Lesson 9 Hands-On
Directions
For this Hands On, you will be performing power analyses in G*Power for a variety of different tests.

Requirements
For each scenario, please complete the following:
- Determine what analysis you would run
- Conduct an a priori power analysis to determine the sample size for that analysis

Then report your chosen test and the required sample size in a text document or presentation.
Additional Info!
You may want to watch this recorded live workshop before beginning the hands-on, which goes over a similar example.

Scenario 1
A company is hoping to collect data about the different marketing strategies they have undertake via social media. They want to measure the number of people who follow their posts on Facebook, Twitter, and LinkedIn to determine if one site works better than the others.

F tests - ANOVA: Fixed effects, omnibus, one-way
Analysis: A priori: Compute required sample size
Input: Effect size f   =   0.25
         α err prob   =   0.05
         Power (1-β err prob) =   0.8
         Number of groups   =   3
Output: Noncentrality parameter λ   =   9.9375000
         Critical F   =   3.0540042
         Numerator df =   2
         Denominator df   =   156
         Total sample size   =   **159**
         Actual power =   0.8048873

Scenario 2
You have been hired to predict how roofing companies will fare in the upcoming years. There are several predictors: yearly hurricanes, winter storms, shingle prices, and GDP.

F tests - Linear multiple regression: Fixed model, R^2 deviation from zero
Analysis: A priori: Compute required sample size
Input: Effect size f^2 =   0.15
         α err prob   =   0.05
         Power (1-β err prob) =   0.8
         Number of predictors =   4
Output: Noncentrality parameter λ   =   12.7500000
         Critical F   =   2.4858849

Numerator df   =   4
Denominator df   =   80
Total sample size   =   85
Actual power   =   0.8030923

Scenario 3

A hospital has contracted with you to determine how to improve patient care, as measured continuously by both pain level and disability level. They are examining these metrics upon admission to the hospital and at discharge from the hospital, and they are comparing their current standard of care to one where they check on the patients every hour.

F tests - MANOVA: Repeated measures, within-between interaction

Options: Pillai V, O'Brien-Shieh Algorithm

Analysis: A priori: Compute required sample size

Input: Effect size $f(V)$=   0.25

α err prob   =   0.05

Power (1-β err prob) =   0.8

Number of groups   =   2

Number of measurements   =   2

Output: Noncentrality parameter λ   =   8.0000000

Critical F   =   3.9163246

Numerator df =   1.0000000

Denominator df   =   126

Total sample size   =   128

Actual power =   0.8014596

Pillai V =   0.0588235