



Enhancing Purposeful Learning in an Online Course Through the Use of Problem Solving Strategies and Real Life Applications

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Course Development (MATH037)

- Designed as alternative to college level algebra as part of a First in the World Grant
- Collaboration between Mathematics and Statistics faculty members
- Covers math, basic statistics, and probability concepts needed to be successful in an introductory statistics course
- Aligns with approach of revamped introductory statistics course

Three Core Course Components

Use of:

1. Open Educational Resources and No Cost Technologies
2. Problem-Solving Approach
3. Real Life Applications

Open Educational Resources

Goal: Provide no cost resources and technology needed to successfully master course concepts. Used available and specially designed learning resources, including:

- Open Source textbook chapters, a chapter written for the course, and chapters from a text written by a UMUC faculty member for another mathematics course.
- No Cost/Online Technology. Applets for:
 - Graphing equations (DESMOS calculator)
 - Creating graphs used in descriptive statistics (e.g., pie chart)
 - Calculating basic statistics (e.g., measures of central tendency)

Problem-Solving Approach

Goals:

- Develop Critical Thinking Skills
- Develop a Systematic Approach to a Math/STAT Problem from Orientation through Interpretation of Results
- Understand When/If Step was Missed

When doing math and statistics problems, it is often helpful to take a step back and think about the process you are using to solve them. To help with process, please use the following format, when answering your discussion questions:

- **Question (or Problem) Being Solved:** Put the question that you picked from the list of weekly discussion questions in this section.
- **Method Used to Solve:** Put the work that you did to solve the problem, or, in the case of later statistics problems, what you used to calculate the answer.

When reporting your work, please be sure to use the following standard mathematical practice:

- Each step should show the complete expression or equation rather than a piece of it.
- Each new step should follow logically from the previous step, following rules of algebra.
- Each new step should be beneath the previous step.
- The equal sign, =, should only connect equal numbers or expressions.

- **Results:** Write a complete answer to the question asked, including units, if appropriate.

Real Life Applications

Goal: To increase transferability of career-relevant skills by enhancing relevancy of mathematical and statistical concepts.

- Created scenarios to fit data and mesh with majors (i.e., business, healthcare management, psychology, etc.) and other real life situations (e.g., purchase of laptop, etc.).
- Use real data from a variety of sources

Problem Examples

Please see handout for example of a concept used in both a:

- Traditional textbook problem
- Real life application problem

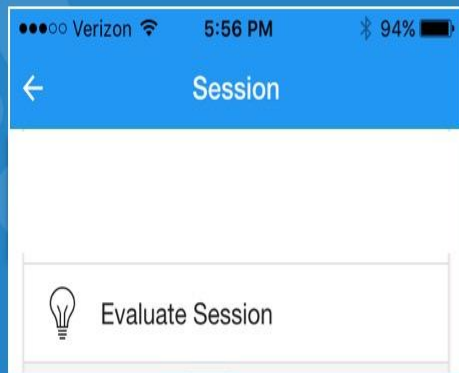
Student Reactions to Course

"Math 037 is wonderful!! I understand the concepts, the book and real world application exercises are so clear and easy to understand.... I cannot stress that enough. I have gained so much confidence after this class. Thank you UMUC. This course is giving me the foundation that I need to be successful in other math classes."



Session Evaluations Contest

- Download and open OLC Conferences mobile app
- Navigate to specific session to evaluate
- Click “Evaluate Session” at the bottom of session details screen
- Complete session evaluation*



*Each session evaluation completed (limited to one per session) = one contest entry
Five (5) \$25 gift cards will be awarded to five (5) individuals
Must submit evals using the OLC Conferences mobile app or website