

PIF Grant 264

Green Building LEED Certification by Student Experiential Learning Year 3 Mid-Year Update



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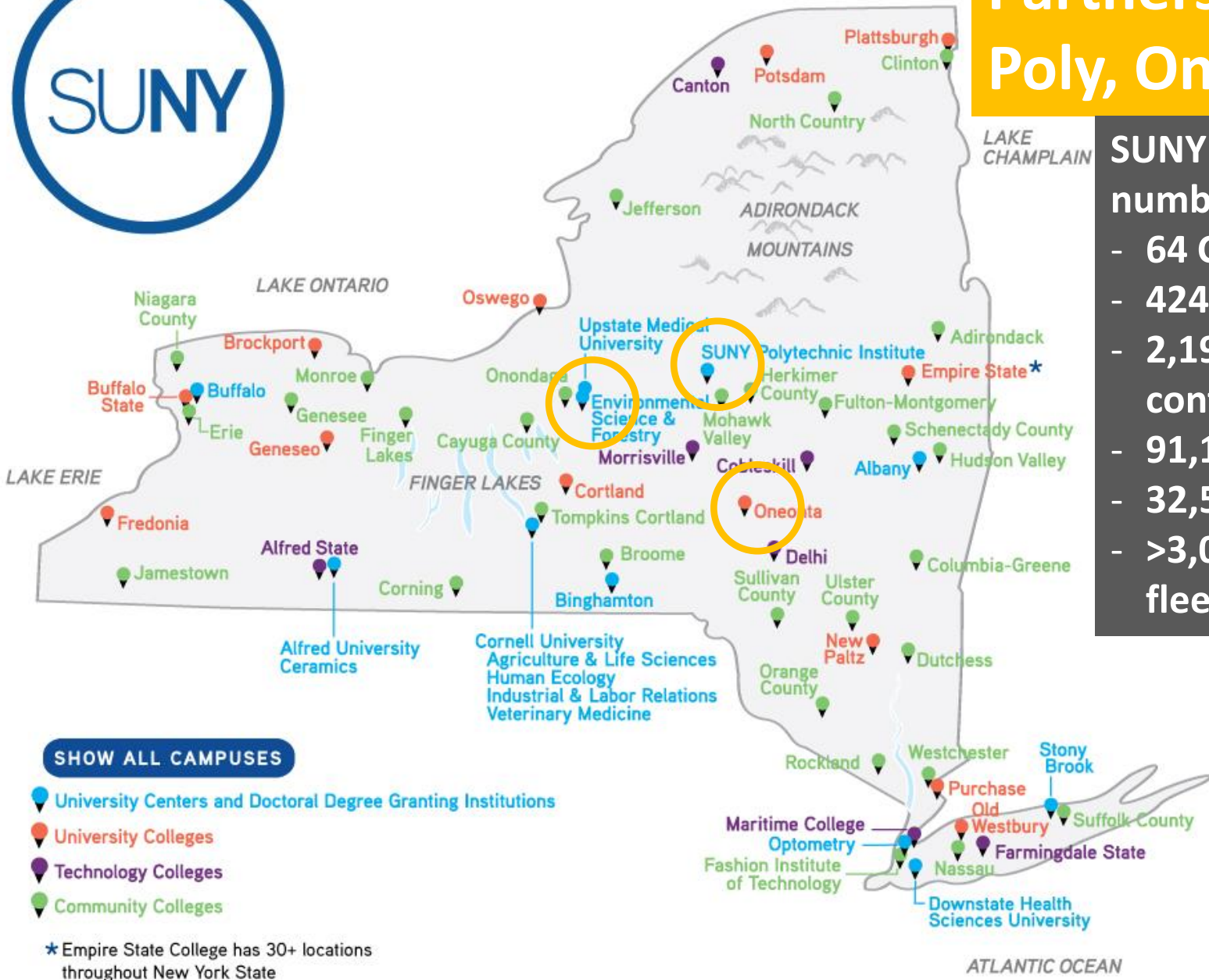
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Partners: ESF, Poly, Oneonta



- SUNY by the numbers**
- 64 Campuses
 - 424,051 students
 - 2,195,000 continuing ed.
 - 91,180 staff
 - 32,500 faculty
 - >3,000 Vehicle fleet

SHOW ALL CAMPUSES

- University Centers and Doctoral Degree Granting Institutions
- University Colleges
- Technology Colleges
- Community Colleges

* Empire State College has 30+ locations throughout New York State

PIF Grant 264

Year 3 Mid-Year Update

ABOUT

ACADEMICS

ADMISSIONS

STUDENT LIFE

RESEARCH

CONTACT

Green Building Experiential Learning Collaborative

POWERED BY SUNY POLYTECHNIC INSTITUTE



Funded Project

Green Building LEED Certification by Student Experiential Learning

SUNY Performance Improvement Fund Award

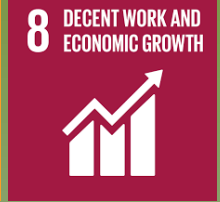
7/1/2018 - 6/30/2022

About the Project

The SUNY Green Building Experiential Learning Collaborative (GBELC) is a partnership between SUNY Polytechnic Institute, SUNY ESF, and SUNY Oneonta supported through the SUNY Performance Improvement Fund for clean energy workforce development. The GBELC is training highly skilled graduates proficient in green building design and with project experience in LEED building certification of campus buildings. It is our hope that the curriculum modules piloted in this collaborative will inspire others and enable adoption of green building experiential learning courses

Chat W

Project Objectives



Make campuses into living laboratories

- Teach new experiential learning courses in which students certify existing campus green buildings

Develop NYS Workforce

- Students earn personal industry credentials (LEED GA)
- Develop capacity of faculty & staff accreditations (LEED AP)

Scale capabilities across SUNY

- Share expertise and best-practices with other campuses
- Increase in-house capacity for measuring air quality and real-time performance sensing

Green Building Experiential Learning Collaborative

Project Goals

Teach

7

New
Courses

Certify

7

Campus
buildings

Train

10

Faculty &
staff

Credential

100

Students

Progress as of 12/9/20

9

New
Courses

3

Campus
buildings

14

Faculty &
staff

43

Students

Poly Project Task Plan

SUNY CLEAN ENERGY WORKFORCE PROGRAM - PROJECT TASK PLAN

Proposal Number: 264

Proposal Title: Green Building LEED Certification by Student Experiential Learning

Lead / Partner Institution: SUNY Polytechnic Institute (Lead)

Tasks			Timeline (Quarters)															
Task 1 - Offer new applied learning opportunities for students to certify new and existing campus green buildings	Task/Subtask Short Description	Deliverables	Year 1 FY18-19				Year 2 FY19-20				Year 3 FY20-21				Year 4 FY21-22			
			1.1 IDS 251 Principles of Green Buildings	New interdisciplinary studies course	IFLI Zero Carbon Certified											X		
1.2 CE 448/ME 448	New civil engineering/	LEED EBOM Certified																



Poly Coursework

FACE-TO-FACE OFFERINGS

Campus	Department	Identify modules, course, certificate, lab, or program. If other, please indicate.	Course Number	Course Name/Title	Status	Instructor Name/Department/Affiliation
Poly Utica	Engineering	4 credit course	CE/ME 448	Green Building Strategies: LEED Lab	delivered fall 2019	Mark Bremer, Arts & Sci, Poly Utica Zhanjie Li, Engineering, Poly Utica

ONLINE OFFERINGS

Campus	Department	Identify modules, course, certificate, lab, or program. If other, please indicate.	Course Number	Course Name/Title	Status	Instructor Name/Department/Affiliation
Poly Utica	Engineering	4 credit course	CE/ME 448	Green Building Strategies: LEED Lab	delivered synchronous fall 2020	Mark Bremer, Arts & Sci, Poly Utica Zhanjie Li, Engineering, Poly Utica
Poly Utica	Arts & Sci	3 credit course	IDS 251	Principles of Green Buildings	anticipated delivery synchronous spring 2021	Mark Bremer, Arts & Sci, Poly Utica



CE 448/ ME 448 Green Building Strategies

Fall
2019

EXISTING
BUILDINGS
OPERATIONS
AND
MAINTENANCE



LEED v4.1



20

LEED
GREEN
ASSOCIATE

12

LEED
AP

+2

0+M



CE 448/ ME 448 Green Building Strategies

Fall
2020

EXISTING
BUILDINGS
OPERATIONS AND
MAINTENANCE



LEED v4.1



8

LEED
GREEN
ASSOCIATE

7+1

LEED
AP

1

BD+C



IDS 251 Principles of Green Buildings

Spring
2021



INTERNATIONAL
LIVING FUTURE
INSTITUTE™

ZERO

CARBON
CERTIFICATION



Hilltop Residence Hall



LEED
GREEN
ASSOCIATE

Poly Equipment supporting coursework

Equipment type	Course support	Purpose
CO2 meters	Poly CE/ME 448 Poly IDS 251 ESF CME 496	Six handheld units for students to measure CO2 concentration, temperature, and relative humidity in indoor air. Requirement for LEED Indoor Environmental Quality performance credits.
VOC meters	Poly CE/ME 448 ESF CME 496	Six handheld units for students to measure concentration and type of Volatile Organic Compounds (VOC) in indoor air. Requirement for LEED Indoor Environmental Quality performance credits. Additional LEED bonus credit available for measuring extra constituents.
Particulate meters	Poly CE/ME 448 ESF CME 496	Six handheld units for students to measure mass concentration and number of 10um and 2.5um particulates in indoor air. Bonus LEED credit available.
Air flow hoods	Poly CE/ME 448 Poly IDS 251 ESF CME 496	Six handheld units for students to measure air flow velocity and volume in HVAC systems. Prerequisite requirement for LEED minimum indoor air quality.

Indoor air quality testing equipment to support student learning in courses



AZ-0001
AZ-0018

- pSense CO2 meters (6)



- Tiger VOC meters (6)



- PCE PM2.5 meters (6)



- Testo Air flow hoods (6)



Poly Project Personnel

Name	Affiliation	% time spent on project	Deliverables
Mark Bremer	SUNY Poly Lecturer - Arts & Sci	20% (18-19) 20% (19-20) 9% (20-21)	Grant administration for Poly & coordination with partners Co-designed CE/ME 448 Co-designed IDS 251 Co-taught CE/ME 448 (fall 2019 & fall 2020) Teaching IDS 251 (spring 2021) LEED building registration, documentation, occupant survey, air quality measurements, waste audit, energy audit
Zhanjie Li	SUNY Poly Assoc. Prof. - Engineering	10% (19-20) 3% (20-21)	Co-designed CE/ME 448 and IDS 251 Co-taught CE/ME 448 (fall 2019 & fall 2020) LEED AP (anticipated) Waste audit, energy audit
Aaron LaFave	SUNY Poly Energy Manager	10% (19-20) 2% (20-21)	Coordinates operations data and documentation for building certifications, LEED building energy audits Energy efficiency best management practices, fundamental refrigerant management Certified Energy Manager
Kaila Aimino	SUNY Poly Assistant Director of Residential Programming	10% (19-20) 3% (20-21)	Co-curricular programs for residential students LEED GA (anticipated)
Eric Hotchkiss	Former SUNY Poly Associate Director of Residential Housing	9% (19-20)	Orientation and outreach to residential students

PIF Grant 264

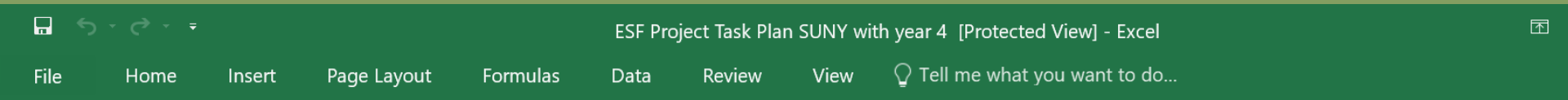
FY20-21 Revised Budget

Total percentage of current amount **spent** from the amount budgeted: **61%**

Projected for remainder of FY20-21: **140%**

Including delayed expenses absorbed from previous FY19-20

ESF Project Task Plan



W4

Tasks			Timeline (Quarters)															
Task/Subtask Short Description	Deliverables	Year 1		Year 2				Year 3				Year 4						
		FY2018-19	FY2019-20	FY2019-20		FY2020-21		FY2021-22										
Task 1 - Offer new applied learning opportunities for students to certify new and existing campus green buildings																		
1.1 CME 496 - Principles of Green Buildings	Introductory course for LEED EBOM certification of existing Buildings	Year 1 – Baker Lab Year 2 – Gateway Center((Covid impacted) Year 3 – Baker Lab Year 4 – Gateway Center																
1.2 CME XXX – Building Energy Modeling	Introductory course for Building Energy Modeling	Energy Models for Baker Lab (year 2) and Gateway Center (year 3)																
Task 2 - Develop in-house capacity of LEED Associated Professionals to certify new and existing campus buildings across SUNY																		
2.1 Use existing faculty/grad student to launch program.	Faculty and grad student co-teach new course	1 faculty extra service 1 Grad student fellowship																
2.2 Hire faculty	Search and fill one full time faculty for position - modified this based on timing and budget	1 faculty																
2.3 Train LEED GA & APs	Train faculty and staff in LEED credentials	1 faculty LEED AP and 4 staff LEED GA																
2.4 Professional development	LEED & CEM continuing education credits	3 faculty and 4 staff																



ESF Coursework

FACE-TO-FACE OFFERINGS						
Campus	Department	Identify modules, course, certificate, lab, or program. If other, please indicate.	Course Number	Course Name/Title	Status	Instructor Name/Department/Affiliation
SUNY - ESF	Sustainable Resources Management	Three credit course	CME 496	Principles of Green Building	First delivered Spring 19, offered again Spring 20	Alex Poisson/Env. Studies Graduate Student and Paul Crovella/ Sustainable Resources Management Asst. Professor
SUNY - ESF	Sustainable Resources Management	Three credit course	CME 496	Building Energy Modeling	First delivered Fall 2019	Glen LeComte/ Adjunct Instructor and Alex Poisson/Env. Studies Graduate Student

ONLINE OFFERINGS						
Campus	Department	Identify modules, course, certificate, lab, or program. If other, please indicate.	Course Number	Course Name/Title	Status	Instructor Name/Department/Affiliation
SUNY - ESF	Sustainable Resources Management	Three credit course	CME 496	Principles of Green Building	First offered online Spring 2021	Alex Poisson/Env. Studies Graduate Student and Paul Crovella/ Sustainable Resources Management Asst. Professor
SUNY - ESF	Open Academy	Six modules (week long)	SUS 400	Analysis of Sustainable Systems	First offered online Fall 2020	Mark Bremer/ SUNY Polytechnic Institute

ESF Equipment support for coursework

Equipment type	Course that the equipment is going to support	Purpose	Cost
Steam Valves	Principles of Green Buildings	The ability to measure energy use in the two buildings was limited by steam meters that gave erroneous values. This expenditure allowed us to measure and manage the energy usage properly. This is a requirement for LEED certification.	\$32,000
Electric grounds equipment	Principles of Green Buildings	The Site Management Policy of LEED requires that the campus commit to a policy of using low emissions grounds maintenance equipment. This expenditure allowed ESF to meet this requirement.	\$3,946
Training materials - textbooks	Principles of Green Buildings	Each student in the Principles of Green Buildings course received a copy of the USGBC approved study guide for the LEED GA exam	\$7,500
Carrier HAP energy modeling software	Building Energy Modeling	This software allowed ESF to create energy models for use in the Building Energy Modeling course.	\$200

ESF Project Personnel

Name	Affiliation	% time spent on project	Deliverables
Paul Crovella	SUNY – ESF Asst. Professor	15% (18-19) 15% (19-20) 3% (20-21)	<ol style="list-style-type: none"> 1. Provided project management at ESF since proposal development 2. Provided plan for experiential course, Spring 2019 3. Provided half of course development delivery, Spring 2019 4. Provided support for USGBC and ESF campus coordination
Alex Poisson	SUNY – ESF Sustainability Staff	29% (18-19) 29% (19-20) 14% (20-21)	<ol style="list-style-type: none"> 1. Provided half of course development and delivery, Spring 2019 2. Provided full course delivery, Spring of 2020 3. Provided LEED training and LEED documentation – Summer 2019 4. Provided LEED documentation – Fall 2019.
Glen LeComte	Argus Engineering Principal	10% (19-20)	<ol style="list-style-type: none"> 1. Delivered a course on building energy modelling 2. Provided a building energy model for LEED building certification
Patrick Whitford	SUNY-ESF Undergraduate	5% (19-20)	<ol style="list-style-type: none"> 1. Provided LEED documentation support – Fall 2019
Josh Stack	SUNY-ESF Adjunct Instructor	5% (19-20)	<ol style="list-style-type: none"> 1. Provided additional course delivery for LEED GA preparation–Spring 20
Kevin Stack	SUNY-ESF Adjunct Instructor	5% (19-20)	<ol style="list-style-type: none"> 1. Provided additional course delivery for LEED GA preparation–Spring 20

Oneonta Project Task Plan

SUNY CLEAN ENERGY WORKFORCE PROGRAM - PROJECT TASK PLAN TEMPLATE

Proposal Number: 264

Proposal Title: Green Building LEED Certification by Student Experiential Learning

Lead / Partner Institution: SUNY Oneonta (Partner)

Tasks			Timeline (Quarters)																	
Task 1 – Develop capacity of existing faculty and staff	Task/Subtask Short Description	Deliverables	Year 1		Year 2		Year 3		Year 4											
			FY2018-19		FY2019-20		FY2020-21		FY 2020-21											
1.1 Recruit faculty and staff to gain LEED accreditation	Recruit and accept faculty and staff to gain LEED GA accreditation and ultimately support LEED certification of campus buildings	3 faculty and 5 staff agreed to participate			x															
1.2 Prepare faculty and staff for LEED AP exam	Hired LEED GA trainer to hold workshop for all	2 full day training delivered in January to 3				x														

Oneonta Coursework

ONLINE OFFERINGS						
Campus	Department	Identify modules, course, certificate, lab, or program. If other, please indicate.	Course Number	Course Name/Title	Status	Instructor Name/Department/Affiliation
SUNY Oneonta	Department of Geography and Environmental Sustainability	3 credit course	ENVS 294-W3	Introduction to Sustainable Design	Taught fall 2020-	Dr. Farzaneh Soflaei, Visiting Assistant Professor, Department of Geography and Environmental Sustainability, SUNY Oneonta
SUNY Oneonta	Department of Geography and Environmental Sustainability	3 credit course	ENVS 294-W1	Green Building Design Principles and Practices	Taught fall 2020	Dr. Farzaneh Soflaei, Visiting Assistant Professor, Department of Geography and Environmental Sustainability, SUNY Oneonta
SUNY Oneonta	Department of Geography and Environmental Sustainability	3 credit course	ENVS 294-W2	Green Roofs/Green Walls for Sustainable Healthy Cities	Taught fall 2020	Dr. Farzaneh Soflaei, Visiting Assistant Professor, Department of Geography and Environmental Sustainability, SUNY Oneonta
SUNY Oneonta	Department of Geography and Environmental Sustainability	3 credit course	ENVS 294- W1	Green Building Design Principles and Practices	Planned to teach spring 2021	Dr. Farzaneh Soflaei, Visiting Assistant Professor, Department of Geography and Environmental Sustainability, SUNY Oneonta
SUNY Oneonta	Department of Geography and Environmental Sustainability	3 credit course	ENVS 294- W2	Neighborhood Development & Sustainable Communities	Planned to teach spring 2021	Dr. Farzaneh Soflaei, Visiting Assistant Professor, Department of Geography and Environmental Sustainability, SUNY Oneonta
SUNY Oneonta	Department of Geography and Environmental Sustainability	3 credit course	ENVS 294- W3	Passive House & Net Zero	Planned to teach spring 2021	Dr. Farzaneh Soflaei, Visiting Assistant Professor, Department of Geography and Environmental Sustainability, SUNY Oneonta

Interdisciplinary Online Courses on Sustainable Design

Fall 2020

No	Course Title	Enrollment	Student's Majors/Background	Flyer
1	ENVS 294- W1 Green Building Design Principles and Practices	14	<ul style="list-style-type: none"> • Geography (1) • Environmental Sustainability (9) • English (1) • Exercise Science (1) • Professional (1: Construction Project Manager) • External Student (1: University at Buffalo) 	
2	ENVS 294- W2 Green Roofs/ Green Walls for Sustainable Healthy Cities	7	<ul style="list-style-type: none"> • Geography (3) • Environmental Sustainability (3) • Early Child/Childhood Ed (1) 	
3	ENVS 294- W3 Introduction to Sustainable Design	10	<ul style="list-style-type: none"> • Geography (2) • Environmental Sustainability (5) • Theatre (1) • Early Child/Childhood Ed (1) 	

Course Evaluation (Students Testimonials)



Course : ENVS 294- W2 [Green Roofs/Green Walls for Sustainable Healthy Cities](#)
Student Name: Christopher Martinovic
Major: [Geography](#)
University: [SUNY Oneonta](#)
Link: <https://www.youtube.com/watch?v=DloPqlvBiuQ&feature=youtu.be>



Course Title: [ENVENVS 294- W3 Introduction to Sustainable Design](#)
Student Name: Chloe Dymak
Major: [Sustainability & GIS](#)
University: [Suffolk County Community College](#)
Link: <https://www.youtube.com/watch?v=IOzQydS2OIk&feature=youtu.be>



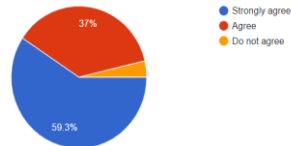
Course Title: [ENVS 294- W1 Green Building Design Principles and Practices](#)
Student Name: Cindy Lehr, PE , [Construction Site Rep, Facilities](#), SUNY Oneonta
Major: [Civil Engineering](#) (Graduated in 2003)
University: [University of Illinois at Urbana-Champaign](#)
Link: <https://www.youtube.com/watch?v=MkX-qaACa4c&feature=youtu.be&hd=1>

Students Experience (Survey)

Q#13: **60%** of students believe that these courses will help them with **sustainability job market**.

13. Do you believe these courses will help you with your sustainability job search?

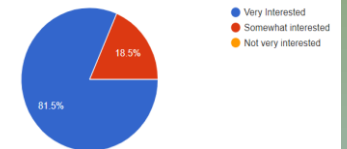
27 responses



Q#20: **82%** of students are **interested to participate to the campuses building assessment, to submit for LEED certification**.

20. If you have an opportunity, are you interested in participating to the campus green building assessment, to apply for LEED certification?

27 responses



Q#14: **100%** of students **recommend these courses** to their friends and classmates.

14. Would you recommend taking this course to your friends and classmates?

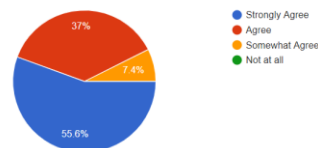
27 responses



Q#17: **56%** of students **strongly agree that department offer more courses on sustainable design in future**.

17. Would you like your department to offer more courses on sustainable design?

27 responses



Interdisciplinary Online Courses on Sustainable Design (**Spring 2021**)

- **ENVS 294- W1 Green Building Design Principles and Practices**

Downloadable Course Syllabus: <https://sunypoly.edu/sites/default/files/gbelc/ENVS294-W1-syllabus-Green-Building-Design-Principles-and-Practices.pdf>

NOTE***.This course was offered in **Fall 2020**, and due to the request from students and department it will be offered again in **Spring 2021**. It prepares students for LEED GA exam.

- 4. **ENVS 294- W4 Neighborhood Development and Sustainable Communities**

Downloadable Course Syllabus: <https://sunypoly.edu/sites/default/files/gbelc/ENVS294-W4-syllabus-Neighborhood-Development-and-Sustainable-Communities.pdf>

- 5. **ENVS 294- W5 Passive House and Net-Zero Energy Buildings**

Downloadable Course Syllabus: <https://sunypoly.edu/sites/default/files/gbelc/ENVS294-W5-syllabus-Passive-House-and-Net-Zero-Energy-Buildings.pdf>

ONLINE COURSES IN SUSTAINABLE DESIGN

PASSIVE HOUSE & NET ZERO BUILDINGS- ENVS 294 W5

Today, buildings demand over 30% of the world's energy resources. Explore passive building design tools and strategies to reduce energy consumption in the built environment. The course reviews PHIUS and NZEB certification requirements. 3 cred

GREEN BUILDING DESIGN - ENVS 294 W1

Understand benchmarks and standards for green buildings and prepare for the LEED Green Associate exam. Students who complete the course in good standing will receive funding to take the GA exam. 3 cred

SUSTAINABLE NEIGHBORHOOD DEVELOPMENT- ENVS 294 W4

Learn how neighborhood development can create sustainable communities that protect cultural and natural resources while supporting a strong quality of life for residents. LEED ND topics covered. 3 cred

SPRING 2021
SUNY ONEONTA



MORE INFO: SUNY.ONEONTA.EDU/SUSTAINABILITY/ACADEMICS
REGISTER: CONTE@ONEONTA.EDU



Oneonta Project Personnel

Name	Affiliation	% time spent on project	Deliverables
Rachel Kornhauser	SUNY Oneonta Sustainability Coordinator	10% (18-19) 10% (19-20) 3% (20-21)	Grant administration for SUNY Oneonta & coordination with partners LEED GA
Farzaneh Soflaei	SUNY Oneonta Visiting Assistant Professor - Department of Geography and Environmental Sustainability	100% (19-20) 100% (20-21)	Designed 5 online Green Building Design courses <ol style="list-style-type: none">1. Introduction to Sustainable Design2. Green Building Design Principles & Practices3. Green Roofs/Green Walls for Sustainable Healthy Cities4. Net Zero Energy and Passive Building Design5. Neighborhood Development & Sustainable Communities Teach 5 Green Building Design online courses (fall 2020/ spring 2021) Passive House Design certificate LEED AP BD+C (2020)

Questions?



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