Course Description

Instruction in the mathematical background is required to appreciate and understand the use of mathematics in economic analysis, including multivariable calculus, integral calculus, and linear algebra. Emphasis is placed on techniques for solving systems of equations, unconstrained and constrained optimization, and comparative statics analysis.

Course Goals

By the end of this course, you will be able to:

- Apply basic rules of calculus to mathematical functions.
- Identify stationary points (e.g., maximums and minimums) and inflection points for constrained and unconstrained optimization problems.
- Apply matrix operations to systems of equations
- Determine the antiderivative of a function and value of a definite integral.

Prerequisites

Academic

There are no prerequisites for this course.

Technological

As a student in an online course, you need to ensure that you have the required technology and skills necessary to fully participate. Please consult the GW Online website (https://online.gwu.edu/student-support) for further information.
You should also be able to:

- Use a personal computer and its peripherals
- Use word processing and other productivity software
- Use the webcam and microphone on your device
- Use your computer to upload recordings and images
- Seek technological help when necessary by contacting the Division of Information Technology
  - web: https://it.gwu.edu
  - telephone: (202) 994-4948

If you have any problems with the software in this course, please reference the Technology Help link in the left navigation menu in our course on Blackboard.

Textbooks & Materials


You may find that purchasing textbooks at gettextbooks.com will save you money. It’s an alternative to Amazon, among others.

Credit Hour Policy

Summer courses are twice as intensive as those held during the academic year. Over 6 weeks, students will spend 6 hours (360 minutes) per week engaging in direct instructions (recorded course videos, synchronous sessions, and discussion exercises) and 12.75 hours (765 minutes) per week doing independent learning, including, but not limited to, readings, assignments and course exams. This amount to 36 hours of direct-instruction and 76.5 hours independent coursework. Instructional time includes a 2-hour final exam.

Methods of Instruction

This course uses the following methods of instruction:

- **Lectures:** Lectures will consist of PowerPoint presentations with and without audio and videos with closed captioning available.
■ Readings: Textbook chapters are required for each module.
■ Discussion: Online discussions are based on the weekly PowerPoint presentations and problem sets.
■ Problem sets: Each module consists of problem sets that are to be completed each week.
■ Midterm exam: Midterm exam will be given the first 3 days of module 4. Please balance your workload for week 4.
■ Final exam: Final exam will be given the last 2 days of module 6. Please balance your workload for week 6.

Grading

This course uses a percent based grading schema, as shown below.

<table>
<thead>
<tr>
<th>Assignment Type</th>
<th>Point Value Per Assignment</th>
<th>Number of Assignments</th>
<th>Total Percent of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem sets</td>
<td>100</td>
<td>6</td>
<td>24%</td>
</tr>
<tr>
<td>Discussion boards</td>
<td>100</td>
<td>6</td>
<td>6%</td>
</tr>
<tr>
<td>Midterm</td>
<td>100</td>
<td>1</td>
<td>35%</td>
</tr>
<tr>
<td>Final (Note: The final is cumulative.)</td>
<td>100</td>
<td>1</td>
<td>35%</td>
</tr>
</tbody>
</table>

The grading scale is based on 100 percent

- 100 – 93: A
- 86 – 83: B
- 76 – 73: C
- 66 – 63: D
- 92 – 90: A-
- 82 – 80: B-
- 72 – 70: C-
- 62 – 60: D-
- 89 – 87: B+
- 79 – 77: C+
- 69 – 67: D+
- <60: F

Due Dates

Below is a list of the major due dates in this course. Detailed assignment instructions are posted in Blackboard. These due dates are subject to revision based upon class progress.
## Timeframe

<table>
<thead>
<tr>
<th>Timeframe</th>
<th>Reading</th>
<th>Discussions</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week 1</strong>&lt;br&gt;July 2 - 8</td>
<td>Ch. 2.1-2.6 3.1-3.3; 3.5; 4.1; 5.1-5.6</td>
<td>Discussion 1&lt;br&gt;Due: July 6</td>
<td>Problem Set 1&lt;br&gt;Due: July 8</td>
</tr>
<tr>
<td><strong>Week 2</strong>&lt;br&gt;July 9 - 15</td>
<td>Ch. A.4.1-4.3</td>
<td>Discussion 2&lt;br&gt;Due: July 13</td>
<td>Problem Set 2&lt;br&gt;Due: July 15</td>
</tr>
<tr>
<td><strong>Week 3</strong>&lt;br&gt;July 16 - 22</td>
<td>Ch. 7.1-7.3; 8.1-8.3; 9.1-9.2</td>
<td>Discussion 3&lt;br&gt;Due: July 20</td>
<td>Problem Set 3&lt;br&gt;Due: July 22</td>
</tr>
<tr>
<td><strong>Week 4</strong>&lt;br&gt;July 23 - 29</td>
<td>Ch. 2.7, Ch. 14.1-14.8</td>
<td>Discussion 4&lt;br&gt;Due: July 27</td>
<td>Problem Set 4&lt;br&gt;Due: July 29</td>
</tr>
<tr>
<td>July 23 - 25</td>
<td><strong>Midterm Exam - Due July 25</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Week 5</strong>&lt;br&gt;July 30 - August 5</td>
<td>Ch. 17.1-17.3; 17.5</td>
<td>Discussion 5&lt;br&gt;Due: August 3</td>
<td>Problem Set 5&lt;br&gt;Due: August 5</td>
</tr>
<tr>
<td><strong>Week 6</strong>&lt;br&gt;August 6 - 11</td>
<td>18.1-18.2; 19.3; 22.1</td>
<td>Discussion 6&lt;br&gt;Due: August 8</td>
<td>Problem Set 6&lt;br&gt;Due: August 9</td>
</tr>
<tr>
<td>August 10 - 11</td>
<td><strong>Final Exam - Due August 11</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Difference in Time Zone

All the times in our Blackboard course correspond to the United States Eastern Time zone. It is your responsibility to convert these times to the time zone of your location so that you can meet the deadlines in the course.

## Policies

### Disability Support Services & Accessibility

If you need disability accommodations, please register with Disability Support Services (DSS) at disabilitysupport.gwu.edu/registration. If you have questions about disability accommodations, contact DSS at 202-994-8250 or dss@gwu.edu or visit them in person in Rome Hall, Suite 102, 801 22nd St., NW, Washington DC.
For information about how the course technology is accessible to all learners, see the following resources:

- Blackboard accessibility
  - [http://www.blackboard.com/accessibility.aspx](http://www.blackboard.com/accessibility.aspx)
- Kaltura (video platform) accessibility
- iSpring accessibility
  - [https://www.ispringsolutions.com/articles/ispring-pro-section-508-vpat.html#section_1194-21](https://www.ispringsolutions.com/articles/ispring-pro-section-508-vpat.html#section_1194-21)
- Microsoft Office accessibility

**Instructor Response Time**

I will respond to emails within 24 hours on weekdays and on the next business day over weekends and holidays. I will return assignments within one week.

**Late Work**

This syllabus provides all relevant due dates for assignments. It is your responsibility to ensure that I receive them on time by 11:59 PM ET on the day they are due. Late assignments will be marked down for each day they are late (only extreme circumstances warrant exception).

**Academic Integrity**

Please review GW's policy on academic integrity, located at [http://studentconduct.gwu.edu/](http://studentconduct.gwu.edu/). All graded work must be completed in accordance with the George Washington University Code of Academic Integrity.

I personally support the GW Code of Academic Integrity. It states: **“Academic dishonesty is defined as cheating of any kind, including misrepresenting one’s own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information.”** Please note that allowing another student to copy your work is defined as cheating under the Academic Integrity code.

Common examples of academically dishonest behavior include, but are not limited to:
■ Cheating
■ Fabrication
■ Plagiarism
■ Falsification and forgery of University academic documents
■ Facilitating academic dishonesty
Sanctions range from failure of the assignment, to failure of the course, to suspension or expulsion from the University. For the remainder of the code, see:  http://www.gwu.edu/~ntegrity/code.html

All students need to be familiar with GW's Code of Academic Integrity. Item 3 in Section 1 of Article II of the Code deals with plagiarism.

“Plagiarism - intentionally representing the words, ideas, or sequence of ideas of another as one's own in any academic exercise; failure to attribute any of the following: quotations, paraphrases, or borrowed information.”

For a full set of definitions, see:  http://www.gwu.edu/~ntegrity/code.html#definition

For the full Code, see:  http://www.gwu.edu/~ntegrity/code.html

Plagiarism and How to Avoid It

Plagiarism is a serious matter both inside and outside academia. Students are responsible for becoming familiar with the different forms that plagiarism can take. Ignorance doesn’t exempt students from being penalized for plagiarism. It is essential to educate yourself about what constitutes plagiarism before writing an essay for a take-home exam, a term paper, a dissertation, or a report in the workplace. Students have failed the course or been expelled because of plagiarism.

You can find a good overview of plagiarism and how to avoid it at:  http://widstudents.wordpress.com/tag/plagiarism/

It’s worth reading through the entire web page, including the section titled "Plagiarism Tales at GW." The following document has good examples of the different forms that plagiarism can take (in Section 4). You should read 1-4 carefully. The document should dispel the possible misconception that plagiarism is committed only when an entire paper, or large parts of a paper, are copied. That is NOT the case. Copying a sentence or even a phrase without properly attributing it constitutes plagiarism.
http://www.ece.msstate.edu/~fowler/Classes/plagiarism.pdf

On the important distinctions among quoting, paraphrasing, and summarizing, see: http://owl.english.purdue.edu/owl/resource/563/01/

On the proper use of quotations, see: http://writingcenter.unc.edu/resources/handouts-demos/citation/quotations

GW Acceptable Use Policy for Computing Systems and Services

All members of the George Washington University must read and comply with the Acceptable Use Policy when accessing and using computing systems and services, including email and Blackboard. Please read the Acceptable Use Policy (http://my.gwu.edu/files/policies/Acceptable_Use%20FINAL.pdf) to familiarize yourself with how GW systems are to be used ethically.

Netiquette

Please observe the following rules of netiquette for communicating online:

■ Remain professional, respectful, and courteous at all times.
■ Remember that a real human being wrote each post and will read what you write in response. It is easy to misinterpret discussion posts. Let’s give the benefit of the doubt.
■ If you have a strong opinion on a topic, it is acceptable to express it as long as it is not phrased as an attack. Please be gracious with differing opinions.
■ When upset, wait a day or two prior to posting. Messages posted (or emailed) in anger are often regretted later.
■ Proofread and use the spell check tool when you type a post. It makes the post easier to read and helps your readers understand what you are saying.

I reserve the right to delete any post that is deemed inappropriate for the discussion forum, blog, or wiki without prior notification to the student. This includes any post containing language that is offensive, rude, profane, racist, or hateful. Posts that are seriously off-topic or serve no purpose other than to vent frustration will also be removed.