IEMS 313 Class Project: Phase 2

Due: Monday Nov 28 at 11am
However we encourage you to submit before Thanksgiving

1 Logistics

- Only one member of the team needs to submit the project on Canvas.

- Be prepared to give a 10 minute presentation during the last week of classes. One or more team members may present.

- Remember that the intent is for this project to be open-ended, so assume that the client is expecting you to provide guidance.

2 Problem Statement

This quarter, 150 students enrolled in DTC, and instructors have a total of different 40 projects. Students are split into four groups of 3 or 4.

Suppose students come from three major-groups:

1. CIV-MECH-MADE (Civil Engineering; Mechanical Engineering; Manufacturing and Design Engineering)

2. IE-ECE-ESAM (Industrial Engineering; Electrical Engineering and Computer Science; Engineering Sciences and Applied Mathematics)

3. BME-CHEME-MSE (Biomedical Engineering; Chemical Engineering; Material Science and Engineering)

In Phase I, we built the model to find the assignment plan which maximizes the total ratings. However, that model is a bit crude.

3 Goals of Phase II

The goal of this phase is three-fold:

1. Modify your model to address the three **new questions** described below.

2. Create the most realistic model that you can conceive. It may or may not incorporate some of the ideas in the **new questions**. It is up to you to design a model that is more useful and to perform a meaningful sensitivity analysis. You may want to use more data; if so generate it synthetically. Formulate the model in AMPL or python, solve it and perform a meaningful sensitivity analysis.

3. Describe in detail a realistic application (in a different context) whose mathematical formulation is very similar to the one you developed for the engineering design teams. Write down the mathematical model, but you don't need to generate data and solve it.

New questions. There are more metrics that we should consider when assigning students with different projects. For example, to encourage diversity, we may want each team has a balanced mix of students from different majors and ideally equal number of males and females. One particular measure for diversity is the so-called *Gini* index. Suppose for a project, p_i is the proportion of students with major i, then the *Gini* index is calculated as

$$\text{Gini index} \equiv 1 - \sum_i (p_i)^2$$

We can prove that the *Gini* index varies between 0 and 1 where 0 means students come from the same major and a higher *Gini* index indicates more diversity. Similarly, we can also calculate Gini index for gender.

Question 1 We want to find an assignment plan that maximizes the gender diversity measured by the total *Gini* index across the project teams. At the same time, we want to make sure a minimum average GPA and a minimum average rating are met by each project team and no team has more than 80 % of its students from the same major. Formulate and solve this assignment problem in AMPL. Comment on your solution (how does it differ from the one you obtained in Phase I).

Question 2 Find an assignment plan that maximizes the total *Gini* index in major composition. Each team needs to achieve a certain minimum average rating and GPA, and no team can have more than 70% of students with the same gender. Formulate and solve this problem in AMPL.

Another metric we should consider is the 'conflict of interest' among students in the same team. Since we usually cannot observe that directly, an estimate of the conflict of interest between two students can come from the difference between their ratings on the projects. Suppose r_{it} is the rating of student i on project t, then one measure of conflict could be

$$\text{Conflict of interest between } i \text{ and } j \equiv \sum_t |r_{it} - r_{jt}|$$

Question 3 Find an assignment plan that minimizes the total conflict of interest for students within the same project. Formulate and solve your problem in AMPL. For this question, consider only the first ten students and three projects.

hint: try to come up with a formulation which uses decision variables $x_{ik} \in 0, 1$ where x_{ik} is one if student i is assigned to project k and zero otherwise. Think about the meaning of $\sum_{k \in PROJ} x_{ik} x_{jk}$

4 Appendix A: Data of 150 students

ID	Gender	Major	GPA	Ratings
1	F	BME-CHEME-MSE	3.69	6, 6, 0, 4, 8, 7, 6, 4, 7, 5, 9, 3, 8, 2, 4, 2, 1, 9, 4, 8, 9, 2, 4, 1, 1, 10, 5, 7, 8, 1, 5, 6, 5, 9, 10, 3, 8, 7, 7, 8
2	F	BME-CHEME-MSE	3.52	4, 0, 8, 0, 1, 6, 10, 10, 0, 9, 7, 5, 3, 5, 1, 3, 9, 3, 3, 2, 8, 7, 1, 1, 5, 8, 7, 1, 4, 8, 4, 1, 8, 5, 8, 3, 9, 8, 9, 4
3	M	CIV-MECH-MADE	2.86	7, 1, 9, 6, 5, 9, 3, 4, 2, 3, 2, 0, 9, 10, 4, 7, 1, 1, 10, 2, 2, 0, 1, 8, 10, 6, 8, 4, 8, 3, 3, 10, 9, 6, 9, 4, 7, 7, 10, 10
4	F	IE-ECE-ESAM	2.54	5, 1, 5, 9, 1, 7, 9, 10, 5, 3, 3, 0, 4, 1, 3, 5, 2, 5, 6, 0, 1, 2, 3, 0, 9, 10, 8, 9, 10, 1, 0, 1, 10, 3, 9, 9, 1, 6, 1, 5
5	M	BME-CHEME-MSE	3.04	1, 0, 9, 0, 3, 2, 1, 7, 3, 0, 10, 0, 8, 6, 9, 1, 4, 1, 3, 1, 10, 4, 5, 6, 2, 0, 8, 7, 0, 9, 1, 6, 3, 4, 5, 7, 9, 2, 10, 3
6	M	BME-CHEME-MSE	2.83	0, 10, 2, 2, 5, 8, 4, 1, 9, 7, 10, 2, 0, 7, 10, 6, 9, 8, 4, 10, 5, 6, 10, 4, 2, 8, 0, 7, 1, 5, 0, 8, 4, 2, 3, 7, 5, 9, 4, 10
7	M	IE-ECE-ESAM	3.57	5, 9, 10, 9, 2, 4, 6, 6, 10, 1, 0, 9, 3, 5, 2, 3, 3, 10, 7, 6, 10, 9, 6, 0, 6, 9, 6, 10, 0, 2, 7, 1, 4, 2, 7, 8, 8, 7, 8, 9, 0
8	M	BME-CHEME-MSE	2.63	0, 7, 5, 4, 7, 0, 6, 3, 8, 10, 1, 2, 0, 6, 10, 6, 5, 0, 3, 0, 0, 10, 8, 9, 1, 3, 1, 9, 10, 3, 4, 4, 2, 1, 7, 6, 10, 1, 0, 4
9	F	IE-ECE-ESAM	2.97	7, 1, 4, 2, 10, 8, 10, 10, 5, 1, 2, 4, 0, 0, 0, 3, 10, 4, 8, 5, 5, 9, 0, 9, 10, 7, 10, 7, 10, 6, 5, 8, 2, 3, 6, 9, 4, 0, 2, 2
10	F	IE-ECE-ESAM	3.18	4, 5, 5, 5, 1, 5, 9, 0, 0, 4, 2, 2, 9, 4, 5, 6, 8, 2, 4, 1, 7, 3, 0, 4, 2, 8, 1, 4, 6, 5, 4, 6, 1, 1, 8, 7, 7, 5, 5, 1
11	M	IE-ECE-ESAM	3.82	7, 1, 7, 6, 0, 4, 5, 10, 2, 2, 10, 9, 6, 10, 1, 1, 1, 3, 3, 0, 6, 0, 1, 6, 8, 8, 4, 7, 7, 9, 10, 3, 6, 1, 5, 3, 4, 9, 2, 6
12	F	IE-ECE-ESAM	3.02	3, 5, 1, 1, 0, 8, 7, 10, 3, 1, 7, 6, 4, 3, 10, 0, 3, 9, 2, 1, 3, 7, 6, 5, 8, 2, 1, 9, 7, 2, 9, 6, 10, 10, 6, 8, 7, 10, 5, 7
13	M	IE-ECE-ESAM	2.59	7, 10, 10, 3, 8, 9, 3, 0, 5, 5, 5, 0, 8, 2, 4, 9, 2, 6, 9, 4, 7, 1, 1, 8, 0, 1, 3, 2, 0, 4, 0, 7, 5, 2, 2, 10, 7, 5, 8, 6
14	M	CIV-MECH-MADE	3.52	8, 8, 0, 9, 1, 10, 8, 9, 1, 6, 3, 4, 8, 9, 6, 7, 6, 9, 9, 3, 0, 10, 0, 2, 4, 8, 9, 4, 5, 1, 7, 4, 4, 6, 6, 6, 0, 2, 10, 2
15	M	IE-ECE-ESAM	3.25	3, 4, 5, 0, 0, 7, 6, 2, 7, 9, 1, 10, 2, 5, 6, 0, 9, 7, 6, 7, 0, 1, 7, 2, 0, 0, 9, 9, 2, 10, 5, 1, 8, 10, 5, 3, 6, 7, 1, 0
16	M	IE-ECE-ESAM	2.52	9, 7, 9, 10, 5, 10, 1, 10, 9, 4, 2, 6, 4, 10, 1, 8, 3, 0, 6, 7, 5, 3, 7, 5, 10, 1, 0, 0, 7, 4, 0, 8, 10, 9, 9, 3, 3, 1, 10, 8
17	F	IE-ECE-ESAM	3.82	8, 6, 8, 4, 1, 2, 6, 9, 6, 1, 1, 6, 1, 1, 6, 2, 0, 7, 6, 10, 6, 0, 7, 5, 4, 1, 5, 1, 1, 5, 0, 5, 5, 2, 0, 3, 5, 1, 9, 2
18	F	CIV-MECH-MADE	3.97	3, 0, 3, 10, 10, 1, 0, 4, 5, 0, 9, 3, 2, 2, 7, 1, 7, 5, 4, 2, 0, 3, 5, 5, 7, 4, 4, 8, 10, 5, 2, 9, 1, 1, 8, 9, 4, 2, 6, 2
19	M	CIV-MECH-MADE	3.63	2, 3, 5, 8, 3, 3, 2, 4, 5, 6, 10, 0, 2, 9, 0, 6, 1, 1, 2, 6, 4, 8, 6, 2, 9, 6, 4, 10, 5, 1, 3, 7, 10, 5, 10, 8, 0, 6, 6, 0
20	F	IE-ECE-ESAM	3.81	6, 5, 7, 3, 5, 4, 7, 1, 2, 1, 4, 1, 8, 9, 2, 7, 6, 2, 6, 6, 2, 3, 7, 5, 8, 2, 5, 7, 10, 10, 1, 7, 3, 4, 0, 7, 9, 7, 0, 3
21	M	BME-CHEME-MSE	2.64	4, 1, 10, 4, 8, 9, 2, 6, 7, 1, 1, 10, 7, 3, 8, 6, 4, 10, 0, 1, 4, 10, 0, 0, 4, 6, 8, 9, 6, 7, 1, 1, 4, 5, 4, 10, 3, 9, 1, 0, 1, 4
22	M	CIV-MECH-MADE	3.47	4, 8, 5, 1, 8, 3, 2, 1, 6, 4, 4, 8, 2, 9, 8, 10, 3, 8, 1, 6, 10, 8, 6, 4, 4, 7, 5, 9, 10, 2, 2, 1, 1, 6, 6, 9, 7, 2, 8, 10
23	M	IE-ECE-ESAM	3.8	4, 5, 10, 7, 6, 3, 7, 7, 8, 5, 7, 10, 0, 7, 4, 2, 7, 0, 9, 3, 0, 5, 7, 6, 0, 8, 1, 10, 1, 10, 10, 6, 0, 5, 0, 1, 9, 0, 4, 10
24	F	BME-CHEME-MSE	3.38	4, 3, 2, 9, 4, 3, 1, 6, 7, 5, 6, 2, 5, 6, 10, 10, 6, 2, 7, 2, 8, 5, 2, 3, 2, 7, 5, 6, 6, 7, 6, 3, 3, 7, 3, 9, 0, 6, 0, 3
25	M	IE-ECE-ESAM	2.96	10, 1, 2, 5, 0, 10, 10, 2, 3, 9, 4, 9, 1, 8, 4, 5, 6, 7, 0, 10, 10, 8, 6, 9, 7, 7, 4, 7, 3, 5, 4, 0, 0, 0, 2, 5, 0, 4
26	M	IE-ECE-ESAM	2.23	10, 0, 2, 1, 6, 10, 3, 9, 6, 8, 3, 7, 3, 5, 9, 1, 9, 1, 5, 5, 8, 7, 5, 4, 0, 8, 0, 3, 5, 1, 3, 8, 5, 3, 3, 4, 10, 4, 4, 8
27	M	BME-CHEME-MSE	2.89	6, 4, 7, 5, 3, 0, 4, 8, 1, 0, 7, 7, 7, 0, 6, 7, 7, 7, 1, 1, 1, 3, 1, 2, 6, 3, 7, 9, 1, 6, 8, 6, 6, 0, 2, 3, 7, 3, 2, 4, 5
28	M	BME-CHEME-MSE	3.23	5, 6, 1, 8, 4, 9, 8, 3, 4, 7, 8, 9, 7, 8, 10, 4, 4, 3, 0, 1, 9, 1, 2, 6, 3, 4, 10, 0, 8, 8, 6, 0, 1, 6, 4, 1, 4, 1, 9, 5
29	M	IE-ECE-ESAM	3.83	3, 10, 8, 10, 4, 3, 3, 1, 8, 4, 10, 5, 3, 5, 10, 7, 4, 9, 2, 2, 0, 8, 8, 5, 5, 9, 10, 0, 2, 6, 2, 2, 8, 1, 2, 3, 7, 9, 9, 3, 3
30	M	CIV-MECH-MADE	3.93	2, 3, 6, 5, 9, 9, 2, 10, 7, 1, 9, 0, 8, 9, 5, 7, 7, 4, 0, 3, 8, 10, 2, 10, 7, 7, 8, 5, 1, 4, 2, 9, 6, 3, 5, 4, 6, 0, 3, 0
31	M	CIV-MECH-MADE	2.97	5, 3, 5, 7, 10, 10, 10, 3, 4, 5, 10, 2, 4, 0, 5, 9, 8, 0, 10, 2, 5, 0, 7, 10, 0, 0, 3, 0, 0, 3, 10, 5, 1, 0, 5, 10, 6, 2, 3, 7
32	M	CIV-MECH-MADE	3.73	6, 2, 5, 4, 2, 10, 5, 6, 6, 0, 6, 4, 8, 8, 10, 7, 0, 9, 1, 6, 6, 2, 0, 8, 2, 9, 10, 8, 2, 1, 5, 3, 2, 3, 0, 2, 10, 8, 2, 1
33	F	BME-CHEME-MSE	2.54	6, 9, 1, 9, 10, 7, 2, 9, 9, 0, 4, 5, 6, 0, 10, 0, 7, 1, 5, 4, 10, 2, 7, 3, 8, 5, 2, 6, 5, 4, 7, 6, 0, 4, 8, 4, 8, 7, 0, 8
34	F	CIV-MECH-MADE	3.62	9, 8, 4, 10, 0, 7, 6, 1, 6, 5, 7, 0, 0, 4, 0, 4, 10, 10, 9, 4, 10, 3, 8, 8, 5, 6, 4, 3, 1, 9, 5, 3, 9, 10, 8, 10, 5, 2, 2, 5
35	M	BME-CHEME-MSE	3.11	0, 9, 0, 9, 2, 5, 5, 4, 10, 4, 5, 7, 6, 9, 6, 2, 2, 0, 9, 7, 2, 5, 0, 7, 10, 10, 4, 9, 3, 1, 8, 6, 4, 2, 8, 2, 1, 10, 10
36	M	IE-ECE-ESAM	2.06	2, 9, 1, 8, 10, 8, 9, 6, 6, 4, 4, 4, 0, 6, 4, 4, 8, 8, 5, 5, 3, 6, 2, 0, 8, 2, 10, 9, 6, 5, 7, 0, 8, 6, 10, 9, 3, 0, 5
37	M	IE-ECE-ESAM	3.45	8, 2, 10, 3, 10, 5, 10, 7, 0, 3, 9, 3, 4, 2, 6, 1, 9, 7, 3, 7, 8, 1, 3, 2, 7, 1, 6, 10, 6, 4, 4, 6, 5, 9, 5, 1, 4, 0, 7, 0
38	M	IE-ECE-ESAM	2.82	4, 3, 6, 6, 6, 10, 10, 10, 6, 6, 0, 9, 7, 5, 9, 2, 9, 4, 5, 0, 6, 7, 8, 2, 0, 1, 9, 5, 5, 0, 1, 3, 1, 10, 8, 7, 0, 5, 0, 5, 6
39	F	CIV-MECH-MADE	3.65	2, 10, 4, 6, 10, 2, 9, 2, 6, 4, 8, 0, 2, 2, 2, 7, 10, 0, 8, 0, 8, 10, 6, 2, 5, 9, 1, 1, 8, 2, 4, 3, 4, 5, 4, 4, 8, 7, 2, 7
40	F	IE-ECE-ESAM	3.35	8, 2, 0, 10, 9, 2, 10, 8, 0, 5, 1, 3, 10, 7, 9, 3, 7, 8, 2, 5, 10, 2, 7, 8, 0, 8, 1, 8, 5, 0, 1, 1, 6, 9, 5, 9, 7, 5, 6, 8
41	M	IE-ECE-ESAM	2.03	5, 10, 1, 2, 5, 0, 2, 2, 0, 5, 9, 3, 0, 6, 10, 0, 4, 6, 0, 9, 2, 5, 1, 6, 0, 7, 5, 9, 9, 4, 10, 4, 9, 7, 6, 2, 0, 7, 4, 3
42	F	IE-ECE-ESAM	3.0	6, 1, 5, 1, 1, 0, 5, 0, 2, 6, 9, 10, 0, 5, 7, 8, 7, 7, 1, 0, 8, 6, 4, 0, 10, 8, 1, 1, 5, 5, 1, 7, 0, 2, 8, 10, 4, 0, 0, 6
43	F	IE-ECE-ESAM	3.74	5, 2, 8, 2, 2, 2, 2, 10, 10, 3, 9, 5, 0, 7, 10, 10, 6, 0, 3, 3, 10, 4, 5, 2, 3, 5, 3, 2, 6, 7, 5, 9, 2, 6, 9, 0, 2, 9, 0, 10
44	M	BME-CHEME-MSE	2.51	6, 2, 2, 0, 0, 5, 8, 0, 0, 0, 1, 9, 9, 2, 2, 10, 6, 0, 6, 6, 9, 10, 5, 3, 2, 5, 8, 3, 8, 6, 1, 2, 6, 9, 10, 5, 1, 6, 6, 3
45	M	CIV-MECH-MADE	2.67	7, 6, 3, 6, 3, 10, 7, 6, 9, 1, 4, 4, 8, 5, 8, 0, 9, 9, 7, 3, 4, 0, 9, 5, 6, 10, 1, 8, 0, 2, 6, 0, 6, 6, 6, 1, 7, 9, 7, 2
46	F	CIV-MECH-MADE	3.74	2, 5, 7, 6, 2, 9, 4, 8, 1, 5, 5, 2, 10, 5, 7, 10, 8, 0, 3, 4, 2, 9, 5, 4, 6, 10, 0, 4, 8, 6, 0, 10, 6, 4, 6, 3, 5, 2, 2, 1
47	M	IE-ECE-ESAM	2.41	9, 5, 2, 0, 6, 9, 6, 7, 1, 10, 10, 1, 6, 8, 8, 2, 2, 2, 3, 2, 3, 0, 8, 2, 7, 5, 9, 4, 5, 10, 1, 6, 4, 2, 5, 10, 8, 5, 8, 2
48	F	BME-CHEME-MSE	3.15	6, 8, 4, 3, 6, 5, 6, 7, 8, 4, 6, 6, 1, 10, 2, 2, 0, 9, 9, 10, 8, 1, 10, 3, 9, 10, 9, 8, 1, 4, 9, 2, 6, 1, 0, 0, 1, 5, 7, 5
49	F	CIV-MECH-MADE	2.5	1, 10, 7, 5, 9, 4, 10, 7, 3, 2, 8, 8, 1, 8, 2, 0, 10, 2, 8, 6, 9, 10, 3, 7, 10, 6, 4, 0, 9, 2, 6, 2, 7, 9, 0, 6, 1, 10, 9, 6
50	M	IE-ECE-ESAM	3.94	5, 3, 8, 7, 0, 7, 9, 1, 4, 8, 7, 8, 10, 6, 7, 4, 2, 3, 8, 5, 2, 4, 9, 2, 7, 1, 1, 7, 6, 9, 6, 8, 1, 4, 7, 3, 1, 4, 2, 5
51	F	IE-ECE-ESAM	3.61	1, 2, 10, 0, 10, 2, 9, 8, 3, 0, 0, 6, 8, 9, 7, 1, 7, 8, 5, 5, 1, 10, 0, 3, 3, 7, 4, 4, 3, 0, 7, 5, 8, 5, 1, 1, 4, 9, 6, 3
52	M	CIV-MECH-MADE	2.91	5, 6, 2, 3, 4, 3, 7, 10, 5, 4, 6, 9, 2, 1, 6, 5, 8, 7, 3, 10, 5, 10, 5, 6, 4, 5, 6, 4, 1, 7, 4, 1, 7, 2, 5, 3, 2, 5, 7, 3
53	F	IE-ECE-ESAM	2.19	1, 10, 6, 6, 7, 8, 7, 9, 9, 3, 10, 6, 8, 4, 7, 3, 5, 8, 10, 0, 1, 7, 5, 6, 3, 6, 0, 9, 0, 6, 1, 4, 3, 5, 2, 1, 2, 5, 0, 3
54	F	IE-ECE-ESAM	2.66	0, 0, 6, 8, 0, 2, 1, 9, 9, 3, 1, 7, 3, 0, 8, 9, 6, 1, 8, 2, 3, 3, 6, 6, 7, 0, 6, 3, 6, 0, 9, 4, 0, 9, 5, 5, 5, 10, 7, 10
55	F	IE-ECE-ESAM	3.03	6, 1, 5, 1, 4, 1, 1, 4, 0, 2, 6, 9, 10, 2, 5, 7, 8, 7, 7, 1, 0, 8, 6, 4, 0, 10, 8, 1, 1, 7, 1, 8, 7, 7, 2, 7, 8, 5, 2, 6, 4, 6, 1, 9
56	F	BME-CHEME-MSE	3.87	8, 5, 3, 7, 3, 5, 7, 6, 0, 7, 0, 8, 6, 7, 3, 6, 3, 4, 7, 7, 2, 3, 7, 4, 5, 10, 7, 9, 2, 8, 10, 1, 3, 4, 8, 10, 10, 1, 0, 2
57	F	CIV-MECH-MADE	2.24	5, 0, 5, 9, 2, 7, 6, 10, 3, 6, 7, 3, 2, 6, 0, 5, 10, 8, 3, 5, 2, 8, 8, 9, 9, 6, 2, 10, 9, 7, 10, 9, 3, 9, 7, 0, 3, 7, 9, 5
58	M	BME-CHEME-MSE	3.12	8, 3, 0, 0, 0, 2, 3, 7, 10, 9, 3, 10, 10, 1, 8, 6, 10, 10, 4, 10, 5, 7, 10, 3, 2, 5, 8, 5, 7, 6, 7, 10, 5, 7, 1, 2, 3, 1, 2, 6
59	F	IE-ECE-ESAM	3.42	7, 8, 3, 5, 0, 0, 6, 3, 1, 6, 9, 9, 6, 8, 3, 10, 0, 10, 2, 8, 10, 7, 4, 6, 8, 8, 1, 1, 9, 7, 0, 3, 6, 9, 5, 4, 1, 0, 3, 9
60	F	IE-ECE-ESAM	3.11	0, 9, 8, 5, 2, 7, 4, 1, 9, 7, 4, 3, 6, 6, 8, 5, 3, 9, 4, 1, 0, 2, 5, 10, 9, 9, 7, 1, 8, 7, 6, 5, 6, 0, 1, 6, 9, 10, 2, 2
61	M	IE-ECE-ESAM	3.63	0, 1, 6, 3, 0, 10, 4, 4, 6, 1, 5, 4, 5, 9, 10, 3, 8, 8, 0, 5, 8, 8, 0, 2, 7, 0, 10, 4, 5, 2, 5, 1, 9, 8, 6, 1, 4, 9, 1, 8
62	M	IE-ECE-ESAM	3.09	1, 9, 2, 7, 0, 8, 3, 5, 1, 8, 3, 2, 10, 3, 6, 3, 9, 7, 5, 2, 4, 5, 8, 3, 3, 7, 5, 6, 4, 8, 10, 0, 1, 10, 5, 6, 1, 9, 5, 6
63	F	IE-ECE-ESAM	3.93	0, 4, 1, 2, 4, 3, 8, 8, 5, 7, 1, 6, 8, 8, 6, 1, 1, 9, 7, 5, 2, 4, 3, 10, 6, 10, 4, 0, 0, 0, 10, 4, 1, 1, 10, 5, 5, 8, 10, 4, 0
64	M	IE-ECE-ESAM	3.22	3, 8, 2, 4, 9, 0, 6, 6, 4, 9, 3, 4, 5, 8, 7, 7, 1, 6, 5, 2, 8, 0, 3, 7, 6, 0, 3, 1, 4, 1, 2, 2, 7, 0, 5, 8, 6, 1, 8, 3
65	F	CIV-MECH-MADE	3.19	7, 4, 4, 6, 6, 7, 0, 2, 8, 5, 3, 3, 2, 3, 4, 2, 8, 0, 2, 3, 6, 2, 3, 8, 2, 9, 10, 2, 3, 8, 4, 0, 7, 3, 0, 6, 2
66	F	IE-ECE-ESAM	2.91	6, 8, 6, 3, 6, 8, 8, 7, 1, 2, 1, 8, 0, 1, 0, 3, 6, 7, 10, 4, 6, 5, 10, 6, 4, 1, 2, 9, 3, 3, 0, 0, 8, 1, 7, 3, 7, 10, 2, 9
67	M	BME-CHEME-MSE	3.2	10, 8, 4, 0, 9, 2, 5, 10, 5, 5, 4, 8, 10, 4, 2, 0, 7, 3, 9, 6, 5, 7, 4, 7, 2, 7, 4, 5, 5, 10, 9, 6, 6, 9, 6, 8, 4, 10, 9, 3
68	F	CIV-MECH-MADE	2.79	3, 6, 3, 4, 8, 2, 8, 2, 9, 8, 8, 8, 10, 7, 5, 4, 6, 4, 7, 10, 8, 0, 3, 4, 7, 1, 0, 3, 9, 1, 4, 0, 3, 2, 9, 2, 10, 5, 9, 4
69	F	CIV-MECH-MADE	3.16	0, 10, 10, 0, 0, 9, 2, 4, 3, 6, 7, 5, 5, 1, 9, 6, 1, 0, 2, 0, 9, 8, 4, 5, 6, 8, 3, 5, 2, 2, 7, 10, 2, 9, 9, 8, 6, 9, 10, 3
70	F	IE-ECE-ESAM	2.6	0, 0, 6, 9, 0, 10, 10, 10, 2, 8, 1, 6, 4, 5, 10, 10, 9, 3, 0, 5, 2, 5, 10, 4, 7, 7, 9, 5, 4, 10, 1, 7, 2, 1, 8, 4, 8, 6, 9, 7
71	M	IE-ECE-ESAM	2.4	6, 10, 2, 9, 6, 2, 10, 10, 1, 9, 1, 2, 7, 4, 10, 1, 10, 6, 4, 4, 1, 10, 5, 8, 8, 1, 0, 0, 9, 0, 2, 1, 6, 6, 7, 0, 5, 10, 2, 1
72	F	CIV-MECH-MADE	2.4	6, 10, 9, 3, 0, 3, 6, 0, 0, 9, 6, 2, 8, 4, 6, 6, 8, 0, 7, 8, 2, 8, 2, 10, 3, 9, 2, 1, 9, 7, 4, 4, 4, 3, 6, 10, 0, 10, 0, 8
73	M	CIV-MECH-MADE	3.24	1, 0, 10, 4, 2, 2, 8, 2, 1, 5, 0, 5, 2, 5, 9, 1, 1, 5, 3, 4, 7, 5, 10, 7, 7, 8, 8, 1, 1, 5, 7, 6, 6, 8, 7, 8, 6, 8, 1, 3
74	M	BME-CHEME-MSE	3.32	2, 10, 6, 8, 5, 2, 1, 2, 2, 0, 6, 10, 9, 1, 10, 1, 8, 4, 9, 4, 5, 10, 7, 6, 9, 5, 10, 9, 7, 8, 5, 3, 8, 0, 6, 5, 5, 8, 0, 3
75	M	IE-ECE-ESAM	2.97	9, 1, 7, 1, 5, 6, 9, 3, 8, 0, 8, 8, 1, 0, 9, 5, 0, 5, 2, 5, 4, 7, 7, 6, 0, 10, 3, 10, 10, 7, 5, 10, 2, 0, 7, 8, 10, 2, 6, 4

ID	Gender	Major	GPA	Ratings
76	M	IE-ECE-ESAM	2.21	10, 9, 7, 3, 0, 7, 9, 9, 10, 2, 9, 7, 5, 9, 5, 6, 9, 10, 2, 8, 6, 6, 3, 5, 6, 4, 3, 3, 4, 3, 8, 9, 5, 7, 3, 9, 5, 9, 10, 2
77	M	IE-ECE-ESAM	3.52	5, 3, 2, 4, 8, 2, 8, 9, 1, 7, 7, 3, 2, 9, 5, 9, 3, 1, 8, 7, 3, 4, 6, 4, 8, 3, 5, 6, 5, 0, 0, 3, 3, 9, 2, 8, 7, 1, 4, 8
78	F	BME-CHEME-MSE	3.76	4, 7, 6, 5, 10, 6, 0, 1, 0, 5, 2, 4, 9, 8, 7, 4, 8, 6, 7, 5, 3, 10, 1, 1, 10, 1, 8, 0, 10, 9, 8, 5, 9, 1, 9, 3, 0, 0, 1, 4
79	F	IE-ECE-ESAM	3.85	1, 9, 6, 2, 9, 9, 8, 3, 4, 4, 2, 2, 9, 3, 2, 2, 3, 4, 7, 4, 2, 9, 4, 3, 1, 2, 10, 6, 2, 3, 9, 0, 5, 8, 10, 7, 10, 2, 4, 1
80	F	BME-CHEME-MSE	3.69	9, 4, 9, 3, 0, 2, 3, 9, 10, 0, 6, 2, 2, 7, 8, 0, 8, 5, 3, 10, 2, 7, 5, 10, 7, 3, 10, 10, 4, 10, 3, 1, 5, 7, 4, 5, 8, 9, 4, 3
81	F	BME-CHEME-MSE	3.8	4, 8, 6, 1, 2, 6, 1, 9, 10, 1, 8, 2, 7, 2, 6, 4, 8, 3, 2, 1, 4, 7, 5, 6, 8, 0, 5, 6, 6, 8, 2, 8, 9, 2, 10, 0, 4, 9, 7, 8
82	F	IE-ECE-ESAM	3.85	9, 6, 3, 7, 3, 6, 1, 1, 8, 6, 1, 8, 10, 7, 10, 2, 0, 3, 3, 3, 1, 9, 6, 6, 1, 8, 3, 8, 3, 3, 7, 1, 3, 1, 8, 2, 9, 3, 8, 9
83	M	CIV-MECH-MADE	3.09	8, 10, 9, 6, 9, 6, 10, 4, 10, 7, 10, 10, 9, 0, 5, 5, 3, 10, 0, 3, 7, 3, 8, 10, 3, 0, 2, 3, 7, 7, 1, 9, 4, 10, 4, 6, 5, 10, 4, 10
84	F	IE-ECE-ESAM	2.8	1, 9, 1, 7, 5, 9, 9, 9, 10, 1, 3, 2, 6, 3, 0, 7, 4, 2, 8, 10, 5, 10, 2, 1, 8, 5, 5, 10, 1, 5, 3, 3, 4, 8, 6, 10, 6, 6, 0, 2, 7
85	F	CIV-MECH-MADE	3.42	1, 4, 10, 10, 2, 8, 3, 9, 7, 5, 2, 9, 2, 9, 6, 4, 3, 1, 2, 2, 7, 8, 6, 2, 0, 4, 7, 9, 1, 10, 5, 10, 1, 1, 7, 3, 8, 0, 0, 10
86	M	BME-CHEME-MSE	2.57	9, 1, 7, 4, 9, 4, 8, 6, 2, 3, 10, 1, 10, 9, 8, 2, 7, 10, 10, 3, 0, 3, 2, 9, 10, 2, 10, 2, 9, 9, 2, 1, 1, 4, 1, 4, 9, 7, 9, 4
87	F	IE-ECE-ESAM	3.63	9, 6, 0, 1, 2, 7, 0, 5, 5, 4, 10, 6, 6, 0, 4, 10, 3, 3, 1, 9, 2, 3, 8, 3, 7, 5, 0, 4, 6, 9, 8, 8, 2, 5, 9, 10, 8, 6, 3, 4
88	M	IE-ECE-ESAM	3.7	1, 7, 10, 10, 4, 3, 10, 4, 4, 1, 5, 2, 7, 0, 6, 10, 7, 0, 10, 4, 8, 9, 6, 7, 9, 9, 8, 3, 2, 0, 4, 1, 6, 4, 3, 7, 7, 4, 8, 6
89	M	IE-ECE-ESAM	3.79	2, 9, 7, 4, 2, 0, 3, 5, 4, 1, 10, 0, 6, 4, 5, 9, 3, 5, 6, 2, 10, 1, 3, 5, 7, 7, 2, 10, 5, 6, 6, 6, 5, 9, 1, 1, 8, 7, 2, 1
90	F	CIV-MECH-MADE	3.19	0, 8, 6, 10, 7, 3, 6, 10, 1, 6, 0, 10, 4, 9, 2, 4, 4, 8, 1, 8, 10, 10, 5, 0, 2, 0, 1, 5, 5, 7, 3, 3, 5, 10, 9, 7, 4, 8, 2, 7
91	F	IE-ECE-ESAM	3.9	6, 0, 1, 0, 1, 5, 3, 4, 8, 1, 8, 4, 1, 1, 8, 9, 4, 0, 3, 1, 10, 2, 7, 2, 2, 7, 4, 2, 7, 9, 0, 8, 6, 0, 1, 1, 4, 1, 10, 6
92	M	CIV-MECH-MADE	3.17	3, 4, 6, 3, 7, 10, 9, 8, 8, 5, 2, 6, 10, 0, 9, 6, 9, 3, 4, 5, 8, 5, 7, 10, 7, 4, 5, 4, 2, 2, 3, 7, 5, 10, 0, 5, 7, 9, 4, 10
93	F	IE-ECE-ESAM	2.92	3, 0, 1, 7, 8, 2, 3, 6, 9, 5, 8, 2, 0, 7, 6, 7, 7, 5, 0, 3, 9, 3, 1, 7, 2, 10, 1, 8, 10, 8, 6, 9, 4, 3, 1, 6, 0, 8, 7, 5
94	F	IE-ECE-ESAM	3.33	0, 3, 9, 4, 6, 7, 8, 4, 1, 0, 1, 5, 6, 10, 6, 6, 10, 10, 3, 4, 7, 6, 8, 0, 10, 6, 10, 4, 10, 7, 2, 6, 10, 6, 6, 9, 9, 4, 7, 8
95	M	IE-ECE-ESAM	3.99	5, 4, 6, 9, 10, 2, 5, 0, 6, 7, 7, 4, 1, 10, 3, 5, 3, 6, 0, 9, 5, 2, 2, 7, 1, 1, 2, 9, 0, 3, 10, 2, 0, 10, 8, 10, 6, 10, 6, 2
96	F	IE-ECE-ESAM	3.84	4, 6, 7, 4, 8, 0, 2, 7, 2, 1, 10, 1, 7, 4, 4, 4, 6, 0, 9, 4, 5, 7, 1, 0, 10, 4, 3, 7, 10, 4, 8, 3, 6, 1, 6, 0, 0, 1, 5, 0
97	F	BME-CHEME-MSE	3.59	4, 4, 0, 0, 0, 9, 0, 2, 9, 2, 7, 10, 1, 9, 2, 0, 8, 2, 1, 1, 1, 9, 10, 1, 3, 1, 7, 6, 1, 1, 7, 7, 8, 2, 8, 1, 2, 5, 6, 8
98	F	CIV-MECH-MADE	2.19	2, 1, 10, 8, 0, 8, 3, 1, 6, 5, 8, 5, 8, 9, 8, 6, 4, 3, 9, 1, 2, 9, 6, 5, 4, 5, 8, 5, 0, 0, 0, 2, 4, 10, 3, 10, 2, 2, 1, 7
99	M	CIV-MECH-MADE	3.24	7, 10, 2, 4, 4, 2, 0, 2, 10, 5, 5, 3, 10, 1, 8, 7, 2, 10, 4, 5, 3, 10, 1, 9, 10, 3, 5, 6, 1, 4, 6, 8, 5, 0, 10, 5, 3, 6, 0, 6
100	M	IE-ECE-ESAM	2.99	8, 4, 2, 4, 0, 4, 1, 5, 10, 6, 0, 10, 4, 3, 10, 2, 4, 5, 8, 10, 1, 2, 7, 3, 9, 9, 9, 1, 6, 4, 10, 0, 4, 0, 0, 9, 2, 5, 2, 6
101	M	IE-ECE-ESAM	3.27	3, 9, 8, 3, 0, 10, 8, 3, 7, 8, 10, 7, 9, 9, 5, 5, 5, 1, 0, 6, 5, 2, 7, 3, 10, 10, 10, 6, 9, 0, 10, 3, 9, 7, 6, 6, 2, 2, 10, 6
102	F	CIV-MECH-MADE	3.69	6, 7, 10, 3, 4, 1, 2, 9, 0, 4, 2, 1, 2, 4, 2, 6, 4, 8, 10, 6, 5, 8, 6, 7, 7, 1, 4, 9, 5, 4, 4, 4, 6, 9, 6, 8, 7, 10, 8, 8
103	F	CIV-MECH-MADE	2.51	3, 6, 4, 10, 6, 0, 0, 6, 8, 1, 4, 0, 0, 7, 10, 6, 8, 5, 8, 7, 8, 7, 8, 7, 9, 2, 9, 0, 9, 5, 3, 4, 6, 1, 3, 1, 2, 9, 7, 10
104	M	CIV-MECH-MADE	3.47	2, 7, 5, 7, 2, 7, 4, 7, 5, 8, 3, 0, 5, 8, 4, 6, 8, 10, 9, 1, 4, 2, 8, 2, 2, 1, 5, 3, 0, 0, 7, 7, 1, 9, 8, 0, 2, 10, 7, 9
105	M	CIV-MECH-MADE	2.26	2, 9, 4, 1, 4, 5, 2, 7, 5, 0, 5, 1, 1, 9, 10, 1, 4, 10, 4, 9, 5, 2, 0, 10, 7, 6, 6, 10, 3, 1, 6, 4, 7, 6, 10, 7, 6, 2, 6, 3
106	M	IE-ECE-ESAM	2.46	6, 10, 3, 4, 1, 2, 7, 5, 5, 4, 7, 5, 3, 2, 7, 2, 5, 3, 7, 2, 1, 8, 9, 9, 7, 5, 2, 1, 1, 6, 5, 5, 2, 4, 5, 10, 1, 1, 6, 5, 5, 4
107	F	CIV-MECH-MADE	3.6	5, 0, 3, 10, 10, 4, 10, 2, 2, 8, 2, 7, 3, 1, 8, 4, 1, 0, 6, 1, 6, 7, 7, 10, 2, 2, 0, 1, 2, 10, 1, 6, 9, 1, 4, 1, 9, 9, 1, 3
108	M	BME-CHEME-MSE	2.69	4, 6, 2, 8, 7, 4, 5, 10, 2, 10, 6, 4, 2, 2, 1, 3, 10, 8, 5, 10, 7, 10, 1, 5, 8, 6, 4, 7, 0, 2, 5, 2, 7, 3, 3, 1, 2, 7, 6, 1
109	M	CIV-MECH-MADE	3.64	5, 3, 1, 5, 2, 3, 3, 9, 8, 5, 10, 7, 5, 9, 10, 7, 8, 10, 4, 4, 0, 9, 4, 5, 7, 1, 0, 10, 3, 6, 10, 9, 8, 1, 4, 7, 2, 1, 0, 7, 8, 8, 9
110	F	IE-ECE-ESAM	2.23	9, 8, 10, 6, 6, 5, 9, 5, 3, 5, 7, 2, 8, 0, 7, 2, 0, 1, 8, 0, 2, 1, 0, 5, 4, 10, 3, 1, 10, 0, 3, 2, 5, 6, 10, 8, 9, 10, 5, 6
111	F	CIV-MECH-MADE	2.32	3, 6, 0, 9, 3, 9, 0, 7, 0, 6, 2, 3, 1, 9, 10, 2, 5, 4, 4, 7, 5, 8, 6, 7, 5, 4, 8, 4, 7, 8, 5, 6, 10, 5, 6, 4, 0, 3, 7, 4
112	F	CIV-MECH-MADE	3.4	6, 6, 10, 2, 2, 7, 3, 2, 9, 3, 1, 4, 8, 8, 2, 9, 2, 10, 7, 1, 7, 3, 6, 2, 1, 0, 8, 0, 1, 1, 9, 2, 2, 9, 3, 10, 5, 5, 1, 1
113	F	CIV-MECH-MADE	2.12	6, 7, 2, 5, 9, 8, 3, 9, 3, 9, 9, 7, 9, 4, 1, 2, 6, 1, 3, 2, 2, 4, 4, 10, 5, 2, 7, 5, 8, 1, 1, 6, 0, 0, 3, 5, 6, 3, 5, 6
114	M	IE-ECE-ESAM	3.16	9, 1, 5, 1, 7, 9, 7, 4, 3, 6, 0, 5, 5, 2, 1, 8, 4, 7, 0, 9, 10, 2, 2, 8, 9, 5, 10, 7, 1, 6, 4, 7, 4, 0, 6, 0, 7, 1, 2, 4
115	M	IE-ECE-ESAM	3.82	5, 4, 9, 2, 7, 7, 0, 9, 5, 2, 6, 0, 4, 2, 9, 2, 1, 6, 8, 7, 8, 10, 2, 6, 5, 2, 8, 5, 9, 2, 1, 1, 3, 1, 3, 7, 10, 3, 0, 6
116	M	CIV-MECH-MADE	3.08	5, 4, 5, 9, 4, 7, 8, 0, 4, 7, 6, 3, 7, 0, 8, 9, 6, 5, 3, 4, 9, 2, 4, 3, 1, 5, 6, 2, 4, 4, 9, 2, 6, 0, 10, 1, 2, 6
117	F	BME-CHEME-MSE	3.37	6, 1, 1, 10, 9, 3, 8, 1, 3, 5, 7, 8, 9, 1, 2, 2, 9, 9, 9, 0, 7, 4, 3, 8, 0, 7, 1, 0, 10, 0, 9, 3, 2, 7, 10, 3, 8, 4, 9, 9
118	F	IE-ECE-ESAM	2.08	1, 2, 5, 8, 0, 9, 5, 10, 4, 8, 3, 9, 4, 0, 9, 6, 5, 1, 5, 4, 5, 1, 4, 9, 2, 5, 0, 0, 10, 9, 6, 0, 6, 3, 6, 9, 7, 4, 0, 2
119	M	CIV-MECH-MADE	3.28	9, 7, 8, 1, 10, 0, 10, 0, 1, 2, 6, 6, 9, 2, 3, 10, 8, 1, 0, 0, 6, 6, 4, 2, 6, 0, 10, 5, 10, 6, 8, 3, 8, 5, 9, 3, 10, 0, 6, 7
120	M	CIV-MECH-MADE	3.22	8, 10, 0, 3, 5, 7, 2, 9, 3, 3, 0, 3, 1, 4, 5, 5, 4, 2, 2, 9, 6, 4, 0, 6, 1, 9, 7, 2, 6, 3, 6, 6, 2, 8, 10, 7, 9, 5, 0, 10
121	M	BME-CHEME-MSE	3.16	9, 8, 3, 3, 8, 6, 7, 3, 9, 1, 8, 1, 2, 2, 4, 0, 5, 1, 2, 9, 10, 8, 9, 2, 8, 6, 4, 0, 5, 2, 0, 8, 3, 7, 10, 9, 4, 6, 0, 3
122	F	CIV-MECH-MADE	2.8	9, 4, 3, 5, 10, 1, 4, 7, 5, 4, 0, 4, 1, 5, 4, 3, 5, 3, 3, 3, 10, 6, 1, 8, 4, 10, 2, 5, 6, 0, 8, 10, 0, 8, 6, 10, 1, 4, 3
123	M	IE-ECE-ESAM	2.76	8, 4, 1, 1, 8, 6, 10, 8, 5, 2, 2, 1, 4, 4, 2, 7, 4, 3, 8, 9, 3, 1, 7, 3, 5, 6, 4, 5, 1, 2, 7, 10, 5, 8, 2, 1, 7, 6, 7, 5
124	M	CIV-MECH-MADE	3.96	9, 4, 7, 2, 4, 0, 6, 1, 7, 9, 2, 1, 1, 6, 3, 4, 10, 1, 6, 10, 9, 4, 8, 0, 9, 0, 6, 6, 8, 5, 3, 3, 2, 10, 10, 1, 1, 8, 9, 2
125	F	IE-ECE-ESAM	2.1	4, 5, 7, 8, 3, 6, 2, 9, 9, 2, 5, 2, 10, 0, 5, 2, 1, 8, 5, 9, 3, 1, 8, 1, 10, 7, 8, 9, 7, 4, 5, 9, 1, 3, 0, 10, 6, 4, 8, 5
126	F	CIV-MECH-MADE	2.07	3, 9, 5, 4, 1, 7, 2, 0, 10, 1, 7, 4, 5, 4, 7, 0, 5, 5, 10, 3, 5, 5, 5, 6, 3, 0, 6, 10, 9, 8, 4, 6, 9, 0, 8, 1, 5, 0, 6, 2
127	M	IE-ECE-ESAM	3.92	1, 2, 0, 10, 8, 4, 3, 10, 5, 3, 9, 1, 3, 10, 6, 5, 10, 10, 10, 4, 0, 1, 7, 4, 10, 6, 3, 2, 7, 0, 2, 0, 2, 9, 10, 0, 1, 5, 0, 10
128	M	IE-ECE-ESAM	2.39	3, 3, 7, 4, 4, 9, 5, 10, 8, 5, 10, 7, 9, 8, 0, 3, 2, 3, 3, 1, 2, 1, 0, 9, 8, 1, 9, 9, 6, 7, 10, 7, 6, 0, 9, 10, 8, 10, 5, 8
129	F	BME-CHEME-MSE	2.27	3, 2, 9, 4, 8, 4, 10, 6, 9, 8, 0, 7, 9, 9, 3, 6, 4, 8, 10, 4, 1, 5, 9, 4, 8, 4, 7, 7, 1, 9, 4, 5, 1, 6, 5, 0, 1, 5, 5, 4
130	F	IE-ECE-ESAM	2.44	8, 3, 9, 10, 10, 0, 0, 0, 4, 7, 1, 8, 10, 0, 7, 3, 4, 8, 4, 4, 3, 6, 9, 7, 7, 4, 5, 0, 9, 9, 9, 4, 1, 5, 1, 2, 6, 7, 4, 5
131	M	CIV-MECH-MADE	3.61	4, 9, 10, 3, 2, 8, 7, 7, 4, 4, 7, 1, 1, 10, 2, 8, 0, 4, 5, 5, 5, 0, 6, 10, 5, 2, 4, 7, 0, 8, 8, 4, 5, 4, 9, 10, 5, 1, 5, 0, 7
132	F	BME-CHEME-MSE	3.88	9, 2, 5, 9, 4, 4, 7, 0, 7, 2, 3, 5, 3, 1, 10, 0, 6, 7, 6, 10, 9, 0, 5, 0, 10, 0, 7, 4, 3, 2, 7, 1, 6, 8, 0, 4, 1, 2, 0, 0
133	M	CIV-MECH-MADE	2.07	4, 6, 8, 10, 9, 4, 1, 5, 7, 9, 5, 4, 3, 10, 8, 3, 7, 8, 0, 10, 6, 5, 0, 8, 3, 1, 8, 3, 0, 8, 5, 2, 3, 9, 7, 8, 7, 6, 2
134	F	CIV-MECH-MADE	2.87	7, 4, 2, 0, 5, 10, 4, 5, 10, 4, 3, 6, 0, 0, 10, 1, 2, 9, 5, 9, 2, 0, 0, 8, 2, 9, 2, 1, 2, 2, 8, 2, 6, 6, 0, 5, 4, 5, 9, 0
135	F	BME-CHEME-MSE	2.23	3, 9, 0, 5, 5, 5, 1, 9, 10, 10, 5, 5, 1, 6, 3, 5, 9, 4, 2, 3, 8, 2, 9, 2, 8, 1, 5, 9, 9, 8, 10, 9, 1, 9, 2, 5, 4, 7, 4, 7
136	F	IE-ECE-ESAM	2.54	2, 6, 6, 5, 1, 5, 2, 4, 2, 5, 7, 1, 5, 5, 4, 10, 5, 9, 3, 0, 5, 2, 0, 7, 6, 6, 10, 9, 3, 0, 5, 2, 0, 7, 6, 9, 1, 0, 6, 4
137	F	IE-ECE-ESAM	2.47	9, 3, 6, 0, 9, 3, 6, 9, 7, 7, 9, 6, 6, 6, 0, 4, 2, 2, 5, 1, 8, 9, 7, 2, 9, 6, 3, 2, 4, 0, 7, 5, 7, 5, 8, 3, 4, 9, 0, 7
138	F	IE-ECE-ESAM	3.3	2, 4, 3, 5, 0, 4, 9, 6, 3, 0, 3, 9, 6, 2, 4, 10, 9, 8, 3, 2, 6, 9, 10, 7, 5, 10, 7, 9, 2, 0, 9, 6, 10, 6, 5, 4, 2, 4, 7, 4
139	F	BME-CHEME-MSE	2.72	6, 9, 3, 7, 3, 2, 7, 7, 0, 6, 3, 8, 4, 6, 1, 4, 4, 2, 2, 3, 4, 2, 2, 5, 3, 9, 9, 2, 0, 1, 2, 4, 9, 4, 4, 2, 0, 4, 9, 5
140	F	IE-ECE-ESAM	2.39	1, 6, 4, 5, 9, 8, 8, 10, 4, 1, 8, 8, 0, 0, 5, 6, 9, 7, 5, 10, 9, 3, 1, 6, 6, 10, 1, 9, 4, 8, 5, 2, 0, 0, 2, 6, 5, 0, 5, 5
141	F	IE-ECE-ESAM	3.02	8, 9, 9, 6, 8, 1, 1, 9, 8, 3, 3, 5, 10, 8, 6, 2, 0, 1, 0, 10, 5, 3, 6, 9, 10, 1, 6, 3, 5, 1, 1, 2, 4, 3, 10, 2, 3, 6, 6, 3
142	M	CIV-MECH-MADE	2.11	3, 0, 8, 4, 6, 3, 8, 1, 9, 5, 10, 5, 4, 8, 3, 7, 9, 3, 9, 0, 9, 10, 1, 4, 6, 10, 1, 0, 1, 5, 5, 1, 9, 4, 1, 3, 4, 9, 1, 1
143	M	IE-ECE-ESAM	2.23	6, 7, 2, 5, 3, 2, 3, 2, 0, 9, 0, 7, 7, 8, 8, 3, 6, 3, 3, 9, 1, 5, 2, 4, 1, 7, 7, 3, 10, 7, 4, 7, 3, 10, 7, 0, 2, 9, 3, 9, 6
144	F	IE-ECE-ESAM	3.98	5, 6, 4, 6, 2, 2, 9, 8, 7, 1, 3, 9, 5, 10, 9, 4, 0, 4, 7, 3, 6, 3, 4, 9, 5, 0, 5, 0, 6, 0, 9, 10, 8, 0, 0, 0, 6, 9, 4, 7
145	M	IE-ECE-ESAM	2.42	5, 10, 0, 8, 6, 1, 6, 4, 0, 5, 0, 0, 5, 10, 10, 10, 1, 9, 0, 10, 8, 10, 1, 9, 8, 0, 3, 9, 9, 6, 4, 1, 1, 2, 1, 2, 8, 3, 3, 7
146	F	IE-ECE-ESAM	2.74	9, 4, 6, 3, 0, 8, 8, 7, 1, 3, 2, 6, 10, 7, 1, 3, 3, 1, 2, 6, 10, 7, 6, 4, 9, 3, 8, 0, 8, 10, 6, 2, 7, 9, 2, 0, 4, 6, 9, 7
147	F	CIV-MECH-MADE	3.47	10, 7, 9, 6, 5, 10, 8, 3, 1, 4, 8, 8, 3, 5, 4, 3, 8, 6, 4, 4, 6, 5, 5, 3, 1, 4, 4, 3, 1, 3, 6, 8, 2, 5, 3, 6, 7, 3, 4, 8
148	M	BME-CHEME-MSE	3.68	5, 6, 1, 9, 7, 7, 10, 1, 2, 10, 1, 8, 4, 4, 0, 6, 6, 3, 0, 9, 2, 0, 6, 6, 5, 6, 6, 0, 4, 7, 10, 9, 9, 0, 1, 0, 2, 9, 8, 3
149	M	IE-ECE-ESAM	3.84	2, 5, 6, 2, 8, 4, 7, 3, 10, 1, 4, 2, 9, 3, 3, 2, 0, 0, 7, 4, 4, 8, 0, 6, 7, 9, 10, 2, 0, 2, 10, 0, 8, 6, 5, 1, 5, 0, 10, 7
150	F	CIV-MECH-MADE	2.36	8, 3, 4, 6, 0, 6, 7, 7, 2, 3, 10, 1, 8, 8, 1, 8, 3, 10, 8, 6, 5, 4, 3, 9, 0, 5, 10, 4, 1, 9, 9, 2, 1, 7, 0, 7, 5, 4, 6, 2