CFM 101 – Group Assignment 2025

Robo-Advising Challenge

Overview

In teams of 3 (or very occasionally 4), you will design a robo-advisor portfolio using Python. Your portfolio will be run on a secret list of stocks for one week in real time. You will choose one competition goal and build your code to meet it.

Competition Goals (choose one)

1. Market Beat – Highest return above the benchmark average.
2. Market Meet – Return closest to the benchmark average (above or below).
3. "Risk-Free" – We will take the value of the portfolio on November 28, 2025 (i.e., using close prices from the Friday), "the ending value", and determine the total return given the initial investment of $1,000,000. The team with the lowest return (in absolute value) will win. TA's will use their judgement if your portfolio value does not start at $1,000,000.

Benchmark Average: Simple arithmetic average of the total returns of the TSX Composite and S&P 500 over the contest period.

Contest Period

Portfolios "purchased" at Nov 21, 2025 close.

Contest runs for 5 trading days ending Nov 28, 2025.

You should design your portfolio with a longer investment horizon in mind, even though the live test is short.

Portfolio Rules

Your code, and portfolio produced from that code must respect the following:

- Use the Tickers.csv file provided at TA run-time.
- Include only valid US and Canadian companies that have listed stocks in these markets.
- Exclude any stock with average daily volume < 5,000 shares between Oct 1, 2024 and Sep 30, 2025 (drop months with < 18 trading days).
- Select 10–25 stocks.
- Min weight per stock: (100 / (2n))% of portfolio value (n = number of stocks).
- Max weight per stock: 15% of portfolio value.
- Spend as close to $1,000,000 CAD as possible (account for transaction fees described below).
- Use fractional shares as needed.
- Ignore dividends.
- No more than 40% of total portfolio value of your portfolio can be in a single sector.
- Market Cap Mix: Must include at least one large-cap (> $10B CAD), and one small-cap (< $2B CAD).

If your portfolio violates any of these rules, it may still run in the contest but your grade will be affected. If, under a different set of stock tickers, your portfolio that would have resulted would violate one of these rules, your grade will also be affected. In other words, write your code to make sure anything I throw at your will result in a portfolio that respects these rules!

Code Requirements

Start from the provided Jupyter Notebook template, named with your group number.

You may only use the included libraries unless you request approval.

Output must include:

- Portfolio_Final DataFrame: Index 1…n; columns: Ticker, Price, Currency, Shares, Value, Weight.

- Stocks_Final CSV: Only Ticker and Shares, named Stocks_Group_XX.csv.
Display total portfolio value = $1,000,000 CAD minus fees, with weights summing to 100%.
Clearly state your chosen competition goal in the designated markdown cell.
Explain your strategy with markdown, charts, and statistics, using concepts from the course.
Code should be clean, well-commented, and avoid hardcoding.
Submission
Code due: Nov 23, 2025 @ 9:00 AM (Dropbox).
Optional Fix Report: Nov 28, 2025 @ 11:59 PM (for teams whose code didn't work as intended; must mark new code as NEW CODE and explain in red markdown).
Prizes: Awarded in class Dec 1, 2025 — winner for each category, and 1 runner-up for the group who was closest to the winner in their category. For example, if the second-place team from the market meet is behind the winning group by 0.5%, while the second-place team from the other two strategies are behind their winning group by more than 0.5%, the second-place team from the market meet group will be declared the runner-up award winner.
Marking
Your grade is based on:
- Code correctness and ability to run with the TA's secret ticker file.
- Adherence to rules and restrictions.
- Quality of analysis and explanation in markdown.
- Code structure (functions, loops, comments, variable names).
Competition results do not affect grades — performance over 5 days is largely random.
Fees
$2.15 USD flat or $0.001 USD per share purchased (whichever is smaller), regardless of the currency in which you are purchasing.
Fees apply to all purchases and are deducted from your $1,000,000 CAD budget.
End-of-Assignment Declaration
Final cell:
"The following team members made a meaningful contribution to this assignment:"
List only contributing members. Omitted names are assumed not to have contributed. If any name is to be omitted, you should email me well below the due date letting me know of the problem.

AI Usage
This project is about learning to develop projects from conceptualization to coding to debugging. It is extremely important that you learn how to do this first without AI. Thus, there will be no AI usage for this project. Note that this is a group project, so it would be quite serious if one member uses AI and costs their other team members their grade.