Problem Set #2  
ECON 3510, Prof. DeBacker  
Due Tuesday, September 29, 9:40 a.m.

NOTE: You are encouraged to work on this problem set in a group of up to four members. When finished, each group should turn in one copy of the problem set directly to me by the beginning of class on the due date. A completed problem set should list the names of the group members who worked on the assignment. As noted in the syllabus, no late assignments will be graded.

1. Chapter 5, “made-up problem” (6 points):
   - Assume that real output is fixed at $Y = \bar{Y} = 300$, consumption is fixed at $C = \bar{C} = 200$, government spending is fixed at $G = \bar{G} = 30$.
   - Assume that the Investment function takes the following form $I(r) = 75 - r$.
   - Assume that the quantity equation of money holds $M \times V = P \times Y$ and the velocity of money is constant, $\bar{V}$.

   (a) If the money supply increases by 3%, by what percentage rate do prices change? That is, what is the inflation rate?
   (b) What is the real rate of interest $r$ in this economy? What is the investment level $I$?
   (c) What is the nominal interest rate?
   (d) If government spending $G$ increases to 35, what happens to the real rate of interest $r$, investment $I$, and the nominal interest rate $i$?

2. Chapter 6, “Problems and Applications” (6 points): #2, #7, #11

3. Chapter 7, “Problems and Applications” (6 points): #1, #5, #7

4. Chapter 7, “made-up problem” - Steady State Unemployment (6 points):
   - Assume, as in the example in the book, that the job separation rate $s$ is 0.01 (1%) per month and that the job finding rate $f$ is 0.2 (20%) per month.
   - Assume that the labor force is 100 million.
     (a) What is the steady state unemployment rate for this economy?
     (b) Given that $L = 100$ million, what is the steady state number of employed $E$ and unemployed $U$?
     (c) If U.S. immigration policy changed today (period $t = 1$) such that we allowed more people to enter the country and $L$ increased to 110 million from its initial value of 100 million. Assume that these new entrants would be unemployed first and then find jobs at the job finding rate $f$. Create a table (maybe in Excel) that shows how $E$, $U$, and $U/L$ evolve over time, given
\( s = 0.01 \) and \( f = 0.2 \), starting at \( t = 1 \) and ending when the unemployment rate reaches its steady state rounded to the nearest thousandth (tenth of a percent).

(d) In the table from the previous scenario, how many periods does it take for the unemployment rate to reach its steady state level rounded to the nearest thousandth (tenth of a percent)?

5. Chapter 8, “Problems and Applications” (6 points): #1, #3, #8