**Spring 2020 Course Syllabus  3-25-2020 Version (Page 6 on 3-29-2020)**

**LL 205: Quantitative Reasoning:** Credit Hours: 4

DePaul University  School of Continuing and Professional Studies (SCPS)

**Term and Campus:** Spring 2020, DePaul Loop Campus, remotely by “Zoom” app via D2L.
**Dates:** Mondays, Mar. 30 through June 8, 2020. Note: Eleven class meetings, includes Exam Week.
**Class Time:** 5:45 – 9:00 p.m.  **Room:** (Lewis 1411 was planned), but class will meet online.

**Faculty:** Eric Thor, 5504 N. Sawyer Ave., Chicago, Illinois  60625
**Phone:** Telephone is the best way to contact me. Landline 773-588-0482; Cell 312-771-0482
**E-mail:** ethor@depaul.edu

**Office Hours:** Class days before or after class, also via phone or appointment or Study Group.

**Competence Offered (4 credit hours):**

L-6: “Can use mathematical symbols, concepts, and methods to describe and solve problems.
1. Understands how variables are expressed and transformed through symbolic representations.
2. Interprets complex relationships of variables expressed verbally or symbolically.
3. Employs a mathematical process to explain or solve a problem.”

We are mandated, not just to solve math problems that someone else presents to us, but also to consider and discuss life situations, sometimes asking, then solving, our own questions. We seek to communicate clearly while using math to understand (and possibly influence) our world.

**Text and Materials:** Adjusted due to Covid-19 pandemic. (Prices approximate.)

**TWO REQUIRED ITEMS:**
1. Pay for your own access to Pearson’s website for our course. Buy online, $105.
   Get correct Pearson link from Eric Thor before buying.
2. Scientific calculator. A two-line display is best, such as the TI-30XIIS, $20.

**SUGGESTED:**

**Course Requirements:**
- **Attend and participate** actively every week. We get together to do math, not just to watch. Missing any classes is strongly discouraged.
- **Stay current** on assignments, and submit work online every week, even if it is incomplete. You can always improve your work later and submit it again for a better grade.
- Follow DePaul University guidelines on academic integrity, as found in the Student Handbook. Summarized in three words: “Tell the truth!” In our math class, this means: “Get all the help you may need, but don’t turn in somebody else’s work as your own. Do the problems yourself.”
- **Show lots of work,** both to clarify your own thought processes and to inform your readers.
- **Goal:** Be able to explain a situation, what you did with it, and why you believe in your result.
**Work and Assessment: What to expect.**


Your term grade will be based on the following weighted factors:

- 30% Class attendance and participation. Be there (by Zoom), and be active.
- 50% Assigned Homework & Quizzes on Pearson website. Goal: Use website every day!
- 10% ‘WorkSheets,’ ‘Show & Tell,’ & Midterm. Participation outweighs scores on these activities.
- 10% Final Exam score. Use your ‘Open Notes Help Sheet.’

The grading scale will be:

- 90-100% = A
- 80-89% = B
- 70-79% = C
- 60-69% = D
- 0-59% = F

By default, course is graded A, B, C, D, or F. You may request Pass/Fail grading if you prefer. In Pass/Fail grading, “C” or better (70% or better) is needed to pass and earn a “PA” grade, which would not affect your GPA. However, a Pass/Fail “F” would affect GPA, just as any other “F” would.

To be eligible for an Incomplete (“IN”) grade, you must already be passing the course at “C” or above.

**For Extra Help:**

- Communicate among us. Use our voluntary contact list or Desire2Learn (D2L) website.
- Organize or join a ‘Study Group.’
- Join us 30 minutes early on class days for voluntary tutoring and problem-solving.
- Call me any day, 10 a.m. until 10 p.m. I am a good telephone tutor; try me and see.
- Work with a tutor. Look or ask, and you’ll find there are many options at DePaul or elsewhere.
- Use Pearson, Khan Academy, Physics4Kids, and other websites for help.
- Acquire auxiliary math books or laminates. Start with your public library and DePaul’s libraries.
- Be kind to yourself: take a break, a walk, or a nap. Eat. Good things can happen when you relax and let your mind get a fresh start on a problem. And, as I will repeat many times, “Don’t worry.” Fear can motivate for a while, but mostly it interferes with learning and performance.

**Description of Quantitative Reasoning Course:**

Our course can help you prepare for other college courses, function effectively in a career, and use ‘critical thinking’ to handle issues of daily life. Our text authors say, “...look at mathematics in three ways: as the sum of its branches, as a way to model the world, and as a language.” I see math as a big collection of useful multi-purpose tools, and a great way to think and communicate clearly. “But,” you ask, “why choose these particular chapters and topics for our brief DePaul SNL course?” I reply:

**Arithmetic** and its abstracted cousin, **algebra**, provide basic ground rules and common language for quantitative discussions. Arising from nature itself, they have been organized and extended by human effort over thousands of years. They give us the words and grammar we need to move beyond English and become functionally literate in ‘Math-Speak.’

It’s a wild world out there. **Logic**, **critical thinking**, and **financial management skills** help us choose and sail our own life courses, instead of being buffeted by storms of confusion or deception. **Statistics** and **data analysis** are crucial in our society and its technologies. Collecting, processing, and using information affects our lives, more than we may realize. Each of us has the right and the responsibility to be engaged -- we can’t afford to just leave decisions up to the ‘experts.’

My goal is that each student be ready for life-long use and learning of mathematics at some personally appropriate level. I expect you to participate and improve, not to be, or become, perfect.
Your Learning Experience: Hints for success with math:

You already have a foundation. We’ll build on it. You probably know more about math and use it more often than you realize. Many math words came from everyday English, usually with related meanings. Watch for connections between previous knowledge and things we do in this course. While moving ahead, use your past; don’t leave it behind.

Be an efficient learner. Find and remember the general essence of material, and apply it when appropriate. For example, I’ll teach you a simple algorithm (set of instructions) to calculate an approximate square root of any number. Focus on the process and the context, not just the numbers, to get the most value from the activity. With a ‘big-picture’ understanding of all situations that involve roots, and all such algorithms, you’ll have new power to open many doors.

Do you experience math anxiety? Ever suffer like the man in “Hell’s library”? (Ask me about the cartoon.) If so, don’t give up. Even more important, don’t stagger under unreasonable self-imposed expectations, labeling yourself as incompetent or incapable. Surprise! You’re not supposed to move directly and confidently to every problem’s solution! Let yourself enjoy a good puzzle.

Slow down, relax, and think. See yourself as a lucky person – a thinker with a challenging puzzle in hand and plenty of time to spend on it. You needn’t rush to an answer. First, make sure you understand the story. Realize that unstated assumptions, deliberate or unintended ambiguities, even outright errors, could all misdirect you. A chosen road may lead you to a dead-end. If so, don’t quit. Turn around, backtrack, and re-examine the context while you ponder a new start.

Look for options to break down or skip around barriers. Often, you can translate the same material between different formats (e.g. numerical, symbolic, physical, geometric, pictorial, chart, or word problem versions). Skills or insights from one format may help you understand and function in other formats. Finding your own path through the wilderness can make math fun and exciting!


Use memory aids, because memory fades. Don’t pretend to have the proverbial photographic memory. Do build, and use, a tool kit of mnemonics (memory aids). Take notes, use acronyms or other reminder cues, and learn how to re-create that which was known but has been forgotten. We’ll share study and memory aids, always aware that the best aid is the one that works well for you.

Your Action Plan: Establish the habit of thinking quantitatively every day. Some suggestions:

Sit down and do coursework for at least one hour every day. Think about math, in a calm way, during other times. Mull over a problem you are stuck on, think up new questions, or review old material. Plan your ‘Show & Tell’ presentation. Keep your scratch papers. Start, and use, a personal course note-book.

Focus on the stories, more than on the numbers. As one poet said, “The universe is made of stories, not atoms.” Don’t start doing arithmetic too soon. First, be sure that you really understand the story. What is known? What are the constraints? What is sought? Second, devise a plan. Third, carry out your plan. Fourth, look back and check. (See George Polya, “How to Solve It.”)

Exercise your mind using multiple learning styles, the academic equivalent of cross training in physical sports. Read each section of your text at least twice. Talk things out in groups; do and turn in homework weekly. Make brief presentations to class or to a small group. Start now on your ‘Open Notes Help Sheet’ to use whenever in doubt. Reading, listening, or watching are all valuable. Sharing, talking, and doing are priceless. Give your mind a well-rounded workout in several venues every week. Your confidence and abilities will grow as you expand your ‘circle of comfort.’

Think, don’t worry. Worrying wastes energy. Use your valuable energy productively to build up understanding and skill. Think about solving problems, not about having problems.
**Week-by-Week:** See page 5 of this syllabus for “Schedule of Topics.” Don’t fall behind!
Do and submit Pearson online assignments, (“Thor…”), keyed to weekly Topics.
Log onto D2L regularly, then log onto Pearson via a link on D2L.

Some ‘WorkSheet’ assignments will be given during the term. We’ll help each other.

If you have access to the optional “Barron’s Mathematics Study Dictionary,” browse in it. Page references (see syllabus page 5) are chosen to enhance understanding of each week’s topics. Please check those pages regularly, plus any others that interest you.

Many excellent resource books could boost your mastery and enjoyment of quantitative material. One I love is “Adam Spencer’s Book of Numbers” by Adam Spencer.

**Get started:** On page 6 of syllabus, see how Chapter and Page numbers vary between text versions. In chapter “Approaches to Problem Solving,” read unit A “Working with Units” and the “Chapter Summary.” Notice two different uses of the same word, “unit.” Do “Quick Quiz” questions 1-10 from Unit A, writing down explanations of your answers. Find answers and solution methods for chapter exercises in the back of the book. Use them for checking and guidance, but please, never just copy them! This introduces you to the layout of the text and to the material on problem-solving methods.

**Your Instructor: Eric Thor**
I believe strongly in lifelong learning and teaching. Since 1975, I’ve taught mathematics in Chicago high schools and colleges. I’ve also taught sailing and other outdoor activities, environmental awareness, and computer skills to adults and to children. At various times I’ve also worked in manufacturing, sales, and stock market investing.

I’m still learning. I enjoy reading, both fiction and non-fiction, especially on historical, psychological, and science topics. I enjoy television – favorites include Turner Classic Movies, Public Television, Book TV and American History TV (on C-SPAN2 and 3), and reruns on H&I-TV. I pay attention to ads and commercials, and often react to the faulty logic, as well as the fascinating facts, found therein. (Ask me about a good-sounding piano, or moving a ton of freight by railroad.)

Philately, sailing, physical activity, travel, friends, family, gardening, and food bring me great pleasure. Environmental degradation, climate change, over-population, abuse of scarce resources, and misuse of dangerous materials are my greatest concerns.

Guess what? Everywhere I look, I find applications of logic and math, which may help explain why my love for these fields has grown through the years, not diminished.

My degrees are B.A. History, and M.S. Teaching Mathematics, both from the University of Illinois at Chicago. “Thank you!” to professors Grant O. Gale, A. I. ‘Izzy’ Weinzweig, Irwin K. ‘Bud’ Feinstein, and others who educated and inspired me in so many ways.

**Last Words:**
Please feel free to call or write anytime to share experiences or ask questions. Hearing from students is one of the great joys of being a teacher. But, I’m not on social media (no Twitter, Facebook, Linkedin, etc.), so please reach me in ‘old-fashioned’ ways (phone, email, or U.S. mail):

Call my home (landline) or cell phone, any day from 10 a.m. to 10 p.m.
Text to my cell phone number or email to ethor@depaul.edu at any time.

See page 7 of this syllabus for links to various DePaul policies and resources. Thanks for reading this far. Let’s have a worthwhile and fun course! Eric Thor
<table>
<thead>
<tr>
<th>Day #</th>
<th>Class Date</th>
<th>Custom Text Units &amp; Topics: Work Due on this date:</th>
<th>Barron’s Math Study Dictionary: Helpful pages &amp; topics for this week.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mar. 30</td>
<td>Introductions&lt;br&gt;Questions &amp; Answers re: Course, etc.&lt;br&gt;Some Basics of Math: “Use the Rules”&lt;br&gt;Start working on assignments</td>
<td>6-9 Algebra: Basics, Equations&lt;br&gt;14-15 Arithmetic: Basics&lt;br&gt;38-41 Shapes, Formulas, Fractions, Percents&lt;br&gt;86-87 Sets, Venn Diagrams</td>
</tr>
<tr>
<td>2</td>
<td>Apr. 6</td>
<td>1 A Working with Units</td>
<td>2-3 Abbreviations, Mnemonics&lt;br&gt;50-51 Kinematics, Speed&lt;br&gt;62-67 Number: Forms, Systems, Sets&lt;br&gt;88-89 Space, Shapes, Area, Volume&lt;br&gt;106-107 Temperature&lt;br&gt;116-119 Units, Conversions, SI (‘Metric Sys.’)</td>
</tr>
<tr>
<td>3</td>
<td>Apr. 13</td>
<td>1 B Problem-Solving with Units&lt;br&gt;1 C Problem-Solving Guidelines &amp; Hints</td>
<td>16-19 Arithmetic: Commercial, Four Rules&lt;br&gt;36-37 Factors, Multiples, Primes&lt;br&gt;98-101 Structures, Rules, Symbols&lt;br&gt;104-105 Techniques, Proportion, Exponents</td>
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<tr>
<td>4</td>
<td>Apr. 20</td>
<td>2 A Use vs. Abuse of Percentages&lt;br&gt;2 B Put Numbers in Perspective</td>
<td>4-5 Accuracy, Significant Digits&lt;br&gt;52-55 Logic&lt;br&gt;68-69 Pi, Approximations&lt;br&gt;110-111 Transformations, Scale Factors</td>
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<tr>
<td>5</td>
<td>Apr. 27</td>
<td>2 C Dealing with Uncertainty&lt;br&gt;2 D Index Numbers: CPI &amp; beyond&lt;br&gt;2 E How Numbers Can Deceive</td>
<td>16-17 Arithmetic: Commercial&lt;br&gt;34-35 Eponyms&lt;br&gt;122-127 Word: Confusions, Origins, Uses&lt;br&gt;128 x,y,z: Math Notation &amp; History</td>
</tr>
<tr>
<td>6</td>
<td>May 4</td>
<td>3 A Taking Control of Your Finances&lt;br&gt;3 B The Power of Compounding</td>
<td>76-77 Probability, Tree Diagrams&lt;br&gt;80-81 Quadrilaterals&lt;br&gt;112-113 Triangles</td>
</tr>
<tr>
<td>7</td>
<td>May 11</td>
<td>3 C Savings Plans &amp; Investments&lt;br&gt;3 D Loans, Credit Cards, Mortgages</td>
<td>12-13 Angles&lt;br&gt;48-49 Information, Spreadsheets, Bytes&lt;br&gt;90-97 Statistics</td>
</tr>
<tr>
<td>8</td>
<td>May 18</td>
<td>4 A Fundamentals of Statistics&lt;br&gt;4 B Believe a Statistical Study?&lt;br&gt;4 C Statistical Tables &amp; Graphs</td>
<td>22-27 Circles, Circle-Based Shapes&lt;br&gt;28-29 Coordinate Systems, Graphs&lt;br&gt;44-47 Circles, Pie Charts, Graphs</td>
</tr>
<tr>
<td>9</td>
<td>May 25</td>
<td>4 D Graphics in the Media&lt;br&gt;4 E Correlation &amp; Causality</td>
<td>30-31 Curves, Asymptotes&lt;br&gt;46-47 Graphs: Linear vs. Exponential</td>
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<td>Holiday; change?</td>
<td>Optional Syllabus Essay Deadline</td>
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<td>10</td>
<td>June 1</td>
<td>6 A Growth: Linear vs. Exponential&lt;br&gt;6 B Doubling Time &amp; Half-Life&lt;br&gt;6 C Real Population Growth&lt;br&gt;6 D Logarithmic Scales: Earthquakes, ...</td>
<td>10-11 Algebra: Functions&lt;br&gt;62-63 Exponents, Logarithms</td>
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<td>11</td>
<td>June 8</td>
<td><strong>Final Exam: Cumulative on all topics.</strong>&lt;br&gt;Review Final Exam and Course Lifelong Learning</td>
<td>60-61 Number Diversions&lt;br&gt;82-83 Recreational Math (Games)&lt;br&gt;102-103 Symmetry</td>
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<td>1 page 2</td>
<td>2 page 68</td>
<td>APPROACHES TO PROBLEM SOLVING</td>
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<td>A. Working with Units</td>
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<td>B. Problem-Solving with Units</td>
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<td>C. Problem-Solving Guidelines &amp; Hints</td>
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<tr>
<td>2 page 52</td>
<td>3 page 120</td>
<td>NUMBERS IN THE REAL WORLD</td>
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<td>A. Uses &amp; Abuses of Percentages</td>
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<td>B. Putting Numbers in Perspective</td>
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<td>C. Dealing with Uncertainty</td>
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<td>D. Index Numbers: The CPI and Beyond</td>
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<td>E. How Numbers Can Deceive: Polygraphs, etc.</td>
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<tr>
<td>3 page 118</td>
<td>4 page 190</td>
<td>MANAGING MONEY</td>
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<td>A. Taking Control of Your Finances</td>
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<td>B. The Power of Compounding</td>
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<td>C. Savings Plans &amp; Investments</td>
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<td>D. Loan Payments, Credit Cards, &amp; Mortgages</td>
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<td>E. Income Taxes (Skip Unit E.)</td>
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<td>F. Understanding the Federal Budget (Skip Unit F.)</td>
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<tr>
<td>4 page 218</td>
<td>5 page 292</td>
<td>STATISTICAL REASONING</td>
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<td>A. Fundamentals of Statistics</td>
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<td>B. Should You Believe a Statistical Study?</td>
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<td>C. Statistical Tables &amp; Graphs</td>
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<td>D. Graphics in the Media</td>
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<td>E. Correlation and Causality</td>
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<td>5 (pg 292)</td>
<td>7 (p 424)</td>
<td>PROBABILITY: LIVING WITH THE ODDS (Skip this chapter.)</td>
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<tr>
<td>6 page 354</td>
<td>8 page 488</td>
<td>EXPONENTIAL ASTONISHMENT</td>
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<td>A. Growth: Linear versus Exponential</td>
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<td>C. Real Population Growth</td>
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<td>D. Logarithmic Scales: Earthquakes, Sounds, &amp; Acids</td>
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1 (pg. 2) THINKING CRITICALLY (Highly recommended.)

6 (p 370) PUTTING STATISTICS TO WORK

9 (p 532) MODELING OUR WORLD

10 (p576) MODELING WITH GEOMETRY

11 (p620) MATHEMATICS AND THE ARTS

12 (p654) MATHEMATICS AND POLITICS (Highly recommended.)

Appendices Page 397

Find and use these extra aids in online text: page viii Preface, P-1 Prologue, E-1 Essay, A-1 Answers, I-1 Index
Links for some DePaul policies and resources, and for Pearson:

1. **Course Policies**

   Students: Be aware: This course includes and adheres to the college and university policies described in the links below:

   - [Academic Integrity Policy](https://degrey.depaul.edu/standards/academic-integrity) (UGRAD)
   - [Incomplete (IN) and Research (R) Grades Expiration Policy](https://degrey.depaul.edu/standards/academic-integrity)
   - [Course Withdrawal Timelines and Grade/Fee Consequences](https://degrey.depaul.edu/standards/academic-integrity)
   - [Accommodations Based on the Impact of a Disability](https://degrey.depaul.edu/standards/academic-integrity)

2. **Other Resources for Students**

   - [University Center for Writing-based Learning](https://degrey.depaul.edu/standards/academic-integrity)
   - [SCPS Resources](https://scps.depaul.edu/student-resources/Pages/default.aspx): [https://scps.depaul.edu/Pages/SCPSWriting.aspx](https://scps.depaul.edu/Pages/SCPSWriting.aspx)

   - **Dean of Students Office**

   - Research Services and Guidelines: [https://offices.depaul.edu/research-services/research-protect/irb/Pages/faq.aspx](https://offices.depaul.edu/research-services/research-protect/irb/Pages/faq.aspx)

3. **Logon to Pearson website for Homework and Quiz assignments, Online Text, Study Plan, Help, etc.**

   There is a clickable link in our D2L website, to get you to our course in Pearson. Try it; make sure it works for you.

   Use your same DePaul username and password to logon to Pearson.

   Caution: Pearson is a huge operation. Be sure you are connecting to our section, with the assignments I post there. Your Pearson assignment names will all begin with my name. For example, “Thor HW 2A Working with Units.”

   [whatthestory](https://whatthestory)
Worksheets for Playing the ‘5 – Dice’ Game:

Choose a Target Number at random: ______________
Roll 5 dice to get 5 random numbers, each from 1 to 6: _____ _____ _____ _____ _____

Use all 5 of those numbers, exactly once each, in any order, to make a math expression.
Goal: When simplified, expression equals, or is closer than anyone else’s, to the Target Number.
To prove your expression, show work to simplify it, following the usual ‘Order of Operations’ rules.

____________________________________________________

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