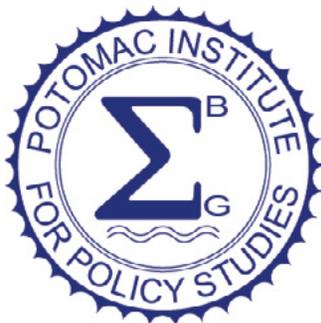


# MICROELECTRONICS

## Foundations and Futures

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A VIRTUAL EXECUTIVE COURSE





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# Course Overview

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Recent years have revealed more than a few vulnerabilities in US security and technology supply chains, not the least of which being our dependence on advanced microelectronics. From semiconductor shortages to malign microchip actors to overseas dependencies, we face a host of challenging obstacles for this vital industry. How have we gotten here? Where are we going? Why do we need reform now? Find the answers to all this and more in the newest course offering from the Potomac Institute for Policy Studies—**Microelectronics: Foundations and Futures**.

This four half-day virtual course will explore the history of microelectronics, detail the current state of the practice, and review legacy and state of the art technology needs as well as their impact on the US economy and national defense. Course sessions will be led by instructors that present a briefing followed by Socratic-style dialogue between the participants and instructor to elicit critical

understanding of the concepts and issues. The course will culminate in an interactive debate where participants will take sides on the policy questions of export control for microelectronics technologies, forming team arguments with an expert coach for presentation to the class. Instructors will include industry leaders, government officials, technical experts, and key decision makers and influencers who will help participants understand the big picture of this technology area that affects every part of American culture and economics.

The Potomac Institute for Policy Studies invites early- to mid-career professionals with an interest in understanding the complexities and nuances of the microelectronics industry and its impacts on the US economy and national defense. This policy-oriented course is perfect for industry, government, and academic professionals alike with a shared goal of identifying and addressing the challenges the US faces in the microelectronics industrial arena.

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## Course Information

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**Course Dates: October 25-28, 2021**  
**Application Deadline: October 3, 2021**  
**Tuition: \$1,500\***  
**Course Location: Zoom Teleconferencing Platform**  
**Course Director: Dr. Michael Fritze**  
**Vice President**  
**Potomac Institute for Policy Studies**

\*We offer discounted rates to participants from the US Government, non-profit sector, or academia.

**CLICK HERE TO  
APPLY ONLINE.**

Questions? Contact Kathryn Young at:  
[education@potomacinstitute.org](mailto:education@potomacinstitute.org)



# Course Agenda

## MICROELECTRONICS: FOUNDATIONS AND FUTURES

A virtual executive course presented by the Potomac Institute for Policy Studies

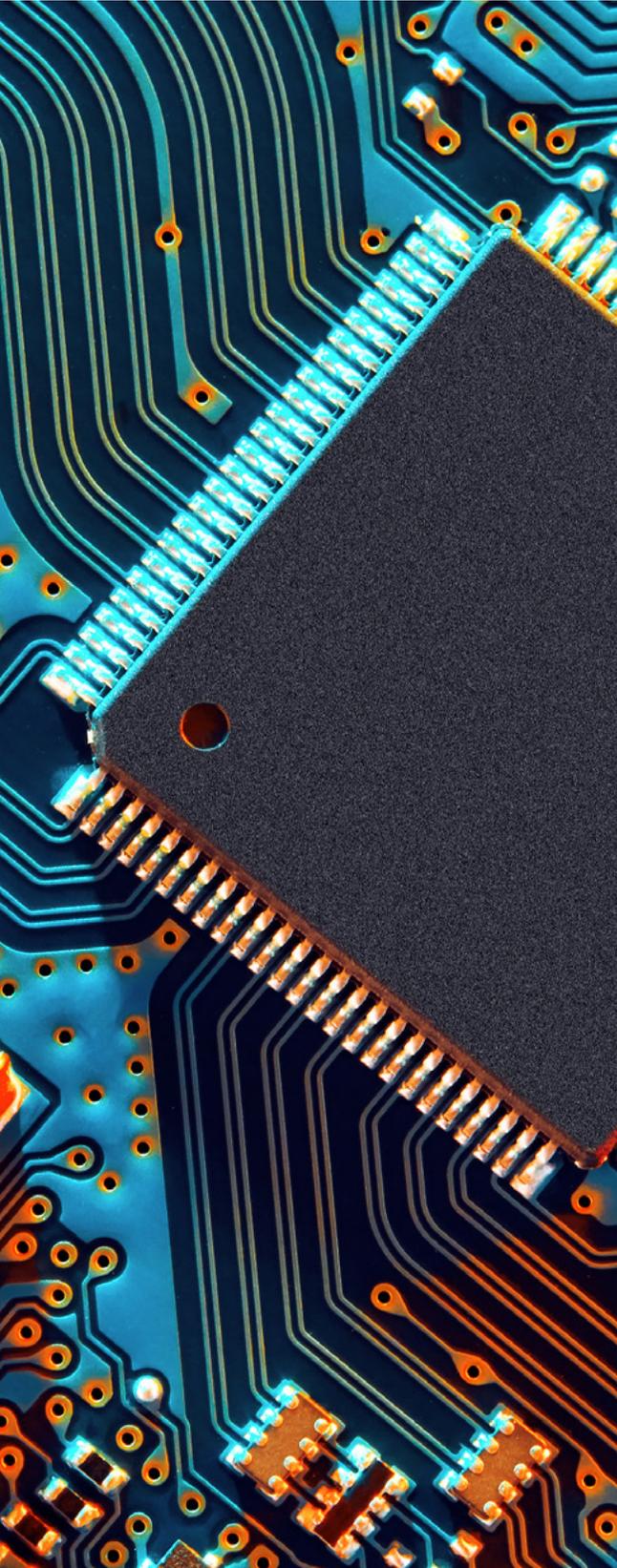
Time (US EDT)	Monday, October 25	Tuesday, October 26	Wednesday, October 27	Thursday, October 28
9:00 am	9:00-9:45 Welcome and Introductions	9:00-10:15 Market and Technology Trends	9:00-10:15 Disruptions, Obstacles, and Opportunities	9:00-9:30 Pre-Debate Team Meetings
10:00 am	9:45-11:15 7 Myths of Microelectronics	10:15-10:30 Break	10:15-10:30 Break	9:30-12:00 Interactive Debate: Does the US Need Export Control for Microelectronics?
11:00 am		10:30-11:30 Policy Perspectives: US DoD and Military	10:30-11:45 Securing the Supply Chain: Identifying and Mitigating Risk	
	11:15-11:45 Break	11:30-12:00 Break	11:45-12:15 Break	
12:00 pm	11:45-1:00 Understanding Fabrication	12:00-1:30 Policy Perspectives: Corporate Considerations	12:15-2:00 Looking Past Tomorrow: The Future of Technology Acquisition Needs	12:00-1:00 Course Debrief and Closing Comments
1:00 pm	1:00-2:00 Virtual Networking Hour	1:30-2:00 Pre-Debate Briefing		

For a full list of instructors, visit:  
<https://www.potomac institute.org/events/education>

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# Session Descriptions



## **Microelectronics: The Building Blocks of Modern Society**

This pre-recorded briefing will provide a shared foundation for participants to launch their learning. When the first integrated circuit microchip was demonstrated in 1958 almost no one bought in. Now microchips are in almost everything we buy and use—phones, cars, fridges, and more! How did we get from there to here? What are the biggest innovations of the past six decades? How have they shaped and changed the way we interact with technology and the world around us?

## **7 Myths and Facts About Microelectronics**

It is more important than ever to understand the data and facts of an issue, getting to the heart of the problem. Complex overlapping factors affecting the demand, supply chain, and business models for microelectronics can easily cloud the truth of the matter. The session will debunk common misconceptions and unravel their origins.

## **Understanding Fabrication**

Fabrication is at the heart of the microelectronics industry. It defines volumes, applications, costs, security, and business models. Take a deep dive into the multifaceted fabrication process and develop a strong understanding of its importance and impacts.

## **Market and Technology Trends**

What are key players in the industry doing and how are they developing their strategies? How are suppliers and buyers in the market affecting industry innovation and practice? From node size to order size, understand integral perspectives and how various actions shape the market—both intentionally and unexpectedly.

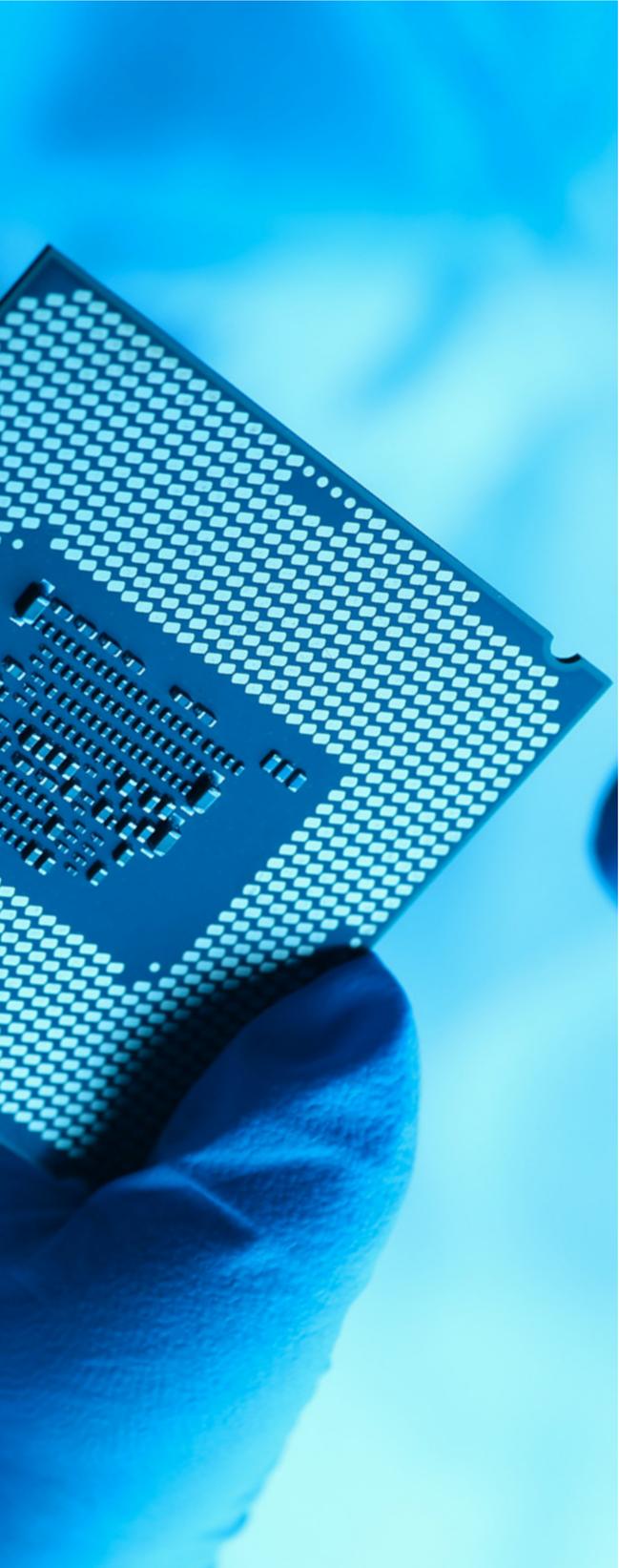
## **Policy Perspectives Pt. 1: US DoD and Military**

Although the US Department of Defense only holds 2% of the market, they are the primary drivers of security and national policy regarding microelectronics. With its niche needs and complex bureaucracy, the DoD juggles complex decisions and trade-offs. Using various case studies from the past and current policy arenas, this session will explore the factors of microchip policy.

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# Session Descriptions



## **Policy Perspectives Pt. 2: Corporate Considerations**

Corporations control the business aspects of the microelectronics industry and determine the business models used. Serving available and newly developing markets is the key aspect for financial success. Learn these market forces from the viewpoint of key industry stakeholders. Explore how their decisions shape the landscape and policy of the microelectronics industry—and how the landscape and policy shape their decisions.

## **Disruptions, Obstacles, and Opportunities**

There are defining moments that shape our view of industry and alter the trajectory of the field. For the microelectronics industry, those moments include the closing of production fabs, important technologies becoming obsolete, major supply chain disruptions, and even a global pandemic. New policy, such as the American Foundries and CHIPS Acts, is likely to add to that list. Take a look at the microelectronics industry disruptions of the past decade and their lasting effects in creating current and future opportunities and obstacles.

## **Securing the Supply Chain: Identifying and Mitigating Risk**

Trust. Privacy. Security. These are important technology attributes for the success of the industry, particularly today. As the microelectronics supply chain grows more complex, we need to ensure that these key needs are met and not just buzzwords. Where are there vulnerabilities, and how do we patch the holes before the ship sinks?

## **Looking Past Tomorrow: The Future of Technology Acquisition Needs**

In a culminating session, explore the differing acquisition models used by the corporate and defense technology communities. There is a wide divergence in approaches and outcomes that must be understood. The discussion will also analyze strategic US goals and policy actions needed to achieve them. This session will contemplate how the “end of Moore’s law” may impact innovation trajectories, business models, and acquisition policies.

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# Collaborative Activity

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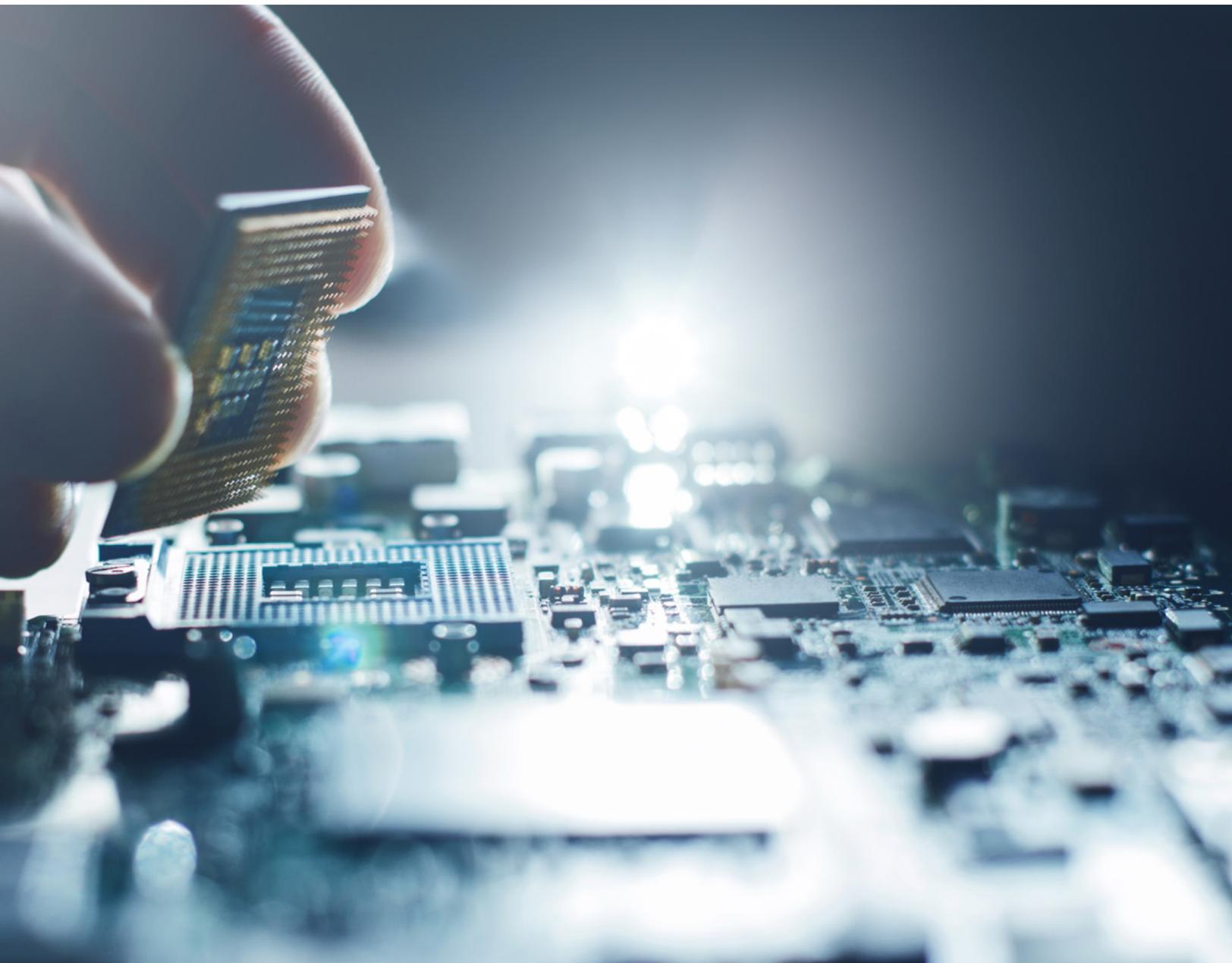
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## DEBATE

### Does the US Need Export Control for Microelectronics?

Applying the knowledge learned over the week, participants will engage in an active, multi-round debate with each other to evaluate whether the US truly needs export control on microelectronics. The cohort will be split into two sides on the second day of the course. Teams will be assigned an expert coach to give a unique perspective from real-life experience and to act as a sounding board for the groups before their presentation. Each side will research and prepare their position then argue their position on the final day in a multi-round debate.

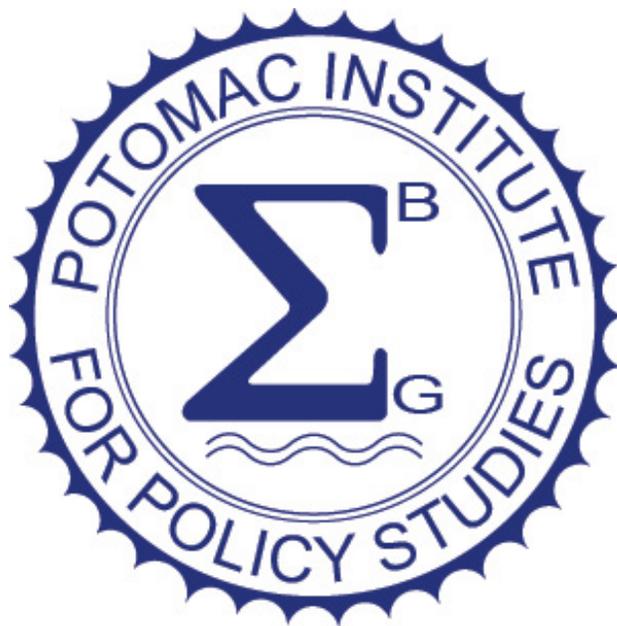


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# About Us

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**The Potomac Institute for Policy Studies** is an independent, nonpartisan, not-for-profit, science and technology (S&T) policy research institute. The Institute identifies and leads discussions on key S&T and national security issues facing our society, providing an academic forum for the study of related policy issues. Based on data and evidence, the Institute develops meaningful policy recommendations and ensure their implementation at the intersection of business and government. The Potomac Institute seeks to (1) identify key emerging technologies or scientific fields with disruptive potential, (2) anticipate and understand the likely societal-level impacts of these technologies, and (3) recommend meaningful policy options to the government. The Institute is keenly aware that implementation is the most difficult component of policy work. As a result, we do not merely conduct a world class study and provide a report. We roll up our sleeves as a think and “do” tank!



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