



## **Math 142 Topics in College Mathematics**

Class Days/Times/Room: 12:40 pm to 1:55 pm Tuesday and Thursday / <i>ma:ltis c huiwis</i> <b>room 23, Main building / i-we:mta ki,</b> Main/S-cuk To:k Campus	Spring ( <i>hu:kalig</i> ) 2017
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<b>Instructor:</b> Richard LEE	Regular Phone: 520 383 0062 Cell Phone/Voice Mail: 520 205 2123 (text acceptable: be professional!) E-mail: <a href="mailto:rlee@tocc.edu">rlee@tocc.edu</a> or <a href="mailto:rlee@glasscity.net">rlee@glasscity.net</a> Office location: Faculty Building / Ha-Maşcamdam Ha-Ki 121 Office hours: Monday and Wednesday afternoons, other days as needed
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**Course Description:**  
 Survey of mathematical topics and applications. Includes application of mathematics to the social services, management science, growth, and probability and statistics.

- Course Objectives:**  
**During this course students will**
1. Apply the principles of counting in problem solving situations.
  2. Compute theoretical and empirical probabilities.
  3. Compute the mean, median, mode and standard deviation for a data set.
  4. Use statistics to analyze data.
  5. Solve interest problems using interest formulas for simple, compound and continuous interest.
  6. Analyze and solve problems using savings and amortization formulas.
  7. Analyze and solve problems using linear and exponential growth.
  8. Apply mathematical concepts to management, social science and other real world situations.

- Student Learning Outcomes (SLOs) :**  
**After completion of the course students will be able to**
- Perform basic statistical analysis with a calculator.
  - Translate and solve a real-life situation involving probability or statistics.
  - Employ technology to set up and solve real world problems.
  - Apply mathematical concepts to real world problems.

**Texts and Materials:**

No text necessary. Some form of calculating device will be necessary.

**Evaluation and Grading & Assignments:**

Two exams (midterm and final) at 100 points

Homework in its totality at 200 points

Total possible points is 400

To guarantee an A, you must have  $400 \times .9 = 360$  points. A B will require  $400 \times .8 = 320$  points.

**Himdag Cultural Component:**

My interpretation of what Nahban said in *the Desert Smells Like Rain* is this: while the *himdag* discourages direct, exact answers, in the mathematical world, one is expected to be able to come up with a precise answer for the situation. That being said, there are a few common issues shared:

- *Baban* (coyotes) are not going to affect your homework or my tests – they didn't write either. (Certainly beats the classic "My dog ate my homework!") Don't try to blame it on *hahaiwañ* or *wapkial* either.
- While one must go through a maze to see *i'toi*, there was no mention as to how many mazes there were to get to him. Likewise, you will discover that there are many different ways to perform the math necessary to see the final answer.
- *I-we:tma*: for your success, the college's and the community's, DO NOT work alone – it is a group activity (except on the tests, of course).
- *T-Wohocudadag c t-apedag c t-pik elida*: We learn for our well-being. We respect each other, ourselves and our community. We respect and take pride in our own work. We respect each other's abilities, quirks and privacy. We believe in ourselves and others.

**Prerequisites and destinations:**

To be in this class, you must have

- passed math 122 here or at Pima Community College with a C or better, or
- tested into this class with a suitable COMPASS score (at least 66 in Algebra or at most 45 in College Algebra), or successor Accuplacer scores (to be determined as of July 2016), or
- obtained permission of the instructor, usually after review of previous coursework

**This is a terminal math class for those majoring in social sciences, humanities or the fine or liberal arts AND transferring onward to any of the three state Universities. What terminal means here is this: This will be the LAST math class for your academic career. This may not necessarily be transferable to other institutions; please ask BOTH your instructor and your adviser for proper direction!**

### Policies and expectations-

- For the level of course that you are in, I will assume that you are mature enough for me **not** to grade for attendance. However, the Government does require me to take it for financial aid purposes. I understand if you miss class for legitimate reasons: E-mailing the instructor and contacting the front office **5203838401** are the best ways of letting me know if you miss class. You still are responsible for any material covered in class.
- Integrity and Honor: I don't mind if you work on the homework in groups. In fact, I expect it. (See *i-we:tma* above.) I do mind for tests and the final exam. Everything else about this topic is available in *the TOCC Student Handbook*.
- Homework and Feedback: We are adults: Although I expect homework to be done as soon as the topic(s) are covered, I understand that it may be late. Just get it done, really. I will try to return homework within one class – not every question will be checked, but I will be using what you have done wrong as a springboard for class. (If you're wondering how I can get away with accepting late homework, we do have a thing called a test. ☺) For this semester, you should spend 3 credit hrs x 3 hrs per credit hr in the fall = **9** hours a week on this course.
- Withdrawal: Final deadline is **October 26<sup>th</sup> 2016**. By that date, you will have had at least one test. As a general rule, if you have been absent more than 25% of the time (8 classes), you should speak with an adviser immediately. *All institutions of higher education strongly encourage instructors NEVER to ask students to withdraw from a course for both financial aid purposes and respect for the student.* (See *t-pik elida* on previous page.) Again, there will be a midterm, a final and homework.
- Incompletes (I): This course's nature (you learn something new every class) makes them awkward. However, per TOCC policy, if you have completed  $\frac{3}{4}$  of the course and specifically request it, I may consider it. *Please call before final exams to assure enough time to consider your request.* In handing out an incomplete, I will assume that you:
  - will finish this course on your own time.
  - will receive a form with the I grade filled in and what work *must* be done to complete the course.
  - will have one year to complete the work, else the grade will revert to an F.
- Makeups: My homework policy has been mentioned beforehand. As for exams, I allow a *reasonable* amount of time – not more than two weeks.
- **Final grades will be available online via Jenzabar.** Per FERPA and the Himdag, I will not give grades over the phone and am strongly discouraged from e-mailing same. (Again, see *t-pik elida* above.)
- Struggling? Tutoring and assistance are available in the Student Success Center in the main building / *i-we:mta ki* and from me during office hours..
- In accordance with *t-pik elida* and the Americans with Disability Act 1990 (ADA) and Section 504 of the Rehabilitation Act, if you have a learning problem, physical disability, or medical illness that requires you to have any special arrangements, please inform your instructor at the beginning of the semester so your academic performance will not suffer because of the disability or handicap.

**Consolidated Course Outline and Homework Assignments. I assume that you have had MATH 122 - Intermediate algebra or equivalent. If not, see me privately as soon as possible. Everything you see here - including the homework - is subject to change.**

		Done?
Terminology and data display (1/17, 1/19, 1/24, 1/26)	<p>What is statistics? What is a statistic? What is a variable? (Warning: Lots of vocabulary.)</p> <p>Handout of an academic article illustrating differences between statistic and parameter, etc.</p> <p>Why do we need to know difference between numerical and categorical data, and how does this affect our display?</p> <p>Homework:</p> <ul style="list-style-type: none"> <li>• Statistical vocabulary - state possible examples, also find definitions.</li> <li>• "Data Display" handout. Also, find examples with Native emphasis of data display, one involving categorical data and one with numerical data.</li> </ul>	
s-eda nu:milo c na:nko = the middle number and spread (1/31, 2/2, 2/7, 2/9)	<p>Data analysis -- descriptive statistics, or when you'd much rather have numbers than pictures -- mean, median and mode (the various s-eda nu:milo) and range and standard deviation (na:nko).</p> <p>Homework: "Descriptive Statistics."</p>	
Location, location, location. (2/14, 2/16)	<p>data analysis -- z-scores, or where is a particular piece of data located amongst others (side discussion on percentiles.)</p> <p>Homework: "Location"</p>	
Ca:nsa = chance (2/21, 2/23, 2/28, 3/2)	<p>probability -- basics of how often something should happen, and why the words AND, OR, NOT matter</p> <p>Homework: "Probability."/week 5</p> <p>(No school February 20th President's Day) <b>(midterm tentatively March 7th 2017)</b></p>	
Expected value (3/7, 3/9, 3/21, 3/23)	<p>putting it all together -- probability with expected value and confidence intervals. with a special mention of the O'odham stick dice game, and how expected value impacts native gaming with respect to the Native Gaming Act.</p> <p>Homework: "Expected Value."/week 6</p> <p>(Spring break March 10th to 19th 2017)</p>	
Catching the population version of the mean (3/28, 3/30)	<p>central limit theorem, normality</p> <p>No homework for this exercise</p> <p>(Last day to withdraw April 3rd 2017)</p>	
Trends - linear v. exponential (4/4, 4/6)	<p>functions and relationships -- linear and exponential -- special emphasis on altitude v. temperature data -- regression/correlation</p> <p>Homework: TBA</p>	

More on linear v. exponential, where it hurts the most (4/11, 4/13)	Simple v. compound interest  Homework: TBA	
Extra appropriate topics (to end of semester)	supplemental topics -- among them, counting throughout the world, special emphasis on differences in counting among Nations dates to be determined  <b>(Final Exam Thursday April 27th 2017)</b>	

**DISCLAIMER:** This syllabus is designed to evolve and change throughout the semester based on class progress and interests. You will be notified of any changes as they occur.

**References:**

- Culin, Stewart. (1975.) *Games of the North American Indians*. New York: Dover Publications.
- Guarin, Jorge. (2011.) *Course syllabus*.
- Hronopoulos, Sophia. (2012.) *Course syllabus*.
- Moore, Charles G. (1988.) *Outdoor World Mathematics: Teacher's Guide*. Flagstaff, AZ: Northern Arizona University / Arizona Board of Regents.
- Nabhan, Gary Paul. (1982.) *The Desert Smells Like Rain: A naturalist in Papago Indian Country*. San Francisco: North Point Press.
- Newberry, Teresa. (2012.) *Course syllabus*.
- Sun-bat, Catherine. (2014.) *Course syllabus*
- Tohono O'odham Community College core values website [http://www.tocc.edu/core\\_values.htm](http://www.tocc.edu/core_values.htm) (2015.)

Assignment	Date	Score
Midterm		
Final		
Homework	various	
Total		Add the numbers you have in this column = _____