MAT 142H: Collegiate Mathematics

Class Days/Times/Room: Monday and Wednesday / *lu:nas c miaklos*, 1:00 to 3:30 pm, **room 2, *Gewkdag ṣon ki*, Main campus / *S-cu:k Du'ag Maṣcamḍam***	Spring (*hu:kalig*) 2019

Instructor: Richard LEE	Regular Phone: 520 383 0062 Cell Phone/Voice Mail: 520 205 2123 (text and photo acceptable: be professional!) E-mail: rlee@tocc.edu or rlee@glasscity.net Office location: Faculty Building / Ha-Maṣcamḍam Ha-Ki 121 Office hours: ● Tuesday / *ma:ltis* 10:00 to 4:00, subject to change depending on meetings, etc.

Course Description:
Basic algebraic functions, including the language of sets, lines in the plane, systems of linear equations, expressions and equations in rational, radical, quadratic, exponential and logarithmic form. This course will also include a survey of real-life topics in the social sciences and management, along with an introduction to probability and statistics.

Course Objectives: Upon successful completion of the course, the student will be able to:

1. 1. Add, subtract, multiply and divide numbers in the real number system.
   2. Solve (linear, rational, radical, quadratic, exponential and logarithmic) equations and inequalities. Realize that some equations and inequalities may have no solution – or infinitely many of them.
   3. Graph Equations
   4. Add, subtract, multiply and divide expressions.
   5. Apply the principles of counting in problem solving situations.
   6. Compute theoretical and empirical probabilities. (in percentages and in fractions)
   7. Compute the mean, median, mode and standard deviation for a data set.
   8. Use descriptive statistics to analyze data.
   9. Solve interest problems using interest formulas for simple, compound and continuous interest.
   10. Analyze and solve problems using linear and exponential growth.
   11. Analyze exponential models of real world situations to find and estimate solutions, including growth and decay models beyond financial concepts.
   12. Describe the patterns and behavior of exponential models using words, algebraic symbols, graphs, and tables.
   13. Identify when an exponential model or trend is reasonable for given data or context.
   14. Explain the impact of changing parameters.
   15. Interpret visualizations for exponential models.
   16. Perform basic logarithmic operations to address questions arising in exponential models.
   17. Critically evaluate statistics presented in media
   18. Explain hypothesis testing, including the purpose of and differences between experiments and observational studies.
   19. Interpret study conclusions, including P-values.
   20. Compute and interpret Z-scores.
   21. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.
   22. Rewrite expressions involving radicals and rational exponents using the properties of exponents.
   23. Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.
   24. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

Student Learning Outcomes (SLOs) :

After completion of the course students will be able to

- Simplify and perform operations with signed numbers, arithmetic and algebraic expressions, understand various uses of constants and variables to represent quantities or attributes, demonstrate operation sense and communicate verbally, graphically and symbolically the effects of common operations on numbers.
- Solve linear equations with rational coefficients. Construct and use equations to represent relationships involving one or more unknowns or variable quantities to solve problems.
- Plot points and graph linear equations on the Cartesian coordinate system. Describe the behavior of linear models using words, algebraic symbols, graphs and tables. Use appropriate terms and units to describe rate of change ex. describe the rate of change using appropriate units: slope for linear relationships or average rate of change over an interval for nonlinear relationships.
- Compare relationships represented in different ways.
- Be able to use and interpret percentages in a variety of contexts including, but not limited to: Parts to whole comparisons, decimal representations of percentages, quantifying risks and other probabilities, rates, change, and margins of error.
- Create (mathematical) models of situations, including representations such as tables, graphs, equations and words, using multiple variables to represent quantities and attributes. Furthermore, students will describe why these tools are a useful strategy for understanding the world, along with their limitations.
- Critically evaluate statistics being presented in a media report including: identifying the reference value for a reported percentage, evaluating the sampling strategy, determining sources of bias, describing the difference between correlation and causation, identifying confounding variables.

Course Structure:

This course will be operating on a combination of **group activity**, **discussions** and rarely traditional lecture that will enhance the student's knowledge of mathematical concepts. Some of this work will need to be done outside of class. That being said, you will have ample time in class to do work in class. (I hope not to be too repetitive, but there still will be homework!)

You will find the format of this class to be a bit different than most. If however you are currently taking, or have had, IRW 070 or 090, then this will be familiar. I will try to make sure that half the class be dedicated to homework.

Texts and Materials:

- Quantway College text provided by instructor - if you had MAT 089 last semester, it'll be the smaller book of the two book combination I gave you. *I am willing to e-mail you a pdf of same on request.*
- A calculator is required, as is a TOCC e-mail and computer access login. An iPad is **not** required.

Evaluation and Grading & Assignments:

There are 27 assignments worth 10 points a piece, corresponding to each section. = 27 x 10 = 270
Per Department of Education rules and TOCC policy, I must take attendance. Doing the homework in class - or making it up outside of it when absent, counts for the 10 points.

There will be two projects corresponding to the ends of each chapter but the last worth 50 points a piece = 2 x 50 = 100

There is a final exam that I did not write - it is **closed-book, closed-note, open calcuator**. There are two grading schema - I will grade for partial work, while Carnegie / WestEd is much stricter. This will be worth 50 points

An A requires 420 x .9 = _____ points. A B will require 420 x .8 = _____ 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!")
- While one must go through a maze to see *i'itoi*, 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 believe in ourselves and others. 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.

Prerequisites and destinations - <u>please read carefully</u>:
To be in this class, you must have

- passed math 089 or 092 here, at Pima Community College, or at San Carlos Apache College with a C or better (equivalent courses within Arizona will be considered), or
- tested into this class with a score in either COMPASS (at least 30 in Algebra) or successor Accuplacer (Elementary Algebra score above 104 or College Mathematics score of 45 – 99), or
- obtained permission of the instructor, usually after review of previous coursework

*It is strongly recommended that you have either placed above by placement test, and/or passed IRW 070 Integrated Reading and Writing -- below that level, and you will find that what I expect for reading and writing in this course to be **extremely** challenging. I have documentary proof of students below that reading level failing or dropping this course.*

Upon successful completion of this course, you will be taking Math 151 College Algebra if you are not majoring in the Arts or O'odham studies. If you are, your math is complete.

Policies and expectations-

- ***T-apedag***: We are required to take **attendance** for financial aid purposes. If you miss class for legitimate reasons, e-mailing me 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. *If you're sick, look out for yourself first, just let me and whomever you're working with in group know if you're not coming in, eh? REMINDER: THIS a group-work based course.* **Our official policy: "You are expected to arrive to class on time and be prepared to participate in each class period. Four unexcused absences may result in withdrawal and a "W" or "Y" will be recorded. You may request to be excused from class for religious observances and practices, for illness, for school or work-related travel or for personal or family emergency. If you will be absent or have been absent, please notify the instructor as soon as possible (approved by Faculty Senate April 2014)** *That being said, due to the nature of this course, miss at least two days, excused or not, and I will start looking for you…!*
- Integrity and Honor: I don't mind if you work on the homework in groups. In fact, it's required. I do expect for you to put your best effort in - and not rely on everyone else to do it. 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, It may be late. Just get it done, really. (*Folks, with the amount of time we have in class scheduled for homework, there's no reason for late.*) Not every question will be checked, but I will be using what you have done wrong as a springboard for class. For this semester, you should spend 4 credit hrs x 3 hrs per credit hr = **12** hours a week on this course.
- Withdrawal: Final deadline is **March 29th 2019**. 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 (public, private, religious, tribal) 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 are three projects, 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 ¾ 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, and
    - will have **nine weeks** to complete the work, else the grade will revert to an F. (effective 2018)
- 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***:
    - 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 requiring special arrangements, please inform your instructor at the beginning of the semester so your academic performance will not suffer because of it. We must honor any arrangements from the Disability Resources Office - please ask either Anthony Osborn aosborn@tocc.edu or Ron Felix rfelix@tocc.edu.
    - Title IX: TOCC faculty and staff are dedicated to creating a safe and supportive campus. Title IX and our school policy prohibit discrimination on the basis of sex - this includes sexual misconduct; harassment, stalking, domestic and dating violence and sexual assault. Sexual discrimination and sexual violence **will** undermine students' academic success and quality of life on campus and beyond. We encourage students who have experienced any form of sexual misconduct to talk about their experience and seek the support they need.

Consolidated Course Outline and Homework Assignments

material on tests and dates for topics are tentative and subject to change - sections in italics are if time permits.

	Date / taṣ	coverage	done?	points	
1	1/14	N.1		10	
2	1/16	N.2		10	1/21 Martin Luther King Day / *taṣ* (no school)
3	1/23	N.3		10	Last day to add / drop w/o signature
4	1/28	N.4, N.5		10, 10	
5	1/30	N.6		10	Rodeo Day / *Ha-wapiktal ha-taṣ* (school still in session)
6	2/4	N.7, N.8, N.9		10, 10, 10	
7	2/6	M.1		10	
8	2/11	M.2			
				50	Chapter N project due _____
9	2/13	M.3		10	2/18 President's Day (no school)
10	2/20	M.4		10	
11	2/25	M.5		10	
12	2/27	M.6		10	
13	3/4	M.7		10	
14	3/6	M.8		10	3/9 - 3/17 Spring Break (no school)
15	3/18	S.1		10	
16	3/20	S.2		10	
				50	Chapter M project due _____
17	3/25	S.3		10	
18	3/27	S.4		10	final withdrawal deadline 3/29 at 5 pm
19	4/1	S.5		10	
20	4/3	S.6		10	
21	4/8	S.7		10	
22	4/10	S.8		10	
23	4/15	S.9		10	
24	4/17				
25	4/22				
26	4/24				
27	4/29				
28	5/1				
29	5/6			50	comprehensive in-class final

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:

- Furlonge, Isaac. (2016.) *Course syllabus.*
- Guarin, Jorge. (2011.) *Course syllabus*.
- Hronopoulos, Sophia. (2012.) *Course syllabus*.
- 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 (2015.)
- Tohono O'odham Community College Faculty Handbook (2015.)