

# S.H.Yasanthi Kottegoda

University of New Haven

Dept of Mathematics & Physics  
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## Education

- July 2014 **PhD in Mathematics**, *Southern Illinois University Carbondale, IL.*  
Area: Finite Fields and their applications
- Dec 2010 **MS in Mathematics**, *Southern Illinois University Carbondale, IL.*
- Oct 2007 **BS in Mathematics (1st class Honors)**, *University of Colombo, Sri Lanka.*

## Research Interests

Finite fields and their applications, Quadratic Forms over finite fields, Math education, Women in STEM

## Academic Positions

- Fall21-Present **Mathematics Coordinator** Dept of Mathematics & Physics, University of New Haven, CT
- Fall20-Present **Associate Professor** Dept of Mathematics & Physics, University of New Haven, CT
- Fall14-Fall20 **Assistant Professor** Dept of Mathematics & Physics, University of New Haven, CT
- Jan09-July14 **Teaching Assistant** Dept of Mathematics, Southern Illinois University Carbondale, IL  
Worked as the primary instructor for Intermediate Algebra, College Algebra, Business Calculus, Finite Mathematics, Trigonometry and Analytic Geometry for 6 semesters. Worked as a recitation instructor for Contemporary Mathematics for Liberal arts students for 2 semesters. Used online tools as MathXL and MyLabsPlus in teaching. Grading and conducting tutoring sessions for undergraduate Math courses.
- Aug12-Aug13 **Research Assistant** Dept of Mathematics, Southern Illinois University Carbondale, IL
- Oct07-Dec08 **Lecturer** Dept of Mathematics, University of Colombo, Sri Lanka  
Worked as the primary instructor for Calculus, Geometry, Financial Mathematics for Math majors.

## Honors & Awards

- 2021 Nominated for the participation of NACU Emerging Leaders Institute.
- 2019 Nominated for the faculty teaching excellence award 2018-2019
- 2015 Association for Women in Math (AWM) research symposium 2015 travel support, University of Maryland. Awarded for poster presentations selected in a competitive basis - Received \$640
- 2007 Was awarded with the following gold medals, awarded by the board of examiners and the senate of the University of Colombo, based on the results of the special degree examination in Mathematics held by the University of Colombo.

- The Gulam Hussein A.J. Noor Bhai Gold medal for the best student specializing in Mathematics;
- Mr. and Mrs. D.P. Epasinghe Memorial Gold medal for Mathematics;
- Dharmadasa Punchihewa Memorial prize for Mathematics;

## Teaching Activities at UNH

**Courses Taught** Quantitative Reasoning (F17 - 2 sections with lectures and recitations)

Business Calculus (Sp16, F15 - recitation)

Business Mathematics (F14 - 2 sections, Sp15-3 sections)

Calculus I (F15, Sp16, Su16, F18 - 2 sections, F19 - 2 sections )

Calculus II (F16, Su17, F17, Sp18 - 2 sections, Su18, Sp19 - 2 sections, Su19, Su20, F20 - 3 sections, Sp21 - 2 sections, Su 21, F21, Sp22)

Calculus III (Sp17 - 2 sections)

Elementary Number Theory (F14, Sp18, Sp20, F21)

Linear Algebra (F15, F16, F20, Sp21, F21, Sp22)

Modern Algebra (F16, F19)

Combinatorics (Sp16)

Foundations of Mathematics (Sp20)

Department Seminar - Graph Theory (Sp22)

[Undergraduate student mentoring](#)

**Independent studies** Foundations of Mathematics (F15- Kokou Tchirifo)

Elementary Number Theory (F17-Angela Mastropietro)

Modern Algebra (Su18 - Tiffany Khan)

**Thesis advising** *Characteristics of Modulo one sequences* -Angela Mastropietro, Sp18 (currently a PhD student at UConn)

**Research projects** Modulo one sequences - Angela Mastropietro & Shirley Duong (F16, Sp17, F17)

Characteristic polynomials of symmetric matrices over finite fields - Samantha Alaimo (F18, S19, F19, S20, F20)

Cryptography and Hill ciphers - Geneva Deckert (Sp20)

**Directed studies** Group Theory and research project on modulo one sequences - Joeseeph Guzzi (Sp15)

Characteristic polynomials of symmetric matrices - Junfu Qiao (Sp16)

Introduction to Cryptography and Hill ciphers - Mahamud Ahmad (Sp17)

**Other** Honors course option research paper supervision (Number Theory and Cryptography) - Natalie Valla (Sp 18)

## Research Activities

[Publications \(peer reviewed\)](#)

1. Robert W. Fitzgerald and **Yasanthi Kottegoda**, *Power Trace functions over finite fields*, Journal of Algebra and Its Applications, Vol. 19, No. 10, 2050196 (2020).
2. **Yasanthi Kottegoda**, Angela Mastropietro and Shirley Duong, *Characteristics of Modulo sequences*, Elemente Der Mathematik, Volume 75, Issue 3, (2020), pp 103 - 113.
3. Houssein El Turkey, Salam Turki and **Yasanthi Kottegoda**, *Two implementations of pre-class reading*

*in Calculus*, PRIMUS: Problems, Resources, and Issues in Mathematics Undergraduate Studies (2019).  
<https://doi.org/10.1080/10511970.2019.1666331>

4. Dan Liu and **Yasanthi Kottegoda**, *Disconnect between undergraduates' understanding of algebraic and geometric aspects of vectors*, European Journal of Physics, Vol 40, No. 3 (2019).
5. Robert W. Fitzgerald and **Yasanthi Kottegoda**, *Invariants of Trace Forms in Odd Characteristic and Authentication Codes*, Finite Fields and Their Applications, Vol 48, (2017) 1 - 9.
6. **Yasanthi Kottegoda**, *Quadratic form Approach for the Number of Zeros of Homogeneous Linear Recurring Sequences over Finite Fields*, Journal of Mathematics research, Vol 9, No. 3 (2017) 8 - 13.
7. **Yasanthi Kottegoda** and Robert W. Fitzgerald, *The cardinality of the set of number of zeros of homogeneous linear recurrence sequences over finite fields*, Journal of Mathematics research, Vol 9, No. 2 (2017) 56 -64.

#### Publications (in preparation)

1. **Yasanthi Kottegoda** and Yevgeniya Rivers, *Pitching the passion for Math and Coding in a summer camp setting* (Submitted).
2. **Yasanthi Kottegoda**, Houssein El Turkey and Lochana Siriwardena (University of Indianapolis), *Designing Scaffolded Inquiry-Oriented Tasks in Integral Calculus*.
3. **Yasanthi Kottegoda** and Samantha Alaimo (UNH student), *Characteristic polynomials over finite fields*.
4. **Yasanthi Kottegoda** and Lochana Siriwardena (University of Indianapolis), *Assessing an inquiry based curriculum for Calculus using Bayesian networks*.
5. **Yasanthi Kottegoda** and Lochana Siriwardena (University of Indianapolis), *Application of inquiry based pre class tasks in Calculus II*.
6. Robert W. Fitzgerald and **Yasanthi Kottegoda**, *Invariants of Trace Forms in Odd Characteristic with the Probabilities of success for Impersonation attacks in Authentication codes*.
7. Yevgeniya Rivers and **Yasanthi Kottegoda**, *Data analysis and evaluation of middle school girls' perspectives on Math from a summer program setting*.

#### Research in progress

1. Application of inquiry based pre class tasks in introductory level Linear Algebra
2. The number of solutions for a quadratic form that lie in a hyperplane.

#### Presentations

##### o Conference presentations

- Jan 2019 "Assessing an inquiry based curriculum for Calculus II using Bayesian networks" : Joint Mathematical Meetings 2019, Baltimore, MD
- Jan 2019 "Pitching a passion for Mathematics and Computer Science in a summer camp setting for females entering grades 7 -12" : Joint Mathematical Meetings 2019, Baltimore, MD (**invited talk**)
- Jan 2019 "All Girls Summer Math Academy 2018; Promoting Retention of Females in STEM" : Joint Mathematical Meetings 2019, Baltimore, MD(**invited poster**)
- May 2018 "Assessing an Inquiry Based curriculum using Bayesian Networks": Bucknall conference for effective teaching strategies, University of New Haven (**poster**)
- April 2018 "Egyptian fractions: What's known and unknown" : 2018 PME Induction and Mathematics Awards Ceremony, The Rhode Island Beta Chapter of Pi Mu Epsilon; Rhode Island College, North Providence, RI (**invited talk**)
- Jan 2018 "Assessing an inquiry based curriculum using Bayesian networks" : Joint Mathematical Meetings 2018, San Diego, CA

- Jan 2018 “All Girls Summer Math Academy 2017; Promoting Retention of Females in STEM” : Joint Mathematical Meetings 2018, San Diego, CA(**invited poster**)
- Jan 2017 “ Exploring the characteristics of Modulo one sequences” : Joint Mathematical Meetings 2017, Atlanta, GA
- Jan 2017 “UNH All Girls Summer Math Camp 2016; Promoting Retention of Females in STEM” : Joint Mathematical Meetings 2017, Atlanta, GA (**invited poster**)
- August 2016 “Exploring the characteristics of Modulo one sequences” : MAA MATHFEST 2016, Columbus, OH
- April 2015 AWM research symposium 2015 at University of Maryland, College Park MD (**poster**)
- March 2015 “The zeros of linear recurring sequences over finite fields” : AMS spring eastern sectional meeting at Georgetown University, Washington DC
- Nov 2014 “Cardinality of the set of zeros of linear recurring sequences over finite fields” : New Colleague talks, MAA Northeastern sectional meeting at Southern Connecticut State University, New Haven CT
- April 2014 “The number of zeros of linear recurring sequences over finite fields” : University of West Florida (**invited talk**)
- March 2014 “The number of zeros of linear recurring sequences over finite fields” : Annual meeting of the Illinois section of MAA at Southern Illinois University Edwardsville, Edwardsville, IL
- March 2014 “The number of zeros of linear recurring sequences over finite fields” : Contributed paper sessions for Probability and Statistics and Coding Theory, MAA Southeastern sectional meetings at Tennessee Tech University, Cookeville, TN
- Jan 2014 “The number of zeros of linear recurring sequences over finite fields” : Contributed paper sessions for Algebra and Topology, Joint Mathematical Meetings at Baltimore, MD
- **Department presentations**
  - Oct 2016 “Egyptian fractions: What’s known and unknown” : Department’s Undergraduate Lecture Series, University of New Haven
  - May 2013 “Use of Coding Theory in determining bounds on the cardinality of the set of zeros of a homogeneous linear recurring sequence” : Algebra and Representation theory seminar, Southern Illinois University Carbondale
  - April 2013 “Number of zeros of a homogeneous linear recurring sequence based on irreducible characteristic polynomials over finite fields” : Algebra and Representation theory seminar, Southern Illinois University Carbondale
- **Co-authored presentations**
  - May 2018 “Implementations of pre-class reading in Calculus” : Bucknall conference for effective teaching strategies, University of New Haven (**poster**), *H. El. Turkey, S. Turki\* & Y. Kottegoda*
  - April 2018 “Characteristics of Modulo one sequences” : 12th Annual Spuyten Duyvil Undergraduate Mathematics Conference at Southern Connecticut State University (**poster**), *Y. Kottegoda, A. Mastropietro\*& S. Duong*
  - January 2018 “Two implementations of pre-class reading in Calculus” : Joint Mathematical Meetings 2018, San Diego, CA, *H. El. Turkey\*, S. Turki & Y. Kottegoda*
  - November 2017 “Characteristics of Modulo one sequences” : MAA Northeastern fall sectional meeting 2017, Sacred Heart University, CT, *Y. Kottegoda, A. Mastropietro\*& S. Duong*

May 2016 “Authentication codes from trace power functions” : National research conference in the fields of Pure Mathematics, Southern Illinois University Carbondale, *R. W. Fitzgerald\* & Y. Kottogoda*

○ **Other (UNH All girls summer math camp, UNH AllCanCode afterschool program)**

July 2016 - “An introduction to Cryptography and modular arithmetic”  
2021

July 2017 “Introduction to Graph Theory and applications”

July 2016 “Introduction to number theory and categories of prime numbers”

July 2015 “ Complex numbers and introduction to Mandelbrot set”

## Conferences and Workshops attended

Jan 2022 NACU Emerging Leaders Institute.

March 2022 CCAS virtual seminar for department chairs.

Oct 2021 Association for Women in Mathematics (AWM) “We Speak: Inspiring Women in Math Speaker Series”- Women in Leadership panel discussion

Jan 2020 Joint Mathematical Meetings 2020, Denver, CO

Jan 2020 Attended the minicourse workshop “Statistics for Data Science” : JMM 2020, Denver, CO

Aug 2019 Writing Across the Curriculum workshop on creating writing intensive courses, University of New Haven.

April 2019 AMS Spring Eastern sectional meeting 2019, Hartford, CT.

Jan 2019 Joint Mathematical Meetings 2019, Baltimore, MD

June 2018 MAA Northeastern Spring sectional Meeting 2018, University of New Haven, CT

May 2018 Bucknall conference for effective teaching strategies, University of New Haven

April 2018 12th Annual Spuyten Duyvil Undergraduate Mathematics Conference, Southern Connecticut State University.

March 2018 Seminar workshop on “Exploring Teaching and Learning through Inquiry-Oriented Linear Algebra”, University of Bridgeport.

Jan 2018 Joint Mathematical Meetings 2018, San Diego, CA

Jan 2018 Attended the workshop “Directing undergraduate research” : JMM 2018, San Diego, CA

Nov 2017 MAA Northeastern Fall sectional meeting 2017, Sacred Heart University, Fairfield CT

Jan 2017 Joint Mathematical Meetings 2017, Atlanta, GA

Nov 2016 MAA Northeastern Fall sectional meeting 2016, Trinity College, Hartford CT

Oct 2016 Circle on the road conference 2016, New York University

Oct 2016 Introductory workshop on MATHEMATICA, University of New Haven

Aug 2016 Teaching Linear Algebra (with Geogebra) : MAA MATHFEST 2016, Columbus, OH, August 2016

Aug 2016 MAA MATHFEST 2016, Columbus, OH

July 2015 International conference on finite fields and their applications 2015 at Skidmore College, Saratoga Springs NY

April 2015 SAGE workshop, University of New Haven

April 2015 AWM research symposium 2015, University of Maryland

March 2015 AMS spring eastern sectional meeting, Georgetown University, Washington DC

- Feb 2015 How to Succeed with Service-Learning, University of New Haven
- Jan 2015 Crafting Effective Learning Outcomes Workshop, University of New Haven
- Nov 2014 MAA Northeastern Fall sectional meeting 2014, Southern Connecticut State University, New Haven CT
- Sep 2014 Discovering the art of teaching mathematics, Quinnipiac University
- March 2014 Annual meeting of the Illinois section of MAA, Southern Illinois University Edwardsville, Edwardsville, IL
- March 2014 Southeastern sectional meetings, Tennessee Tech University, Cookeville, TN
- Jan 2014 Joint Mathematical Meetings at Baltimore, MD, January 2014.

## Grant Applications

### Internal grants

- May 2017 University of New Haven Faculty research award 2017-2018 - **Received \$2000.**
- May 2016 University of New Haven Faculty research award 2016-2017 - **Received \$2000**

### External grants

- March 2022 Coca-cola foundation grant - Pending ; Co-PIs :Y. Kottegoda, Y. Rivers
- July 2021 CHEFA client program grant - **Not funded**; Co-PIs :Y. Kottegoda, Y. Rivers
- Feb 2019 United Bank Foundation grant - **Not funded**; Co-PIs :Y. Kottegoda, Y. Rivers
- Dec 2019 Elsevier Mathematical sponsorship fund 2020 - **Not funded**
- Nov 2019 Verizon Foundation Cyber grant 2019 - **Received \$5000**; Co-PIs :Y. Kottegoda, Y. Rivers
- March 2019 Elsevier Mathematical sponsorship fund 2019 - **Not funded**; Co-PIs :Y. Kottegoda, H. El Turkey
- Feb 2019 Verizon Foundation Cyber grant 2018 - **Received \$5000**; Co-PIs :Y. Kottegoda, Y. Rivers
- March 2018 MAA Tensor grant for Women in Mathematics 2018 - **Received \$6000**; Co-PIs :Y. Kottegoda, Y. Rivers
- Dec 2107 Verizon Foundation grant 2017 - **Received \$3000**; Co-PIs :Y. Kottegoda, Y. Rivers
- March 2017 MAA Tensor grant for women in Mathematics 2017- **Received \$5300**; Co-PIs :Y. Kottegoda, Y. Rivers
- March 2017 Elsevier Mathematical sponsorship fund 2017 - **Not funded**; Co-PIs :Y. Kottegoda, H. El Turkey
- March 2016 MAA Tensor grant for women in Mathematics 2016 - **Received \$5881**; Co-PIs :Y. Kottegoda, Y. Rivers
- April 2016 "Community fund for woman and girls 2016," Sponsored by The community foundation for greater New Haven - **Not funded**; Co-PIs :Y. Kottegoda, Y. Rivers
- March 2016 Elsevier Mathematical sponsorship fund 2016 - **Not funded**; Co-PIs :Y. Kottegoda, Y. Rivers
- March 2015 MAA Tensor grant for women in Mathematics 2015- **Not funded**; Co-PIs :Y. Kottegoda, Y. Rivers
- Feb 2015 AAUW community action grant 2015- **Not funded**; Co-PIs :Y. Kottegoda, Y. Rivers
- March 2015 AWM-NSF travel grant for women researchers 2015 - **Received \$1885**

## Service

### UNH- Department of Mathematics & Physics

- Aug 17 - Jan 20. Chair of the department seminar series committee and the organizer of the bi-weekly Mathematics & Physics department seminar series
- Sep 14 -Pres. Project Co-director for annual UNH Summer Math Academy for Middle School Girls
- Sep15-Aug17 Member of the Math & Physics Department curriculum committee  
&
- Aug 18 -Pres.
- Feb-May 19 Organizer of the University of New Haven Math Carnavale 2019 (Julia Robinson Math Festival) for middle and High school students.
- Jan - June 18 Project Co-director for the University of New Haven after school math program "AllCan-Code" for middle school students
- Dec18-May19 Member of the math non tenure track/visiting positions (2) search committee
- Aug 18 -Pres. Member of the Calculus coordination committee
- Aug 18 -Pres. Member of the department outreach committee
- Dec17-May18 Co-chair of the math department chair search committee
- Dec17-May18 Co-chair of the math tenure track position search committee  
Acting chair for the Mathematics department (24Dec17 - 8Jan18; 24July18 - 3Aug18; 22July - 5Aug19)
- June - Aug 17 Member of the Visiting assistant professor in Probability and Statistics search committee
- Aug 17 -Pres. Undergraduate academic advising (5 students)
- Dec16-May17 Member of the math tenure track positions(2) search committee
- Oct15, Site chair and a committee member of the annual UNH math tournament 2015, 2017 for  
March17 grades 4-6
- Sep14-Aug17 Faculty mentor of Math & Physics club
- Fall 14 Member of the Math & Physics department extra curricular committee
- Sep14-May15 Course coordinator and member of the Business Calculus curriculum committee
- Fall 14 Member of the summer course coordination committee

### UNH- College of Arts & Sciences

- Fall20 Member of the College of Arts & Sciences dean search committee
- Fall17 - Sp18 Member of the College of Arts & Sciences curriculum committee
- Sp17 Member of the College of Arts & Sciences awards ceremony committee 2017

### Other - UNH

- Sp 21 Engineering Pathways Certificate program with Edge Pathways LLC oversight committee
- Fall 19- Fall 21 Member of the UNH faculty senate 2019 -2021
- June19-Sp20. Member of the proposal committee to apply for the HHMI(Howard Hughes Medical Institute) grant for Inclusive Excellence in the STEM fields 2019 -2020
- Sp 18 Member of the Electrical Engineering tenure track assistant professor search committee 2017 - 2018
- Sp18, F18, University of New Haven 1st year EXPO faculty evaluator  
Sp19, F19

Sp16,Sp19 Member of the UNH Summer Undergraduate Research Fellowships (SURF)- 2016, 2019 review committees

Other - Professional service outside UNH

- March 21 Mathematical Association of America (MAA) Tensor grant for woman & Mathematics 2021 review panel member
- March 20 Mathematical Association of America (MAA) Tensor grant for woman & Mathematics 2020 review panel member
  - Jan 20 Undergraduate Algebra & Number Theory poster session judge, Joint Mathematical Meetings 2020, Denver, CO, January 2020
  - Sep 19 Article reviewer for the journal of Humanistic Mathematics
- March 19 Mathematical Association of America (MAA) Tensor grant for woman & Mathematics 2019 review panel member
  - Jan 19 Undergraduate Algebra & Number Theory poster session judge, Joint Mathematical Meetings 2019, Baltimore, MD, January 2019
- June 18 - Nov 18 Article reviewer for the journal of Designs, Codes & Cryptography
- June 18 Moderator of the contributed paper session, MAA Northeastern Spring sectional meeting 2018, University of New Haven
- June 18 Member of the MAA Northeastern Spring sectional meeting 2018 local arrangements committee
  - Jan 18 Undergraduate Algebra & Number Theory poster session judge, Joint Mathematical Meetings 2018, San Diego, CA
  - Jan 17 Moderator of the session on Algebra, MAA contributed paper sessions, Joint Mathematical Meetings in Atlanta, GA
- Aug 16 Judge for MATHFEST 2016 MAA Undergraduate student paper session for Number Theory
- July 15 Session chair for 3 contributed paper sessions, International conference on finite fields and their applications 2015 at Skidmore College, NY
- March 14 Judge for the Illinois Junior Academy of Science Region 8 Science fair which at Southern Illinois University Carbondale, organized for young students in Illinois to give some insight in scientific investigations and experiments
- 2008 - 2014 Volunteering in Math Field day at SIUC which is organized for the high school students in the Southern Illinois area,
- 2008 - 2013 Volunteering in Expanding Your Horizons Conference in Illinois, which is held at SIUC, that is organized for young women to develop inspiration in STEM fields
  - 2007 Junior staff member of the organizing committee of the Sri Lankan Mathematical Olympiad Competition and awards ceremony, 2007