

Master Course in Ocean College, Zhejiang University  
 Course subject: Supply chain modeling and optimization  
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<b>Item</b>	<b>content</b>
Course description	<p>This course is designed to provide students with knowledge and skills of supply chain modelling and optimization techniques, in particular for urban supply chains. Supply chain optimization comprises a number of operational problems, e.g., supply chain network design, supplier selection, production scheduling, inventory management and vehicle scheduling. Each operational problem involves one or more supply chain parties with different objectives and constraints. In order to find the optimal solution for each problem, mathematical modeling is the first step to quantitatively represent the problems by extracting their internal and external features and requirements. Then, optimization techniques are applied for solving these problems. Different problems possess different features, and different algorithms have different strengths. Therefore, it is a critical problem to select an appropriate algorithm for a specific problem. This course will enable students to understand the modelling and optimization techniques towards the supply chain operations management. A mixture of lectures, tutorial exercise, and case studies will be used to deliver the various supply chain modelling and optimization topics covered in this course. Upon completion of this course, students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the concept of urban supply chain management, supply chain optimization and supply chain coordination.</li> <li>2. Be able to develop models with the requirements, objectives and constraints of different supply chain partners in accordance with their corresponding characteristics.</li> <li>3. Understand the mechanism of different optimization algorithms and apply optimization techniques to solve supply chain problems.</li> </ol>
Overview of Learning Activities	<p>This course aims to facilitate students' understanding of relevant topics and improve their mathematical modelling capability and problem-solving skills. Students are encouraged to participate in various learning activities, such as literature review of relevant topics, case study investigation, data collection, optimization techniques implementation using computer software, group project design and presentation, etc. These learning activities can complement the in-class lecture and tutorial.</p>
Overview of Course Assessment	<p>Student performance in this course is evaluated in view of the following three components.</p> <ol style="list-style-type: none"> <li>1. In-class exercise and quiz (30%)</li> <li>2. Individual literature report (30%)</li> <li>3. Group project and presentation (40%)</li> </ol>

## Session Topics

Session 1: The constitution of (urban) supply chain operations and management

Session 2: The development of optimization techniques for supply chains

Session 3: Supply chain network design modeling

Session 4: Urban supply chain modeling and analysis

Session 5: Close-loop supply chain modeling and analysis

Session 6: Inventory and transportation optimization in supply chains

Session 7: Supply chain coordination with contracts

Session 8: Team project presentation and exam