# Curriculum Vitae

Joy D'Andrea, Ph.D

University of South Florida Sarasota-Manatee
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## Education

- Ed.S., Instruction and Curriculum: Instructional Technology Concentration (Expected Spring 2024), USF Tampa.
- Graduate Certificate, Instructional Design: Florida Digital Virtual Educator Concentration (spring 2017), USF Tampa.
  - Ph.D Mathematics (Statistics Concentration), USF Tampa, spring 2016.
    – **Dissertation:** *A Statistical Analysis of Hurricanes in the Atlantic Basin and Sinkholes in Florida.*
  - M.A. Mathematics, USF Tampa, spring 2011.
    – **Master's Thesis***:* *Fundamental Transversals on the Complexes of Polyhedra.*
  - B.A. Mathematics, USF Tampa, fall 2007.
  - A.A. Mathematics, *Summa Cum Laude*, State College of Florida, spring 2004.

## Professional Experience

**August 2022 -**

Associate Professor of Instruction, USF Sarasota - Manatee.

Courses Assigned: MAC 1147 Precalculus/Trigonometry, MAC 2311 Calculus 1, MAC 2312 Calculus 2. MAC 2313 Calculus 3, STA 4930 Selected Topics in Statistics – Stats Programming in R, STA 2023 Elementary Statistics (online and face to face), MAD 2104 Discrete Math (online), MAC 2233 Business Calculus, MAP 2302 Differential Equations.

**August 2016 - May 2022**

Instructor of Mathematics and Statistics/ Unit Chair, USF Sarasota - Manatee.

Courses Assigned: MAC 1147 Precalculus/Trigonometry, MAC 2311 Calculus 1, MAC 2312 Calculus 2. MAC 2313 Calculus 3, STA 4930 Selected Topics in Statistics – Stats Programming in R, STA 2023 Elementary Statistics (online and face to face), MAD 2104 Discrete Math (online), MAC 2241 Life Science Calc 1, MAC 2233 Business Calculus (online), MAP 2302 Differential Equations, MAE 4310 Teaching Elementary Math 1 for education majors, MAE 4326 Teaching Elementary Math 2, MAE 6117 Teaching Elementary Math (graduate course).

**June – August 2016.**

Adjunct Professor, Department of Mathematics, Hillsborough Community College: Southshore Campus.

Courses Assigned: MAP 2302 Differential Equations 1

**August 2013 – August 2016.**

Visiting Instructor, Department of Mathematics, USF Sarasota - Manatee.

Courses Assigned: MAC 1105 College Algebra, MAC 1147 Precalculus/Trigonometry (3 face to face contact hours, and 1 hour online), MAC 2241 Life Science Calculus, MAC 2223 Business Calculus, and STA 2023 Elementary Statistics. Created student – centered/active learning lectures for all face to face courses. Developed and created online modules, discussions and quizzes for the Precalculus/Trigonometry course. Had regular scheduled office hours and offered additional tutoring. Within the courses that I was assigned to teach; I implemented, created, encouraged, and incorporated the following:

1) Group work activities
2) Projects (which included presentations)
3) Peer related learning skills
4) College age students Montessori Method to learn through exploration, tact, and abstraction.
5) Inquiry based projects
6) Learner-Autonomy

**June – August 2015.**

Adjunct Professor, Department of Mathematics, Hillsborough Community College: Southshore Campus.

Courses Assigned: MAC 2311 Calculus 1

**January 2013 – May 2013**.

Fulltime Temporary Assistant Professor, Department of Mathematics, Polk State College. Courses Assigned: MAT 1033 Intermediate Algebra (face to face), MAC 1105 College Algebra, MAC 2223 Applied Calculus, MGF 1106 Topics in Math.

Prepared student – centered/active learning lectures for all face to face courses. Prepared the necessary quizzes or tests that would test the student's knowledge of the concepts presented in their main lectures. Graded and recorded quizzes, tests, homework, and final grades. Had regularly scheduled office hours for students to come and ask questions or get assistance. Offered additional weekend test preparation and reviews. Proctored all exams and quizzes.

**June 2011 – August 2013.**
Adjunct Professor, Department of Mathematics, Polk State College.
Courses Assigned: MAT 0024 Basic Algebra, MAT 1033 Intermediate Algebra (face to face, hybrid, and online), MAC 1105 College Algebra, MAC 2223 Applied Calculus, MGF 1106 Topics in Math, and MGF 1107 Liberal Arts Math.
Prepared student – centered/active learning lectures for all face to face courses. Developed and created online modules for hybrid and online courses. Prepared the necessary quizzes or tests that would test the student's knowledge of the concepts presented in their main lectures. Graded and recorded quizzes, tests, homework, and final grades. Had regularly scheduled on- line office hours (via skype, google hangout, chat) for students in either hybrid or online courses to email to and ask questions or get assistance. Offered additional weekend test preparation and reviews. Proctored all exams and quizzes.

**August 2012 – August 2013.**
Adjunct Professor, Department of Mathematics, Hillsborough Community College: Southshore Campus.
Courses Assigned: MGF 1106 Topics in Math, MGF 1107 Liberal Arts Math.

**August 2008 – May 2013.**
Graduate Teaching Assistant, Department of Mathematics, University of South Florida.
Courses Assigned: MAC 1105 College Algebra (face to face, hybrid), MAC 1147 Precalculus/Trigonometry, MAC 2281 Engineering Calculus, 2282 MAC 2282 Engineering Calculus 2, MAC 2311 Calculus 1, MAC 2321 Calculus 2, MAC 2311 Calculus 3 (grader), MAC 2241 Life Science Calculus, MAC 2223 Business Calculus, MGF 1106 Finite Math, MFG 1107 Liberal Arts Math, MGF 3301 Bridge to Abstract Math (grader), and MAS 4156 Vector Calculus (grader).

Prepared lesson plans for the class sessions, encouraged students to be active in their learning process by offering them chances to come to the board and do problems. Re - enforced the new material the students learned in their main lecture class, answered any questions about their homework assignments or issues with the material. Developed the necessary quizzes that would test the student's knowledge of the concepts presented in their main lectures. Graded and recorded quizzes, tests, homework, and final grades in blackboard. Had regularly scheduled office hours for students to come and ask questions or get assistance. Proctored exams and final examinations for the main lecture classes. Participant in the pilot College Algebra course in fall 2010 and spring 2011. This pilot course involved motoring students working on computers using MyMathLab on a daily basis, answering questions and offering assistance with showing

supplemental steps to understand MyMathLab strategies. Partnered with other graduate assistants to write a user manual for the course.

**January 2004 – August 2005.**

Mathematics Tutor, Academic Resource Center, State College of Florida (Venice).

Assisted students with questions on their homework assignments and class notes. Provided assistance with math - related software for student computer assignments.

**June 2003 – August 2005.**

Computer Tutor, Academic Resource Center, State College of Florida (Venice).

Assisted students with computer related homework questions. Helped students taking Web - page development classes learn HTML language.

**January 2003 – May 2004.**

Bookstore Clerk, Bookstore Venice Campus, State College of Florida (Venice).

Stocked shelves with course textbooks, cash handling duties, made the schedule for part - time students.

**April 2000 – May 2002.**

Aerobics Instructor / Personal Trainer / Front Desk, Gold's Gym, Venice, Florida,

Taught low and high impact step aerobics with special stretching and abdominal exercises included. Trained clients to workout correctly and injury free daily, weekly, and monthly. Answered the phone and answered questions about the facility, directed clients to specific areas of exercise areas. Provided tours of the facility.

**August 2001 – August 2002**

Swing Store Manager, McDonalds Restaurant, Port Charlotte, Florida.

Assisted in running the production of the franchise store, customer service responsibilities, cash handling.

**September 1999 – August 2001**

Assistant Store Manager, McDonalds Restaurant, Venice, Florida.

Assisted in running the production of the franchise store, responsible for crew scheduling, hiring new crew members, customer service responsibilities, cash handling.

**October 1995 – April 2000.**

Aerobics Instructor, La Palestra Health Club, Englewood, Florida.

Taught low impact step and water aerobics with special stretching and abdominal exercises included.

**September 1993 – September 1999**

Crew Member/Shift Leader, McDonalds Restaurant, Venice, Florida.

Customer service responsibilities, cash handling, responsible for crew member monthly meetings.

## Teaching Assistantships

Teaching Assistantship, University of South Florida, 2008, 2009, 2010, 2011, 2012.

## Grants

NSI, Coral Reef Restoration Case Study, $2,000, spring 2021
EPSRC, Mathematical Science Research grant, $550, spring 2014.

## Honors & Awards

- MAA VP – Elect 2019-20
- MAA VP – Elect Site Selection 2017-18
- USF Sarasota-Manatee, Excellence in Teaching Award, nominated spring 2016.
- AMS (American Mathematical Society), Impact on the Teaching and Learning of Mathematics Award. Nominated fall 2015.
- Urban Scholars Outreach Program, Outstanding Service Award fall 2014.
- Pi Mu Epsilon Conference Liaison Award spring 2014.
- Tharp Endowment Funding Award ($500), University of South Florida Mathematics Department, spring 2012.
- Pi Mu Epsilon President, Chapter at University of South Florida, spring 2009
- Pi Mu Epsilon Vice - President, Chapter at University of South Florida, spring 2008.
- Pi Mu Epsilon Induction, University of South Florida, spring 2007.
- Mathematics Olympics Competition, First Place Team Competition Small College Division, University of North Florida, spring 2007.
- Honor Award for Math Team Member, State College of Florida, spring 2007.
- Mathematics Olympics Competition, First Place Team Competition Small College Division, University of North Florida, spring 2006.
- Honor Award for Math Team Member, State College of Florida, spring 2006.
- Student Ambassador Award, State College of Florida, Spring 2006.
- Mathematics Olympics Competition, First Place Team Competition Small College Division, University of North Florida, spring 2005.
- Dean's List, University of South Florida, 2005-2006.
- Dean's List, State College of Florida, 2003-2004.
- Honor Student of the Year, Ideal High School, summer 1994.

## Scholarships

- Gulf Coast Community Foundation of Venice Scholarship for Arts and Sciences Student ($1200), Venice FL, summer 2009.
- Gulf Coast Community Foundation of Venice Scholarship for Arts and Sciences Student ($1200), Venice FL, summer 2008.
- Gulf Coast Community Foundation of Venice Scholarship for Arts and Sciences Student ($900), Venice FL, summer 2007.
- Gulf Coast Community Foundation of Venice Scholarship for Arts and Sciences Student ($700), Venice FL, summer 2006.
- Brunch on the Bay Scholarship ($500), USF, Sarasota FL, fall 2005.

## Seminar and Colloquia Presentations

1) USFSM STEM CLUB - A Brief Overview of Polyhedra in the Real World, USFSM, November 2, 2022.

2) 1st Special Colloquium Series for Mathematical Sciences (SCSM), Georgia Southern University, October 30, 2020. “Latent Storm Factors and Their Indicators.”

3) Mathematics & Computer Science Colloquium (Invited), Florida Southern College, Lakeland FL. September 7, 2016. "An Extension of Euler's Polyhedron Theorem - An Enumeration of orbits."

4) Mathematics & Computer Science Colloquium (Invited), Florida Southern College, Lakeland FL. February 11, 2016. “Exploratory Factor Analysis and Modeling of Hurricanes in the Atlantic Basin.”

5) Discrete Mathematics Seminar, USF, April 21, 2014. “Coradjacent Edge Fundamental Transversals.”

6) Discrete Mathematics Seminar, USF, November 25, 2013. “A Survey of a Periodic Placement Lemma.”

7) Mathematics Teaching Seminar, USF, October 23, 2013. “The Benefit of Teaching Networking Skills to Mathematics Students.”

8) Discrete Mathematics Seminar, USF, April 23, 2012. “Looking at Kolam Designs.”

9) Discrete Mathematics Seminar, USF, November 28, 2011. “A Re - Visitation of Fruchts Theorem for the Digraph Factorial.”

10) Discrete Mathematics Seminar, USF, April 26, 2010. “Graph Transversals and Transversals of Faces.”

11) Discrete Mathematics Seminar, USF, December 1, 2008. "Representation of algebraic groups by simple graphs."

## Workshops, Panels & Conference Organization

1) Tech Savvy Conference (presented by AAUW-Bradenton Branch), USF Sarasota – Manatee, May 13, 2017. "Fluff & Puff: Edible Geometric Shapes (workshop)."

2) Tech Savvy Conference (presented by AAUW-Bradenton Branch), USF Sarasota – Manatee, June 4, 2016. "Marshmallows, Toothpicks, and Polyhedra (workshop)."

3) MAA 39th Annual Suncoast Regional Meeting, December 5, 2014, USF Sarasota – Manatee, Organizer and host.

4) MAA 38th Annual Suncoast Regional Meeting, December 6, 2013, HCC, Ruskin, FL - Organizer of 'Special Sessions on Geometry' panel.

5) Math meets Chemistry panel. USF Tampa, March 6, 2012.

## Conference Presentations

1) ICTCM - Pearson Conference. Orlando, FL. "Teaching Transitions Through The New Normal Transformation", March 26, 2022.

2) FCTM - Orlando, FL. "ADAPTATION,CREATION AND COLLABORATION DURING THE COVID CIRCUMSTANCE", June 2021.

3) Joint Annual Meetings, MAA Florida Section and FTYCMA, Polk State College, February 22, 2019. "Euler Extension Episode Continued."

4) EERA Annual Conference, Clearwater FL, February 8, 2018. "A Topic about Teaching Gen Y Networking Skills."

5) MAA 42nd Annual Suncoast Regional Meeting, December 1, 2017. "Latent Storm Factors."

6) Forty Eighth Southeastern International Conference on Combinatorics, Graph Theory, and Computing, FAU, Boca Raton FL, March 10, 2017. "Connected Fundamental Transversals and Transversal Domains."

7) Joint Annual Meetings, MAA Florida Section and FTYCMA, State College of Florida, February 18, 2017. "Developing Critical Thinking using Practical Computing."

8) Joint Mathematics Meetings, Atlanta GA, January 5, 2017. "Modeling Hurricanes using Exploratory Factor Analysis in conjunction with Non-Response Analysis and Logistic Regression."

9) MAA 41st Annual Suncoast Regional Meeting, December 2, 2016. "Improving Performance and Enhancing Introductory Statistics using Projects."

10) FCTM Conference, Orlando FL, October 22, 2016. "Using Technology to Illustrate Elementary Geometry."

11) Joint Annual Meetings, MAA Florida Section and FTYCMA, St. Leo's University, February 26, 2016. "A Statistical Analysis of Sinkholes in Florida."

12) MAA 40th Annual Suncoast Regional Meeting, December 4, 2015, Florida Polytechnic University. "A Logistic Modeling of Hurricanes in the Atlantic Basin."

13) ASA: American Statistical Association Florida Chapter Meeting, USF, February 6th 2015. "Big Data Set Compilation of Atlantic Basin Hurricanes and Buoys."

14) Joint Annual Meetings, MAA Florida Section and FTYCMA, Edison State College, February 21, 2014. "An Extension of Euler's Polyhedron Theorem."

15) StemTECH 2013 Conference - Atlanta Georgia, October 28, 2013. "The Benefits of Teaching Networking Skills to Mathematics Students."

16) FTYMCA Conference, St. Petersburg College, October 13, 2012. "The Montessori Method Applied to Social Media for the Developmental Mathematical Student."

17) AMS Special Session on Quasi-Crystalline Materials, USF, March 11, 2012. "Transversals on Crystal Nets."

18) 6th Annual Graduate Students Combinatorics Conference, Auburn University, Alabama, April 4, 2010. "Portraits of Transversal Domains."

19) Forty First Southeastern International Conference on Combinatorics, Graph Theory, and Computing, FAU, Boca Raton FL, March 11, 2010. "Transversal Domains on the CW Complexes of Polyhedra."

20) Joint Annual Meetings, MAA Florida Section and FTYCMA, Santa Fe College, February 19, 2010. "Describing some Polyhedra and their Symmetry groups."

## Research Papers & Projects

***Peer - Reviewed & Moderated***

- D'Andrea, J., A Brief Parametric Analysis of Catastrophic or Disastrous Hurricanes that have hit the Florida Keys between 1900 and 2000. American Journal of Computational Mathematics, Vo1. 8 No.1. doi: 10.4236/ajcm.2018.81001 (2018)

- D'Andrea, J., Wooten, R., Pogoda, W. Odds Ratio & Relative Risk Ratio of Buoy Conditions for Storms in the Atlantic Basin. Open Journal of Statistics. Vol.8 No.5. doi: 10.4236/ojs.2018.85049 (2018)

- D'Andrea, J. and Wooten, R. The Art of Estimating a Moving Parameter and Reducing Bias Introduced by Inflated Measurements in Student Assessments. American Journal of Computational Mathematics, Vol.8 No.1. doi: 10.4236/ajcm.2018.81003 (2018)

- D'Andrea, J. and Wooten, R. Improving Performance and Enhancing Introductory Statistics Using Projects. American Journal of Computational Mathematics, 7, 21-28. doi: 10.4236/ajcm.2017.71002. (2017)
- Wooten, R. D., D'Andrea, Joy. Modeling Hurricanes using Principle Component Analysis in Conjunction with Non-Response Analysis, arXiv.org – in affiliation with Cornell University Library, eprint arXiv:1512.05307. March 25, 2016
- Wooten, R. D., Baah K, & D'Andrea, Joy. Implicit Regression: Detecting Constants and Inverse Relationships with Bivariate Random Error, arXiv.org – in affiliation with Cornell University Library, eprint arXiv:1603.07948. December 17, 2015
    - McColm, G., D'Andrea, Joy. Statistical Turtle-bug Search. A python computer program that extracts information from a given Systre out-file, and assembles a text file for ready accessibility for SAS to import for analysis. May 2012 – March 2014

***Accepted & In Progress***

D'Andrea, J. A Case Study on Southwest Florida Coral Reefs (accepted into American Journal of Computational Math – December 2022).

- D'Andrea, J. An Extension of Euler's Polyhedron Theorem- Classifying Polyhedra by Enumeration of Orbits (In progress Jan 2023).
- D'Andrea, J. Connected Fundamental Transversals and Transversal Domains (In progress December 2022).
- D'Andrea, J. Latent Storm Factors with Associated Indicators (In progress, Jan 2023).

## Mentored Students

- Katie McClure – USFSM, fall 2016 - Spring 2017. Presented research poster, "Statistical Analysis of Correlated Factors Associated with Liver Cancer," at the USFSM Research Showcase April 2017. Student won third place in the Science & Math category
- .Adela Ramos (undergraduate at USF), 2013 - 2014, "Geometric Educational Resources." Presented research poster at the USF Undergraduate Research Symposium and Colloquium April 2014.
- Cody Shirah (undergraduate at Polk State College), 2012, 'Electromagnetism use through conductors.' Summer project.

## Educational Research Interests

- Educational Leadership
- Instructional Design
- The Montessori Method
- Distance Education Pedagogics
- Virtual Learning Pedagogics
- Kinesics Mathematics Pedagogics
- Student - Centered Learning Pedagogics
- Learning - Centered Pedagogics

## Statistical & Mathematical Research Interests

- Survival Analysis
- Logistic Regression
- Applied Statistics
- Non-Response Analysis
- Geometric Group Theory
- Mathematical Crystallography
- Economic Game Theory
- Galois Theory

## Technical Knowledge

- Math Programming Languages: Maple, Python, Latex.
- Statistical Languages: SAS, SPSS, R, R- Commander, Excel.
- Writing and Presentation Languages: Microsoft Office, Latex, Adobe Illustrator, Reader, Writer.
- E - Learning: Canvas, Web Assign, Course Compass, Blackboard, PAL, MyMathLab, ALEKS.
- Social Media: Virtual Algebra Tutor, Purple Math, Mathematics Stack-exchange, Google Hangout, Skype, Facebook, Linkedin.

## Service Activities

University of South Florida Sarasota – Manatee:
USF Math Migration Website Committee, 2020-2021
USFSM Math Discipline Chair, spring 2016-18
USFSM Math Club Advisor, spring 2016-
USFSM Software Committee, spring 2016
USFSM 10 in 3 Task Force Committee, spring 2016
Faculty Search Committee for Mathematics Instructor (Chair), fall 2016 – spring 2017.
Faculty Search Committee for Visiting Mathematics Instructor, spring 2016.
Faculty Search Committee for Visiting Mathematics Instructor, spring 2015.
Duval Family Series Conference Committee Member, spring 2015.
Faculty Search Committee for Physics, fall 2014.
E-Learning Development Committee Member, spring 2014.

Polk State College: 2012 - 2013
QEP (Quality Enhancement Plan) Committee

## Professional Service

- Associate Editor, Undergraduate Journal of Mathematical Modeling, summer 2010, fall 2011, summer 2012.
- Textbook Reviewer – "The Joy of Finite Mathematics," by Chris Tsokos and Rebecca Wooten, spring 2014.

## Professional Activities

- Member, AMS
- Member, MAA (VP- Elect for Site Selection 2017-18)
- Member, ASA.
- Member, FTYCMA.
- Member, FCTM
- Member, PI Mu Epsilon, spring 2007 - present.
- Member, GAU, *Mathematics Department Steward*, January 2012 - April 2013.