

**Exam #1 Study Guide (Abbreviated)**

This is not a comprehensive study list, but covers the main topics we have covered so far in the class. All material covered in class (including handouts and practice problems) and Chapters 1-4, Chapter 9 (sections 9.2-9.4) and appendices 4a and 4b are fair for the exam.

Specific topics include:

- What is an economic model? How do we use them? (Ch 1)
- Supply and demand. Shifts in the curves, graphing them, market equilibrium, assumptions underlying their construction. (Ch 2 and 3)
- Taxes (sales tax vs. quantity tax). How they affect market equilibrium, incidence on consumers. Tax effects depend on elasticities. (Ch 2 and 3)
- Price ceilings/floors. (Ch 2)
- Elasticities (price, income, cross-price). For both demand and supply. Know all of them and how to calculate each. Important to be able to say in words what you write in math. Distinguish between inelastic and elastic. (Ch 3)
- Consumer and producer surplus. Why does the competitive market maximize consumer welfare? Deadweight loss. Calculating welfare changes due to taxes. (Ch 9)
- Preference axioms (4 of them). What they mean and why we impose them. Focus more on the class notes here than the textbook (I covered more than the book does). Are the axioms assumptions or facts?
- Preference maps and indifference curves. Be able to reconstruct something similar to Figure 4.1 in the textbook. Know why indifference curves slope downward, how they relate to utility, and the different types (imperfect substitutes, perfect substitutes, perfect complements). Can indifference curves be thick or cross? Why must they slope down? Why are they typically convex to the origin? Where do indifference curves come from, the market or the consumer? (Ch 4 and class notes)
- Marginal rate of substitution (MRS) vs. marginal rate of transformation (MRT). Be able to calculate both and know the economic intuition behind them. (Ch 4 and appendix 4a)
- Utility and utility functions. Be comfortable working with them (explicit or implicit types). How do we get an IC from a utility function? Marginal utility (definition and calculation of it). (Ch 4)
- Budget constraints. Graphing, what the axes mean, their slope, economic intuition behind them. Changes in the budget constraint due to price and/or income changes. Do budget constraints represent consumer preferences? (Ch 4)
- Optimal choice/utility maximization.  $MRS=MRT$  at the optimal interior solution. What about at corner solutions? Be able to graph and mathematically derive the

optimal solution. Lagrangean method. Discussion what is happening at the optimum. (Ch 4, appendix 4b, class handouts, class notes)

Exam format:

We will talk about this in-class on Tuesday. Mixture of multiple choice, true false, and problem based questions. The exam is worth 100 points.

The exam will look like the homework, quizzes, and class practice problems. *Be very comfortable going back and forth between the economic intuition, the math, and graphs.*

Utility maximization sample problems:

Here are some additional utility maximization problems that should help you for the exam. Solve for the optimal consumption bundle using the method of Lagrange.

1)  $U(B, Z) = AB^\alpha Z^\beta$ , where  $A, \alpha, \beta$  are constants and B is burritos and Z is pizza. The price of burritos is \$2, the price of pizzas is \$1 and Y is \$100.

2)  $U(B, Z) = \sqrt{ZB}$ . The price of burritos is  $p_B$ , the price of pizzas is  $p_Z$ , and income is Y.

Additional sample problems (if you are looking for extra practice):

Chapter 2, problems 31, 35, 41 from the textbook.

Chapter 3, problems 3, 12, 20, 40 from the textbook.

Chapter 4, problems 4, 6, 14, 16, 32, 38, 39 from the textbook.