TMATH 342 Spring Term 2019

UH 10:10-12:10pm ACDM WCG 103 SLN 21422
Lecturer: Ruth Vanderpool Office: MDS 303C
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Course Description:

Generally, topics vary and are chosen from differential topology, knot theory, or algebraic topology. Applications (such as chemistry, physics, or engineering) will me emphasized throughout the course. This quarter the focus will be on knot theory with applications in chemistry. Prerequisites: minimum grade of 2.0 in TMATH 324.

Student Learning Objectives:

Upon successful completion students are able to:

1. Define and provide examples for basic terms used in the topological area of study.
2. Use techniques from the topological area of study to differentiate objects.
3. Provide examples that highlight the limits to the techniques above.
4. Use topological theorems and tools on problems from another discipline.
5. Break down complex problems into manageable pieces and make simplifying assumptions.

This supports the Student Learning Objectives in the Math Major by enabling students to:

- Comprehend, discover, and communicate common principles from algebra, geometry, and analysis,
- Modify problems to make them tractable, and
- Apply quantitative theory, modeling, or mathematical principles to other disciplines to solve problems.

Social Expectations:

You are expected to work regularly with others in this class and thus need to make sure you:

- Expect to make mistakes but be sure to reflect/learn from them!
- Are civil and are aware of your impact on others.
- Assume and engage with the strongest argument while assuming best intent.

Important Dates:

4/30	Midterm	4/7	Last day alter your schedule with no fees
6/13	Final (10:10-12:10pm)	5/19	Last day to change grading option

Useful Items:

- Text: *Knots, Molecules, and the Universe: An Introduction to Topology.* by Erica Flapan. American Mathematical Society. ISBN-13: 978-1470425357
- Calculators: Either scientific or graphing non-internet accessing calculators are welcome. The application Desmos Test Mode may also run on a smart device if wanted. The following resources exist on campus:

Location	Type/Model	# Available	Duration of Checkout
Library	TI-36X Pro (non-graphing)	39	4 weeks
Library	TI-83 (graphing)	30	1 day
Library	TI-83 (graphing)	61	4 weeks

Activities: Activity sheets are used almost every day of class to give you an opportunity to work with the material. *Usually* these will not be collected or marked but the group will be asked to post their work & answer to one of the questions on the board. This will allow the class to see the answer as well as other methods to solving problems. (There is *always* more than one way to find a solution!)

Homework: In order to understand mathematics you need to do mathematics! Exercises will be assigned each day of class, and will be based on the sections in the text discussed. Individuals must turn in their own homework weekly on Thursdays at the start of class. It is encouraged for students to work together on problems but make sure that you write up your own solution and cite who you worked with! Fifteen minutes at the start of class on Tuesday is set aside to provide help or suggestions for the assigned problems. All exercises collected may not be thoroughly reviewed or graded.

Modeling Work: Applications focused homework will be assigned and be due every two to three weeks. This applications homework consists of open-ended problems from other disciplines that regularly are not well defined and have no one answer. Solutions will be evaluated using a rubric introduced in class that emphasizes mathematical creativity. This homework is to be completed in groups of 3 to 4 people. Two groups chosen at random will present their models to the class on the day the HW is due to share their work with the class and collect critical feedback.

Beginning in week six, students will commit to a group and more thoroughly investigate and model a given problem to prepare for a poster presented in a public forum (likely to be SAMURS). The poster should clearly identify assumptions being made, identify at least one alternative approach to the problem, and outline any conclusions. More details, including a rubric for the project will be provided in class.

Outside Resources:

Come visit me in the TLC (Snoqualmie 260) for office hours! If you are unable to make my posted office hours, please let me know and I will try to work with your schedule. Also

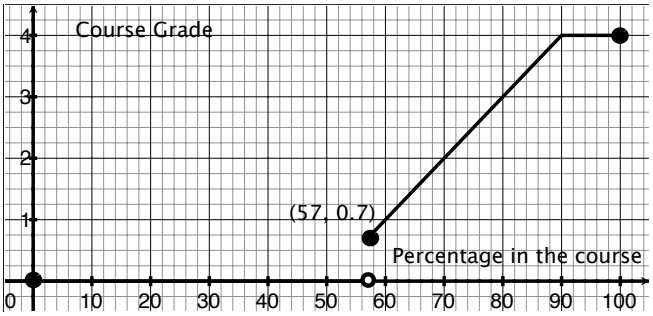
remember that you are not alone in this class and your peers are a valuable (and often underutilized) resource.

Visit the Teaching & Learning Center (TLC)! Math tutors are available Monday through Thursday from 9am-7pm and Fridays from 9am-3pm. Complete information is available at `http://www.tacoma.uw.edu/teaching-learning-center/teaching-learning-center`.

Grades:

The following weights will be used to calculate your percentage in the course. The function graphed takes your course percentage and returns your grade.

Homework	25%
Model HW	20%
Model Poster	10%
Midterm	20%
Final	30%



Notes:

- I do *not* check my email after 4pm. Any questions sent to my email after 4pm may not receive a response until the next morning. The University's e-mail policy is posted at: `http://www.tacoma.uw.edu/information-technology/uw-tacoma-email-policy`
- To plagiarize is to use the ideas-or unique phrasings-without acknowledging that they come from someplace other than you. At the UW Tacoma, plagiarism is a violation of the student conduct code and the consequences are serious. If you have questions about what amounts to plagiarism, seek guidance from faculty and the TLC.
- Bias Reporting: Report an incident of bias or explore how to effectively respond by visiting `http://www.tacoma.uw.edu/reportbias`.
- UW Tacoma is committed to making physical facilities and instructional programs accessible to students with disabilities. Disability Resources for Students (DRS), located in MAT 354, functions as the focal point for coordination for students with disabilities. If you have a physical, emotional, or mental disability that "substantially limits one or more major life activities [including walking, seeing, hearing, speaking, breathing, learning and working]," and require accommodation in this class, please contact DRS at (253)692-4508, email at drsuwt@uw.edu or visit `http://www.tacoma.uw.edu/drsuwt`.
- The Counseling Center offers short-term, problem-focused counseling to UW Tacoma students who may feel overwhelmed by the responsibilities of college, work, family, and relationships. Counselors are available to help students cope with stresses and personal issues that may interfere with their ability to perform in school. The service is provided confidentially and without additional charge to currently enrolled students. To schedule an appointment, call 253-692-4522 or stop by the Student Counseling Center (SCC), located in MAT 354.
- Campus Safety Information: `http://www.tacoma.uw.edu/campus-safety/home`. Safety escorts are available 24 hours a day, 7 days a week, there is no time limit. Call the main office line at 253-692-4416.

- Inclement Weather: Always check the UW Tacoma Home Page: official campus closures or delays will be announced there first. Course Announcements and Email regarding assignments and expectations during a closure will follow.
- Infants/Children in Class Policy: If you have no choice but to bring a child or children with you to class, please let me know prior to class. You will be responsible for seeing that the child or children are not disruptive to the class. If you are breastfeeding an infant or expressing milk regularly, you may bring an infant or breast pump to class. If you prefer to breastfeed or breast pump outside of class, you may take time out of class to use the lactation room (GWP 410).
- While I have attempted to make this syllabus as complete as possible, adjustments will be made throughout the course. Announcements will be made during class and it is the responsibility of the student to keep updated if class is missed.