



**ENS 208**  
**Introduction to Industrial Engineering**

**Course Syllabus**  
**Spring 2022-2023**  
**(Updated as of April 6, 2023)**

*We may have to revise the course plan according to the countrywide reassessment to be made regarding higher education. This is expected to happen at the beginning of April. The content to be delivered is certain but the method of course delivery, the number and dates of exams, and some other details are subject to change*

**Instructor**

İhsan Sadati E-mail: [msadati@sabanciuniv.edu](mailto:msadati@sabanciuniv.edu)  
Office Location: FMAN/SBS G024  
Office Hours: Mondays 12:30 - 14:00 (Zoom Meeting ID: [986 8058 5238](https://sabanciuniv.zoom.us/j/98680585238))

**Teaching Assistants**

Mebrure Buket Özen E-mail: [bozen@sabanciuniv.edu](mailto:bozen@sabanciuniv.edu) Zoom Meeting ID: [959 7690 6334](https://sabanciuniv.zoom.us/j/95976906334)  
Ferruh Tan Güremek E-mail: [ferruhtan@sabanciuniv.edu](mailto:ferruhtan@sabanciuniv.edu) Zoom Meeting ID: [975 7822 8778](https://sabanciuniv.zoom.us/j/97578228778)  
Neman Karimi E-mail: [neman.karimi@sabanciuniv.edu](mailto:neman.karimi@sabanciuniv.edu) Zoom Meeting ID: [996 5740 6754](https://sabanciuniv.zoom.us/j/99657406754)

**Learning Assistants**

Buse Merter E-mail: [busemerter@sabanciuniv.edu](mailto:busemerter@sabanciuniv.edu)  
Abdullah Suat Kalkan E-mail: [skalkan@sabanciuniv.edu](mailto:skalkan@sabanciuniv.edu)  
Zehra Betül Danışman E-mail: [bdanisman@sabanciuniv.edu](mailto:bdanisman@sabanciuniv.edu)

**Course Schedule & Sections**

The course is delivered in **two A** and **B** sections.

**Section A & Recitation:**

**Lectures:** Mondays 14:40 - 16:30 (FENS-G055), Wednesdays 10:40 - 12:30 (FENS-G055)

**Zoom Link:** <https://sabanciuniv.zoom.us/j/96576263234>

**Section B & Recitation:**

**Lectures:** Mondays 9:40 - 11:30 (FENS-G059), Wednesdays 14:40 - 16:30 (FENS-G059)

**Zoom Link:** <https://sabanciuniv.zoom.us/j/91610132776>

**All sections will be conducted online over Zoom**

### **Course Content**

An overview of the design, analysis and control of production and service operations; systems analysis of various functions within the enterprise; system dynamics analysis of complex interactions among different entities; fundamental industrial engineering tools and techniques for decision-making at strategic, tactical and operational levels. The course aims to introduce the students to the industrial engineering profession through fundamental problems of interest to modern industrial engineering professionals and familiarize the students with major analytical modeling tools and problem-solving methods used by industrial engineers.

### **Recommend or Required Reading**

There is no specific Textbook for ENS 208. We will have lecture notes, reading materials, book chapters, case (“real life”) documents, and coding tutorials. All course materials will be available on SUCourse.

### **Objectives & Learning Outcomes**

The objective of the course is to take you on a journey on set problems and case studies that modern Industrial Engineers are involved with in real life. Upon completing this course, you will be able to

- Implement algorithms for business problems that can be depicted as an analytical/mathematical problem
- Develop mathematical models in the form of linear programming problem formulations and solve these problems with (commercial) solvers
- Comprehend how variation and randomness in life/observations can be depicted with functions
- Establish the link between industrial engineering and required professional skills
- Identify IE problems that you can attack, formulate, and solve
- Familiarize yourself with the industrial engineering profession

### **Grading**

Attendance & Lecture Participation	5%
Quizzes	10%
Midterm Exam 1	25%
<del>Midterm Exam 2</del>	<del>25%</del>
Final Exam	<del>35%</del> 60%
Total	100%

- **The instructor might adjust this grading scheme if necessary.**

## Attendance & Lecture Participation Grade

- It is required that the students **attend the classes with a computer** (via which an algorithm can be texted and run properly, and the outputs can be uploaded to a designated site). **Students without a functional computer shall not be admitted to the sessions.**
- **You are expected to attend the sections to which you are registered to.**
- We want students to explain their thoughts and recommendations clearly and engage in constructive discussions with others.
- Each student's class participation (i.e., comments, questions, answers, discussions with other students, etc.) will be graded.
- Attendance ~~to lectures is mandatory and~~ will be tracked.
- Attendance records **start from the first third week.**
- The attendance policy is as follows: missing more than 30% of sessions: ~~NA-grade in the course.~~ **Attendance & Lecture Participation grade will be ZERO.**
- Please e-mail the TAs if you will miss (or have missed) a class session with a valid reason. The TAs will keep track of the attendance records.

## Quizzes

- We will have several Quizzes during the semester.
- Quizzes might be on the written assignment or the previous or current lectures' discussions.
- Quizzes will be announced beforehand or can be pop-up.
- The topics of these Quizzes can include both the **conceptual questions** and the **applications, including the algorithms and coding exercises.**

## Exams

- ~~Two~~ One Midterm Exams and one Final Exam.

### To receive a passing letter grade:

- You are required to take a minimum of "**25**" from the **Final Exam** (this is a necessary condition, **not** a sufficient condition).
- ~~You are required to attend at least 70% of the classes.~~

### Make-up Exam Policy

- You have to have a valid reason for not taking an exam. If proof such as a medical report is not brought to me before or within the first three days of the exams, you will NOT be given a make-up exam and will be assumed to score **ZERO** in the missed Exam.
- A **comprehensive make-up exam** will be offered after the Final Exam to those who have missed a midterm or the final Exam.
- If you miss multiple exams, the remaining grades will be "**ZERO**," regardless of your excuse.

- There is no make-up for Quizzes.

### **Computational Part**

- We use Python (<https://www.python.org/>), the programming language in the freshman year course IF 100 Computational Approaches to Problem-Solving.
- We utilize “*anaconda*,” which is known as the “most popular” and easy-to-use python data science *platform*. It may be downloaded from the following URL: <https://www.anaconda.com/products/individual>.
- **NOTE:** There should be no Turkish alphabet-specific characters in the directory path name where you are trying to install Anaconda.
- It is highly recommended that each student recollect their fundamentals about Python before the first lecture.

### **Course Outline:**

<b>Week</b>	<b>Topics</b>
<b>1</b>	Overview of syllabus and expectations, installation of required software, and tutorials.
<b>2-5</b>	Module 1 – Traveling Salesman Problem and Vehicle Routing Problem
<b>6-11</b>	Module 2 – Linear Programming Formulations and Solvers
<b>7</b>	<b>Midterm Exam 1</b> (12.04.2023)
<del><b>11</b></del>	<del>Midterm Exam 2 (Date and Time: TBA)</del>
<b>12-14</b>	Module 3 – Randomness and Variation in Observations

### **Academic Integrity and Conduct:**

Each student in this course is expected to abide by the Sabanci University Academic Integrity Statement (available at <http://www.sabanciuniv.edu/en/academic-integrity-statement>) and to behave properly against the instructor and the course assistants. The violations of the integrity principles and any disrespect toward course assistants will not be tolerated.

### **Disclaimer:**

The instructors reserve the right to alter the grading policy, change examination dates, and modify the syllabus and course content when necessary. Modifications will be announced in class and via SUCourse. Students are responsible for keeping up with the announced changes.

*We may have to revise the course plan according to the countrywide reassessment to be made regarding higher education. This is expected to happen at the beginning of April. The content to be delivered is certain but the method of course delivery, the number and dates of exams, and some other details are subject to change*