

Invited Speakers

Kathryn Leonard

On Friday evening, **Kathryn Leonard** from [Occidental College](#) will present a talk entitled “Getting your computer into shape: Toward automated understanding of the shape of objects in two and three dimensions.”

Kathryn Leonard’s research interests are in geometric modeling with applications to computer vision and computer graphics. Her work has been recognized with a CAREER award from NSF, the Henry L. Alder Award for Excellence in Teaching from the MAA, and a Service Award from the AWM. She became a math major in her junior year of college, after her petition to waive the university’s math GE requirement was rejected. Currently, she is professor and chair of the newly formed Computer Science department at Occidental College. She has held positions at CSU Channel Islands (where she helped build a university), Caltech, MSRI and Pomona College. She still gets no respect from her cats.

Talk abstract: Shape understanding—looking at a shape and intuitively understanding which parts comprise body, arms, legs, toes and ears—is almost effortless for humans. Training a computer to understand shapes in a similar way presents substantial challenges. This talk will discuss human shape perception and the challenges of automation. We will describe a promising shape model, the Blum medial axis. Using the Blum medial axis, we will propose a method for automatically decomposing a shape into a hierarchy of parts and determining the similarity between those parts. We will end by comparing our automated results to human perception data gathered from a massive user study.



William Asher

On Thursday evening, **William Asher**, senior principal oceanographer at the [University of Washington Applied Physics Laboratory](#), will present a talk titled “Belay That Nonsense: How to Not Succeed in Oceanography.”

After graduating from Reed College in 1980 with a B.A. in chemistry, William Asher received his Ph.D. in Environmental Science and Engineering in 1987 from the Oregon Graduate Institute, where he did his doctoral research on air-water gas transfer. He later worked at the Pacific Northwest National Laboratories Marine Sciences Laboratory in Sequim before moving to the University of Washington in 1995. Dr. Asher’s research interests include understanding the small-scale physics and chemistry of air-sea exchange processes, applications of second-order nonlinear optical processes to chemical remote sensing, the use of microwave radiometry in remote sensing of the ocean, chemical thermodynamics of atmospheric organic particulate matter, and fate and transport of pollutants in surface waters.

Talk abstract: The high cost of conducting oceanographic measurements at sea, where charges for ship time can be on order of several tens of thousands of dollars per day, coupled with the limited availability of space for scientists on research ships, mean scientists may only get one chance to take a particular set of measurements. This makes it critical that equipment and instruments used to record data operate without problems. However, field research in oceanography can be frustrating due to the complexities involved with working on a ship, where resources are limited, and mechanical and electronic systems frequently fail due to the harsh conditions. When equipment or instruments fail they must be repaired by whoever is present with whatever is on hand, leading to a relatively high-stress environment. This talk will discuss the design and testing of an instrument that measures vertical profiles of temperature and salinity in the upper meter of the ocean, what went wrong, and how problems were corrected, as a case study in oceanography.



FRIDAY SESSIONS

	Chinook Room B 4 th floor	Dolphin Room C 2 nd Floor	Whale Room A 3 rd Floor	Whale Room C 3 rd Floor	Dolphin Room A 2 nd Floor
Friday 1 9-9:50	Matteo Tamburini Thinking Outside the Tank	John Mitchell Mindfulness for Mathematics Leadership	Yves Nievergelt Real Applications of the Details of Calculations of Limits	Kate Cook Pre-College Sequence Redesign: shorten, split and rethink the path	
Friday 2 10-10:50	Rajesh Lal Why Equity? I thought I was already teaching to give my Students the best chance to succeed	Jeff Eldridge WAMAP for placement Roundtable Discussion	Steven Bogart An Introduction to Data Science	William Asher Simple Equations for a Complex World	Ryan Comeau Knewton
Friday 3 11-11:50	Mike Flodin Using Team Folders to Enhance Collaborative learning Interaction in the Classroom	Preston Kiekel and Kurt Schaefer Credit-Bearing Higher Education Coursework in Prisons	William Webber The Unforgivable (Algebra) Courses	Melonie Rasmussen Guided Pathways: Math Pathways for Students of Color (and everyone else)	
Lunch					
Friday 4 1:30-2:20	Jason Engle Getting Off the Beaten Path	Elizabeth Demong and Marty Cooksey Financial Algebra: An Alternative to the Dev-Ed Sequence	Emily Asher and Kurt Schaefer Enhancing Math Courses with History	Sarah Adams A Pragmatic Approach to "The Emporium Model"	Deb Harden Pearson
Friday 5 2:30-3:20	Rajesh Lal Let's add writing anxiety on top of math anxiety Yay!	Teri Miller Google Doc Collaborations for Active Learning	Murali Krishna Unexpected Surprises	Robert Weston Corequisite Course Design and Implementation	
Friday 6 3:30-4:30	WAMATYC Meeting				



SATURDAY SESSIONS

	Chinook Room B 4 th floor	Dolphin Room C 2 nd Floor	Whale Room A 3 rd Floor	Whale Room C 3 rd Floor	Dolphin Room A 2 nd Floor
Saturday 6 9:30-10:20	Bill Moore Addressing High School to College Math Pathways in Washington	Leslie Glenn Multiple Methods of Assessment	Helen Burn and Ben King Co-Requisite Courses	Preston Kiekel Multicultural Studies in a Math in Society Course	
Saturday 7 10:30-11:20	Patrick Martin How to put your math class online – without changing it!	Leslie Glenn Multiple Methods of Assessment (continued for questions)	Helen Burn and Ben King Co-Requisite Courses	<u>10:50 am</u> Helen Burn Is your teaching typical?	

Friday Session 1

Matteo Tamburini - Thinking Outside the Tank

This article proposes asking students to consider the case of Tokitae, one of the Southern Resident Orcas, who has been in captivity since the 70's. Tokitae is 22' long, and lives in a 70 by 80 ellipsoidal pool. If she were human, how big would that space be? After a presentation of the historical context, time will be set aside for the assembled faculty to work in small groups and propose a variety of different answers and solution approaches, and possible places to pose this question in the math curriculum. Graphing technology applications for student use will be suggested.

John Mitchell - Mindfulness for Mathematics Leadership

Mathematicians usually receive little or no formal training in transitioning from the classroom to departmental leadership roles. Mindfulness training can help with the complex and varied challenges of leadership including focus/attention, interpersonal skills, and working skillfully with distractions. Many faculty may be aware of mindfulness as a common component of academic or corporate leadership training, but may be unsure of how to get started. This presentation will give attendees a foundation in mindfulness and a road map for developing their own customized leadership development program.

Yves Nievergelt - Real Applications of the Details of Calculations of Limits

In practice, formulae may arise in a form that would entail divisions by zero. Occasionally, IEEE arithmetic magically still delivers the correct final result. Near the singularity, however, rounding errors are dramatically amplified. As a remedy, exactly the same algebraic simplifications used to find limits also lead to algebraically equivalent but more accurate formulae that are not as sensitive to rounding errors. In a different vein, the definition of the concept of limit provides a means to determine a number of iterations that guarantees a specified level of accuracy. Specific examples range from a first basic course in calculus to a first course in multivariable calculus.

Kate Cook - Pre-College Sequence Redesign: shorten, split and rethink the path

Clark College recently converted from a 4-quarter precollege math sequence to two differentiated 2-quarter pathways. This entailed developing a new "applied algebra" sequence with: targeted content focused on college readiness, study skills embedded to enhance student success, active learning as a large portion of class time, and teacher training. Learn what we did, why we did it, and how it's going.

Friday Session 2

Rajesh Lal - Why Equity? I thought I was already teaching to give my Students the best chance to succeed

The presenter's own struggles to introduce equitable practices in his mathematics classrooms will be used to encourage participants to share their experiences. Why is this an uncomfortable topic to discuss? What is the debate on equity vs. equality? What are the tensions that arise when a particular equitable practice is implemented in an actual classroom?

Jeff Eldridge - WAMAP for placement Roundtable Discussion

This roundtable discussion will explore the advantages and challenges of designing and implementing a customized math placement assessment delivered via WAMAP, drawing on experiences from colleges who have been using such a test for some time, those with tests currently in development, and those still considering this option.

Steven Bogart - An Introduction to Data Science

Data scientist currently tops Glassdoor's best jobs list. I'll give an overview of data science, introduce common tools like the R programming language and Tableau visualization software, and lead a discussion of how to incorporate contemporary data science concepts and readings into an introductory statistics class.

William Asher - Simple Equations for a Complex World

The University of Washington hosts Math Day every spring at its Seattle campus. The event is designed to show high school students from around the Pacific Northwest how mathematics gets used in science and engineering. The Applied Physics Laboratory (APL) is a University Applied Research Center founded by the U.S. Navy during World War 2 with the goal of bringing the knowledge and expertise of the academic community to bear on critical problems faced by U.S. naval forces during the war. Since then, APL has expanded its core mission and is a leader in basic and applied research across multiple disciplines including oceanography. APL participates in Math Day by presenting a seminar by a staff member, typically discussing some aspect of how mathematics is used in their research. The core of this talk is one that was presented at Math Day several years ago, with the goal of showing students how the mathematics they were learning in high school forms the basic tools that scientists use to solve complicated problems. This particular lecture discusses how geometrical reasoning, along with basic algebra and trigonometry, are used to understand how an aircraft-mounted camera was imaging breaking waves inside a hurricane.

Friday Session 3

Mike Flodin - Using Team Folders to Enhance Collaborative learning Interaction in the Classroom

When using collaborative learning in the classroom, it is often a challenge to get students interacting with each other thoughtfully about mathematics. Students often tend to work on their own with collaborative in-class learning activities or cooperate more superficially. Creating a stronger sense of group/team identity in the classroom can help foster better teamwork. I will show how using a team folder with a team logo can help students identify as member of a team, which can in turn lead to better group collaboration and interaction. There will be time for discussion regarding improving in-class math collaboration.

Preston Kiekel and Kurt Schaefer - Credit-Bearing Higher Education Coursework in Prisons

Teaching in a prison requires a very adaptive frame of mind, and means relinquishing classroom resources many instructors take for granted. However, it is extremely gratifying, and students are extremely dedicated. Professors Kiekel and Schaefer discuss their experiences teaching credit-bearing college-level course work in prison facilities. Courses the instructors have taught in prisons include Algebra, Introduction to Statistics, History, Psychology, and Math in Society.

William T Webber - The Unforgivable (Algebra) Curses

In the world of Harry Potter, imperio, crucio, and avada cadavra are the 3 unforgivable curses. In the world of Mathematics there are a corresponding 3 unforgivable algebra errors that are the curse of many students. I will discuss these 3 unforgivable errors, their prevalence in student work, reasons why they might be so prevalent, what I have done to eradicate them, and how successful I have not been in this eradication effort

Melonie Rasmussen - Guided Pathways: Math Pathways for Students of Color (and everyone else)

This session will review the recent study that found instructor mindset is KEY to student success. We will focus on ways to help all students feel welcome, included, successful and capable in your classes, hopefully without increasing your work load. We will look at student populations, their needs and accommodations that are reasonable without negatively impacting your outcomes.

Friday Session 4

Jason Engle - Getting Off the Beaten Path

Math is about more than implementing formulas and algorithms. It is only when a problem is presented that evades formulaic techniques that creative problem solving begins. A problem is not worth doing if it is perceived as impossible; likewise, a problem is not worth doing if it is too simple. A good problem will be just barely out of reach. A fantastic problem will be just barely out of reach for a room full of students with varying skills and abilities. We will consider some fantastic math problems.

Elizabeth Demong and Marty Cooksey - Financial Algebra: An Alternative to the Dev-Ed Sequence

As part of the larger Guided Pathways work happening on our campus, and across our state, faculty from the Math and College and Career Pathways (formerly Basic Studies) Departments have partnered in a large scale overhaul of our approach to math education. A major component of the math redesign involved condensing and contextualizing the developmental math sequence in terms of financial Algebra. This presentation will focus on our course design and content which scaffolds students from basic math to the rich information density they will encounter in transfer level math courses. We will also present the alignment of contextualized learning outcomes with the traditional Dev-Ed sequence, and dual credit courses for high school students.

Emily Asher and Kurt Schaefer - Making History Useful in a Math Course

Are math and history two subjects that can be laced together into one course? For about 4 years we have been co-teaching two math courses, one in finance and one in pre-engineering preparatory math. The students learn the math, business and technology concepts, then learn the history and philosophy behind them.

Sarah Adams - A Pragmatic Approach to "The Emporium Model"

Are you a cynic? Do you secretly or...not so secretly, believe "The Emporium Model" is just a fad that will pass – a top-down idea – where development-time will never truly provide a clear return on investment? Do you believe that mediocre outcomes will be the only fruits of your labor? Then this presentation is for you! We will look at the "non-negotiables" that should be incorporated, while looking at promising practices for a fresh implementation. A time to discuss common issues that arise when using this model will be included. Consider how each college's culture may shape the programs and success rates. What will each group discover from discussion and sharing? Come to this sugar-free presentation to find out!

Friday Session 5

Rajesh Lal - Let's add writing anxiety on top of math anxiety Yay!

What happened when I introduced writing in a precollege mathematics classroom? Discussion questions will include: what prevents us from assigning writing in our courses; what sorts of writing assignments should we assign; is there a framework we can use to create the assignments? The focus will be on short-responses writing assignments. Participants will be asked to share their experiences and writing assignments in their mathematics courses.

Teri Miller - Google Doc Collaborations for Active Learning

Active learning online? It can be done! Learn how to run a Google Doc collaboration through Canvas and see how we are using it at Clark College in our online pre-college math sequence. The process for setting up a collaboration in a Canvas shell will be presented. Examples of how this has been used in classes will be shown and participants will be invited into a google doc collaboration so they can interact through that page during the session and record ideas for using this in any type of math class.

Murali Krishna - Unexpected Surprises

Three different problems will be presented along with their very elegant proofs. The first is a modified Japanese Sangaku problem from 1800. An n sided convex polygon is inscribed in a circle and triangulated in any manner to yield $(n - 2)$ triangles. A circle is inscribed in each of the inside triangles. We then show that the sum of the radii of these inscribed triangles is a constant regardless of the triangulation chosen! Second, we present Stanley's Theorem from 1972 that deals with partitions of +ve integers. This theorem states that the total number of 1's that occur among all partitions of a positive integer equals the sum of the numbers of distinct parts of those partitions. Third, we will show that on the average, a non negative integer has π representations as the as the sum of squares of two integers! This result was discovered by Gauss around 1800.

Robert Weston - Corequisite Course Design and Implementation

Corequisite support courses are meant to increase student success through earlier placement in college-level courses, with concurrent remediation and study skill development. This presentation will discuss the experience of faculty at Clark College designing and implementing these courses. This work is partially funded by a Washington College SPARK Community Grant.

Saturday Session 6

Bill Moore - Addressing High School to College Math Pathways in Washington

This session will provide an update on the Bridge to College Math high school transition course and how it is going to connect to new statewide initiatives focused on high school to college math pathways. The goal is also to gather perspectives from participants on how we as a state need think about math pathways in the critical transition period for students from the junior year in high school to the junior year in higher education.

Leslie Glen - Multiple Methods of Assessment

Research has shown that lecture still works as a means of conveying academic content, but that it works better in conjunction with student-centered active learning. This presentation demonstrates an alternative to lecture for introduction to the shapes we call “The Conic Sections” and suggests an alternative method of assessment for the conic sections unit. By adapting and extending an activity used in high schools, I have created an entire unit that is activity based rather than lecture based. I will lead participants through the activity for discovering the ellipse and provide duplicable instructions for all of the conic sections. (this talk is 2 hours)

Preston Kiekel - Multicultural Studies in a Math in Society Course

Math in Society instructors sometimes incorporate ethnomathematics, the anthropology of mathematics. This presentation will explore: (a) cross-cultural mathematical studies, (b) addressing cultural biases in mathematics education, (c) where to find open-education resources on this topic, (d) teaching the course at a prison (Cedar Creek Corrections Center), and (e) anything else that sounds fun.

Helen Burn and Ben King

Corequisite Courses (this talk is 2 hours)

Saturday Session 7Helen Burn - Is your Teaching Typical?

Learn how your classroom instruction compares with data on instruction collected through three sources: Transitioning Learners to Calculus in Community Colleges (TLC3, NSF IUSE 1625918), the National Survey of Community College Mathematics Chairs, the Fall 2015 Conference Board of the Mathematics Sciences (CBMS, Blair, Kirkman, & Maxwell, 2018) and the Community College Instructional Development Inventory (CC-IDI, San Diego State University, 2010).

Patrick Martin – How to put a math class online – without changing it!

This presentation will show how an online math class can operate almost exactly like an engaging face-to-face math class. Methods include different types of videos, online office, live study groups, discussions and more. Online math courses in Canvas that are almost exactly like face-to-face classes will be explored. These courses have had a high retention rate with higher test scores than my former face-to-face math classes.

AttendeesBates Technical College

Emily Asher
Paula Emerson-Glade
Nancy Landeis
Emilie Pulido
Kurt Schaefer

Bellevue College

Malini Ajwani
Rini Chakrabarti
Ricardo Chavez
Dale Hoffman
Tim Kearney
Sumita Kishore
Jennifer Laveglia
Mausumi Maulik
Tatiana Mihaylova
Susan Moore
Rose L Pugh
Mathi Radhakrishnan
Luke Rawlings
Lorraine Shreffler
Jen Townsend
Timothy Trammel
Andria Villines

Big Bend Community College

Salah Abed
Ann George
David Mayhugh
Irina Tkachev
Tyler Wallace

Cascadia College

Cindy Bea
Hernando Tellez
Srividhya Vankatraman
Tammy Wright
Steve Yramategui

Centralia College

Chris Carlson
Preston Kiekel
John Steidel
Dan Taylor
David Tonn

CHOICE High School

Chris Hobson
Sharon Hobson

Clark College

Aaron Bingham
Paul Casillas
Diana Coatney
Kate Cook
Allen Eddinger
Mark Eddinger
Mark Elliott
Hannah Jackson
Murali Krishna
Sarah Luther
Kanchan Mathur
Teri Miller
Chris Milner
John Mitchell
Harold Oaks
Michelle Walty
Robert Weston

Clover Park Technical College

Tula Mollas
LaVerta Schmeling

Columbia Basin College

Alexandrison
Jacob Anderson
Melissa McNickle
Ryan Orr
Tracie Russell
Limin Zhang

Eastern Washington University

Yves Nievergelt

Edmonds Community College

Mary Anderson
Pat Averbeck
Jeff Eldridge
Terry Goldstick
Melissa Hope
Tiffany Ledford
Nancy Marx
Gabrielle McIntosh
Mahnaz Nassiri
Wayne Neidhardt
Vinh Nguyen
George Nzenge
Maria Pedersen
Mahnaz Sadrenassiri
Tom Shelly
Jadwiga Weyant

Everett Community College

Julian Trujillo
Alys Hugo

Grays Harbor College

Taya Do
Tom Kuester
Patrick Martin
Amy Montoure
Jaime Reino
Kyle Smith

Green River College

Allison Beckwith
Donnie Hallstone
Mike Kenyon
Lara Michaels
Rochelle Mitchell
Samantha Smith

Highline College

Sarah Adams
 Helen Burn
 Charly Cohen
 Barbara Hunter
 Shane Kibler-Trimboli
 Rashmi Koushik
 Terry Meerdink
 Jason Ramirez
 Razmehr Schmidt
 Kate Skelton
 Brenda Transier
 Dusty Wilson

Lake Washington Inst. of Tech.

Narayani Choudhury
 Sue Kuestner

Lower Columbia College

Lori Babbick
 Holly Brewster
 Dawn Draus
 Mary Hebert
 Terri Skeie

North Seattle College

April Allen Materowski
 Denise Brannan
 Catherine Conway
 Pam Lippert
 Beier Lu
 Eileen Murphy
 Anna Schindler
 Samuel Wilson

Occidental College

Kathryn Leonard

Olympic College

Ann Brackebusch
 Denise D'Haenens-Luker
 Mary Ann Kelso
 Elizabeth O'Neil
 Donald Robertson
 Joe White

Peninsula College

Eve Wallis

Pierce College

Chad Bemis
 Jason Engle
 Cody Fouts
 Stewart Jaffe
 Pete Kaslik
 Rajesh Lal
 Tom McCollow
 Tom Phelps
 Melonie Rasmussen
 Erica Shannon
 Larry Wiseman

Renton Technical College

Marty Cooksey

SBCTC

Bill Moore

Seattle Central College

Jonathan Ursin

Shoreline Community College

Steven Bogart
 Lourdes Gutierrez
 Lorna Larsen
 Trevor Pelletier
 Tatiana Rudneva
 Shelby Sleight
 Rosalie Tepper
 Marek Wyzgowski

Skagit Valley College

Abel Gage
 Jennifer Lawson

Spokane Community College

Ben King
 Josh Krone

South Puget Sound CC

Emily Boyce

Tacoma Community College

Jared Abwawo
 Jonathan Armel
 Beverly Bunch
 Sellie DeMarco
 Kendra Feinstein
 Mike Flodin
 Min Kim
 Allison Leon-Guerrero
 Amber Mozeleski
 Trung Tran
 Chris Willett

University of Washington

Bill Asher
 Brian Heaven

Wenatchee Valley College

Angie Redmon
 Angela Russell
 Benjamin Van Dyke
 Sharon Wiest

Western Washington University

Victoria Anderson
 Amber Goodrich

Whatcom Community College

Yumi Clark
 Wendi Davis
 Jody DeWilde
 Leslie Glen
 Nathan Hall
 Luu Mei
 William Webber

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