COURSE INFORMATION
Course title: Topics in Industrial Engineering (Revenue Management and Pricing)
Course keywords: Pricing, revenue management, optimization
Course number: 406.559 Credits: 3.0
Semester: Winter 2020 Class location: Virtual (Online)
Section(s): Class times: MWF 12:00-14:30 KST
Course duration: Dec 21, 2020 – Jan 22, 2021
Class homepage: SNU eTL <https://etl.snu.ac.kr/login.php>

INSTRUCTOR AND TA INFORMATION
Instructor: Tim Huh (허웅희)
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TA: Jongwook Lim (PhD student, Industrial Engineering)
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COURSE OVERVIEW
Revenue management is an emerging area dealing with applying analytics tools to make decisions regarding product availability and pricing. Its goal is “selling the right product to the right customer at the right time for the right price.” Many industries use revenue management tools to maximize the return on their limited supply of products. Airlines use revenue management to decide what fare classes should remain open and what fare classes should be closed. Hotels use revenue management to choose the room rates and to determine how much to overbook. Rental car agencies use revenue management to choose which cars to use for which requests. Restaurants use revenue management to decide what portion of their tables should be reserved for walk-ins. This course focuses on analytical tools related to capacity allocation and pricing.

TEXTBOOK AND READING MATERIAL

WEEKLY TOPICS (SUBJECT TO CHANGE)
Week 1 Introduction; dynamic booking control; two-fare capacity allocation
Week 2 Multi-fare capacity allocation; dynamic programming; heuristics for multi-fare capacity allocation; network revenue management
Week 3 Network revenue management (continued); Linear programming formulations
Week 4 Pricing; pricing optimization; consumer choice model
Week 5 Demand learning; Presentations

PRE-REQUISITES
Students are expected to have a working knowledge of probability, optimization, and stochastic processes at the level typically covered in the second-year or third-year undergraduate courses. The
students should have mathematical maturity since students will need to read and understand proofs.

**GRADING POLICY**

**Summary**

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<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Homework</td>
<td>25%</td>
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<td>Quizzes</td>
<td>50%</td>
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<tr>
<td>Presentation</td>
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<td>Class participation</td>
<td>15%</td>
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<td>Total</td>
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**Assessment Schedule**

- Homework #1  Thurs Dec 24 @ noon KST
- Homework #2  Thurs Dec 31 @ noon KST
- Quiz #1      Wed Jan 6 in class
- Homework #3  Sat Jan 9 @ noon KST
- Homework #4  Sat Jan 16 @ noon KST
- Quiz #2      Mon Jan 18 in class
- Presentation Week of Jan 18 in class

**Presentation**

Students may work individually or as a group of 2 or 3. The students will make a presentation in-class and submit a PDF version of the slides.

- Option 1 (Paper presentation). Choose a published paper after consulting with the instructor, and prepare a presentation for your class. It should be accessible to the students in the class. The contribution and model should be presented, along with sufficient details regarding methodological approaches and technical analysis.

- Option 2 (Research proposal). Choose a topic of interest related to the course topic, and prepare a research proposal. It must include motivation, literature review, methodological approach, and intended contribution.

Doctoral students are strongly encouraged to choose Option 2.

**ACADEMIC INTEGRITY**

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply.
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