Intermediate Microeconomics with Calculus
ECNS 301
Fall 2015 Syllabus

Time & Location: TR 9:25-10:40 in Reid Hall 101

Course Page: http://www.montana.edu/jpearcy/ecns301/

Instructor: Jason Pearcy
Linfield Hall Room 304
(Between the 3rd and 4th floors on the main stairway)
E-mail: pearcy.teaching@gmail.com

Office Hours: Tuesday 1:00-2:15
Tuesday 3:15-4:30
and by appointment

Teaching Assistant: Samuel Knox
Office: Linfield Hall Room 106
Monday 10:00 - 12:00
Wednesday 10:00 - 12:00


Other Texts:

Course Description:
The goal of this course is to provide a better understanding of microeconomics. We’ll build on the microeconomic principles you’ve already learned and examine some of these principles in depth. Besides providing general intuition for microeconomic concepts, we’ll think about microeconomic concepts mathematically. Mathematics, calculus in particular, makes the in depth analysis of microeconomic principles much easier (really!) and much more insightful. This course will also prepare you for upper-division courses in economics.

The course is divided into four parts. The first part of the course, deals with consumer theory. We start with basic consumer preferences and then discuss utility functions and budget constraints. We’ll cover the consumer’s utility maximization problem as well as market demand and consumer welfare. In the second part of the course, we examine the theory of the firm/producer theory. We start with production and then move on to firm costs and the profit maximization problem.
The third part of the course deals with markets and combines both consumer theory and producer theory. We’ll cover many types of specific partial equilibrium models including perfect competition, monopoly, oligopoly and monopolistic competition. We’ll also cover general equilibrium models and discuss related issues of efficiency and welfare.

The fourth part of the course covers additional topics. Time permitting we can cover any topics that generate sufficient interest. Ideally we’ll have time to cover risk and uncertainty along with externalities, common resources and public goods. Other potential topics include revealed preferences, discrete choice, auctions, asymmetric information, price discrimination, asset markets and behavioral economics.

My goal is to make this course both challenging and intellectually stimulating. To help me achieve this goal and for you to get the most out of this course, there are certain things I expect for you to do throughout the semester. First off, you should read the book. It supplements the material presented in class well and the book generally follows the course outline. Besides reading the book, you should work on problems. I’ll sometimes give you problems in class, you’ll have problems to do for homework, there are problems in the book, there are problems in the study guide (if you purchased it), and there are problems online. The more problems you do, the more you will understand the material, the better you will do in the class, and the more you will get out of the class. I want everyone to do well in the class, but how well you do is up to you. You’ll have to work hard, read the book, do lots of problems, but if you are having issues with the material, I am here to help. So, be sure to ask questions during class and come see me during office hours if you have additional questions about the material.

Course Objectives:

Students who successfully complete ECNS 301 will have:

- a solid foundation in calculus-based microeconomics, including consumer theory, firm behavior, competitive markets, monopoly, imperfect competition, and extensions of the basic theory to additional topics such as game theory, externalities, public goods, and asymmetric information. This will be assessed via homework and exam questions.

- the ability to apply mathematical tools (e.g., partial derivatives) they have learned in calculus courses to a variety of problems. This will be assessed via homework and exam questions.

- the ability to use mathematics and graphs, in conjunction with good writing, to explain economic phenomena. This will be assessed via homework and exam questions.

- the ability to use calculus-based microeconomics to reason their way through abstract problems and real policy issues, and to explain how abstract problems can provide insight into the real world. This will be assessed via homework and exam questions.

- the preparation necessary to do well in field courses that have calculus-based microeconomics as a prerequisite. This will be assessed via homework and exam questions.
**Instructor Access/Contact:**

I care a great deal about whether or not you understand the material. If you have questions regarding the course content, I want to make sure your questions get addressed in an efficient and timely manner. For questions about the material or course that you prefer to not ask in class, my contact information is listed above. Ceteris paribus, the preferred method of contact is for you to see me during office hours. You can also email me or leave a voice-mail. Keep in mind that voice-mail is the least preferred method of contact and is rarely ever checked.

I am almost always in my office at the beginning of office hours and am able to help with questions at any time during schedule office hours. In my experience, most students come to office hours at the beginning of the scheduled period. I’ll make my best effort to be in my office during the entire scheduled office hour period, but may leave if no one shows up after a significant amount of time. If you intend to come to office hours midway through or at the end of the scheduled period, please let me know during class or send me an email. If your schedule conflicts with the office hours listed above, let me know the first week of class so that I might reschedule office hours for the benefit of the class. If you have many questions or your time is limited you might want to make an appointment which can be done after class or via email.

In many cases it may be more appropriate or more convenient to email me. Please keep in mind that I respond to student emails during scheduled office hours, if not before. I do this to give students the proper incentive to utilize office hours. The expected length of time for which I respond to an email may differ from your general expectations.

**Prerequisites:**

Students are expected to already be familiar with the material covered in an introductory microeconomics course (ECNS 204 or ECNS 251) and students are also expected to know calculus (M 161 or M171).

**Class:**

In class new material will be presented, we’ll discuss readings, review assignments, review exams and you’ll have the chance to ask questions. Occasionally you might be given an assignment in class to be covered during class or in the next class. All students are strongly encouraged to attend class regularly. Attendance and participation are part of your homework grade and some exam questions will not be covered in the text but only covered during class. In the off chance that you miss a class, you should try to get notes from a fellow student, if they are willing to share.

**Grading:**

Your course grade will be based on three exams and your homework grade. Exam dates are listed below. The breakdown of grades is as follows:

- 25% for Exam 1,
• 25% for Exam 2,
• 30% for Exam 3,
• 20% for homework,

Your grades on each exam and homework assignment will be posted on Desire2Learn.

There will be no extra credit opportunities available, but I will use a curve. If the median on any of the exams is below a 75%, I will add the same amount of raw points to everyone’s score until the median is 75%. If the median is above 75%, then either everyone really understands the material or I have written too easy of an exam. In either case, students should not be punished for this, so I will not curve scores downwards. There will be a separate curve for each of the exams.

Your homework score will be determined by your performance on any assignments, your attendance and participation. The averaging method used for your homework score will be determined at the end of the semester and may vary from a simple average to a continuous non-linear weighted average. The same curving scheme described above will be applied to your overall homework score and not to individual assignments.

Exams:

The first two exams will take place during regular class time in the regular class room on the dates listed below. The third exam will take place during finals week on the date, time, and place listed below. You’ll need to bring a blue book and you’ll probably want to bring a calculator (no cell phone calculators allowed). The number of questions on each exam may vary. The format of the questions will be short answer and will contain both numerical and written questions. Exam questions will be based on material covered in the book and/or in class. A minority of the questions will test your memory and understanding of the definitions and concepts covered, and a majority of the questions will test your ability to synthesize the material and apply the concepts in a new context. I’ll talk more about each exam as the exam date approaches.

Make-ups for any exam are never allowed under any circumstances. In very rare cases under compelling circumstances, you may be able to take an exam early, but you are required to make prior arrangements before the exam at least one week in advance. In the event that a make-up exam is warranted, I may choose to prorate your exam grade.

Homework Assignments:

Homework assignments will either be assigned in class or posted on the course website or posted on Desire2Learn. I will announce in class when and where homework assignments are posted and the date they are due. No late homework will be accepted. You will not be able to submit your homework during or after class on the day it is due, but you may submit your homework assignments anytime before the due date. It is your responsibility to attend class and check the course website to obtain the homework assignments and make sure they are submitted on time. Any work submitted as a hard-copy which contains multiple pages must be stapled together to be graded.
Important Dates:

University Calendar
University Drop/Add Dates
Classes Start Mon. Aug. 24
Labor Day Mon. Sept. 7
Exam 1 Tues. Oct. 6
Election Day Tues. Nov. 3
Exam 2 Thurs. Nov. 5
Veteran’s Day Wed. Nov. 11
Thanksgiving Break Wed. Nov. 25 - Fri. Nov. 27
Last Day to Drop Thurs. Nov. 19
Last Day of Class Fri. Dec. 4
Final Exam Mon. Dec. 7 12:00 p.m.-1:50 p.m. in Reid 101

Additional Notes:

If you qualify for accommodations because of a disability, please submit to me a letter or card from Disabled Student Services (DSS) early in the semester so that your needs may be addressed. DSS determines accommodations based on documented disabilities. Contact: 406-994-2824, http://www.montana.edu/wwwres/disability/. Disability Student Services’ letters or cards for students with disabilities indicate legally mandated reasonable accommodations. Other letters/requests you may receive from agencies such as Student Health Services, or other health providers, such as physicians or counselors, are recommendations I may choose to follow to assist students but are not necessarily legal mandates.

I will make every effort to reasonably and fairly deal with all students who, because of religious or cultural obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, accommodations will be made, but only with adequate advanced notification.

Students and faculty each have responsibility for maintaining an appropriate learning environment. Students who fail to adhere to behavioral standards may be subject to discipline. Faculty have the professional responsibility to treat students with understanding, dignity and respect, to guide classroom discussion and to set reasonable limits on the manner in which students express opinions. See policies at http://www2.montana.edu/policy/student_conduct/student_conduct_code.htm.

All students are responsible for knowing and adhering to the academic integrity policy of this institution. All incidents of academic misconduct shall be reported to the Dean of Students. Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Other information on academic misconduct can be found at http://www2.montana.edu/policy/student_conduct/student_conduct_code.htm.

Montana State University’s Harassment Policy applies to all students, staff and faculty. Sexual harassment is unwelcome sexual attention. It can involve intimidation, threats, coercion, promises or create an environment that is hostile or offensive. Harassment may occur
between members of the same or opposite gender and between any combination of members in
the campus community: students, faculty, staff, and administrators. Harassment can occur
anywhere on campus, including the classroom, the workplace, or a residence hall. Informa-
tion about Montana State University’s Harassment Policy and information about how to file
a complaint can be found at http://www2.montana.edu/policy/affirmative_action/.

Be aware of the Drop/Add deadlines listed in the Registration Handbook (http://www.montana.edu/registrar/pdfs/RegistrationHandbook.pdf) on the Registrar’s website. If the class if full email Jane Boyd at aboyd@montana.edu to be added to the wait-list.

If you have three or more final exams scheduled on the same day, you are entitled to
arrange an alternative exam time for the last exam or exams scheduled on that day. To
qualify for rescheduling final exam times, you must provide evidence that you have three or
more exams on the same day, and arrangements must be made with me no later than the
end of the sixth week of the semester. For the complete final examination policy, see the
final exam schedule (http://www.montana.edu/registrar/Schedules.html).

**Tentative Course Outline:**

<table>
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<tr>
<th>Week</th>
<th>Topic</th>
<th>Book Chapter</th>
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<tbody>
<tr>
<td>Week 1</td>
<td><strong>Math Review:</strong> Functions, monotonicity, concavity, convexity, differentiation</td>
<td>Math Appendix</td>
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<td><strong>Optimization:</strong> unconstrained univariate, unconstrained multivariate, constrained multivariate</td>
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<tr>
<td>Week 2</td>
<td><strong>Micro Review I:</strong> Demand curves, demand functions, shifts versus movements, aggregation, supply curves, supply functions, shifts versus movements, market equilibrium, comparative statics</td>
<td>Chapters 1 &amp; 15</td>
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<td>Week 3</td>
<td><strong>Micro Review II:</strong> Price elasticity of demand, revenue and elasticity, other elasticity measures, taxes on goods, per-unit taxes, ad-valorem taxes</td>
<td>Chapters 16 &amp; 3</td>
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<td><strong>Consumer Theory:</strong> Overview, preferences, preference relations, properties of preference relations</td>
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<td>Week 4</td>
<td><strong>Consumer Theory:</strong> Indifference curves, properties of indifference curves, utility, examples of utility functions, budget constraint, taxes, rationing</td>
<td>Chapters 2 &amp; 4</td>
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<td>Week 5</td>
<td><strong>The Consumer’s Problem:</strong> Constrained optimization, quantity demanded</td>
<td>Chapter 5</td>
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### Tentative Course Outline – *Continued from previous page*

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<tr>
<td>Week 6</td>
<td><strong>Comparative Statics:</strong> General consumer’s problem, derivation of demand functions, comparative statics, income effects, Engel curve, price effects, Giffen goods, law of compensated demand, gross substitutes/complements</td>
<td>Chapter 6</td>
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<td>Week 7</td>
<td><strong>Exam 1 - Tues. Oct. 6</strong></td>
<td>Chapters 1-16</td>
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<td><strong>Comparative Statics II:</strong> Hicksian decomposition, Slutsky equation, income and substitution effects, duality</td>
<td>Chapter 8</td>
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<td>Week 8</td>
<td><strong>Consumer Welfare:</strong> Compensating variation, equivalent variation, consumer surplus, comparison of welfare measures, policy analysis</td>
<td>Chapter 14</td>
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<td>Week 9</td>
<td><strong>Producer Theory:</strong> Types of firms, theory of the firm, production, inputs, production function, marginal products, marginal returns</td>
<td>Chapters 19-20</td>
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<td>Week 10</td>
<td><strong>Production:</strong> Isoquants, properties of isoquants, returns</td>
<td>Chapter 21</td>
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<td>to scale, productivity and technical change</td>
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<td><strong>Costs:</strong> Accounting and economic, short-run levels, short-run averages, graphical interpretation, long run costs, cost minimization problem</td>
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<td>Week 11</td>
<td><strong>Election Day Holiday:</strong> Tues. Nov. 3</td>
<td>Chapters 6-21</td>
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<td><strong>Exam 2 - Thurs. Nov. 5</strong></td>
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<td>Week 12</td>
<td><strong>Veteran’s Day:</strong> Wed. Nov. 11</td>
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<td><strong>Costs II:</strong> Conditional input demands, cost functions, comparative statics, scale and scope</td>
<td>Chapter 22</td>
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<td><strong>Profit Maximization:</strong> Residual demand and market structure, profit maximization problem</td>
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<td>Week 13</td>
<td><strong>Last Day to Drop - Thurs. Nov. 19</strong></td>
<td>Chapters 23-24</td>
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<td><strong>Perfect Competition:</strong> Production decisions, short-run and long-run market supply, dynamics of perfect competition</td>
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<td>Week 14</td>
<td><strong>Monopoly:</strong> Overview, barriers to entry, profit maximization problem, deadweight loss, antitrust and regulation, price discrimination</td>
<td>Chapters 25-26</td>
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<td><strong>Thanksgiving Break:</strong> Wed. Nov. 25 - Fri. Nov. 27</td>
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<td>Week 15</td>
<td><strong>Game Theory:</strong> Elements of a game, types of games, solution techniques and equilibrium concepts for strategic form games, solution techniques and equilibrium concepts for extensive form games, repeated games and the folk theorem, mixed strategies, Cournot Duopoly</td>
<td>Chapters 28-30</td>
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<td>Time General equilibrium, risk and uncertainty, public goods, Permitting externalities, common resources, auctions, discrete choice, asymmetric information, asset markets</td>
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<td>Week 16</td>
<td><strong>Exam 3</strong> - Mon. Dec. 7 12:00 p.m.-1:50 p.m. in Reid 101</td>
<td>Chapters 1-30</td>
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Last Updated Monday 24th August, 2015