



### Course Outline

#### EE482: Economics of Innovation and Industrial Development

Semester 2/2025 (January 5 - May 2, 2026)

**Lecture Time:** Wednesday, 13:00 – 16:00 hours **Lecture**

**Venue:** [Insert Venue] **Teaching Materials Platform:**

<https://classroom.google.com/c/Nzg5Mzg2OTY4MDUw>

**Instructor:**

**Name:** Min Ye Paing Hein Office

**Hours:**

**Email:** [paingminn@econ.tu.ac.th](mailto:paingminn@econ.tu.ac.th) **Phone:**

**Number of Credits:** 3 Credits (3-0-6) **Prerequisite:**

- EE312 (Curriculum 2018)
- EE311 (Curriculum 2023)

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### Course Description

This course explores the economics of innovation and industrial development, focusing on theoretical foundations, policy frameworks, and empirical experiences across Asia. Drawing from growth theory, institutional economics, entrepreneurship, and industrial policy, the course prepares students to critically evaluate innovation systems, development strategies, and industrial transformation processes. Special emphasis is placed on the Thai innovation landscape and regional dynamics.

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### Learning Objectives

- Understand and apply economic theories of innovation and growth
- Analyze the role of institutions, geography, and entrepreneurship in development
- Evaluate industrial and innovation policies, including green and digital strategies
- Compare national innovation systems across Asia
- Explore innovative approaches to industrial and innovation policies in Thailand

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## Expected Learning Outcomes

By the end of the course, students will be able to:

1. Demonstrate Ethical and Social Responsibility
    - Uphold academic integrity and professionalism in individual and group work.
    - Evaluate the societal, environmental, and ethical implications of innovation and industrial policies.
    - Understand the role of inclusive innovation and sustainability in development.
  2. Apply Economic Theories to Innovation and Development
    - Understand and utilize key economic frameworks including endogenous growth theory, Schumpeterian dynamics, new economic geography, and institutional analysis.
    - Critically assess the roles of entrepreneurship, institutions, and geography in shaping innovation outcomes.
  3. Analyze Industrial and Innovation Policy
    - Evaluate policy tools and governance models for innovation, industrial transformation, and green transitions.
    - Compare national and regional innovation systems, with a focus on Asia and Thailand.
    - Design and propose context-sensitive policy responses to specific challenges in Thailand.
  4. Develop Research and Analytical Skills
    - Conduct empirical and comparative analysis of innovation systems and policy outcomes.
    - Synthesize theoretical, institutional, and case study insights into coherent policy briefs or research projects.
    - Use appropriate data and indicators (e.g., innovation indices, governance scores, cluster maps) for policy evaluation.
  5. Collaborate, Communicate, and Use Digital Tools Effectively
    - Work effectively in teams to analyze cases and present findings.
    - Communicate economic arguments and policy insights clearly through written and oral presentations.
    - Utilize ICT tools and platforms to collect, process, and visualize data relevant to innovation and development.
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## **Weekly Schedule**

### **PART I: Theoretical Foundations**

#### **Week 1: Innovation and Economic Growth**

- Classical growth models: Solow's model
- Romer's endogenous growth and technology as an input
- Aghion & Howitt: creative destruction and Schumpeterian growth
- Comparative growth accounting with selected Asian countries

#### **Week 2: New Economic Geography and Innovation Diffusion**

- Krugman's core-periphery models and agglomeration
- Knowledge spillovers, innovation hubs, and regional clusters
- Technology diffusion models and S-curve dynamics
- Mapping key Asian innovation clusters and analyzing diffusion patterns

#### **Week 3: Institutions and Innovation Systems**

- North: institutions and economic performance
- Peter Evans: "embedded autonomy" and state capacity
- Innovation systems and institutional complementarities
- Institutional analysis using global governance and innovation indicators

#### **Week 4: Innovation, Inequality, and Development**

- Dual economy and labor market segmentation
- Technology-driven inequality (SBTC, routine-biased change, and automation)
- Inclusive and frugal innovation in the Global South
- Grassroots vs elite-led innovation pathways

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### **PART II: Entrepreneurship and Origins of Ideas**

#### **Week 5: Economics of Entrepreneurship**

- Schumpeterian vs. Kirznerian entrepreneurship
- Firm dynamics, lifecycle of startups and innovation bottlenecks
- Entrepreneurial ecosystems in Asia
- Comparative case study analysis of startups in Singapore, Indonesia, and Vietnam

#### **Week 6: Where Do Good Ideas Come From?**

- Steven Johnson: liquid networks and adjacent possible
- Von Hippel: user innovation and open innovation models
- Failure, bricolage, and serendipity in idea formation
- Ricardo Hausmann: The Atlas of Economic Complexity

### **Week 7: Digital Innovation and Platforms**

- Network effects and two-sided markets
  - Data-driven innovation and platform monopolies
  - Challenges in regulating digital ecosystems
  - Analysis of digital platforms in Southeast Asia (Grab, Gojek, Lazada)
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## **PART III: Industrial Policy and Governance**

### **Week 8: Modern Industrial Policy Theory**

- Dani Rodrik: Growth diagnostics and pragmatic policy design
- Ha-Joon Chang: historical institutionalist perspective
- Keyu Jin: industrial policy in China's rise
- Policy design exercise for middle-income countries

### **Week 9: Green Industrial Policy and Sustainability**

- Market failures in environmental innovation
- Industrial policy tools for decarbonization and green technologies
- Just transition strategies in manufacturing sectors
- Green innovation index and sustainability comparisons across Asia

### **Week 10: Innovation Governance and the Entrepreneurial State**

- Mazzucato: mission-oriented innovation and the “Entrepreneurial State”
  - Public-private partnerships and coordination problems
  - Innovation agency design (e.g., DARPA, SPRING) • Evaluation of national Innovation policies in Asia.
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## **PART IV: Innovation Experiences (ASEAN and the World)**

### **Week 11: Case Study 1-Chinese Industrial Policy**

- Made-in-China strategy: national plans for technological self-sufficiency
- Double circulation strategy: balancing domestic consumption with international trade

- Innovation in EVs (electric vehicles) and solar panels: state support and market development
- Comparative perspective: how China's industrial policy differs from other innovation ecosystems

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### **Week 12: Case Studies II- Singapore and Korea**

- Singapore: innovation-led growth and foreign talent strategies
- South Korea: rapid industrial transformation, chaebol-led clusters, and coordinated innovation governance
- Regional competition and complementarities

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## **PART V: Thailand Focus**

### **Week 13: Thailand's Innovation System and Industrial Policy**

- Thailand's industrial transformation: ISI → EOI → Thailand 4.0
- Structure and evolution of Thailand's National Innovation System (NIS)
- Eastern Economic Corridor (EEC) and high-tech zone strategy
- University–industry linkages and innovation capability-building
- BOI investment promotion schemes and SME support policies
- Institutional barriers and coordination failures in Thai innovation policy
- Comparative reflections on middle-income country governance

### **Week 14: Thailand's Electric Vehicle Industry and Green Transition**

- Evolution of Thailand's automotive sector and strategic pivot to EVs
- Government incentive programs: EV3.0, EV3.5
- Global value chains and localization strategies
- Green industrial policy, circular economy, and workforce transition
- Policy coherence across energy, transport, and innovation
- Regional comparisons with Indonesia and Vietnam

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## **PART VI: Presentations and Wrap-up**

### **Week 15: Student Presentations and Synthesis**

- Group presentations (15 mins each)
- Thematic synthesis and discussion
- Final course reflections and feedback

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## **Learning Management and Evaluation**

<b>CLO</b>	<b>Learning Management</b>	<b>Evaluation</b>
To be specified	Lectures, seminars, case studies, group work, presentations, policy design exercises, and problem sets	Quizzes, assignments, midterm essay, research project, final exam

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### Learning Assessment Plan

<b>CLO</b>	<b>Methods of Learning</b>	<b>Assessment</b>	<b>Assessment Week</b>	<b>Proportion of Assessment</b>
1	Problem Sets/Quizzes	Periodic	Periodic	30%
2	Midterm Essay	Written assignment	Week 8	15%
3	Final Exam	Exam	End of Semester	25%
4	Research Project	Project	Week 15	20%
5	Participation	Ongoing / Class Engagement	Throughout	10%

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### Main Text

To be announced and updated by the instructor.

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### Core Readings

- Romer, P. (1990). *Endogenous Technological Change*. Journal of Political Economy.
- Aghion, P., & Howitt, P. (2023). The creative destruction approach to growth economics. *European Review*, 31(4), 312-325.
- Rodrik, D. (2007). *One Economics, Many Recipes: Globalization, Institutions, and Economic Growth*. Princeton University Press.
- Krugman, P. (1998). What's new about the new economic geography? *Oxford review of economic policy*, 14(2), 7-17.
- Kirzner, I. M. (1999). Creativity and/or alertness: A reconsideration of the Schumpeterian entrepreneur. *The review of Austrian economics*, 11(1), 5-17.
- North, D. (1990). *Institutions, Institutional Change and Economic Performance*.
- Suri, T., & Udry, C. (2022). Agricultural technology in Africa. *Journal of Economic Perspectives*, 36(1), 33-56.
- Evans, P. (1995). *Embedded Autonomy: States and Industrial Transformation*.

- Aiginger, K., & Rodrik, D. (2020). Rebirth of industrial policy and an agenda for the twenty-first century. *Journal of industry, competition and trade*, 20(2), 189-207.
- Chang, H.-J. (2002). *Kicking Away the Ladder: Development Strategy in Historical Perspective*.
- Jin, K. (2023). *The New China Playbook*.
- Mazzucato, M. (2013). *The Entrepreneurial State: Debunking Public vs. Private Sector Myths*.
- Johnson, S. (2010). *Where Good Ideas Come From: The Natural History of Innovation*.
- Von Hippel, E. (2005). *Democratizing Innovation*.
- P. Intarakumnerd & P. Charoenporn (2023). *The Window of Opportunity: A Case Study of the Battery Electric Vehicle in Thailand*. *Asia Pacific Journal of Innovation and Entrepreneurship*, 18(4), 322–339.
- A. Kohpaiboon (2020). *Industry 4.0 Policies in Thailand*. ISEAS – Yusof Ishak Institute.
- Intarakumnerd, P., & Jutarosaga, A. (2023). *The Evolution of University–Industry Linkages in Thailand*. *Asian Economic Policy Review*, 18(2), 265–282.
- Kohpaiboon, A. (2024). Policies to promote EV uptakes in Thailand. *Journal of Southeast Asian Economies*, 41(3), 221-244.

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### **Course Policies**

- Attendance is mandatory for lectures, seminars, and presentations.
- Academic integrity is strictly enforced; plagiarism results in failure.
- Extensions for assignments granted only with valid documentation.
- Active participation in group work and class discussions is expected.

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### **Instructor Support**

Office hours by appointment. Contact instructor by email for scheduling.