

## **Mastering Economics**

### **How to Develop and Implement a Plan of Study**

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To do well in any college course, you must develop a plan of study which has mastery of the subject matter as a goal. In any college course, mastery means much more than the ability to recognize terminology on a multiple choice question or to simply repeat definitions or to do problems which involve nothing more than punching numbers into a calculator. Mastery means the ability to apply the basic concepts of a subject to new problems, and to modify your concepts to handle those problems.

"Mastery" seems a very ambitious goal for an introductory course. Of course, you will probably need a few more courses to become Chair of the Federal Reserve System or of the President's Council of Economic Advisors. But you can take steps toward mastery of economics, and the first step is to realize that your goal is to master a way of thinking rather than memorize a list of definitions.

Setting mastery of economics as your goal means that you must plan for the course (rather than panicking the week before each exam). You must approach each week's lectures and each chapter of the text with the realization that the material will be not only on the exam next week, but very likely on the final exam. You cannot forget about supply and demand analysis after the chapter on supply and demand, or about the components of Gross Domestic Product after the chapter on GDP accounting. And you would be unwise to expect your professor to tell you once again, the week before the final, the difference between supply and quantity supplied, or the difference between Gross Private Domestic Investment and investment in the stock market.

Setting mastery as a goal also means that you expect to put in the time necessary to master detail. The rule of thumb for most college courses is to spend two hours of study outside of class for every hour of class. Very few students are able to do well in economics without putting in at least that much time. Those who think they can are often making the mistake of confusing the ability to recognize terms such as "supply" and "demand" or "cost" with the ability to apply those concepts to a problem. Did "supply" change or only the "quantity supplied"? Is the important cost concept for a specific problem fixed or variable cost, explicit or implicit costs, marginal or average costs?

How do you go about achieving mastery in economics? I suggest a 10 step program:

**1. Review the basic prerequisites** for an understanding of the graphs and algebra which will be used in an economics course. Syracuse University has an excellent brief review titled "Math Skills for Introductory Economics: Introduction to Graphs" (<http://syllabus.syr.edu/cid/graph/book.html>)

The importance of graphs as a learning tool in economics cannot be overemphasized. It is very difficult for anyone (this includes your professor) to clearly grasp the relations between economic ideas without a graphical representation of those ideas. You should be able, for every graph you meet in text or lecture, be able to reproduce the graph: to label the axes correctly (price and quantity? marginal product and labor?), to identify the lines (supply? production possibility frontier?), to explain why the lines have the slope they do, what an intersection of two lines means, and (often most important of all) to explain what factors shift the lines on the graph. Very often mastery of a graph is equivalent to mastery of a chapter.

**2. Read the text chapter before the lecture.** Even if you don't understand the text material the first time through, you will get a sense of the basic vocabulary and the sort of problems you will be looking at. Most texts have a chapter summary and a list of key vocabulary at the end; it may be a good idea to look at those first. It is an excellent idea to try to master the definition of key terms before the lecture, so you can concentrate on the application of those terms and their relation to other important concepts during the lecture. It is not necessary to take notes at this stage (see step 5), but you may want to place a question mark in the margin of the text or an exclamation point in the margin by a key definition.

DO NOT, now or ever, underline or use highlighting markers. Sweeping a marker across a page involves so little effort that it does not help fix ideas in your mind and almost always leaves you with far too much of the text highlighted or underlined. If you want, write questions in the margin in pencil, so you can erase them once the question is answered.

**3. Take notes actively during the lecture.** This means much more than copying just what is put on the board. Try to focus on the connections between ideas rather than on the exact wording of definitions and the logic in solving problems, rather than simply on the list numbers in a specific problem. When you don't see the connections or the logic, place a circled question mark in the margin. If your review of your notes or re-reading of the text does not answer your question, be sure to ask your professor about it in the next class.

The definition on the board or on the Power Point slide is often the starting point for a long discussion of each element of the definition, or how the idea defined is linked to other concepts in a particular economic model. Assume that the elements of the definition and the linkages between the concepts are at least as important as the bare definition, and you will hear more about them on the exam. (If you have skimmed the text before the lecture, you probably know the definition anyway, or at least know that it is in the text, and you will have the time to concentrate on the development of the idea).

The numbers for a particular problem go on the board, but the logic behind the steps in working the problem doesn't get written down by the professor. Be sure you have it written down, and if you are not sure of the logic, place a circled question mark in the margin of your notes. Worry more about the logic than about the specific numbers -- a similar problem is probably in the textbook (Again, if you have skimmed the text, you know whether or not it is, and may have noticed that the text does things a bit differently. If so, you have a question -- use a circled question mark to indicate that you need an answer).

**4. Review and rewrite your notes soon after the lecture.** You will find you can fill in gaps in the logic pretty well the same day, not so well the next day, and poorly the day after. If you haven't filled in the gaps that are inevitable in taking notes on college-paced lectures, you will be left with unrelated definitions and numbers jotted down in your notes -- useless for an exam review.

**5. Reread your textbook presentation of the material.** Does it present some of the material differently than your professor did? If so, do you understand what the difference is? If you don't see the difference, make sure that you put another question in the margin of your notes or of the text.

**6. Ask questions.** You have probably collected a number of questions if you have followed the above directions. If you haven't answered them yourself, **ask a question** in the next lecture or during office hours. Questions on specific problems are always welcome, and you shouldn't hesitate to ask them. Many questions take less time to answer than you might think. For example, the question "Do I really have to do all the work you recommend in this handout?" has the very simple answer "Yes."

You should be aware that very general questions, such as "What did we cover last week?" can only have very general answers ("Supply and demand"). Specific questions ("I don't see how you calculated producer surplus in this problem" or "Why did you draw the marginal cost curve as flat in one graph and upward sloping in another?") are the ones which help you master the subject material.

**7. Work the problems at the end of the chapter.** This is the the most important suggestion. The only way anyone ever sees which concepts are helpful in solving which problems is to go out and get some practice in solving problems.

Authors of good textbooks use the problems to reinforce the points they think are most important in the chapter. My most important consideration in adopting a text is the quality of the problems. My most frequent complaint about textbooks is that even the good ones don't usually have enough problems. I often try to provide more, in class or in separate postings to my web pages.

I recommended earlier that you should be prepared to devote three hours to study for every hour of class. I would recommend that two of those hours be devoted to working problems.

**8. Draw up a review page.** It should include:

- the five (or six or seven) most important terms in the chapter and how they are related to one another.
- the most important distinctions made in the chapter (demand and quantity demanded, marginal and average costs...)
- the most important graph (or two or three) in the chapter  
Make sure you can reproduce this from memory, and explain the meaning of every line, slope, intersection or area.
- an example of a numerical problem and of an algebraic problem from the chapter.  
Ideally, work it through with different numbers than the text or lecture provided.  
If you are not confident of your answer, you have a question. Ask it.
- any answer you have to the question: "How does this chapter depend on, extend or change the material presented in previous chapters?" If you don't have an answer to this question (and the chapter is numbered two or higher), try to think of one.

Your review pages should of course be saved for review before each exam in the course and before the final exam.

**9. The night before the exam, try to anticipate the questions that will be asked.**

Review is more important than trying to master entirely new material at this point.

If you have to cram, you haven't really read points 1-8 carefully. You will probably find that cramming only works for short-term recognition, and that most of the questions on the exam are testing application and your ability to relate terms and to distinguish between them, and your ability to choose the right concepts to apply to a particular problem.

Was a particular point made two or three times in lecture? This just might be a hint that the professor thinks the point was important.

Was a particular type of problem gone over two or three times in previous classes?

If so, do you know how to do it?

**10. Attend the review session after the exam.**

Even if there isn't one, find out what you got wrong and make sure you know how to correct it.

Remember that basic economic concepts have a way of turning up later in the course, and mastery of those concepts will be necessary to pass the final exam.

In any college course, the final exam is always the most important exam. I always regard performance on the final as the most important single indicator of how students have done in the course, and I always include questions that draw on material covered on previous exams as well as the most recent material covered.

If you follow the above recommendations, you should have review sheets which will make reviewing for the final a relatively easy task, and more importantly, you will have mastered the course material.