

DECARBONIZING BUILDINGS

FUNDAMENTAL PRINCIPLES AND POSSIBILITIES TO IMPACT POLICY, PROGRAMS, AND DESIGN

THE GEORGE WASHINGTON UNIVERSITY

WASHINGTON, DC

course syllabus

Why does the path to a zero carbon economy go right through our buildings? Because the buildings sector has an outsized impact on global emissions. By increasing the efficiency of how buildings and their sites use energy, water, and materials; 'green' buildings can reduce their impacts on human health and the environment, including climate change, for the entire lifecycle of a building. This course introduces you to the foundational concepts and range of possible approaches to decarbonize the built environment and provides you with a framework to apply them to green building projects, programs, or policies for maximum benefit to society and the planet.

You will learn about strategies, tools, and resources to improve energy efficiency, and the public and private sector ecosystems that support the development of green buildings. The course will empower you to bring a systems-thinking mindset about green buildings to a variety of purposes.

“Better is possible. It does not take genius. It takes diligence. It takes moral clarity. It takes ingenuity. And above all, it takes a willingness to try.”

—ATUL GAWANDE, *Better*

TAKE THIS COURSE IF ...

you find yourself saying: “I need to understand decarbonization of buildings, and I am busy. Is there a concise, well-rounded course with actionable content that tells me what I need to know?” You might be a:

Government Official (including regulator or policymaker) • Gain insights into metrics, regulations, and incentives to accelerate implementation and innovation

Green Building Professional • Round out your knowledge on green building applications

Architect • Learn ways to mitigate climate impact through passive design, energy efficiency, and low-carbon materials

Engineer or Consultant • Learn aspects beyond technology such as financing options and global trends

Real Estate Developer • Get exposed to the latest concepts in green technologies

Financier • Learn how energy efficiency improves the value of real estate investments

Educator • Enhance courses with concepts about green building applications

Graduate student (engineering, business, law, environmental, other professionals) • Gain a broad understanding of key aspects

Learn to evaluate options knowledgeably, engage with the technical community, advise decision makers, and even consider a career in the green building field.

YOU WILL WALK AWAY WITH

- Quantitative knowledge of environmental and energy benefits of green buildings
- Knowledge of frameworks to evaluate green building approaches
- Ability to think critically about making green building investments
- An understanding of effective tools to promote green building solutions

ACCREDITATION

You will receive a certificate of completion at the end of this course from the School of Engineering and Applied Science (SEAS) at the George Washington University's (GWU) Environment & Energy Management Institute (EEMI). The course also counts towards EEMI's Energy Resilience Certificate.

Environmental & Energy Management Institute
School of Engineering & Applied Science

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COURSE FORMAT AND CONTENT

The course provides about ten hours of recorded online instruction supported with case studies and interviews. The content is divided into three modules. Each module includes an introduction to fundamentals, key concepts, recent trends and innovation, and resources and tools. The course ends with a multiple-choice quiz geared towards reinforcing the applied concepts about green buildings. See to the right for topics covered.

COST

Registration cost is \$550 per person for online access to the course and the online web meetings described below.

REQUIRED MATERIALS

You will need a computer with internet connection and sound to view the course content and supplemental materials available online.

ASSIGNMENTS AND EVALUATION

The course includes 10 multiple-choice questions; 7 out of 10 correct answers are required to pass. Attendance at online web meetings is optional.

ONLINE WEB MEETINGS

Online web meetings are held every 4-8 weeks, and are optional to attend. Registered students can attend these meetings for any of the seven courses offered through the Energy Resilience Certificate Program. Scheduled for ninety (90) minutes, the meetings will include highlights from the course content, possibly a guest speaker, and time for student questions. Links to attend will be emailed to you after registration.

MODULE 1: WHY BUILD GREEN

Macroeconomic Drivers for Decarbonizing Buildings

BUILDINGS & CLIMATE CHANGE IMPACTS
Global and US

WHAT IS CARBON & DECARBONIZATION?

Deconstructing building sector emissions

EFFICIENCY & CONSERVATION

THE BUSINESS CASE FOR GREEN BUILDINGS

MODULE 2: HOW TO BUILD GREEN

Technologies, Success Metrics, and Financing Mechanisms

A STEPWISE FRAMEWORK

A pare-down paradigm to net-zero energy buildings

KEY CONCEPTS

DERs, grid impacts, zero carbon, existing buildings, resilience

ASSESSING GREEN BUILDINGS

Tools and rating systems, corporations, and investments

INNOVATIVE LEGAL & FINANCING MECHANISMS

Incentives, EEaS, PPAs, EEMs

MODULE 3: ENABLERS OF THE ECOSYSTEM

Policies, Market Infrastructure, and Stakeholders

IMPACTFUL POLICIES & PROGRAMS

Codes and standards, benchmarking and disclosure, BEPS
Market transformation programs

SOCIETY & EDUCATION

Influencers, equity and justice, certifications and training

ORGANIZATIONS & ROLES

Key organizations: quasi-government, government, non-profit, commercial

Roles: individual careers, green buildings market trends



INSTRUCTOR

SMITA CHANDRA THOMAS

Smita Chandra Thomas is the founder and principal of DC-based consulting practice Energy Shrink, LLC and also serves as a senior green building consultant to IFC (World Bank). Dedicated to measurable decarbonization, Ms. Thomas is a subject matter expert in green buildings at the cutting edge. She has a master's degree in building science, and a LEED Accredited Professional (AP) and Certified Passive House Consultant (CPHC), and is a published author, blogger, and speaker. Smita is also an active member of the community of Greater Washington energy professionals. See her full bio at the Energy Shrink website energy-shrink.com

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