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ECONOMICS 4010
Spring 2022
www.economics.utah.edu/lozada

Professor Lozada
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Gardner Commons, Rm.
4030
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COURSE DESCRIPTION: We will study neoclassical principles of resource allocation. Topics include the theory of consumer choice, the theory of the firm, introduction to general equilibrium and welfare economics, and the theory of market structures. The prerequisites for this course are Econ. 2010, 2020, and 3620, or their equivalents. This class is designated as “Quantitative Intensive” (“QI”) for the purposes of fulfilling the university’s QI requirement.

WEB SITES: The main web site is on Canvas. All the material except the introductory videos (the ones where you see me instead of my tablet’s screen) can also be found on the public internet by going to www.economics.utah.edu/lozada and clicking on “Econ. 4010,” but I recommend accessing the material through Canvas instead.

VIDEOS: The main way for you to learn the material in this course is to view the videos given in each of the modules in Canvas. The videos are also on the public class web site, under its “Videos” link, but I recommend accessing them through Canvas. The textbook is much less important than the videos.

TEXT: *Intermediate Microeconomics and Its Application*. You may use either:

- the 9th edition, by Walter Nicholson, ISBN 0324171633; or
- the 10th edition, by Walter Nicholson and Christopher M. Snyder, ISBN 0324319681; or
- the 11th edition, by Walter Nicholson and Christopher M. Snyder, ISBN 143904404X.
- the 12th edition, by Walter Nicholson and Christopher M. Snyder, ISBN 1133189024.

We will not use the computer disk which may be included with the book. In my opinion, for the purposes of this class, older editions are just as good as the newest

edition. The earlier editions are available at lower prices on the internet than the current edition. The bookstore has some copies of the textbook (it seems to be the 9th edition), but you can also buy the book from an online book seller.

Do not get Nicholson and Snyder's other textbook, called "Microeconomic Theory: Basic Principles and Extensions." That is a master's level book. Just make sure the title of the book you buy has "Intermediate" as its first word.

In addition:

1. old exams from this class, answers to old exams,
2. answers to homework problems, and
3. a small packet of class handouts

can all be found by going to www.economics.utah.edu/lozada and clicking on "Econ. 4010." However (1) and (2) can also be found on Canvas, and I have built a nice interface to (1) and (2) inside of each Canvas module, so you may only have to visit the www.economics.utah.edu/lozada web site once, to print out (3), the class handouts. With the possible exception of one topic I will inform you about later this semester, **all of your exam questions will come from the material in (1) and (2)**—usually but not always unaltered—so it is **very important that you study that material**. As the semester goes on, I will keep you up to date on where you should be in studying this material. Before each exam, be sure you can thoroughly answer the questions covered in the material without looking at their answers.

A word of warning: Most economics majors around the world think that intermediate microeconomics was the hardest economics course they took. The only way to succeed in this class is for you to have the self-motivation and discipline to keep up with this online material—both the online lectures *and* the old exam problems and homework problems. Online classes in general put large demands on students' self-motivation and discipline, and that is even more true in this class because there are no weekly quizzes or multiple-choice homework problems.

Because of the availability of (1), (2) and (3), there are no additional "study guides" for this class.

GENERAL COURSE OBJECTIVES: The major objective is for you to fully understand the derivation of neoclassical demand and supply curves from first principles, understand market equilibrium, and understand the optimality (or lack thereof)

of different types of market structures. A minor objective is for you to gain some familiarity with the most important critiques of neoclassical microeconomic theory. After all, as British economist Joan Robinson once wrote (*Collected Economic Papers*, 1980, Vol. 2 p. 17):

“The purpose of studying economics is not to acquire a set of ready-made answers to economic questions, but to learn how to avoid being deceived by economists.”

COURSE WORKLOAD: This is a 3 credit hour course. According to the University of Utah’s [Policy 6-100](#) III Sec. C6, “at the University of Utah we assume that there is at least one hour in class and two hours outside of class per week [or the equivalent combination] connected to every credit hour” (brackets added). So you should expect to study for Econ. 4010 about 6 hours outside of viewing lectures every week.

The reason most students find Intermediate Microeconomics the hardest economics class in the undergraduate curriculum is that this class stresses deep understanding of detailed, even mathematical, issues. In principle it would be possible for a student who did nothing but listen to my lectures to make an ‘A’ in this class, just like in principle a student could become a structural engineer after a 60-minute lecture on Newton’s three laws of motion, because the rest just logically follows. In practice, it takes very many hours, working problem after problem after problem, in order for most students to realize what all the implications of the basic concepts are. Once you do that, you’ll realize that all you have to memorize are the basic principles, because you can construct an answer to any question just from those. In the same way, an experienced structural engineer realizes that all there is to making sure a bridge stands up is applying Newton’s Laws.

Another analogy is that my lectures about economics are like a swimming instructor’s lectures about how to swim. Lectures about how to swim are useful, but you do not learn how to swim unless you get in the water and do it—eventually, all by yourself. Lectures about economic theory are useful, but you do not learn economic theory unless you can open a set of problems and work them—eventually, all by yourself. You will be a dismal failure at swimming if you try to learn how to do it just by memorizing, and you will be a dismal failure at economic theory if you try to learn how to do it just by memorizing, too.

My exams have no multiple-choice questions. All the questions require you to compose a correct answer on a blank sheet of paper, using whatever graphs, equa-

tions, and words are appropriate and adequate. (The Canvas modules you will work through will, topic-by-topic, show you all the questions and answers from all of my old exams, but if you want to look at them right now to get an idea of what they are like, go to www.economics.utah.edu/lozada, click on the “Econ. 4010” link, then click on “Old Exam Questions and Their Answers.”) The instructions to my exams say, in part, that “correct answers which are unsupported by explanations will not be awarded points.” This means that *even if* a question does not explicitly tell you to “explain your answer,” you *still* have to explain your answer. Students often wonder how much explanation they should put in their answers. A rule of thumb is that you do not have to explain things you knew before you started taking this class. For example, you do not have to explain why $x^2 = y + 1$ would imply that $x = \pm\sqrt{y + 1}$. On the other hand, you *do* have to explain everything you learned since you started taking this class.

Here is an example. I asked this question on an exam:

Trapper Joe, the fur trader, has found that his production function in acquiring pelts is given by

$$q = 2\sqrt{H}$$

where q = the number of pelts acquired in a day and H = the number of hours Joe’s employees spend hunting and trapping in one day. Joe pays his employees \$8 an hour.

Calculate Joe’s total cost curve (as a function of q).

A student wrote down “total cost is $2q^2$.” This is the right answer, but it was completely unexplained, so the student did not get credit for it. He told me later he felt the answer was “obvious,” and so did not have to be explained. It was not obvious to most of his classmates (who got it wrong); is it obvious to you right now? (I suspect it was not even obvious to the student; he probably guessed the answer by working out a few test cases, and could not figure out the actual derivation.)

The nice thing about my way of grading is that you can get lots of partial credit for your response even if you cannot arrive at the right final answer. This can increase your grade significantly. In fact, you can get full credit on a problem even if its final answer is wrong, if I can see that what made your final answer wrong was that you made an inadvertent mistake about something you really do know (such as writing $4 \times 2 = 6$). This is another reason to show all your work.

MY BACKGROUND: My current rank is Associate Professor. I hold a BA degree in Economics and a BS degree in Physics, both from Louisiana State University. I hold an MS degree in Engineering-Economic Systems, an MA degree in Economics, and a PhD degree in Economics, all from Stanford University. My main area of research is the microeconomic theory of exhaustible resource industries. However, I have published work in other areas of dynamic economics, such as finance, and in environmental economics and related areas of cost-benefit analysis and “law and economics.” I regularly teach microeconomic theory at the undergraduate and PhD levels, and resource and environmental economics at the introductory, advanced undergraduate, and advanced PhD levels. I have also taught Mathematical Economics at the PhD level.

OFFICE HOURS: Due to the pandemic, office hours will be held on Zoom. E-mail me to set up a mutually-agreeable time for us to meet. During Zoom office hours, I can share the screen of my tablet computer, so we can discuss graphs and equations.

EXAMS: There will be two exams during the semester and a final exam at the end of the semester. The exams are not computerized; they are paper-based, and they will be proctored. The University of Utah offers proctored exam services at the UOnline Center in the Marriott Library on campus and at service sites in Sandy and St. George, Utah. Students living far from these places can select from several remote exam proctoring options.

At least one week before each exam, you have to register online to take it. You schedule your exam time and location through Canvas following the instructions at <https://support.tlt.utah.edu/hc/en-us/articles/4406679951259--TESTING-IN-A-CENTER-I-want-to-take-my-exam-in-a-testing-center-UOnline-Center-Sandy-Center-other-approved-centers>. (At the very beginning of the semester, your Canvas menu probably will not yet have the “Schedule Exams” link.) Teaching and Learning Technologies offers e-mail support; send your questions to examhelp@utah.edu.

You have a window of time during which you can take the exams:

- February 24–26 (Thursday–Saturday) for Exam 1,
- April 7–9 (Thursday–Saturday) for Exam 2, and
- April 28–30 (Thursday–Saturday) for the Final Exam.

Not all hours of those days are available; register online for your exams early in order to have the best choice of times.

If you decide to take your exams at the UOnline Center or the Sandy Center or the St. George Center, you need to visit the web page <https://www.uonline.utah.edu/exams-and-proctoring/index.php> to learn where Center is and what its hours of operation are.¹ You also need to visit the web page <https://support.tlt.utah.edu/hc/en-us/articles/4406998506139-UOnline-Center-Policies-Procedures-for-Students> to learn about “UOnline Center Policies and Procedures.” One of the policies is that if you are more than a few minutes late, you may have to reschedule. Another of their policies is that if you forget your University of Utah Identification Card, you will not be allowed to take the exam. (Note that it is impossible to get a replacement UCard on Saturdays, and on other days, it is a time-consuming process.) The Center has other policies posted on the web page just given.

You should bring a *new* blue book to each exam, although it is also acceptable to bring blank sheets of paper. (If you do not know what a “blue book” is, see for example https://en.wikipedia.org/wiki/Examination_book.) You should bring sufficient writing instruments so that if they suffer some malfunctions you can still complete the exam. You may not use a calculator during exams; if you encounter complicated arithmetic expressions, such as $1.2 * 1.4 - 17.3$, leave them unevaluated. You may use a ruler, straightedge, and drawing triangle. No other material besides that just described may be used during an exam.

This semester, I do not plan on allowing bathroom breaks during exams. Time your pre-exam eating, drinking, and bathroom visits accordingly.

When you turn in your exam to the workers in the UOnline Center, *watch them carefully* as they file your exam to make sure they do not accidentally think your answers are scratch sheets and throw them in the garbage. (This has never been a problem with students who wrote their answers in blue books.)

After you have taken the exam, do not give any information about it to any other student in the class until the exam testing window has closed. After the exam testing window has opened but before you have taken the exam, do not receive any information about the exam. The penalties for violating any of the rules in this paragraph are listed under Point 1 of “Policies” below.

¹Much of this information is also available at <https://support.tlt.utah.edu/hc/en-us/articles/360046102691-UOnline-Center-Hours>.

GRADING: Exams 1 and 2 will each be worth 25 points. The Final Exam will be comprehensive and will be worth 50 points. At the end of the semester, your course grade will be based on the sum of the grades you have made on the three exams. It will not be based on anything else: there is *no way* to do “extra work” at the end of the semester to earn “extra credit” to raise your grade. There is no such thing as “extra credit” in this class. To make this completely clear: if you ask me at the end of the semester if there is any extra work you can do to raise your grade, the answer is going to be no. The way to get a good grade is to study hard for the exams.

If you make above an 80% you are guaranteed to make an A–; if you make above a 55% you are guaranteed to make at least a B–; if you make above a 40% you are guaranteed to make at least a C–; and if you make above a 20% you are guaranteed to make at least a D–. However, if the following curve results in a higher grade for you then I will use it (approximately): 15%, A/A–; 30%, B; 35%, C; 15%, D; 5% or less, E.

In a recent past semester, the 35 students who took 4010 generated the following distribution out of 100 points possible:

- 3 students scored between 81 and 100
- 6 scored between 61 and 80
- 10 scored between 41 and 60
- 10 scored between 21 and 40
- 6 scored between 0 and 20

The high score in that class was 97 out of 100; the low score (among students who took all three exams) was 4 out of 100.

POLICIES:

1. Cheating: Cheating on exams and other forms of academic dishonesty may lead to expulsion from the class, failure of the class, or more severe penalties such as dismissal from the University. In accordance with University regulations (University Policy 6-400, Section V, B, 4, at <http://regulations.utah.edu/academics/6-400.php>, if you are caught cheating in this class, I must send a letter to your dean about that, and the letter will be put in your permanent University file. I have done this for several students already.

I punish cheating quite severely. For example, not long ago one of my 4010 students cheated on the final exam. It was supposed to be this student's last semester and the student expected to graduate the next week, then move out of state to get a job which was contingent on his/her graduating, but because of the cheating, the student failed 4010 and was unable to graduate that semester.

2. Missed Exams: You cannot miss an exam and take a makeup exam unless I give you permission to do so. Without my permission, you will earn a zero on any exams which you miss.

To get my permission to take a makeup exam, you must give me notice before the class takes its exam (if at all possible), and before you take the makeup exam, you must supply written evidence ("documentation") of your reason for missing the in-class exam. If the reason is illness, a note from a doctor will be sufficient.

I will let you know if I think your reason is good enough to warrant letting you take a makeup exam. If your reason is that you are participating in a university-sponsored activity, I will always allow you to take a makeup. Otherwise, I will make the decision on a case-by-case basis.

In addition, there are limited circumstances in which I may let you take an exam early.

I will only give a makeup final if:

- (a) You are ill. You must be under a physician's care for this condition, and you must supply a note from your physician stating that it is his/her opinion that you were too ill to take the exam at its regularly scheduled time.
 - (b) An immediate family member is very ill or has recently passed away and you explain why a makeup final would be a better indicator of your knowledge of the material in this class. I will be the judge of whether your situation warrants giving your a makeup final. I will require evidence supporting your story about the illness (for example, a note from your family member's physician).
3. Incompletes: Incompletes will be given only for reasons of illness or a family emergency. You must supply written evidence for the reason. According to university regulations (Policy 6-100 III G2 at <http://regulations.utah.edu/academics/6-100.php>, you must be passing the class at the time you get an incomplete.

4. Student Code: The Student Code is available at <http://regulations.utah.edu/academics/6-400.php>. Students have specific rights as detailed in Section II of the Code. The Code also specifies proscribed conduct (Sections III and V) that involves cheating on tests, plagiarism, collusion, fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content. Students have the right to appeal sanctions imposed under the Code to the Student Behavior Committee.
5. Disabilities: The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Union Building, 801-581-5020 (V/TDD), <https://disability.utah.edu/>. CDA will work with you and me to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability & Access.

I encourage you to reach out to CDA early if you think you might be eligible for exam accommodations due to a disability. It may take CDA some time to investigate your request, and I cannot give you any accommodation until after they order that I do so. Students with temporary disabilities, for example from automobile accidents or concussions from sports, may be eligible for exam accommodations through the CDA; CDA does not only deal with students with permanent disabilities.

UNIV. OF UTAH STUDENT SUPPORT SERVICES:

1. Undocumented Student Support: The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families. To learn more, please contact the Dream Center at 801-213-3697 or visit dream.utah.edu.
2. Wellness: Personal concerns such as illness, stress, anxiety, relationship difficulties, depression, or cross-cultural differences can interfere with a student's ability to succeed and thrive at the University of Utah. The Office of Student Affairs has a list of Student Mental Health Resources at <https://studentaffairs.utah.edu/mental-health-resources/index.php>, and I have copied some of their information and pasted it here as Figures 1 and 2. For concerns unrelated to Mental Health, you could contact a Student Success Advocate, see <https://studentsuccess.utah.edu/advocates/our-mission-faqs/>, and for links to more than a dozen other student support offices such

CRISIS RESPONSE

University Counseling Center

801-581-6826

counselingcenter.utah.edu

Crisis response: Monday-Thursday
8am-6pm and Friday 8am-5pm

Huntsman Mental Health

Institute Crisis Line

801-581-3000

Crisis response 24/7, including: crisis support over the phone, a mobile outreach option that can respond to persons in their home, and the Receiving Center where individuals from Salt Lake County can access a safe and supportive environment.

Housing Mental Health First

Responders

mh1.utah.edu

The MH1 provides after-hours crisis response and community support for students living in Housing and Residential Education.

Safe UT App

healthcare.utah.edu/hmhi/safe-ut/

The free App and Tip Line is a statewide service that provides real-time crisis intervention to youth through live chat and a confidential tip program – right from your smartphone.

Figure 1. University of Utah Mental Health Crisis Response support information for students. Clickable URL's are counselingcenter.utah.edu, mh1.utah.edu, and healthcare.utah.edu/hmhi/safe-ut/.

COUNSELING AND MINDFULNESS

University Counseling Center
801-581-6826 | SSB, Room 426
counselingcenter.utah.edu

Free services offered include individual, group, and couples counseling, as well as crisis appointments, and low-cost psychiatric medication management.

Women's Resource Center
801-581-8030 | Union, Room 411
womenscenter.utah.edu

The WRC provides individual counseling, support groups, and training programs to connect students with shared experiences.

Mindfulness Center
801-581-6826 | SSB, Room 344
mindfulnesscenter.utah.edu

The center offers a range of self-guided meditations, self-help resources, and various workshops to assist in moments of stress, anxiety, and chaos.

Online Mental Health Platforms 24/7 access:

- **You@Utah | you.utah.edu**
You@Utah connects students with research-based content to support their emotional growth and resilience.
- **Nod App | Available for free download in any app store**
The app offers student resources to reduce loneliness on campus by building social connections through ideas, reflections, and testimonials.



ADDITIONAL STUDENT AFFAIRS RESOURCES

Student Affairs offers a variety of programs that support student well-being and success. Visit our website here: studentaffairs.utah.edu.

Student Health Center
801-581-6431 | studenthealth.utah.edu

Full service primary health care for students and their dependents including prevention, well care and immunizations at low cost. Prescription assistance available to those who qualify. Learn more about student health insurance on their website.

Center for Disability and Access
801-581-5020 | disability.utah.edu

CDA provides reasonable accommodations to students whose condition significantly impacts major life activities including their ability to function in the academic setting.

Center for Student Wellness
801-581-7776 | wellness.utah.edu

Offers workshops, training, HIV/STI testing and opportunities for student involvement.

Financial Wellness Center
801-585-7379 | financialwellness.utah.edu

The Center provides students with counseling services and the tools to succeed with their financial journey.

Veteran Support Center
801-587-7722 | veterancenter.utah.edu

The VSC is a space dedicated to veterans who are seeking to find services, support, advocacy, and camaraderie. The VSC offers various resources that can best assist veterans by helping build their support system.

ADDITIONAL SUPPORT

Victim Survivor Advocacy
advocate@sa.utah.edu | 801-581-7776
wellness.utah.edu/victim-survivor-advocacy

Victim-Survivor Advocates provide free, confidential and trauma-informed support services to students, faculty, and staff, who have experienced interpersonal violence (i.e. domestic and dating violence, stalking, etc.). They will assist in navigating resources, processes, and/or services.

Office of the Dean of Students
deanofstudents@utah.edu | 801-581-7066
deanofstudents.utah.edu

The office is dedicated to being a resource to students through support, advocacy, involvement, and accountability. One of the core goals is to connect students to support systems that will assist in their academic journey.

TRAINING

Mental Health First Aid Training
wellness@sa.utah.edu | 801-581-7776
studentaffairs.utah.edu/mental-health-first-aid.php

For faculty, staff and students to learn how to help those who may need additional support and assistance until professional help can be found. Visit our website to learn more.



Figure 2. Additional university mental health support information for students. Unfortunately, the name given above for the Veterans Support Center is misspelled, and the misspelling causes its URL to be wrong. Clickable correct URL's are, in the order they appear above:

[Counseling Center](#) [Student Health Center](#) [Victim Survivor Advocacy](#)
[Women's Resource Center](#) [Center for Disability and Access](#) [Office of the Dean of Students](#)
[Mindfulness Center](#) [Center for Student Wellness](#) [Mental Health First Aid Training](#)
[You Utah](#) [Financial Wellness Center](#)
[Veterans Support Center](#)

as the Learning Center, the Dean of Students Office, and the Center for Ethnic Student Affairs, see <https://studentsuccess.utah.edu/resources/student-support/>.

3. Addressing Sexual Misconduct: Title IX of the federal Education Amendments of 1972 makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability, and victims are entitled to the same kinds of support, as in the cases of offenses against persons in other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic makeup. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, at www.wellness.utah.edu or 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).
4. Campus Safety: To report suspicious or potentially criminal activity, call campus police at 801-585-COPS (801-585-2677).

If you do not already receive important emergency alerts and safety messages regarding campus safety via text message, sign up to receive them by logging into CIS at cis.utah.edu, selecting the Campus Alert link, and providing your mobile phone number.

For more information regarding safety visit safeu.utah.edu.

University support resources for victims of crimes (whether or not the victim reported the crime to the police) are listed and described at <https://safeu.utah.edu/where-do-i-get/>. If instead you prefer to reach out to a non-University source of assistance in cases of domestic violence or the threat of domestic violence (including intimate partner danger in a dating relationship), you may contact the Utah Domestic Violence Coalition, whose phone number is 800-897-5465.

SCHEDULE:

The weeks shown for Exams 1 and 2 below are definite, but the exam dates are not yet definite; when they are, I will revise this document accordingly. The other dates are just suggestions about when you should study what, arbitrarily assuming a Tuesday/Thursday schedule. In the schedule:

(12) text in parentheses, like this (), pertains to the 12th edition of the textbook;
 {11} text in braces, like this {}, pertains to the 11th edition of the textbook;
 [10] text in brackets, like this [], pertains to the 10th edition of the textbook; and
 9 text not in parentheses, braces, or brackets pertains to the 9th edition.

If there are no parentheses, brackets, or braces, the numbering is the same as the 9th edition. The words in blue are hyperlinks to the relevant module in Canvas.

- 1/11, 1/13: [A. Mathematics](#). Appendix to Chapter 1
- 1/18, 1/20: [B. The Theory of Choice](#). Chapter 2
- 1/25, 1/27, 2/1: [C. Changes in Income and Prices](#). Chapter 3
- 2/3, 2/8: [D. Market Demand and Elasticity](#). Chapter 4{3}(3 but not section 3-9)
- 2/10, 2/15: [F. The Technology of Production](#). Chapter 5[7]{6}(6)
- 2/17: Chapter 5[7]{6}(6)
- 2/22–2/24: Exam on demand (the chapters before 5[7]{6}(6); A/B/C/D in old exam packet); **Exam Feb 24–26**
- 2/22, 2/24, 3/1, 3/3, 3/15: [G. Cost Functions](#). Chapter 6[8]{7}(7)
- 3/17, 3/22, 3/24, 3/29: [H. Profit](#). Chapter 7[9]{8}(8) (flat MR)
- 3/31, 4/5: [I. Competitive Equilibrium](#). Chapter 8 pages 253–267 only [297–309] {303–316} (277–289).
- [J. Tax Incidence](#). Chapter 9, 293–297 [333–339] {330–332} (302–306)
- 4/7–4/12: Exam on supply (Chapters 5/6/7 [7/8/9] {6/7/8} (6/7/8); F/G/H in old exam packet); **Exam Apr 7–9**
- 4/7, 4/12: [K. Monopoly](#). Chapter 10, not 351 ff. [13, not 398ff.] {11, not 397ff.} (11, not 364ff.), rest of Chapter 7[9]{8}(9).
- [K. Consumer and Producer Surplus](#). Chapter 9[11]{9}(sections 3-9 and 9-9) (284–291)[325–331]{324–330}(99–102 and 296–301)
- 4/14: [L. Input Markets](#). Chapter 13[15]{13}(13)
- 4/19, 4/21: [M. Dynamic Economics](#). Chapter 14[16]{14}(14) & its appendix.
- 4/26: [E. The Edgeworth Box](#). Pp. 324–328 [363–367] {360–364} (section 10.7)
- 4/28?–5/4?: comprehensive Final Exam ; **Exam Apr 28–30**

This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. Any changes will be announced in class.

Supplemental Information

COURSE OVERVIEW: We will first study how to sketch the graph of a function's average and of its marginal. Next, neoclassical consumer theory (utility maximization subject to budget constraints). The middle part of the course is a very careful study of the neoclassical theory of the firm: total product curves (& their averages and marginals), total cost curves, both in the short run and in the long run (& their averages and marginals), total revenue curves (& their averages and marginals), and total profit curves (& their averages and marginals). After this comes single-market equilibrium (competitive and monopolistic), and an application to tax incidence. The course ends with an introduction to general equilibrium and welfare economics using the Edgeworth-Bowley Box.

SPECIFIC COURSE OBJECTIVES: In particular, students should learn to do the following.

1. Given only a sketch of the graph of a function $f(x)$, sketch the graph of its average and of its derivative (its "marginal"), as a function of x . Also, be able to do this even when the function (f) is not everywhere differentiable (so one can discuss income tax "brackets").
2. Given only a sketch of the average and marginal of $f(x)$, sketch the graph of $f(x)$ itself.
3. Identify and construct convex and concave functions.
4. Draw indifference curves for monotonic and nonmonotonic preferences, and identify the Marginal Rate of Substitution of these curves.
5. Draw budget constraints (both linear and nonlinear) given an explicit or implicit algebraic description of them.
6. Having drawn both indifference curves and budget constraints, show the utility-maximizing point (both for interior and boundary maxima).
7. On such a graph, illustrate the effect of changes in prices or income (sketching income expansion paths, from there sketching Engel curves and identifying inferior and normal goods and the income effect; and sketching price-offer curves, and from there identifying complements, substitutes, Giffen goods, and the substitution effect). Apply this to lump sum versus ad valorem taxation.
8. Aggregate individual demand curves and calculate and interpret their own-, cross-, and price-elasticities.

9. Explain neoclassical production functions, draw their isoquants, and both derive and sketch their average product and marginal product curves. In this context, calculate returns to scale, demonstrate the Law of Diminishing Returns, and explain why returns to scale are unrelated to diminishing returns. Calculate Rate of Technical Substitution.
10. Explain capital aggregation problems and the importance of this critique for neoclassical production theory and for its non-neoclassical alternatives.
11. Derive the sketch of the total cost, average cost, and marginal cost functions, both in the short run (for the cases when diminishing returns begin immediately and when diminishing returns do not begin immediately) and in the long run (for the cases of increasing-, constant-, decreasing-, and first-increasing-and-then-decreasing returns to scale). In the short run, identify and graph total, average, and marginal fixed cost and total, average, and marginal variable cost.
12. Graphically derive the cost-minimizing point from a derivation of the firms' isoquants and isocost curves.
13. Explain the idea of perfect competition.
14. Graph total revenue, average revenue, and marginal revenue curves for competitive firms.
15. Identify profit both on graphs of total revenue and total cost, and on graphs of average and marginal revenues and costs (both in the long run and in the short run). Identify the profit-maximizing level of output on these graphs.
16. Explain the implications of U-shaped average cost curves on existence of a competitive equilibrium.
17. Locate the incidences of a tax on a "supply and demand" diagram.
18. Explain and graph the profit-maximizing quantity for a monopolist. Contrast this with the competitive equilibrium. Also discuss the welfare consequences of monopoly, using consumer surplus, producer surplus, and social surplus.
19. For input markets, generate the total expense, average expense, and marginal expense curves; the marginal revenue product curve; and the profit-maximizing input demand. Do this both for competitive input markets and for monopsonists. Discuss the welfare consequences of monopsony, using rent and the social surplus going to input demanders.
20. Calculate the present discounted value of a cash flow and use it to make intertemporal decisions.

21. Draw and explain Edgeworth Boxes, then use them to analyze Pareto Optimality and the First Theorem of Welfare Economics. Explain the limitations of Pareto Optimality as a guide to policy.
22. Understand the caution that most attempts by U.S. textbooks to connect these topics to “real life” advance a particular ideological and political viewpoint, and because of the narrow assumptions required for the analyses taught in this class to be valid, most of those attempts are incorrect because the required technical assumptions fail to hold. Illustrate this with timely examples generated in collaboration with students.