WELCOME CLASS OF 2024!

Department of Mathematics and Statistics

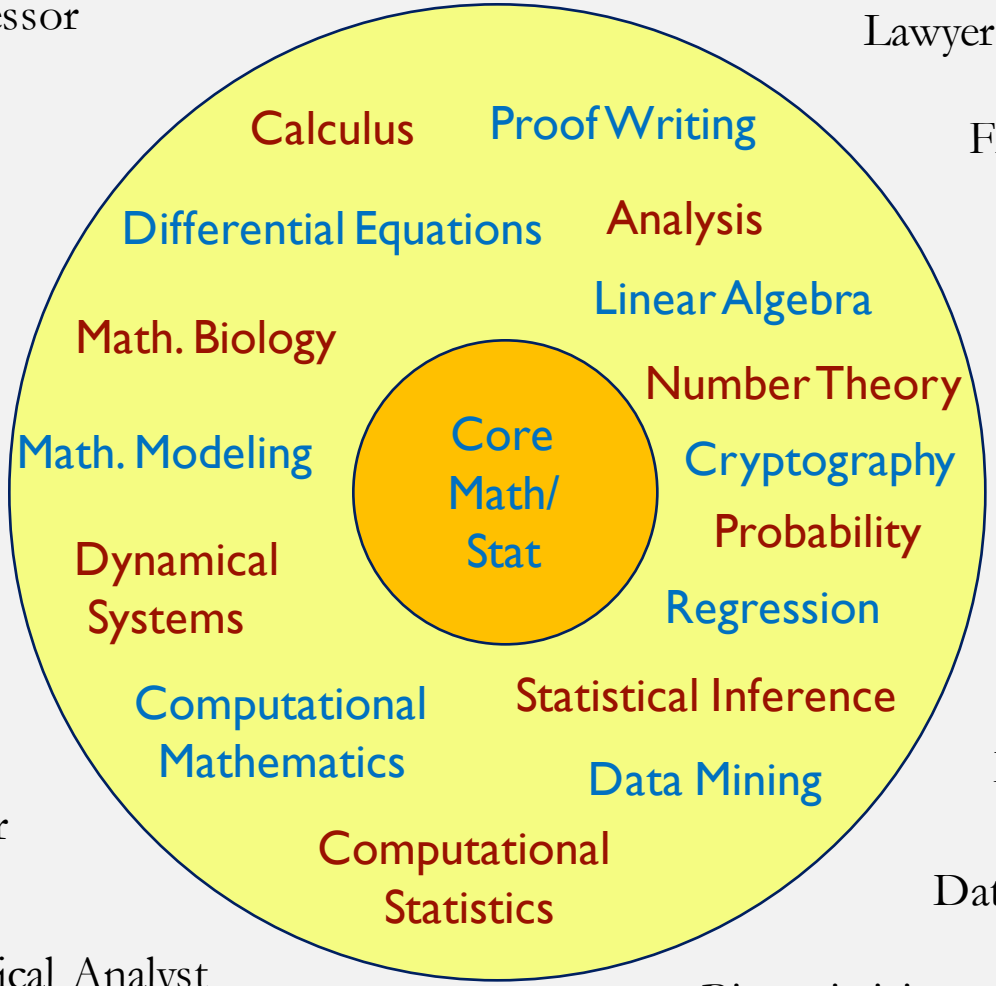
Faculty: Tom Hagedorn, Karen Clark, Mike Ochs, Nick Battista
Students: Tierney Baldwin, Mike Knothe, Michael Luo, Francesca Zumpano

WHY DO MATHEMATICS AND STATISTICS?

Mathematicians and statisticians apply theories and techniques, such as mathematical or statistical modeling, to solve practical problems. Typically, they work with individuals in other occupations to solve these problems.

- For example, they may work with chemists, materials scientists, and chemical engineers to analyze the effectiveness of new drugs.
- Others may work with industrial designers to study the aerodynamic characteristics of new automobiles
- Decide what data are needed to answer specific questions or problems
- Apply mathematical theories and techniques to solve practical problems in business, engineering, the sciences, and other fields
- Design surveys, experiments, or opinion polls to collect data
- Develop mathematical or statistical models to analyze data
- Interpret data and report conclusions drawn from their analyses
- Use data analysis to support and improve business decisions

CAREERS IN MATHEMATICS AND STATISTICS



Teacher/Professor

Financial Modeling

Oceanography/Physics

Medical Researcher

Business Analyst

Operations Research

Computer Programmer

Statistical Analyst

Lawyer

Financial Risk Analyst

Cryptologist

Computer Security

Actuary

Public Policy Analyst

Market Research Analyst

Data Analyst

Biostatistician

WHAT DISTINGUISHES TCNJ MATH/STAT?

- Distinguished, engaged faculty.
- Undergraduate focused. Small class sizes, strong curriculum.
- Faculty advisors
- Opportunities for research/ independent work

- Great facilities
- Supportive student culture
- Outstanding student/ alumni achievements

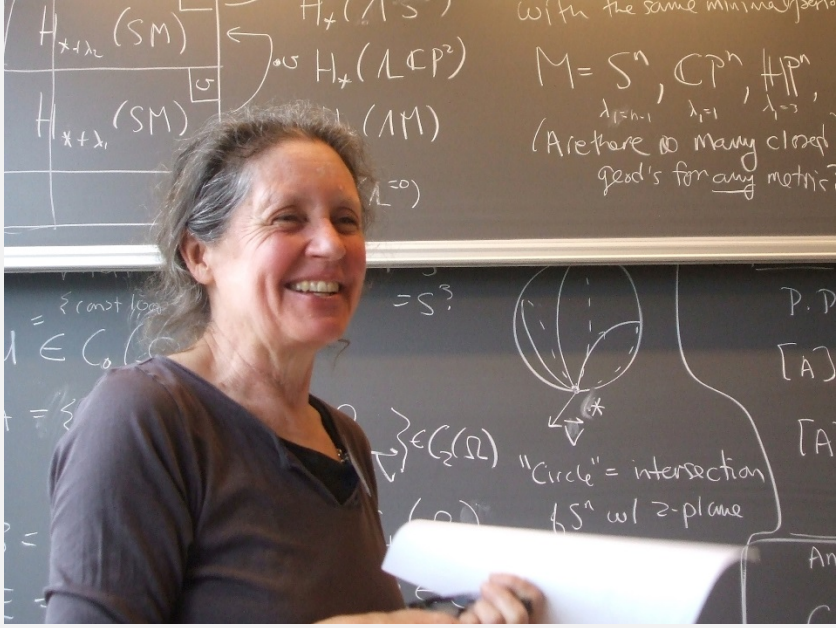
TCNJ MATHEMATICS AND STATISTICS

- One of 5 Departments in the School of Science at TCNJ
  - Biology
  - Chemistry
  - Computer Science
  - Mathematics and Statistics
  - Physics

- 23 Full time faculty
- Approx. 370 declared majors (70-80 students per graduating class)

TCNJ THE COLLEGE OF NEW JERSEY

DISTINGUISHED FACULTY



Dr. Nancy Hingston
2017 AMS Fellow,
Invited Speaker, 2014, ICM, Seoul, Korea

Dr. Jana Gevertz
2016 MAA Henry Alder Award
1 of 3 winners nationally

Dr. Robert Cunningham,
2019-20 Fulbright Scholar – Caribbean
2016 Fulbright Specialist -- Anguilla

RESEARCH FIELDS

Applied Mathematics
Mathematical Biology, Cancer Modeling, Finance, Material Science

Mathematics
Topology, Algebra, Number Theory, Logic, Analysis, Alg. Geometry, Combinatorics

Mathematics Education
Teacher Knowledge, Teacher Preparation

Statistics
Biostatistics, Data Mining, Quality Control

DEPARTMENT AND CURRICULUM

- 23 full-time faculty
- 330+ Math/Stat majors

Majors (BS Degree)

- Mathematics w/ Specializations in:
  - Mathematics
  - Applied Mathematics
  - Statistics
  - Data Science (currently being formalized)
- Mathematics Secondary Education (4-yr)
  - Specialization in Urban Ed (5-yr)
  - Specialization in Special Ed (5-yr)
- Mathematics Teaching
  - Elementary, Early Childhood, Deaf & Hard of Hearing, Special Education, Urban Education, and combinations of the above!

Minors:

- Math, Statistics, Actuarial & Financial Risk Studies, Computational and Math Biology

SMALL CLASS SIZES, INDIVIDUALIZED ATTENTION

- Class sizes
  - Largest class size is 32 (First courses in Calculus, Statistics)
  - Intermediate level Class sizes are 15-25.
  - Upper level Class sizes 12-18.
- Faculty Advisors
- Independent research– typically 1-3 students/faculty member.

You will never be in a class this big!

SIGNATURE EXPERIENCES: INTERNSHIPS

- Finance:
  - CIT, Bessemer Trust, TD Bank, Wells Fargo, Signature Bank
- Insurance & Actuarial:
  - Prudential, Metlife, Miravast, Willis Towers, Chubb
- Data Science
  - Dow Jones, BioClinica, Novo Nordisk
- Consulting
  - Fulcrum Worldwide, Castle Consulting
- Other: Technology, Law, Healthcare

Benefits:

- Gain Experience
- Get feel for different industries
- Learn new skills and build confidence

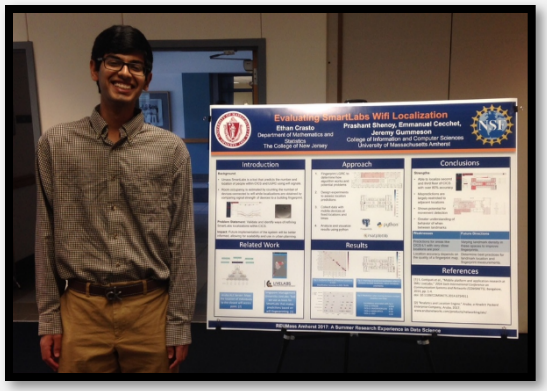
SIGNATURE EXPERIENCES: RESEARCH OPPORTUNITIES

Gain experience with independent learning, a good career skill for workplace and grad. school

Earn academic credit

MUSE (Mentored Undergraduate Summer Experience) Program at TCNJ

Research Experiences for Undergraduates



Recent REU Experiences

- Williams College
- Univ. of Berkeley
- Summer Inst. Biosciences
- Sloan Kettering
- Univ. of Michigan
- Harvard University
- U. Mass -- Amherst
- Franklin & Marshall C.
- Wake Forest Univ.
- Lafayette College
- James Madison Univ.

CAREERS: INDUSTRY

Companies

- Facebook
- Educational Testing Service
- Prudential Financial (Annuities department)
- National Security Agency
- Department of Defense
- Ernst & Young (IT risk area)
- Munich Reinsurance (actuarial firm)
- Mathematica Policy Research
- NRG Energy (Risk analysis)
- Lockheed Martin
- Buck Consultants, Secaucus
- AON/Hewitt, Metlife
- New Jersey State Government
- Pharmaceutical firms

Average Salary of 2018 Grads: $65,400

Average 2018 Salaries:

- Mathematicians: $91,000 (Bureau of Labor Statistics)
- Statisticians: $105,000 (BLS)
- Actuaries: $113,000 (Glassdoor)

CAREERS AFTER GRADUATE SCHOOL

Industry

- **Financial Analyst, NYC** (UC Davis 2016 math PhD)
- **Director, Duke University,** Biostatistics, Epidemiology and Research Design Core, (2015 NCSU Statistics PhD)
- **Lawyer,** Seton Hall Law School (2012)

Higher Education

- **Math Professor, Temple University** (Postdoc, Yale Univ., Univ. Texas at Austin, 2014 PhD)
- **Math Prof., Union College** (Univ. Massachusetts at Amherst math PhD)
- **Math Prof., Hunter College, NYC** (Indiana University, 2014 Applied math Phd)
- **Senior Preceptor., Harvard University** (2014 Univ. of Utah, Math Phd)

Class of 2019: Grad. Schools

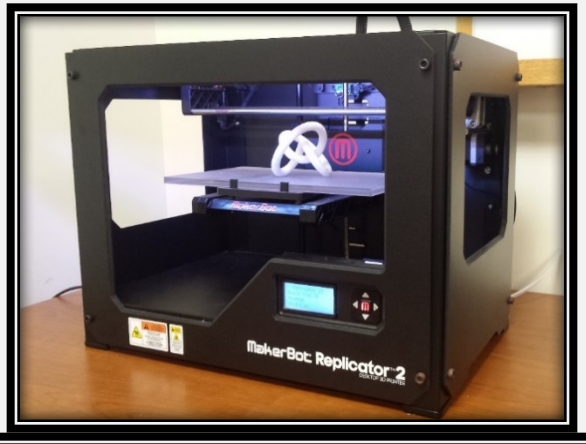
- **Math:** Rice University, Penn State, Ohio State
- **Statistics**: Ohio State, Univ. of Penn, Rutgers

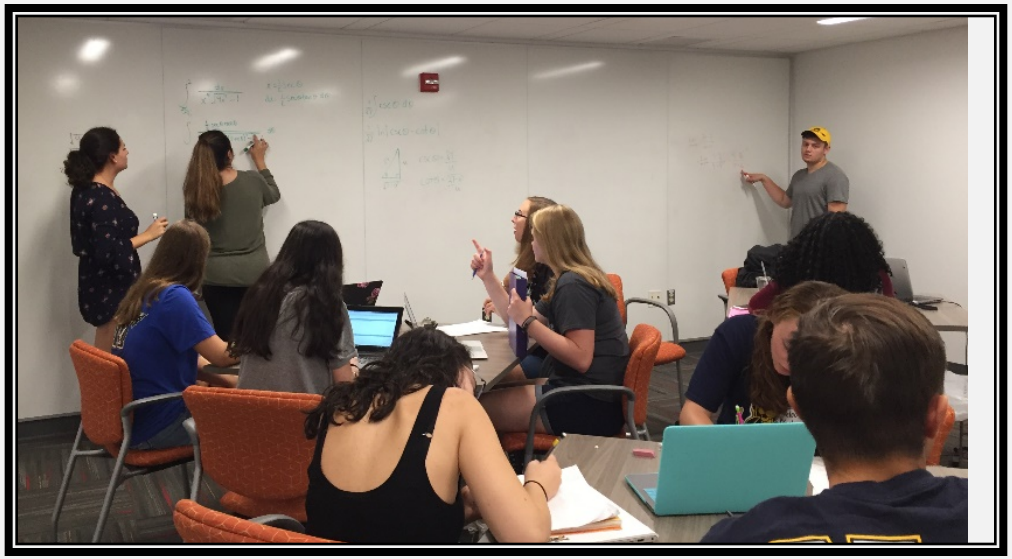
Classes of 2015-18: Grad. Schools

- **Math:** Ohio State, Michigan State, Univ. of Connecticut, Wesleyan University (2), Washington University, Bryn Mawr, , Univ. of Florida, Florida State Univ., University of Louisville,
- **Math Finance:** Rutgers
- **Math. Biology/Biology:** Yale University (Biology), Columbia (Epidemiology)
- **Statistics:** Harvard, Penn State (2), UNC-Chapel Hill, George Mason, Univ. of Minnesota
- **Math Education:** University of Central Florida

NEW FACILITIES

- High-Performance Computing Lab
- 2018 Department Renovation, Student Lounge
- STEM building
- 3D-printer





RICH STUDENT CULTURE

- Math & Stat Club
- Pi Mu Epsilon
- Putnam Exam
- Garden State Undergraduate Mathematics Conference

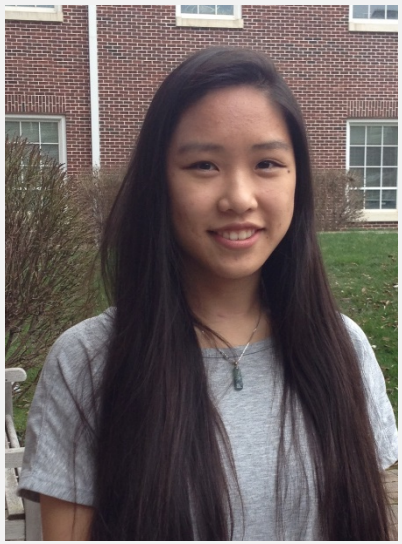
- Council of Student Teachers of Mathematics
- Actuarial Club
- Student/Faculty events

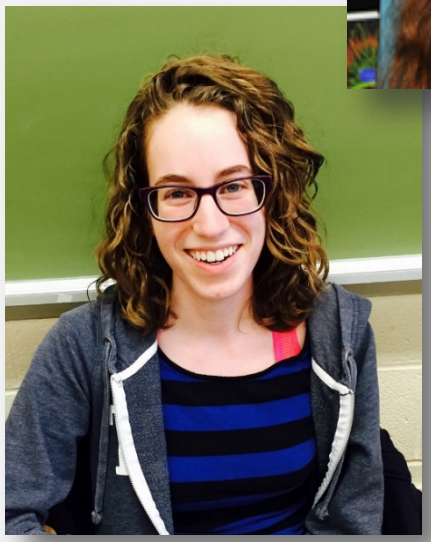
STUDENT ACHIEVEMENTS:

National Recognition

- Goldwater Scholarships: 2014, 2015, 2016, 2018

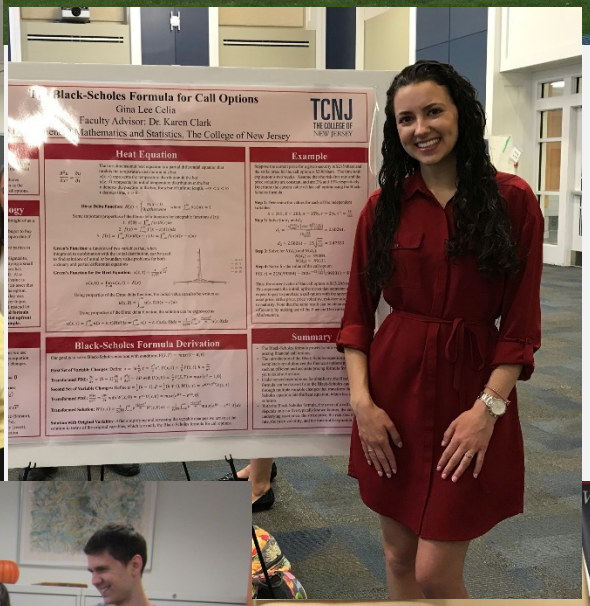
260 national scholarships in science given each year for students intending to pursue graduate work.





- National Science Foundation Graduate Fellowships: 2017, 2018 (3 awarded)
- 2018 National Education Trust Scholarship in Math. Ed (NCTM)
- 2019, one of 3 winners of Distinguished Clinical Intern award

A Fun Department!



MAA
MATHEMATICAL ASSOCIATION OF AMERICA
New Jersey
SECTION
1956

EMERGENCY

Welcome to
CANDY
CASINO!

TCNJ

DETAILS OF MAJOR

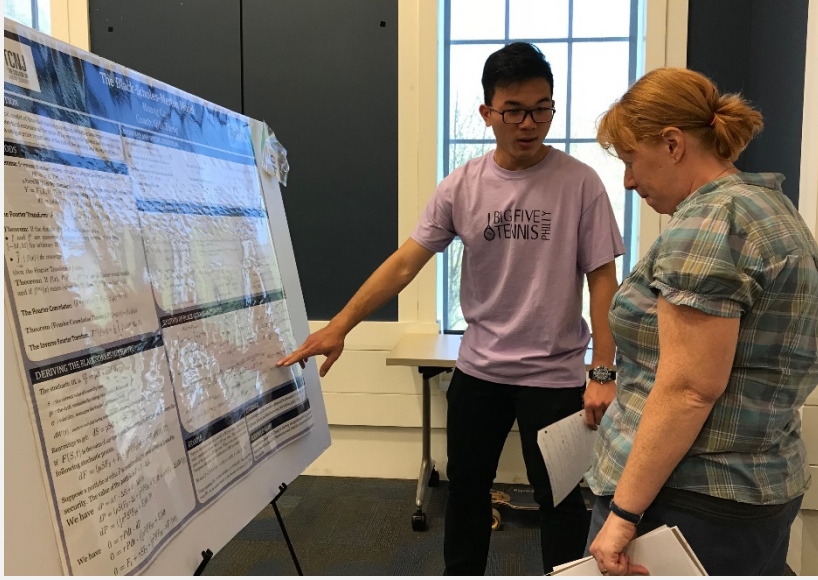
- Required Courses for **all Majors**
  - Calculus A,B,C
  - Proof Writing through Discrete Mathematics
  - Linear Algebra
  - Capstone

- **Mathematics**: Abstract Algebra, Real Analysis, 6 more

- **Applied Math**: Differential Equations, Real Analysis, 6 more

- **Statistics**: Stat. Inference, Prob., Regression, Math. Statistics, 5 more stat/math courses
- **Data Science**: Stat. Inference, Regression, Data Mining, Computational Mathematics, 4 more stat/math courses

QUESTIONS?



Dr. Tom Hagedorn,

hagedorn@tcnj.edu, x3053, Chair

Dr. Cathy Liebars,
liebars@tcnj.edu, x3043,
Associate Chair and Math Education Coordinator

- Dept. of Math and Statistics
  Science Complex Room P231
- Website:
  www.tcnj.edu/~mathstat

CALCULUS PLACEMENT

- Placed into Calculus A with SAT Math score 630 or a 28 ACT score and four years of math including Algebra I, Algebra II, Geometry, Trigonometry
- Placed into Precalculus with SAT Math score between 550 and 620 or ACT between 24 and 27
- Placed into Intermediate Algebra with SAT Math score below 550 or ACT lower than 24

AP CREDIT

- 4 or 5 on Calculus AB exam or 3 on Calculus BC exam – placed into Calculus B, receive credit for Calculus A
- 4 or 5 on Calculus BC exam – placed into Calculus C, receive credit for Calculus A and B
- 5 on Statistics exam – credit for Statistical Inference (STA 215) or Statistical Inference & Probability (STA 216 – Ed majors only)

STUDY ABROAD OPPORTUNITIES

PAY TCNJ TUITION AND STUDY ABROAD WITH EXCHANGE PARTNERS IN

Argentina
Australia
China
England
France
Germany
Ireland
Japan
Spain
Tajikistan
Thailand
Turkey

Math/Stat student participation

- Budapest semesters in mathematics and mathematics education
- Study abroad in England (Oxford), Spain, Australia
- J-Terms in England with TCNJ English Department
- Student teaching in Italy, Thailand, Netherlands

CSTM: First NCTM Student Chapter in New Jersey

Amazing Careers

Dr. Chris Manno '90

Superintendent, Burlington County School District
2013 New Jersey Superintendent of the Year

Dr. Katarzyna Potocka '99

Associate Professor of Mathematics
Ramapo College of New Jersey