

Course number and name	END 471 Marketing & CRM Analytics
Credits, contact hours, categorization of credits	3 credits / 42 hours / Engineering topic
Instructor or course coordinator	Umut ASAN
Text book and other supplemental materials	<ul style="list-style-type: none"> • Lilien, G. L., Rangaswamy, A., & De Bruyn, A. (2017). Principles of Marketing Engineering and Analytics. DecisionPro. • Palmatier, R. W., & Sridhar, S. (2021). Marketing strategy: Based on first principles and data analytics. Macmillan International Higher Education • Kumar, V., & Petersen, J. A. (2012). Statistical Methods in Customer Relationship Management. John Wiley & Sons. • Winston, W.L., (2014),Marketing Analytics: Data-Driven Techniques with Microsoft Excel, John Wiley & Sons, Indiana. • Grigsby M. (2016) Marketing Analytics: A Practical Guide to Real Marketing Science (Marketing Science), Kogan Page • Larose, D. T., & Larose, C. D. (2015). Data mining and predictive analytics. John Wiley & Sons.

Course information	
Content	<p>This course involves technology enabled and model supported approaches to analyze data to drive effective marketing decision making. It will focus on customer relationships and marketing problems such as:</p> <ul style="list-style-type: none"> • segmenting the market (using clustering methods), • predicting market potential and customer value (using CLV), • identifying target customers (using classification trees, RFM), • positioning products/brands (using multidimensional scaling), • identifying customer preferences (using conjoint analysis), • modeling customer acquisition, • determining strategies for customer retention • predicting customer churn and win-back.
Prerequisites	END 311E Statistics
Type	Selected elective

Course learning outcomes
<p>The following learning outcomes are aimed in the course:</p> <ol style="list-style-type: none"> I. Ability to describe problems of CRM and marketing analytics II. Ability to identify the required data to carry out the desired analyses III. Ability to perform CRM and marketing analytics applications with real data IV. Ability to interpret and translate the results of analyses into strategy

Student outcomes	Level of contribution
SO1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	Partial
SO2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	Partial
SO3. An ability to communicate effectively with a range of audiences.	Partial
SO4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	Not applicable
SO5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	Not applicable
SO6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	Not applicable
SO7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	Little

Week	Topics	Learning outcome(s)
1	Basic Concepts: Marketing and the Marketing Process	I
2	Introduction to Marketing Analytics and CRM	I
3	Segmentation: Hierarchical Clustering	II, III, IV
4	Segmentation: Partitional Clustering	II, III, IV
5	Profiling and Targeting: RFM and Classification Trees	II, III, IV
6	Product/Brand Positioning: Perceptual Mapping	II, III, IV
7	Product/Brand Positioning: Preference Mapping	II, III, IV
8	Predicting Market Potential: Customer Lifetime Value	II, III, IV
9	Supervised Learning: Regression Algorithms	II, III, IV
10	Supervised Learning: Classification Algorithms	II, III, IV
11	Customer Acquisition	II, III, IV
12	Customer Retention and Churn	II, III, IV
13	Modeling Customer Preferences: Conjoint Analysis	II, III, IV
14	Marketing Mix Decisions	II, III, IV