

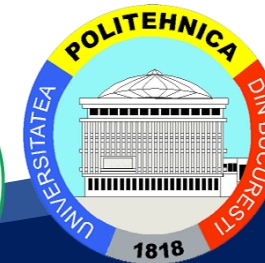


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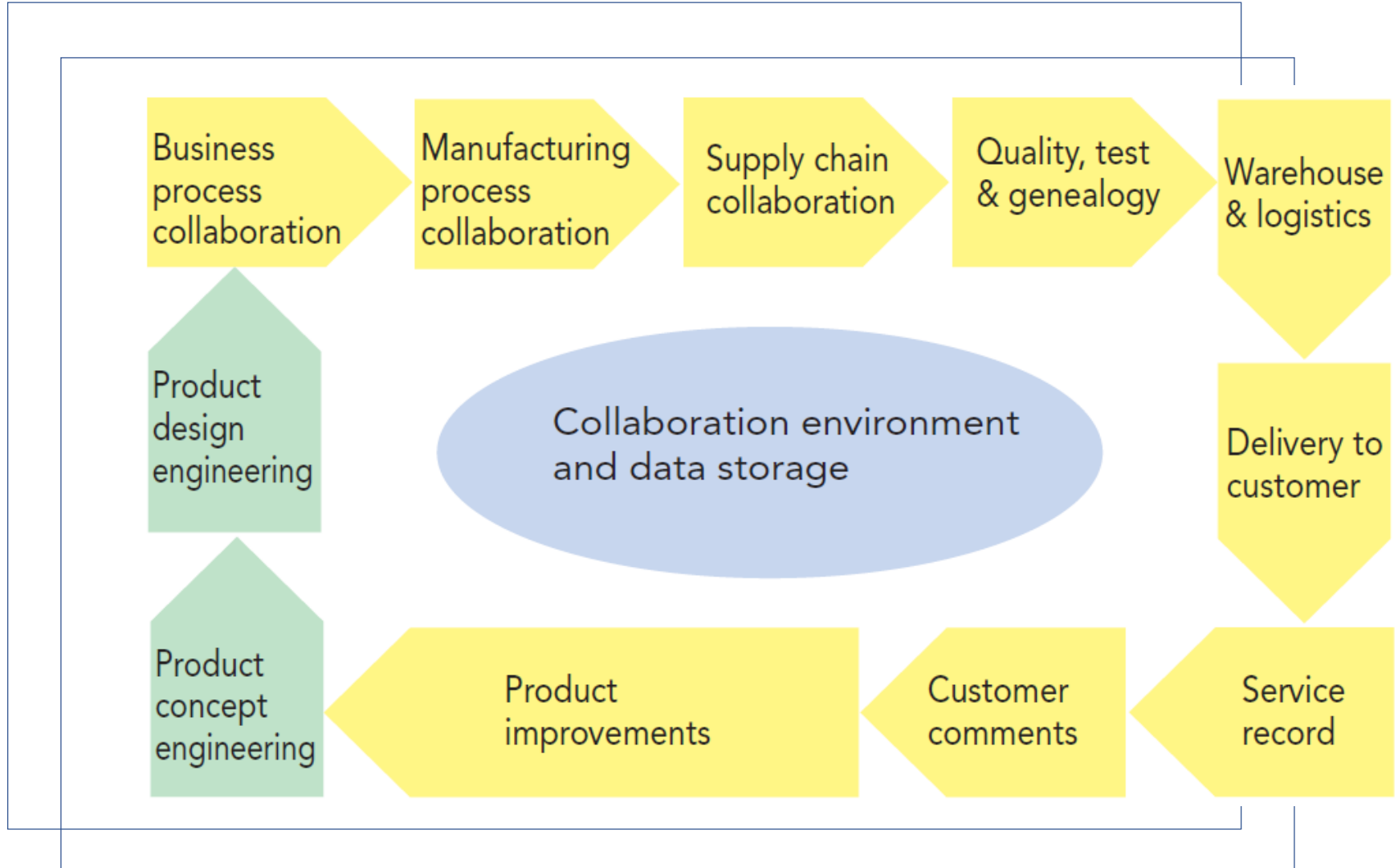
# Course 11: Collaborative Manufacturing Systems

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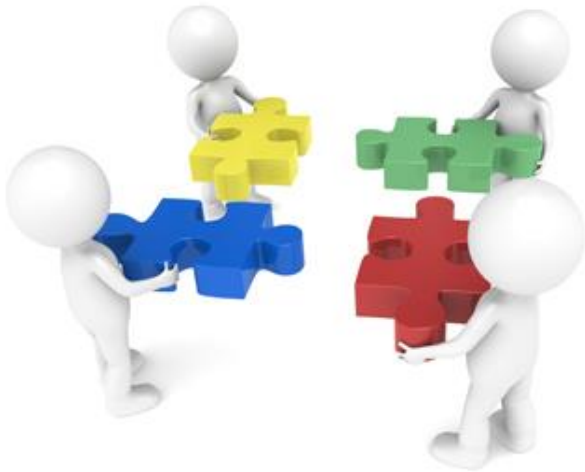
Curriculum Development  
of Master's Degree Program in  
Industrial Engineering for Thailand Sustainable Smart Industry

# Collaboration



# Collaborative manufacturing

With collaborative manufacturing,  
all parties in the  
business relationship contribute to the  
betterment of the whole



By ACR.

Collaborative  
Manufacturing  
Systems



# Course Objective



**Collaboration** among partners to form a value network has become necessary as up-to-date information is so critical in a competitive market. **Sharing of information** among a network of physical units on the shop floor and connecting internal manufacturing processes and business processes with external business processes allow a company to offer a core competence with flexible, responsive operations meeting the expectations of customers and the value network partners.

This course aims to build students' competence in **collaboration** in manufacturing from the board picture of collaborative manufacturing management down to **collaboration** on a shop floor. The students will learn from concepts, applications, and hands-on experience



# Course Learning Outcomes (CLOs)

The students on the completion of this course would be able to

CLO1: Recognize a potential collaborative manufacturing in a factory (understand)

CLO2: Identify a value network for collaborative manufacturing for a business (apply)

CLO3: Apply collaborative manufacturing management in practice (apply)

CLO4: Manipulate collaborative robots for collaborative tasks (apply)

CLO5: Manage manufacturing collaboration on a shop floor (apply)



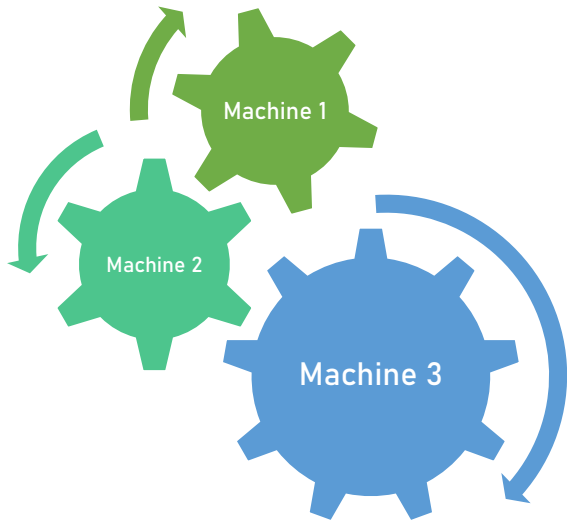
## I Collaborative Manufacturing Management

- Evolution of Manufacturing Systems
- Collaborative Manufacturing Management Model
- Collaborative Manufacturing Management Fundamentals and Infrastructure
- Ontology for Collaborative Manufacturing



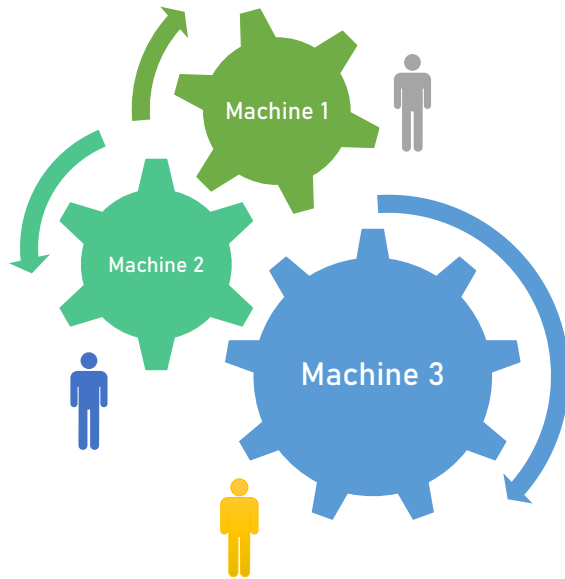
## II Machines Collaboration on a Shop Floor

- Distributed Manufacturing
- Distributed Arrival Time Control for Real-Time Scheduling
- Collaborative Material Handling System
- Collaborative Manufacturing Processes





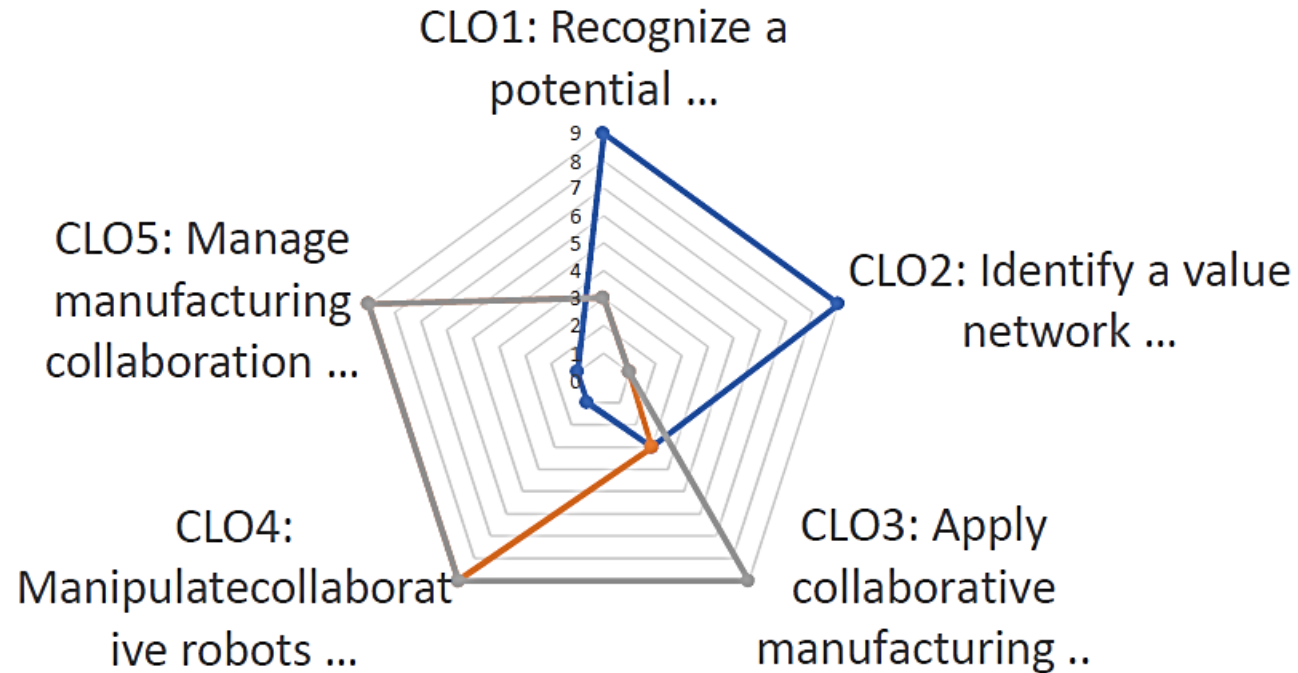
## III Man-Machine Collaboration on a Shop Floor



- Evolution of Man-Machine Collaboration
- Industrial human augmentation systems
- Flexible Human-Robot Collaboration
- Cyber-Human System

# Modules' Contribution to Course Learning Outcomes

—●— Module 1    —●— Module 2    —●— Module 3



# Assessments

	CLO1	CLO2	CLO3	CLO4	CLO5
<b>Formative Assessment Method</b>					
Class discussion and participation (5%)	9	9	3	3	3
Peer assessment in class activities (5%)	3	3	9	9	9
Practical exercises (20%)		3	9	9	9
Assignments (10%)		9	9	3	3
<b>Summative Assessment Method</b>					
Presentation (10%)		3	3	9	9
Group project (50%)		3	9	9	9

9: Strong; 3: Moderate, 1: weak





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# Thank You

Together We Will Make Our Education Stronger



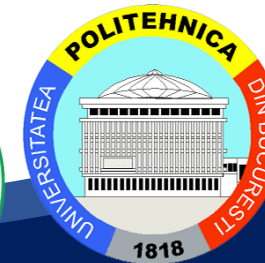
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