Instructions

1. Please bring your student ID card to the final exam. Information on SFSU ID cards is here. If you lost your SFSU ID card, I will accept another official photo ID, such as driver’s license.

2. The final exam is on Friday, June 7, at 12:15pm – 1:45pm, in class.

3. Scantrons and Bluebooks are not needed.

4. The format of the exam will be similar to the format of the sample finals posted on the course webpage.

5. You can bring one double-sided sheet of paper, letter size (8½ × 11 in or 215.9 × 279.4 mm), with any content you want (on both sides).

6. Books, calculators or any other material is not allowed.

7. Show all the calculations.

8. If you need more space, use the back of the page.

9. Use a ruler to draw neat graphs.

10. Fully label all graphs.

11. In a case of discrepancy between definitions I gave and the textbook, you are required to follow my definitions.
**General guidelines**

12. The material for the exam is based on class lectures and textbook chapters: 1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 16, 17, 19.

13. There are 5 types of questions:
   
a. **Vocabulary** – you are asked to write the definition of a concept
   
b. **Graphs** – you are asked to draw a graph and/or answer a question based on a graph.
   
c. **Calculations** – you are asked to calculate or solve something. In these questions most points are awarded to the correct steps, and NOT to the final answer.
   
d. **Multiple choice** – you are asked to circle the correct answer. Your calculations are not graded.
   
e. **True/False, explain questions** – you are given a statement, asked to circle either True or False, and provide a brief explanation.

**It is useful to describe the entire course in one diagram:**

```
Step 1: Micro Foundations
Chapters: 1,3,4

Start

Step 2: Measuring the Economy
Chapters: 5,6,7

Step 3: Macroeconomic Theory
Chapters: 8,9,10,11,12,13

Step 4: Macroeconomic policy
Chapters: 16,17,18,19

Finish
```
Detailed Guide

What is Economics? (Ch. 1)
This chapter explains what economics is.

Vocabulary
1. Scarcity
2. Economics
3. Incentives
4. Microeconomics
5. Macroeconomics
6. Rational Choice Axiom
7. Economic models
8. Correlation
9. Normative statement
10. Positive statement

Example questions
1. Economists assume that all people take any action (circle the correct answer):
   a. in a random and unpredictable way
   b. if their perceived cost from taking the action is zero
   c. if their perceived benefits from taking the action are greater or equal to their perceived cost from taking the action
   d. in a selfish manner, and are never influenced by feelings and emotions
2. Define Economics.
3. Other examples from class lectures, textbook and MyEconLab.

Gains from Trade (Ch. 3)
In this chapter, we illustrated the concept of scarcity with our first economic model – the Production Possibilities Frontier. We also illustrated how people and countries can gain from trade and economic growth.

Vocabulary
1. Production Possibilities Frontier
2. Production efficiency (technical efficiency)
3. Opportunity cost
4. Absolute advantage
5. Comparative advantage
Example questions

1. (12 points). Two countries produce guns (X) and roses (Y). The time required for an average worker to produce one unit of each good is given in the next table.

<table>
<thead>
<tr>
<th>Country</th>
<th>Time required (in hours) to make one unit</th>
<th>Opportunity cost of one unit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>Y</td>
</tr>
<tr>
<td>A</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

   a. Calculate the opportunity costs of X and Y for each country, and complete the above table.

   b. Which country has absolute advantage in X? In Y?

      ________ has absolute advantage in X and _________ has absolute advantage in Y.

   c. Which country has comparative advantage in X? In Y?

      ________ has comparative advantage in X and _________ has comparative advantage in Y.

   d. Both countries can gain from trade if ________ switches resources from X to Y

      and _________ switches resources from Y to X.

2. Monaco can produce two goods: X (beer) and Y (pizzas). Monaco’s Production Possibilities Frontier is illustrated in the next figure.
a. An output of 80 pizzas and 60 beer is (circle the correct answer):
   i. Attainable and inefficient
   ii. Attainable and efficient
   iii. Unattainable

b. The opportunity cost of 1 pizza on section A-B is (circle the correct answer):
   i. 40 pizzas
   ii. 1/2 a beer
   iii. 2 pizzas
   iv. 20 beer

c. Suppose that Monaco and Vatican have the same PPF as in the above figure. If
   Monaco produces 80 beers and 60 pizzas, while the Vatican produces 50 beers and
   100 pizzas, then (circle the correct answer):
   i. Monaco has absolute advantage in beer, and Vatican has absolute advantage
      in pizza.
   ii. Monaco has comparative advantage in beer, and Vatican has comparative
       advantage in pizza.
   iii. Monaco has comparative advantage in pizza, and Vatican has comparative
       advantage in beer.

d. In the above graph, illustrate the effect of a technological improvement in beer
   production. Label it “d”

e. In the above graph, illustrate the effect of technological improvement in both goods.
   Label it “e”.

4. Other examples from class lectures, textbook and MyEconLab.

**Supply and Demand (Ch. 4)**
In this chapter, we introduced our second model – Demand and Supply diagram. This model was
used to illustrate how competitive markets work: how prices of goods and quantity traded are
determined, and what causes prices to change. In order to apply this model successfully, we need
to distinguish between shifts along a curve vs shift of the curve (supply or demand).

**Vocabulary**
1. Demand curve
2. Supply curve
3. Market equilibrium
4. Substitute goods (in consumption)
5. Complement goods (in consumption)
6. Normal goods
7. Inferior goods
Example questions
1. Suppose that demand and supply curves in some market are given below:

\[ D: P = 100 - Q \]
\[ S: P = 10 + 0.5Q \]

Solve for the market equilibrium.
2. Bad weather destroyed many rice plantations in China. Using the supply and demand diagram, illustrate the effect of this event on the market for rice and the market for noodle. Assume that rice and noodle are substitute goods.
3. News announcement: mad cow disease is back. Analyze the effects of the announcement on the market for beef and chicken.
4. New oil reserves were discovered in China. Analyze the effect of this event on the market for oil.
5. In the last 20 years the demand for personal computers increased dramatically. At the same time the prices of computers decreased. Use the supply and demand diagram to reconcile these facts.
6. Other examples from class lectures, textbook and MyEconLab.

Measuring GDP and the Standard of Living (Ch. 5)
In this chapter we learned how to measure the economy’s output - nominal GDP, and how to adjust it for inflation, which gave us the Real GDP. Students need to be able to calculate nominal GDP using the expenditure approach and income approach. Students need to be able to calculate the real GDP using the base year approach, and to relate the real and nominal and the price level (GDP deflator), and calculate their growth rates. Students also need to know the limitations of real GDP per capita as a measure of standard of living in an economy.

Vocabulary
1. Nominal GDP
2. Real GDP
3. Living Standards

Example questions
1. The next table provides data on prices and output in some economy for the years 2008, 2013. The goods are labeled 1 and 2, so that \( P_1, P_2, Q_1, Q_2 \) are prices and quantities of the two goods respectively.

<table>
<thead>
<tr>
<th>Year</th>
<th>( P_1 )</th>
<th>( Q_1 )</th>
<th>( P_2 )</th>
<th>( Q_2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>5</td>
<td>40</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>2013</td>
<td>10</td>
<td>50</td>
<td>50</td>
<td>10</td>
</tr>
</tbody>
</table>

Calculate the growth rate of the real GDP from 2008 to 2013, using 2008 as the base year. Express your answer in %.
2. How would the following transactions be recorded in the U.S. GDP?
   a. A person in the U.S. buys an imported car (circle all the correct categories):

   \( C, I, G, X, IM \)
b. A family buys a new house in the U.S. (circle all the correct categories):

\[ C, I, G, X, IM \]

c. Saudi Arabia buys Boeing aircraft manufactured in the U.S. (circle all the correct categories):

\[ C, I, G, X, IM \]

3. Suppose that the nominal GDP grows at 5%, the price level grows at 2%, and population grows at 2.5%.
   a. What is the approximate growth rate of real GDP?
   b. What is the approximate growth rate real GDP per capita?
4. Other examples from class lectures, textbook and MyEconLab.

**Measuring Unemployment and Labor Markets (Ch. 6)**

In this chapter we learned how to measure labor markets, focusing on the two most important measures: (1) Unemployment Rate, (2) Labor Force Participation Rate. Students need to know the 3 types of unemployment, and be able to explain why declining unemployment rate is not always a positive event (unemployment rate can decline due to a rise in discouraged workers, who drop out of the labor market). Students need to know country characteristics influence the natural unemployment rate.

**Vocabulary**

1. Unemployment rate
2. Labor Force Participation Rate
3. Structural unemployment
4. Frictional unemployment
5. Cyclical unemployment
6. Full employment

**Example questions**

1. The following table contains data from the labor market of some country (in millions).

<table>
<thead>
<tr>
<th>Civilian noninstitutional population</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civilian labor force</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>3</td>
</tr>
<tr>
<td>Not in the labor force</td>
<td>40</td>
</tr>
</tbody>
</table>

   a. Complete the above table.
   b. Find the unemployment rate in this country. Express your answer in %.
   c. Find the labor force participation rate in this country. Express your answer in %.
2. When the economy is at full employment (circle the correct answer)
   a. The unemployment rate is zero
   b. The only type of unemployment is cyclical
   c. The only types of unemployment are frictional, and structural
   d. The only types of unemployment are cyclical and structural

3. Other examples from class lectures, textbook and MyEconLab.

**Measuring the Price Level and Inflation (Ch. 7)**
In this chapter we learned how to measure consumer prices and cost of living. Students need to be able to calculate the CPI and, use the CPI for calculating inflation and comparing monetary values across time and locations.

**Vocabulary**
1. Consumer Price Index
2. Inflation
3. Nominal vs. real interest rate
4. Nominal vs. real wage

**Example questions**
1. Consumer Price Index (CPI) at the end of 2012 was 200, and at the end of 2013 the CPI was 206.
   a. Calculate the inflation rate in 2013.
   b. Suppose that Alex earned $50,000 in 2012 and the same in 2013. How much raise (in $) would Alex ask for from his employer in 2013, so that his **real wage** stays the same as in 2012?
   c. Suppose that Alex has a savings account that pays 5% nominal interest rate. What was the **real interest rate** that he earned on his savings in 2010?
   d. Suppose that the tax rate on nominal interest earnings is 20%. Calculate the **real after-tax interest rate** that Alex earns on his savings account.
2. Other examples from class lectures, textbook and MyEconLab.

**Theory of Potential Output (Ch. 8)**
In this chapter we presented a theory of potential real GDP and natural unemployment rate. We used a model consisting of production function and labor market in order to analyze the effects of various events (technological progress, natural disaster, immigration, minimum wage laws,…) on the potential real GDP and real wage in a country.

**Vocabulary**
1. Potential GDP
2. Job search
3. Job rationing
4. Efficiency wage
5. Minimum wage laws
6. Union wage
Example Questions
1. Suppose that the economy is described by the macroeconomic model consisting of a production function and a labor market.
   a. Illustrate the impact of a technological improvement on the country’s potential real GDP, equilibrium real wage and employment.
   b. Suppose that instead of the technological improvement, the country experiences an influx of immigrants. Illustrate the impact of this event on the country’s potential real GDP, equilibrium real wage and employment.
2. Other examples from class lectures, textbook and MyEconLab.

Economic Growth (Ch. 9)
In this chapter we analyzed the long term growth trend of an economy. The most important question in economics is “Why are some countries poor, while others are rich?” We measured economic growth, explained the mechanics of growth (labor productivity is essential for growth in standard of living) by measuring economic growth, and listed the economic preconditions and economic policies that promote growth.

Vocabulary
1. Economic growth
2. Diminishing marginal product
3. Labor productivity

Example questions
1. Suppose that in some country the nominal GDP grows at 7% per year, the price level grows at 4% and population grows at 1%. Calculate the approximate economic growth rate in this economy.
2. Suppose that during 2013, real GDP of a country increased by 4% and the population growth rate was 2%.
   a. What is the growth rate in standard of living?
   b. Using the rule of 70, approximately how many years will it take for the real GDP to double?
   c. Using the rule of 70, approximately how many years will it take for the standard of living to double?
   d. Draw a graph of a county’s Production Possibilities Frontier (PPF), and illustrate the effect of technology improvement in both goods.
3. Other examples from class lectures, textbook and MyEconLab.

Theory of Saving and Investment (Ch. 10)
In this chapter we explained how borrowing and lending decisions are made and how these decisions interact in the loanable funds market, to determine the amount of saving and investment in the economy. We also discussed how a government budget surplus or deficit influences the real interest rate, investment, and saving.

Vocabulary
1. Bond
2.  Stock  
3.  Physical capital  
4.  Wealth  
5.  Gross investment  
6.  Net investment  
7.  Net worth  
8.  Balance sheet of a company  
9.  Balance sheet insolvency

**Example questions**
1. Calculate the interest rate on a bond that trades at $96 and has face value of $100.
2. Using the diagram of a loanable funds market, illustrate the crowding out effect of an increase in government deficit. Clearly indicate what happens to the equilibrium real interest rate and to equilibrium investment. **Assume no Ricardo-Barro effect.**
3. Other examples from class lectures, textbook and MyEconLab.

**The Monetary System (Ch. 11)**
In this chapter defined what money is, described the structure of the Federal Reserve System, and illustrated how the central bank and commercial banks create the money supply in the economy.

**Vocabulary**
1. Money  
2. Barter  
3. Monetary base  
4. Money multiplier

**Example questions**
1. Suppose that the public wants to hold currency/deposit ratio of \( cd = 0.6 \), and the required reserve/deposit ratio is \( rd = 0.2 \). The initial consolidated balance sheet of commercial banks is:

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>( R = 20 )</td>
<td>( D = 100 )</td>
</tr>
<tr>
<td>( Sec = 15 )</td>
<td>( E = 10 )</td>
</tr>
<tr>
<td>( L = 75 )</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( 110 )</td>
</tr>
</tbody>
</table>

Where \( R \) is reserves, \( D \) is demand deposits, \( Sec \) are government securities, \( L \) denotes loans, and \( E \) denotes the shareholder’s equity (owners’ capital).

   a. Find the monetary base, the money supply and the money multiplier in this economy.

   b. Suppose that the central bank conducts an open market purchase of securities from the commercial banks, at the amount of $10. Find the new monetary base, the money supply, the currency in circulation, and present the new consolidated balance sheet of commercial banks.

2. Examples from class lectures, textbook and MyEconLab.
Money, Interest and Inflation (Ch. 12)
In this chapter illustrated the short-run and long-run effects of monetary policy. The money market illustrates how the money supply changes affect the nominal interest rate. The quantity theory of money illustrates the long-run effect of money growth on inflation. We also discussed the different costs of inflation.

Vocabulary
1. Money market
2. Velocity of circulation

Example questions
1. Suppose that real GDP in the Philippines is growing at 7% per year, and the velocity of circulation is constant. Using the **quantity theory of money**, find the necessary growth rate of the money supply in order to achieve inflation rate of 3% per year.
2. Since the recession of 2008, the money supply in the U.S. has more than doubled. Nevertheless, inflation rate was low: 1% - 2%. The growth rate of real GDP was also slow (~1%). Using the quantity theory of money, explain how is that possible.
3. Examples from class lectures, textbook and MyEconLab.

AD-AS Model (Ch. 13)
In this chapter we introduced the AD-AS model, which is a framework for analyzing short-run economic fluctuations – business cycles.

Vocabulary
1. Recessionary gap
2. Inflationary gap

Example questions
1. Using the AS-AD model,
   a. Illustrate an economy in recession, and indicate the recessionary gap.
   b. On the above graph illustrate a fiscal policy which successfully ends the recession.
   c. Suppose that the size of the recessionary gap is 1000, and the government expenditure multiplier is 4. What should be the size of the fiscal stimulus, which will end the recession and will restore full employment?
   d. Mention 2 practical difficulties that reduce the effectiveness of a fiscal stimulus.
2. Other examples from class lectures, textbook and MyEconLab.

Fiscal Policy (Ch. 16)
In this chapter we learned about the structure of government budget, its spending and income from taxes. We also explained the relationship between government deficits and national debt. We used the AD-AS model to illustrate a successful fiscal stimulus. We also discussed the practical difficulties associated with implementing fiscal stimulus. Finally, we listed the supply-side effects of fiscal policies.
**Vocabulary**
1. Fiscal policy
2. Government budget balance
3. Government budget deficit
4. Government budget surplus
5. National Debt
6. Spending multiplier
7. Automatic stabilizers
8. Discretionary fiscal policy
9. Supply side fiscal policy

**Example questions**
1. What is the biggest item on the federal budget outlays?
2. Based on what we studied in class, give one argument in favor of fiscal stimulus during recessions.
3. Based on what we studied in class, give one argument against fiscal stimulus during recessions.
4. Using the AS-AD model, 
   a. Illustrate an economy in recession, and indicate the recessionary gap.
   b. On the above graph illustrate a fiscal policy which successfully ends the recession.
   c. Suppose that the size of the recessionary gap is 1000, and the government expenditure multiplier is 4. What should be the size of the fiscal stimulus, which will end the recession and will restore full employment?
   d. Mention 2 practical difficulties that reduce the effectiveness of a fiscal stimulus.
5. President Trump promised to create economic growth of 4% with fiscal policies. In particular, he promised to invest in infrastructure and lower taxes. Use the AD-AS model to illustrate the effect the above policies, if they are successfully implemented.
6. Other examples from class lectures, textbook and MyEconLab.

**Monetary Policy (Ch. 17)**
In this chapter we presented the double mandate of the Federal Reserve System. We illustrated the monetary policy transmission mechanism. Students need to be able to illustrate the short-run and long-run effects of monetary expansion and contraction. We discussed the two main strategies of monetary policy: (i) discretionary policy, (ii) policy rules, and in particular emphasized the Taylor Rule.

**Vocabulary**
1. Federal funds rate
2. Discretionary monetary policy
3. Monetary policy rule

**Example questions**
1. Using the AS-AD model, 
   a. Illustrate an economy in recession, and indicate the recessionary gap.
b. On the above graph illustrate a monetary policy which successfully ends the recession.

2. Write one advantage of monetary policy rules over discretionary policy.

3. Suppose that the Fed decided to follow the Taylor rule for monetary policy, given by the following equation:

\[
i_t = \pi_t + r_t^* + 0.5(\pi_t - \pi_t^*) + 0.5 \left( \frac{y_t - y_t^*}{y_t^*} \times 100 \right)
\]

Where \( i_t \) is the Federal Funds Rate, \( \pi_t^* \) is the target inflation rate, \( r_t^* \) is the long-run equilibrium real interest rate (determined in the loanable funds market), \( \pi_t \) is the actual inflation, \( y_t \) is the actual real GDP, and \( y_t^* \) is the potential real GDP.

   a. Suppose that the output gap is zero, \( r_t^* = 3\% \), the target inflation rate is 2\%, and the actual inflation is equal to the target level. Calculate the recommended Federal Funds rate by the Taylor rule.

   b. Suppose that the output gap is zero, \( r_t^* = 3\% \), the target inflation rate is 2\%, and the actual inflation is 1\% above the target level. Calculate the recommended Federal Funds rate by the Taylor rule.

   c. Suppose that \( r_t^* = 3\% \), the target inflation rate is 2\%, the actual inflation is equal to the target level, and the output gap is –1\%. Calculate the recommended Federal Funds rate by the Taylor rule.

4. Other examples from class lectures, textbook and MyEconLab.

**International Trade Policy (Ch. 18)**

In this chapter we illustrated the gains from trade in a model of a market (supply and demand). We showed that with imports, domestic consumers gain and domestic producers lose, but the economy as a whole has a net gain relative to no-trade. Similarly, in a market with exports, consumers lose and producers gain, but the economy as a whole gains. We then illustrated the impact of tariff, which reduces the gains from trade. We evaluated the main arguments against globalization and free trade.

**Vocabulary**

Tariff
Example questions
1. Consider the market for shirts.

![Market diagram]

a. Without international trade, the domestic price of a shirt is $____.

b. Suppose the world price of shirts is $40. When the market opens to international trade, the domestic price of a shirt is $____, the domestic sellers produce _____ shirts, the domestic buyers buy ____ shirts, and _____ shirts are imported/exported. Fill in the blanks and circle the correct answer.

c. Suppose the government imposes a tariff of $20 per shirt. The increase in producer surplus due to the tariff is represented by the area ______, and the deadweight loss caused by the tariff is represented by area ______.

2. Other examples from class lectures, textbook and MyEconLab.

International Finance (Ch. 19)
In this chapter we defined exchange rates. Based on the assumption that Purchasing Power Parity holds for traded goods, we developed a theory of exchange rate determination. We demonstrated the link between monetary policy and exchange rate policy. Students need to know how to use exchange rates to convert amounts in one currency into another and analyze the implications fixed exchange rate for monetary policy.

Vocabulary
Exchange rate
Purchasing Power Parity
Fixed exchange rate
Floating exchange rate
Nominal anchor

**Example questions**
1. Suppose that TVs are traded goods. The price of TV in the U.S. is $500 and the price of the same TV in Japan is ¥ 60,000. What should be the exchange rate between the $ and ¥ if PPP holds for TVs?
2. Suppose the U.S. inflation 2% and inflation in China is 10%. What does our theory predict about the change in the value of the dollar?
3. Suppose that money supply in the U.S. grows at 4% and money supply in the Euro area is growing at 3%. If other influences remain the same, what is the expected change in the value of the dollar relative to Euro?
4. Suppose that the money supply in the U.S. is growing at 4% and the U.S. real GDP growth is 2%. In China the real GDP is growing at 10%, and the velocities of the two countries change at the same rate. If China adopts a fixed exchange rate between Yuan and the dollar, what will be the growth rate on the Chinese money supply?
5. Other examples from class lectures.