

SOUTHEASTERN ILLINOIS COLLEGE

BUILDING ILLINOIS'
BIOECONOMY
CONSORTIUM PROGRAMS



BUILDING ILLINOIS'
BIOECONOMY CONSORTIUM

THE BUILDING ILLINOIS' BIOECONOMY CONSORTIUM

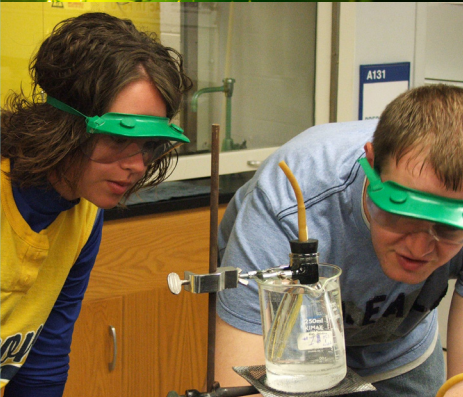
MISSION

The Building Illinois' Bioeconomy (BIB) Consortium strives for the development of a well-trained quality workforce by merging the collective strengths and resources of each partner school with a network of committed regional employers. At the core of the Consortium's mission is transforming the workforce to create a talent pipeline and meet industry needs through educational programs leading to bioeconomy careers. The Consortium spans across the state of Illinois, comprising Southern Illinois University Edwardsville (SIUE), Lewis & Clark Community College (L&C), Southeastern Illinois College (SIC), Lincoln Land Community College (LLCC), and Carl Sandburg College (CSC).

POPULATIONS SERVED

The Building Illinois' Bioeconomy Consortium benefits a variety of students. The recent high school graduate can find a worthwhile, engaging career through our bioeconomy aligned programs. Furthermore, our programs focus on providing career tracks for the non-traditional student, such as Trade Adjustment Assistance eligible workers, displaced, underemployed, or unemployed workers, veterans, and underserved minorities.

Building Illinois' Bioeconomy Consortium activities are funded through a \$10 million U.S. Department of Labor Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant.



4	LETTER FROM SOUTHEASTERN ILLINOIS COLLEGE PRESIDENT
5	LETTER FROM BUILDING ILLINOIS' BIOECONOMY CONSORTIUM PROJECT MANAGER
6	ABOUT BUILDING ILLINOIS' BIOECONOMY CONSORTIUM
7	ABOUT SOUTHEASTERN ILLINOIS COLLEGE
8	ABOUT BIOFUELS AND THE BIOECONOMY
9-14	BIB PROGRAMS AT SOUTHEASTERN ILLINOIS COLLEGE
15	COURSES DESIGNED TO FIT ALL STUDENTS' NEEDS
16	CORE COURSES
17-18	SUCCESS STORIES
19	CONTACT US

LETTER FROM SOUTHEASTERN ILLINOIS COLLEGE PRESIDENT

In 2014 the State of Illinois Economic Development Plan identified seven high-potential industry clusters that are poised for significant job creation through 2025. These industries include biotechnical, advanced materials, clean energy, and agribusiness. The Building Illinois' Bioeconomy (BIB) Consortium has been tasked with creating unique, forward-thinking career pathways as a foundation for training Illinois workers for these jobs.

Southeastern Illinois College's (SIC) participation in the BIB Consortium includes partnerships with fellow Illinois colleges, universities, and bio-based employers to expand workforce development through job training and upgrading worker skills to support this emerging bioeconomy.

The primary focus of these 21st century workforce development partnerships is to create short-term, unique, and credible career pathways to in-demand jobs in bioprocess technologies. The BIB Consortium's focus is to assist in providing economic stability by offering pathways for workers to upgrade skills and meet the demands made by the shortage of

qualified workers in bio-related jobs. Specifically, SIC has concentrated on five strategies to strengthen the marketable skills of workers. These strategies include: accelerating credential completion by using Prior Learning Assessments; using new instruction methods and technologies to improve student learning; strengthening online learning methods; increasing student success through active support; and increasing employer engagement in Building Illinois' Bioeconomy Consortium programs.

Building a skilled workforce is the culmination of the partnerships between schools, businesses, and local governments to work toward the common goal of ensuring a thriving economy, business profits, and low unemployment. Skilled workers create a strong local economy. SIC continues to fulfill its mission by leading its community toward economic stability in real time and toward economic growth in the region.

Jonah Rice, Ph.D.
President
Southeastern Illinois College

“ Building a skilled workforce is the culmination of the partnerships between schools, businesses, and local governments... ”



LETTER FROM BUILDING ILLINOIS' BIOECONOMY CONSORTIUM PROJECT MANAGER

For the past three years, I've had the pleasure of serving as the Project Manager for the Building Illinois' Bioeconomy (BIB) Consortium. Across the BIB Consortium, our goal is to empower students with the degrees, certificates, and training they need to achieve success in their desired career in the bioeconomy.

One of the first questions we always must answer is, "What is the bioeconomy, anyway?" To quote the specialized literature, "In its broadest sense, the bio-economy addresses the production and use of biological resources for conversion into commercial products, ranging from food and feed to bio-based products and bio-energy." (Institute for European Environmental Policy, 2015).

I tend to think primarily of agriculture, energy, manufacturing, and water, but it's also forestry, fisheries, food processing, and parts of the chemicals and biotechnology sectors, as well as business, management, communications, and education components related to these industries. It's food processing at Prairie Farms and Kraft Foods. It's biofuels production at Green Plains and Center Ethanol, water treatment at Metropolitan Sewer District, and agriculture

communications at Osborn Barr. These are all real companies, with real jobs, that our graduates are competitive in filling.

To address these employment needs, the BIB Consortium has created programs within the clusters of bioprocessing, biofuels, water management, restoration ecology, and process maintenance, as well as opportunities to articulate Associate of Applied Science (A.A.S.) degrees offered at community colleges into an innovative and interdisciplinary Integrative Studies Baccalaureate degree offered at Southern Illinois University Edwardsville.

We're filling the jobs of today while also preparing for the jobs of tomorrow. We are preparing workers for jobs that can't be outsourced, using homegrown, domestic fuel and products made from sustainable, renewable resources. We have the opportunity to build upon our collective strengths and develop the bioeconomy for the benefit of our students and for our community.

Courtney Breckenridge
Project Manager
Building Illinois' Bioeconomy
Consortium

“Our goal is to empower students with the degrees, certificates, and training they need to achieve success...”



ABOUT BUILDING ILLINOIS' BIOECONOMY CONSORTIUM

The Building Illinois' Bioeconomy (BIB) Consortium is a collaboration between five Illinois postsecondary educational institutions, made possible through funding from a U.S. Department of Labor grant. The Consortium is dedicated to transforming the workforce to create a talent pipeline and meet industry needs through flexible education and training programs that lead to in-demand, skilled, and high-wage jobs in the bioeconomy.



**Lewis & Clark
Community
College**



**Lincoln Land
Community
College**



**Southern Illinois
University
Edwardsville**



**Southeastern
Illinois College**



**Carl Sandburg
College**



Bioprocess

Converting organic matter or waste into products that we use every day, like fuels or plastics



Bioenergy

A form of bioprocessing focused on turning organic matter into fuel



Process Maintenance

Operation of both machine and computer process systems in manufacturing facilities



Water Management

Treatment of waste or drinking water in a government or private facility, as well as in agriculture watersheds



Restoration Ecology

The preservation and restoration of natural environments like forests and plains

ABOUT SOUTHEASTERN ILLINOIS COLLEGE

Southeastern Illinois College (SIC), located in Harrisburg, Illinois, serves more than 52,000 district residents of surrounding counties. SIC's quality academic programs offer educational opportunities for all ages. SIC's endeavors to fulfill its mission to enhance lifelong learning by providing these quality educational programs, cultural enrichment opportunities, and support for economic development.

Biofuels Technology & Sustainability Certificate

Provides a comprehensive understanding of the biofuels industry, its evolution, and its future.



Biodiesel Production Certificate

Provides an understanding of the biodiesel industry.

Bioenergy Production Certificate

Builds upon the Biofuels Technology & Sustainability Certificate.

Biofuels Production Fast-Track Certificate

Builds upon the Biofuels Technology & Sustainability Certificate.

Ethanol Production Certificate

Provides an understanding of the ethanol industry.



Biofuels Production & Sustainability

Combines industry knowledge, technical skills, and general education requirements for an A.A.S. degree.

Visit sic.edu/biofuels to enroll today

ABOUT BIOFUELS AND THE BIOECONOMY

The United Nations and the United States are the largest consumers of fuel in the world and have committed to the use of bio-based fuel in conjunction with higher bio-based blends. This has spawned an increase of careers available not only in producing these fuels, but also in the supply chains to biorefineries. Such careers are part of the growing bioeconomy.

The bioeconomy can reduce the United States' dependence on foreign oil, mitigate CO₂, and provide high-paying rural and urban jobs.

Southeastern Illinois College (SIC) has committed to providing high quality and convenient training to support a well-trained biofuels workforce contributing to the bioeconomy.

These training programs prepare individuals for bioenergy positions and provide professional development in the biofuels sector. All classes are online, with flexible start dates, and the timeline for completion can be compressed to as little as eight weeks.

Additional areas where bio-based fuel has gained recognition are:

- Marine fuel
- Aviation fuel
- Motorcycle fuel
- Agricultural fuel

Skills learned in the SIC's programs are transferable across the advanced fuel manufacturing industry.

Biofuels Technology & Sustainability Certificate

This certificate provides a comprehensive understanding of the biofuels industry, its evolution, and its future. Students will gain an understanding of the history of biofuels, basic biofuel production processes, regulatory commitments, and the industry's fast-moving technological advances. This program is for those new to the industry or those seeking professional development in their bioeconomy-based careers.

16-32 week certificate

12 credit hours



CAREER OPPORTUNITIES

- Plant Operator
- Instrumentation Technician
- Maintenance Technician

BIB PROGRAMS AT SOUTHEASTERN ILLINOIS COLLEGE

Biofuels Production Fast-Track Certificate

This certificate builds upon the Biofuels Technology & Sustainability Certificate by providing a broader knowledge of the industry with additional math, computer, and Occupational Safety and Health Administration (OSHA) training.

One-year certificate

16 credit hours



CAREER OPPORTUNITIES

- Plant Operator
- Instrumentation Technician
- Maintenance Technician

Ethanol Production Certificate

This one-year certificate is designed to couple knowledge of the biofuels industry with technical learning needed to succeed in jobs in ethanol production facilities.

One-year certificate

32 credit hours



CAREER OPPORTUNITIES

- Plant Operator
- Instrumentation Technician
- Maintenance Technician

Biodiesel Production Certificate

This one-year certificate is designed to provide an understanding of the biodiesel industry in order to succeed in sustainable jobs in biodiesel production facilities or the supply chain.

One-year certificate

31 credit hours



CAREER OPPORTUNITIES

- Plant Operator
- Instrumentation Technician
- Maintenance Technician

Bioenergy Production Certificate

This certificate continues to build upon the Biofuels Technology & Sustainability Certificate by providing a broader knowledge of the industry and additional math and computer training.

One-year certificate

21 credit hours



CAREER OPPORTUNITIES

- Plant Operator
- Instrumentation Technician
- Maintenance Technician

Biofuels Production & Sustainability

This degree combines industry knowledge, technical skills, and general education requirements for an Associate in Applied Science (A.A.S.) degree to make participants truly competitive for high-paying jobs in the biofuels industry.

Two-year Associate degree

62 credit hours



CAREER OPPORTUNITIES

- Plant Operator
- Instrumentation Technician
- Maintenance Technician

COURSES DESIGNED TO FIT ALL STUDENTS' NEEDS



Online

The Biofuels core courses are online and can begin and end outside of traditional semester scheduling



Flexible

Because courses are online, they can be started at anytime from anywhere



Student-Paced

Participants can complete courses in less time than traditional semester schedules



Transferable

Credits and courses are transferable across the Building Illinois' Bioeconomy Consortium (BIB) and throughout Illinois system schools

// Southeastern Illinois College is a reliable training resource for those choosing careers in renewable fuels or for incumbent workers seeking a broader knowledge of their industry and its supply chains. //

- Jonah Rice, Ph.D.

President, Southeastern Illinois College

CORE COURSES

ENGY 111 - Introduction to Biofuels

This course includes the extent of energy demands, various types of biomass resources, production processes, in addition to regulatory and environmental aspects. (3 credit hours)

ENGY 151 - Ethanol Production

This course provides an overview of ethanol production from biomass solution to the completed project to include distribution. (3 credit hours)

ENGY 115 - Agricultural Wastes to Biofuels

This course introduces students to the concepts of converting animal and agricultural waste to biofuel solutions. (1 credit hour)

ENGY 113 - Plant Maintenance

This course introduces maintenance management concepts and fundamentals for the plants and industry. (3 credit hours)

ENGY 131 - Biodiesel Production Technology

This course covers the various processes for converting feedstock to biodiesel. This includes biomass selection through production. (3 credit hours)

ENGY 211 - Biofuels System Technology

This course provides students with a detailed overview of biofuel process fundamentals and biorefinement, such as batch, continuous process, modes of operation, and specific equipment needs. (3 credit hours)

ENGY 213 - Algae Feedstock for Biofuel

This course introduces algae as a sustainable feedstock for biofuels and as a carbon sequestration medium for the environment. (1 credit hour)

ENGY 270 - Biofuels Internship

A biofuels internship provides students with a chance to enhance knowledge learned with hands-on experience. (1-3 credit hours)

SUCCESS STORIES



Chris Grathler
Distillation Field Operator
Mt. Vernon, Indiana

"As a dislocated worker from the mining industry entering college, I chose Southeastern Illinois College (SIC) and a program approved by the Workforce Innovation and Opportunity Act to help fund my education. This education and training experience has been one of the best choices I have ever made. Not only did I receive an education in biofuels, but I also gained hands-on experience as an intern in Edwardsville, Illinois, at a pilot biorefinery, the National Corn-to-Ethanol Research Center (NCERC). From the very first question I had about the biofuels program, the biofuels faculty and staff were involved. They answered my questions and provided assistance with resume writing and more. The staff and faculty at SIC have helped me prepare for a new career. Before I knew it, I had completed the entire Biofuels program in one and half years, earning the A.A.S. degree, five certificates, and was hired on as operator at a local ethanol plant. I am honored to be a student and alumni member of Southeastern Illinois College."

SUCCESS STORIES



Don Jackson
Board Operator, Cardinal Ethanol
Union City, Indiana

"The Biofuels Program at Southeastern Illinois College benefited me in multiple ways. Being able to attend college online has been one of the program's greatest advantages as a full-time employee and single father. Another advantage was the ability to accelerate my schedule to complete my first certificate in six months, one of the first in the program to do so. My employer has recognized my efforts and accomplishments through a quarterly staff excellence award. I was funding my education out of pocket until the staff and faculty encouraged me to apply for an internationally known scholarship from BBI International, the Kathy Bryan Memorial Scholarship, which I won. The coursework in the program has broadened my knowledge and has encouraged me to pursue the A.A.S. in Biofuels Production and Sustainability."

CONTACT US

Southeastern Illinois College
3575 College Rd
Harrisburg, IL 62946

Email: biofuels@sic.edu
Phone: 618.252.5400;
866.338.2742



Visit sic.edu/biofuels to enroll today

SOUTHERN ILLINOIS UNIVERSITY
EDWARDSVILLE

L&C LEWIS & CLARK
COMMUNITY COLLEGE
Empowering People

SOUTHEASTERN
ILLINOIS COLLEGE

LLC Lincoln Land
Community College

CSC CARL
SANDBURG
COLLEGE



BUILDING ILLINOIS'
BIOECONOMY CONSORTIUM

BuildingIllinoisBio.com

 @BuildingILBio

 Building Illinois' Bioeconomy TAACCCT Consortium

CSC

LLCC

L&C

SIUE

SIC