Daily Schedule:
(On first day, course starts at 9:00am)
8:30am - 10:00am - First Session
10:00am - 10:30am - Break – Refreshments w/Coffee
10:30am - 12:00pm - Second Session

12:00pm - 1:00pm - Lunch - on your own

1:00pm - 2:30pm - Third Session
2:30pm - 3:00pm - Break – Refreshments w/Soda
3:00pm - 4:30pm - Fourth Session

4:30pm - 5:00pm - Wrap Up and Daily Summary
Monday July 28, 2014
Background & Motivation; Platform Definitions & Principles

All
0. Introductions and Course Overview
1. Background and Motivation
   Industrial Manufacturing Paradigms
      a. Craft Production ( - 1850)
      b. American System of Manufacturing (1850-1900)
      c. Mass Production (1900-1960)
      d. Lean Manufacturing (1960-1990)
      e. Mass Customization (1990 - )

Simpson
L1. LEGO Game Round 1: Mass Production

2. Fundamental Concepts
   a. Platform Definition and Approaches
   b. Platform Leveraging Strategies
   c. Module- and Scale-based Product Family
   d. Examples
   e. Interpretations, Advantages, Disadvantages

All
3. Interactive Exercise 1: Product Family Dissection

Day 1 Wrap-Up
Tuesday July 29, 2014

Product Architecture and Modularity

4. Product Architecting
   a. Methods and Tools
   b. Case Study
   c. Product/System Architecture Framework
   d. Roles and Responsibilities of the Product/System Architect

L2. LEGO Game Round 2: Production with Variety

5. Product Decomposition and Modularity
   a. Product Architecture Decomposition
      • Principles of Decomposition
      • Examples: Automotive, Aerospace, Consumer Products
   b. Modularity and Interfaces
      • Abstraction, Interfaces and Product Complexity
      • Modularity Drivers and Styles of Interconnection
      • Modularity Metrics
      • Modularity vs. Integrality

6. Interactive Exercise 2: Product Decomposition and DSM Mapping

Day 2 Wrap-Up

Course Participant Dinner at Brasserie Jo @ 6:30pm
Wednesday July 29, 2014
Maps, Metrics, Commonality & Platform Architecting

7. Product Platform: Maps & Metrics
   a. Product Family Maps
   b. Defining a Platform Strategy
   c. Platform R&D Metrics

8. Commonality
   a. Advantages & Disadvantages
   b. Commonality Discussion
   c. Commonality Indices

9. Interactive Exercise 3: Commonality Analysis

10. Product Platform Architecting
    a. Single-use Camera Example
    b. Product Platform Planning
    c. Generational Variety Index
    d. Product Family Optimization

Guest Lecture: Tony Tao (PhD student, Designing a Family of UAVs)
Day 3 Wrap-Up
Thursday July 30, 2014

Strategic & Organizational Issues

11. Platform Strategy Selection
   a. Product Families based on Multiple Platforms
   b. Integrated Platform Strategy Model
   c. Optimization Framework: Automotive Case Study

12. Flexible Product Platforms
   a. Motivation for Platform Flexibility
   b. Cousin Parts
   c. Mid/Large Sedan Case Study

L4. LEGO Game Round 4: User-Defined Platform

13. Organizational Issues
   a. Alignment of Product Architecture and Organization
   b. Time Constants
   c. Divergence and Lifecycle Offsets

Guest Lecture: Dr. Bruce Cameron (MIT System Architecture Lab)
Industry Panel Discussion (Invited participants from class)
Prepare for Final Group Presentations
Day 4 Wrap Up
Friday August 1, 2014
Platforming in Other Domains & Next Steps
14. Platforming Software & Services
   a. Microsoft Example
   b. Matlab Example
   c. Modularity and Cyclicality in Software
   d. Software Architecting

Guest Lecture: Carlos O. Morales (Design Principles for Reusable Software Platforms)

15. Final Group Presentations (10 min each)
   a. Product Family Overview
   b. Market Segmentation
   c. Commonality Analysis
   d. Platform Identification
   e. Observations & Suggested Improvements

16. Product Platform Textbooks & Future Reading
   a. Chapter Overview
   b. Ties to Course Topics
   c. Recommendations for Further Reading
   d. LinkedIn Group: Product Platforms

17. Final Discussion & Course Diplomas