1. **Course Detail**

   Professor: Dr. Misuk Lee (Pigott 413, leem@seattleu.edu)

   Websites: All assignments and class materials will be posted on Canvas.

   Meeting Times: T/F (Sign up for weekly meeting schedule)

   Office Hours: 3:10pm – 4pm Tuesday, 1pm – 3pm Friday

2. **Course Objective**

   The purpose of the Capstone Project is for the students to apply knowledge acquired during the MSBA program to a project involving actual data in a realistic setting. During the project, students engage in the entire process of solving a real-world data science project, from processing actual data to applying suitable and appropriate analytic methods to the problem.

   **Topic 1: Modeling Passengers’ Airport Choice in Multi-Airport Region**

   Passengers’ airport choice in multi-airport regions is of great interests to transport researchers, local governments, airport authorities and airline companies. Traditional approach to air travel behavior is discrete choice models that aim to statistically analyze a decision maker’s choice of one alternative from a finite set of alternatives. While discrete choice models have been widely adopted in transportation and economics, those models often do not provide a comprehensive framework for capturing multicollinearity and non-linear relationships in decision processes. This project proposes the use of data mining models such as decision trees and random forest along with discrete choice models to examine airport choice in the Seoul Metropolitan Area. Based on the quantitative analysis, substantive policy implications are to be discussed.

   **Topic 2: Forecasting Hotel Room Demand**

   Demand forecasting is a crucial part of hotel revenue management that aims to maximize revenue by matching demand to available capacity. The goal of this project is to develop forecasting models that predicts future booking arrivals based on real hotel demand data. This project will investigate three categories of forecasting models: time-series models (exponential smoothing, Holt-Winters method, AR, MA, ARIMA), advance booking models, and combined models. Based on the comparative analysis, best forecasting models will be discussed and proposed.

   **Topic 3: Predicting hotel booking cancellations**

   Booking cancellations have a substantial impact in demand management decisions in the hospitality industry. The goal of this project is to develop machine learning models that predicts future booking cancellations based on real hotel booking data. In this project, various machine learning models will be applied: regression, regression tree, nearest neighbors regression, neural network, and ridge/Lasso. Based on the comparative analysis, best models are to be discussed and proposed.
3. **Assessment**

Weekly Assignments: 40%

Final Paper and Presentation: 40%

Peer Assessment: 20%

4. **Grade**

- 95 to 100: A, 90 to 94 : A-
- 85 to 89: B+, 80 to 84: B, 77 to 79 : B-
- 74 to 76 : C+, 70 to 73 : C, 67 to 69 : C-
- 64 to 66 : D+, 60 to 63 : D, 50 to 59 : D-

5. **Peer Assessment**

After submitting your final paper, each student should provide feedback and assessment on other teams’ final paper. In addition, you will rate yourself and your team members on the relative contributions that were made in preparing and submitting your group assignments and project.

6. **Non-Disclosure Agreement**

Data, codes, papers, reports, and lecture materials, including assignments, lecture notes, and others, should not be shared by anybody or any other organization.

Students or anybody need to obtain an explicit permission from the faculty member for any use outside of class, including posting them on GitHub or anywhere else.

7. **Honor Code**

Seattle University is committed to the principle that academic honesty and integrity are important values in the educational process. Academic dishonesty in any form is a serious offense against the academic community. Acts of academic dishonesty will be addressed according to the Seattle University Academic integrity Policy.

**Academic Policies on Registrar website** (https://www.seattleu.edu/redhawk-axis/academic-policies/)

- Academic Integrity Policy
- Academic Grading Grievance Policy
- Professional Conduct Policy (only for those professional programs to which it applies)

If you are not sure whether a particular action is acceptable according to the Academic Honesty Policy, you should check with your instructor before engaging in it.
8. **Disability**

If you have, or think you may have, a disability (including an ‘invisible disability’ such as a learning disability, a chronic health problem, or a mental health condition) that interferes with your performance as a student in this class, you are encouraged to arrange support services and/or accommodations through Disabilities Services staff located in Loyola 100, (206) 296-5740. Disability-based adjustments to course expectations can be arranged only through this process.

9. **Office of Institutional Equity**

Title IX of the Education Amendments of 1972 (Title IX) prohibits discrimination based on sex in educational programs or activities that receive Federal financial assistance. This prohibition includes sexual misconduct, which encompasses sexual harassment and sexual violence. Seattle U remains committed to providing a safe and equitable learning, living, and working environment. Seattle U offers emergency, medical, and other support resources, as well as assistance with safety and support measures, to community members who have experienced or been impacted by sexual misconduct.

Seattle U requires all faculty and staff to notify the University’s Title IX Coordinator if they become aware of any incident of sexual misconduct experienced by a student. For more information, please visit https://www.seattlevu.edu/equity/. If you have any questions or concerns, you may also directly contact the Title IX Coordinator in the Office of Institutional Equity (email: oie@seattlevu.edu; phone: 206.296.2824) University Resources and Policies.

10. **Academic Resources**

- Library and Learning Commons (http://www.seattlevu.edu/learningcommons/)

(This includes: Learning Assistance Programs, Research [Library] Services, Writing Center, Math Lab)

- Academic Integrity Tutorial (found on Canvas and SU Online)