BA 4314/5314 – COMPUTER APPLICATIONS IN MANAGEMENT
Tuesday and Thursday 14:40 – 15:55 @ G107

Instructor:	Dr. Berna N. YILMAZ
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Office Hours:	Tuesday and Thursday at 13:00 – 14:00 @ H 106
Course Web Page:	https://odtuclass.metu.edu.tr/

Course Description:

This course introduces students to the fundamentals of R programming with a focus on business administration applications. The course covers essential programming concepts, data structures, data manipulation, visualization, and statistical modeling techniques that are widely used in business analytics. Students will develop hands-on experience in working with real-world data and learn how to use R to analyze and visualize business-related datasets. The course will also introduce predictive modeling techniques, including regression and time series analysis, to support data-driven decision-making. The final project will allow students to apply their knowledge to a business-related problem, demonstrating their analytical and programming skills.

Course Student Learning Objectives: (CSLOs)

Upon successful completion of this course, students should be able to:
Course Specific Skills:
1. Write and execute R scripts using RStudio for data analysis.
2. Apply fundamental programming concepts such as loops, functions, and conditional statements in R.
3. Work with different data structures (vectors, matrices, data frames, and lists) for business applications.
4. Import, clean, and manipulate datasets from various sources, including Excel.
5. Create descriptive and visual analytics using R's built-in and external packages.
6. Implement linear and multiple regression models to analyze business-related data.
7. Conduct hypothesis testing to support business decisions.
8. Perform basic time series analysis for forecasting business trends.

Discipline Specific Skills:
9. Use R to conduct exploratory data analysis and extract meaningful business insights.
10. Integrate R with Excel to enhance data processing capabilities.
11. Develop predictive models for business analytics and interpret their outcomes.
12. Apply statistical methods to business problems and assess their impact.
13. Communicate findings effectively using data visualizations and reports.

Personal and Key Skills:
14. Develop problem-solving skills by working with real-world business datasets.
15. Enhance critical thinking through the interpretation of statistical and analytical results.
16. Improve teamwork and collaboration through group projects and peer discussions.
17. Strengthen presentation and communication skills by delivering analytical findings.
18. Adapt to new analytical tools and techniques in business decision-making.

Learning and Teaching Methods:

This course follows a hands-on, application-driven approach with interactive lectures, live coding demonstrations, and weekly in-class exercises to reinforce learning. Students will complete assignments, work on real-world business datasets, integrate R with Excel, and engage in peer discussions. Assessment includes a practical midterm exam and a final project with presentations to demonstrate analytical and programming skills.

Required Reading:
Hadley, W., Garrett, G. & Grolemund G., R for Data Science: Import, Tidy, Transform, Visualize, and Model Data, O'Reilly Media, Inc., USA. 2nd Edition, 2023 (ISBN: 978-1492097402)
Suggested Reading:
All R sources over the www, i.e. W3Schools R Tutorial.

Assessment and Grading:

Form of Assessment	% Contribution	Size of the assessment	CSLOs covered by the assessment	Feedback Method
Midterm Examination	%30	60-minute in-class exam	1-13	Written (via ODTUClass)
In-Class Assignments	%30	Weekly short assignments (~15 minutes each)	1-13	Written (via ODTUClass)
Final Project & Presentation	%40	Final report (~3000 words) & 30-minute presentation.	1-18	Written (via ODTUClass) and oral feedback

Makeup Examinations: There will be no make-ups for exams, in-class assignments, projects or presentations. If you have a time conflict, please contact me ahead of time.

Important Note About Re-sit (Bütünleme) Exams: Please note that re-sit exams are no longer given at METU.

Course Policies:

STUDENT DISABILITIES: Any student, who, because of a disabling condition, may require special arrangements in order to meet course requirements, should contact the instructor as soon as possible. Students should present the appropriate documentation from the university's Disability Support Office (Engelsiz ODTÜ Birimi, ODTÜ Kütüphanesi, Solmaz İzdemir Salonu, Tel: 210.7196; engelsiz@metu.edu.tr) verifying their disability, and outlining the special arrangements required. Please note that no accommodations will be provided to the disabled students prior to the completion of this approved University process.

ACADEMIC DISHONESTY: The Department of Business Administration has no tolerance for acts of academic dishonesty. Such acts damage the reputation of METU, the department and the BA/MBA/MS degree and demean the honest efforts of the majority of the students. The minimum penalty for an act of academic dishonesty will be a zero for that assignment or exam.

CHEATING: All university, faculty/institute, and department principles on academic honesty will be strictly enforced. The usual consequence for academic dishonesty is failure of the course and referral of the case to the Dean of the Faculty/Institute for additional disciplinary action. Examinations are individual and are to be completed without outside assistance of any sort. Persons observed cheating during examinations will receive a failing grade in the course. Homework assignments are individual, unless otherwise specified by the instructor, and are to be completed without outside assistance of any sort, as well. Persons observed cheating in their homework assignments will receive a score of zero for the portion of the semester grade that is allocated to such assignments.

PLAGIARISM: The instructor assumes that students will do their own work. By placing their names on assignments (individual or team), students are affirming that the contents are their original work. Any previous work available from files or past students, as well as materials available on the internet may be used only as a suggestive model. Violation of this provision will be considered as unethical behavior, subject to disciplinary action. If you have any doubt about the use of a specific material, see the instructor ahead of time. Any material used from outside sources should be referenced appropriately. Persons observed to plagiarize while preparing assignments will be referred to the Graduate School of Social Sciences for additional disciplinary action and also, they will receive a score of zero for the portion of the semester grade that is allocated to such assignments.

Please read the following documents carefully:

Turkish: https://oidb.metu.edu.tr/sites/oidb.metu.edu.tr/files/ODTUAkademikDurustluk-Kilavuzu-7.3.2016.son_.pdf
English: http://oidb.metu.edu.tr/sites/oidb.metu.edu.tr/files/Academic%20Integrity%20Guide%20for%20Students.pdf

Turkish: http://oidb.metu.edu.tr/sites/oidb.metu.edu.tr/files/ODTU%20Sinav%20Kurallari-Kilavuz-7.4.2016.son_.pdf
English: http://oidb.metu.edu.tr/sites/oidb.metu.edu.tr/files/Guide%20for%20Rules%20to%20Be%20Followed%20In%20an%20Examination%20Environment.docx

METU HONOR CODE

Every member of METU community adopts the following honor code as one of the core principles of academic life and strives to develop an academic environment where continuous adherence to this code is promoted.

"The members of the METU community are reliable, responsible and honorable people who embrace only the success and recognition they deserve, and act with integrity in their use, evaluation and presentation of facts, data and documents."

Students arrive on time. Timely arrival ensures that classes are able to start and finish at the scheduled times. Timely arrival shows respect for both fellow students and faculty and it helps to create a better learning environment by reducing avoidable distractions.
Students are fully prepared for each class. Much of the learning in this course takes place during classroom discussions. When students are not prepared, they cannot contribute to the learning process. This affects not only the individual but also the classmates who count on them.
Students respect the views and opinions of their colleagues. Disagreement and debate are encouraged; however, intolerance for the views of others is unacceptable.

STUDENT EXCUSES: Unless you inform me in advance, I will not excuse you from any of the grade requirements. At the same time, this does not mean that I will allow you to miss a test or an assignment with any excuse that you present to me. Please note that the excuse is acceptable for only the most extreme circumstances and only after stringent verification and approval by the Department.

KNOW YOUR RIGHTS AND RESPONSIBILITIES! http://oidb.metu.edu.tr/en/academic-rules-and-regulations

NOTE THE IMPORTANT DATES ON THE ACADEMIC CALENDAR! https://oidb.metu.edu.tr/en/academic-calendar

Notes:
- Usage of cell phones is strictly prohibited during class. Please be courteous to your classmates and me and make sure that your phones are on silent mode before the class begins.
- Please arrive on time and do not enter the classroom if I already have closed the classroom doors. If you have to leave early, please inform me in advance, but note that there will be no make-up or compensation for in-class assignments missed due to leaving early.
- You are encouraged to drop by my office during office hours for questions, concerns, or suggestions. Outside the office hours, please make an appointment with me in advance, before or after the class, via phone or e-mail. For quick questions that you may have, note that e-mailing is a very effective means of communicating with me.

The instructor assumes that students who attend the next class have understood and accepted to agree with all the requirements and rules of this course.

Don't be Trashy. Recycle.

Do not throw items away in the trash that should go into the recycling bin.

Show a little class.

REFUSE, REDUCE, REUSE, REPURPOSE, RECYCLE!

The following table gives the tentative schedule for the semester. The lectures will stress the most important and/or most difficult material. Appendices are required only if they are assigned. The students are required to read the chapters and appendices before they are covered in class.

Tentative Course Schedule				
Month	Day	Topic	Reading/ Assignment	CSLO
		Part 1: Basics		
February	18	Introduction to R, RStudio	Various	1
	20	The Basics - First R scripts	Various	1, 2
	25	Operations & Data Structures	Various	3
	27	Operations & Data Structures (Cont'd)	Various	3
March	4	Data Import, Cleaning, and Manipulation	Various	4, 9
	6	Data Import, Cleaning, and Manipulation (Cont'd)	Various	4, 9
	11	Excel Pivot Tables	Various	10
	13	Combining R and Excel	Various	10
	18	Data Visualization	Various	5, 9, 13
	20	Data Visualization (Cont'd)	Various	5, 9, 13
	25	Descriptive Analytics	Various	5, 9, 12
	27	Descriptive Analytics (Cont'd)	Various	5, 9, 12
April	1	*No Class: Break for the bayram*		
	3	**MIDTERM EXAMINATION**		
	8	Introduction to Linear Regression	Various	6, 11, 12
	10	Basics of Linear Regression	Various	6, 11, 12
	15	Basics of Linear Regression (Cont'd)	Various	6, 11, 12
	17	Multiple Linear Regression	Various	6, 11, 12
	22	Multiple Linear Regression (Cont'd)	Various	6, 11, 12
	24	Hypothesis Testing	Various	7, 12
	29	Hypothesis Testing (Cont'd)	Various	7, 12
May	1	*No Class: Labor and Solidarity Day*		
	6	Time Series Analysis	Various	8, 11, 12
	8	Introduction to Time Series Data	Various	8, 11, 12
	13	Decomposing Time Series	Various	8, 11, 12
	15	Decomposing Time Series (Cont'd)	Various	8, 11, 12
	20	Final Project and Presentations (Cont'd)	Various	
	22	Final Project and Presentations (Cont'd)	Various	
	27	Final Project and Presentations (Cont'd)	Various	
	29	Final Project and Presentations (Cont'd)	Various	