect assessment are strongly recommended.

*Direct measuring instruments include but not limited to: course assignment, portfolios, internships evaluation, capstone course work, thesis, research project, standardized tests, etc.*

*Indirect measuring instruments include but not limited to: Student survey, interview, alumni survey, employer survey, focus group, students' reflection, etc*

Program Learning Outcomes	Courses	Assessment Type: <i>DIRECT METHODS OF ASSESSMENT</i>	Assessment Type: <i>INDIRECT METHODS OF ASSESSMENT</i>	Measurement Instruments/Assignments	Benchmark/Score	Assessment Results	Changes/Improvements	Notes
PLO1	Arch 775	course assignment; capstone course work; standardized tests	student survey; interview; alumni survey; students' reflection;	assignments; exams	75% of students score 3 or higher	pending	tbd	
PLO2	Arch 701B Arch 702B Arch 703B	course assignment; portfolios;	student survey; interview; alumni survey; students' reflection;	assignments; ¼ semester & midterm reviews; presentations	75% of students score 3 or higher	pending	tbd	



**CPI\_STUDENT/PROGRAM LEARNING OUTCOMES**

			jurors review					
<b>PLO3</b>	Arch 702B Arch 703B Arch 776	course assignment; portfolios; capstone course work	student survey; interview; alumni survey; students' reflection; jurors review	assignments; exams; ¼ semester & midterm reviews; presentations	75% of students score 3 or higher	pending	tbd	
<b>PLO4</b>	Arch 701B Arch 702B Arch 776	course assignment; capstone course work;	student survey; interview; students' reflection; jurors review	assignments; exams;	75% of students score 3 or higher	pending	tbd	
<b>PLO5</b>	Arch 775 Arch 703B	course assignment; portfolios; research project	student survey; interview; students' reflection	assignments; exams; ¼ semester & midterm reviews; presentations	75% of students score 3 or higher	pending	tbd	
<b>PLO6</b>	Arch 701B Arch 702B Arch 703B	course assignment; portfolios; research project	student survey; interview; students' reflection; jurors review	assignments; exams; ¼ semester & midterm reviews; presentations	75% of students score 3 or higher	pending	tbd	

**CPI\_STUDENT/PROGRAM LEARNING OUTCOMES**

<b>STUDENT LEARNING OUTCOMES</b>		<b>ASSESSMENT TYPE: <i>DIRECT METHODS OF ASSESSMENT</i></b>	<b>ASSESSMENT TYPE: <i>INDIRECT METHODS OF ASSESSMENT</i></b>	<b>MEASUREMENT INSTRUMENTS/ ASSIGNMENTS</b>	<b>BECHMARK/ SCORE</b>	<b>ASSESSMENT RESULTS</b>	<b>CHANGES/IMPROVEMENTS</b>	<b>NOTES</b>
<b>PLO7</b>	Arch 775	course assignment; portfolios;	student survey; interview; alumni survey; students' reflection	assignments; ¼ semester & midterm reviews; presentations	75% of students score 3 or higher	pending	tbd	
<b>PLO8</b>	Arch 701B Arch 702B Arch 703B Arch 775	course assignment; capstone course work;	student survey; interview; alumni survey; students' reflection; jurors review	assignments; ¼ semester & midterm reviews; presentations	75% of students score 3 or higher	pending	tbd	
<b>PLO9</b>	Arch 701B Arch 781 Arch 782	course assignment; portfolios;	student survey; interview; alumni survey; students' reflection; jurors	assignments; ¼ semester & midterm reviews; presentations	75% of students score 3 or higher	pending	tbd	

**CPI\_STUDENT/PROGRAM LEARNING OUTCOMES**

			review					
<b>PLO10</b>	Arch 783 Arch 784	course assignment; capstone course work;	student survey; interview; alumni survey; students' reflection	assignments; exams; ¼ semester & midterm reviews; presentations	75% of students score 3 or higher	pending	tbd	
<b>PLO11</b>	Arch 783 Arch 784 Arch 702B Arch 703B	course assignment; capstone course work;	student survey; interview; alumni survey; students' reflection	assignments; ¼ semester & midterm reviews; presentations	75% of students score 3 or higher	pending	tbd	
<b>PLO12</b>	Arch 702B Arch 776 Arch 763	course assignment; portfolios; capstone course work	student survey; interview; alumni survey; students' reflection; jurors review	assignments; exams; ¼ semester & midterm reviews; presentations	75% of students score 3 or higher	pending	tbd	
<b>PLO13</b>	Arch 701B Arch 702B Arch	course assignment; capstone course work;	student survey; interview; alumni survey; students' reflection; jurors review	assignments; exams; ¼ semester & midterm reviews; presentations	75% of students score 3 or higher	pending	tbd	

**CPI\_STUDENT/PROGRAM LEARNING OUTCOMES**

	<u>776</u> Arch 703B							
<b>PLO14</b>	<u>Arch 776</u> <u>Arch 702B</u>	course assignment; portfolios;	student survey; interview; alumni survey;	assignments; ¼ semester & midterm reviews; presentations	75% of students score 3 or higher	pending	tbd	
<b>PLO 15</b>	<u>Arch 702B</u> <u>Arch 703B</u>	course assignment; portfolios;	student survey; interview; alumni survey; jurors review	assignments; ¼ semester & midterm reviews; presentations	75% of students score 3 or higher	pending	tbd	
<b>PLO 16</b>	<u>Arch 775</u> <u>Arch 703B</u>	course assignment; portfolios;	student survey; interview; alumni survey; students' reflection	assignments; ¼ semester & midterm reviews; presentations	75% of students score 3 or higher	pending	tbd	
<b>PLO 17</b>	<u>Arch 775</u> <u>Arch 703B</u>	course assignment; portfolios;	student survey; interview; alumni survey;	assignments; ¼ semester & midterm reviews; presentations	75% of students score 3 or higher	pending	tbd	

**CPI\_STUDENT/PROGRAM LEARNING OUTCOMES**

			students' reflection					
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4. Timeline of the PLO assessment:

<b>STUDENT LEARNING OUTCOMES</b>	<b>ACADEMIC YEAR 2022-23</b>	<b>ACADEMIC YEAR 2023-24</b>	<b>ACADEMIC YEAR 2024-25</b>	<b>NOTES</b>
PLO1	X			
PLO2		X	X	
PLO3	X	X	X	
PLO4	X	X	X	
PLO5		X	X	
PLO6			X	
PLO7	X	X	X	
PLO8		X	X	
PLO9	X	X	X	
PL010			X	
PLO11	X	X	X	
PLO12			X	
PLO13		X	X	

**CPI\_STUDENT/PROGRAM LEARNING OUTCOMES**

<b>PLO14</b>	<b>X</b>	<b>X</b>	<b>X</b>	
<b>PLO15</b>	<b>X</b>	<b>X</b>	<b>X</b>	
<b>PLO16</b>			<b>X</b>	
<b>PLO17</b>			<b>X</b>	

5. Personal responsibilities for implementing the assessment, collecting data and analyzing the results against expected outcomes

<b>STUDENT LEARNING OUTCOMES</b>	<b>TYOPOLOGY OF DATA</b>	<b>WHO IS RESPONSIBLE FOR COLLECTING DATA</b>	<b>WHO IS RESPONSIBLE FOR ANALYZING DATA</b>	<b>HOW TO IMPLEMENT/ RESPONSE FOR IMPLEMENTATION</b>	<b>TIME FRAME</b>	<b>NOTES</b>
<b>PLO1</b>	student paper; grade analysis; publications	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	
<b>PLO2</b>	student portfolio; grade analysis; publications	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	
<b>PLO3</b>	student portfolio; grade analysis; publications	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	
<b>PLO4</b>	student portfolio; grade analysis; publications	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	

**CPI\_STUDENT/PROGRAM LEARNING OUTCOMES**

<b>PLO5</b>	student portfolio; grade analysis; publications	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	
<b>PLO6</b>	Externship data	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	
<b>PLO7</b>	student paper; grade analysis	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	
<b>PLO8</b>	student portfolio; grade analysis in specific courses; publications	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	
<b>PLO9</b>	student portfolio; grade analysis in specific courses; publications	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	
<b>PL010</b>	student portfolio; grade analysis in specific courses; publications	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	
<b>PLO11</b>	student portfolio; grade analysis in specific courses; publications	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	

**CPI\_STUDENT/PROGRAM LEARNING OUTCOMES**

<b>PLO12</b>	student portfolio; grade analysis in specific courses; publications	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	
<b>PLO13</b>	student portfolio; grade analysis in specific courses; publications	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	
<b>PLO14</b>	student portfolio; grade analysis in specific courses; publications	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	
<b>PLO15</b>	student portfolio; grade analysis in specific courses; publications	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	
<b>PLO16</b>	Externship data	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	
<b>PLO17</b>	Externship data	faculty & coordinators	coordinators & directors	tbd/ course coordinator	annual review	

**II. Brief description of how the plan is shared and communicated with all faculty members in the department**



## **CPI\_STUDENT/PROGRAM LEARNING OUTCOMES**

*Each faculty member at the MS ACT Program will be responsible for collecting grades and compiling them and submitting them to the Director. Faculty will be engaged in coordination meetings to address and improve mechanisms of measuring and collecting information to address Students Learning Outcomes. Grades will be compiled and measured against Student Learning Outcomes by Director and with faculty meetings coordination. Students surveys will be sent out by the administration and compiled. Alumni reports will be send out.*

*Last updated 2/11/22*