

# Joshua Kent Patterson

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## SUMMARY

Joshua Kent Patterson is a PhD mathematician with 15 years of in-class experience as an outstanding mathematics facilitator / instructor / professor. This includes 2 years as a Supplemental Instructor, followed immediately by 3 years as a Teaching Assistant, 2 years as an Adjunct Instructor at multiple institutions (listed below), 4 years as a Graduate Assistant / GAANN fellow, and 4 years as a full-time ad-interim instructor of Mathematics. He is known primarily for his Mathemagic tricks—these tricks are every bit as fun as magic, but rely solely on the axioms of mathematics. They engage students to be curious about mathematics and aid in classroom attendance and retention.

## EDUCATION

**University of Texas-Arlington**  
PhD in Mathematics, May 2019

**Texas A&M University-Commerce**  
Masters of Mathematics, 2008-2011

**Texas A&M University-Commerce**  
Bachelor of Science in Mathematics & Computer Science, 2006-2008

**Northeast Texas Community College**  
Associates in Mathematics & Computer Science, 2004-2006

## PROFESSIONAL DEVELOPMENT

### Published Papers

1. Patterson, Joshua, and Andrzej Korzeniowski. "M/M/1 Model with Unreliable Service." *International Journal of Statistics and Probability* 7, no. 1 (2018). <https://doi.org/10.5539/ijsp.v7n1p125>
2. Patterson, Joshua, and Andrzej Korzeniowski. "M/M/1 Model With Unreliable Service and a Working Vacation." *International Journal of Statistics and Probability* 8, no. 2 (2019). <https://doi.org/10.5539/ijsp.v8n2p1>
3. Patterson, Joshua, and Andrzej Korzeniowski. "Decomposition of M/M/1 With Unreliable Service and a Working Vacation." *International Journal of Statistics and Probability* 9, no. 1 (2020): 1-63. <https://doi.org/10.5539/ijsp.v9n1p63>

### Submitted Papers

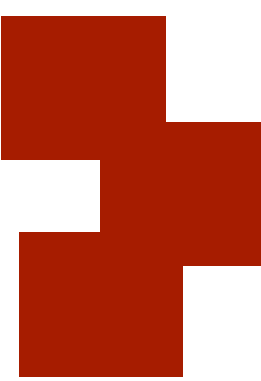
N/A

### In-Progress Papers

1. Patterson, Joshua, "M/M/1 Model with Unreliable Service and a dynamic policy-based service rate." (2022)

### Presentations

1. Patterson, Joshua, "Modeling an M/M/1 Queue with Unreliable Service and a Working Vacation" *TAMUC Colloquim* Oct. 23 (2019)
2. Patterson, Joshua, "The M/M/1 Queue with 'unreliable service' and a working vacation." *99th Annual Meeting of the Texas Section of the MAA*, Mar. 29 (2019)
3. Patterson, Joshua, "The M/M/1 Queue with 'unreliable service' and a working vacation." *AMS Spring Southeastern Sectional Meeting*, Mar. 16 (2019)
4. Patterson, Joshua, "Mathemagics" *A.I.M. (Adventures in Mathematics)*, Feb. (2015)
5. Patterson, Joshua, "Mathemagics" *94th Annual Meeting of the Texas Section of the MAA*, Apr. (2014)
6. Patterson, Joshua, "Mathemagics" *A.I.M. (Adventures in Mathematics)*, Feb. (2014)
7. Patterson, Joshua, "Mathemagics" *93rd Annual Meeting of the Texas Section of the MAA*, Apr. (2013)

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8. Patterson, Joshua, "Mathemagics" *A.I.M. (Adventures in Mathematics)*, Feb. (2013)
  9. Patterson, Joshua, "Mathemagics" *TAMUC Math Club*, Feb. (2013)
  10. Patterson, Joshua "The S.O.M. (self organizing map) Neural Network" *93rd Annual Meeting of the Texas Section of the MAA*, Apr. (2010)

### Training

- Completed the first time instructor training (weekly meetings every Friday for 1 year) by Dr. Jennifer Dyer, department head of Curriculum and Instruction at TAMUC, 2019.
- Met weekly with my supervisor, Dr. Pamela Webster, along with the other Teaching Assistants to discuss various classroom issues as well as other instructional purposes. This included "grading exercises" and literature reviews, among other activities, 2008-2011.
- Voluntarily attended optional Teaching Assistant meetings for instructional training purposes, 2011-2015
- Attended training on **Adobe Connect**, presented by Jeremy Gamez.
- Attended optional TI calculator training given by a TI representative.
- Attended optional Panic Button training provided by Jason Bone.
- Attended optional MyMathLab training, provided by Pearson Education. Sep, 2013.
- Attended optional **SMART Board** training, Aug, 2013.

### Attended Conferences

- Mathematical Association of America Texas Section, 2010P, 2012P, 2013P, 2014P, 2015P, and 2019P
  - Conference for the Advancement of Mathematical Teaching, 2014, and 2015P
  - Served as a Session Chair at the AMS Spring Southeastern Sectional Meeting, March 2019P
- \* P after the year denotes that a presentation was also given.*

### **SERVICE**

- Served as a judge for the SCUDEM IV competition in differential equation modeling, 2019.
- Served as a session moderator for the 99th MAA Texas Section Meeting & the AMS Southeastern Spring Sectional Meeting, 2019.
- Volunteered to cover additional classes and proctor the exams of other instructors when they were traveling or ill, 2008-2015
- Helped the TAMU-C faculty host the first annual A.I.M. (Adventures in Mathematics), Feb, 2013.
- Volunteered to man the Mathematics department booth at the "University Days" event every Fall, 2006-2008.
- Volunteered to help with various Math Club events on campus. 2006-2015.
- Organized an on-campus WebAssign training session, presented by Cengage Learning, Nov, 2013.
- Coached the TAMU-C Calculus Bowl team 2014-2015, having received 1<sup>st</sup> place both years at the MAA competition

**EXPERIENCE**  
*Current Employment*

**Adjunct Instructor, Texas A&M University-Commerce**

Commerce, TX, May 2023-Aug 2023

Will teach two online Graduate Level Mathematical Statistics courses  
MATH 501.01W & 502.01W.

**Most Recent Prior Employment**

**Ad-Interim Instructor, Texas A&M University-Commerce**

Commerce, TX, 75428 Aug 2022-May-2023

Taught 5 upper-division/graduate level courses (Fall 2022)

MATH 402

MATH 403

MATH 453

MATH 561

MATH 1324

Taught 4 upper-division/graduate level courses (Spring 2023)

(2) MATH 403

MATH 2414

MATH 503

**Accomplishments**

- Taught my first graduate level math course
- Developed detailed course materials for 402, 403, & 561 & 503.

**Adjunct Instructor, Texas A&M University-Commerce**

Commerce, TX, Jan 2021-May 2021

Taught an online Calculus II course, MATH 2414.02W.

**Accomplishments**

- Developed online course material for Calculus II in D2L, including detailed lecture notes and lecture videos, occasionally utilizing special case examples to address common second year misconceptions in Calculus.
- Held online office hours regularly using Discord, but was generally reachable at all times via my own discord server. This facilitated not only student-instructor interactions, but likewise the ever so crucial student-student interactions in the online environment.
- Administered individual oral examinations (approx. 1 hr/student) for all exams and the final exam, utilizing a detailed rubric that students were given ahead of time.
- Worked with students to navigate the rolling blackouts of February 2021 in accordance with University policy, while simultaneously managing to cover all relevant content.

**Past Employment**

**Ad-Interim Instructor, Texas A&M University-Commerce**

Commerce, TX, 75428 Aug 2019-May-2020

Taught 5 undergraduate courses (Fall, 2019):

MATH 2305 – Discrete Mathematics

(2) MATH 1342 – Elementary Statistics

(2) MATH 2312 – Precalculus

Teaching 4 undergraduate courses (Spring, 2019):

MATH 403 – Intro to Mathematical Statistics

MATH 2413 – Calculus I

MATH 2414 – Calculus II

### **Accomplishments**

- Taught the above listed courses as the instructor of record.
- Published 3rd research paper: <https://doi.org/10.5539/ijsp.v9n1p63>
- Became familiar with the D2L LMS.
- Transitioned all courses successfully to an online format due to COVID-19, developing lecture notes/videos for the new environment as well as some custom animations in Mathematica showing the rigorous epsilon-delta definition of a limit.
- Supervised 2 graduate teaching assistants assigned to the Calculus class, and one learning assistant assigned to the 2413 class.

### **GAANN Fellow, University of Texas-Arlington**

Arlington, TX, Aug 2016-May 2019

Facilitated 2 Pre-Calculus MATH 1421 labs

Taught 7 Business Algebra MATH 1315 courses

Taught 1 Business Calculus MATH 1316 course

### **Accomplishments**

- Became a GAANN Fellow.
- Taught the above listed courses as instructor of record.
- Passed 3 out of 3 preliminary exams. (Math Analysis, Linear Algebra, Real Analysis)
- Passed my Comprehensive Examination.
- Passed Abstract Algebra by examination, completing all necessary PhD course work.
- Published 2 papers in the *International Journal of Statistics and Probability*  
<https://doi.org/10.5539/ijsp.v7n1p125>  
<https://doi.org/10.5539/ijsp.v8n2p1>
- Began work on a 3rd paper.

### **Graduate Teaching Assistant, University of Texas-Arlington**

Arlington, TX, Aug 2015-Aug 2016

Facilitated 6 Pre-Calculus MATH 1421 labs

### **Accomplishments**

- Facilitated the above listed labs.
- Passed 2 out of 3 preliminary exams. (Math Analysis, Linear Algebra)
- Encouraged my students to fulfill their academic potential through rapport and subtle in-class encouragement.
- Engaged my students with hands-on learning techniques, including group activities of 3-5 students as instructed by the course coordinator.
- Utilized Pearson's **MyLabsPlus**, which is an textbook embedded online component to the 1421, 1315, and 1316 courses which enables students to access homework, detailed step-by-step solution techniques, online tutoring, and much more in real-time.

### **Ad-Interim Instructor, Texas A&M University-Commerce**

Commerce, TX, Aug 2013-May 2014 & Aug 2014-May 2015

Taught 25 First Year Math courses, including the following:

College Algebra, MATH 1314

Liberal Arts Math, MATH 179

Liberal Arts Math, MATH 179.xCW (online, 5 week terms)

Business Calculus, MATH 176

Pre-Calculus, MATH 142

### Accomplishments

- Taught 11 face-to-face First Year Math courses. (listed above).
- Incorporated the use of technology into my face-to-face lessons, including graphing calculators, **SMART Boards**, and the use of a tablet connected to the projector.
- Served as a faculty member for the **CSSP** (Comprehensive Student Success Program) grant which aims to standardize First Year Math classes as well as provide additional support for both Instructors and students. The CSSP grant also added a project based or service based hands-on component to the Intermediate Algebra classes.
- Encouraged my students to fulfill their academic potential.
- Engaged my students with hands-on learning techniques, including group activities as well as counter intuitive Mathemagics tricks.
- Utilized **GradesFirst**, which is an online component which enables students to view their grades, tutoring hours, and attendance records in real-time and also gives Academic Advisors access to this information. This allows for Instructors and Advisors to work together in an entirely new, interconnected way.

### Adjunct Instructor, Texas A&M University-Commerce

Commerce, TX, Jun 2011-Aug 2013

Taught a number of First Year Math classes on an as-needed basis. Classes taught include the following:

Intermediate Algebra, MATH 131  
College Algebra, MATH 141/1314  
Business Math, MATH 176  
Liberal Arts Math, MATH 179

### Accomplishments

- Taught a number of face-to-face First Year Math courses.
- Developed the College Algebra content / curriculum for the **eCollege / MyMathLab** powered online homework component.
- Incorporated the use of technology into my face-to-face lessons, including graphing calculators, **SMART Boards**, and the use of a tablet connected to the projector.
- Served as a faculty member and a team leader for **project DREAM**, (Developing Readiness for Everyone in Algebra and Mathematics), a grant which was funded by the Texas Higher Education Coordinating Board for \$400,000 for two years, 2010-2012.
- Served as a faculty member for the **CSSP** (Comprehensive Student Success Program) grant which aims to standardize First Year Math classes as well as provide additional support for both Instructors and students. The CSSP grant also added a project based or service based hands-on component to the Intermediate Algebra classes.
- Encouraged my students to fulfill their academic potential.
- Engaged my students with hands-on learning techniques, including group activities as well as counter intuitive Mathemagics tricks.
- Beta tested the new **GradesFirst** online component which enabled students to view their grades, tutoring hours, attendance records, and so much more all in real time and also gave Academic Advisors access to this information as well. This allowed for Instructors and Advisors to work together in an entirely new way.

## **Adjunct Instructor, Northeast Texas Community College**

Mount Pleasant, TX, Jan 2012-May 2013

Taught seven College Algebra courses over a consecutive three semester time frame to a diverse student body.

### **Accomplishments**

- Taught four face-to-face courses, and three online hybrid courses.
- Developed the College Algebra content / curriculum for the **Blackboard / WebAssign** powered online hybrid courses.
- Met weekly with Dr. Paula Wilhite for in-service instructional training.
- Continued to develop my own teaching style, successfully utilizing my "Mathemagics" as a way to encourage attendance and class room participation.

## **Adjunct Instructor, Jarvis Christian College**

Hawkins, TX, Aug 2011-May 2012

Taught a number of upper division math courses. (listed below)

Calculus I

Calculus II, twice

Calculus III

Differential Equations

Abstract Algebra

### **Accomplishments**

- Taught 3 face-to-face courses, and 3 online courses.
- Developed the curriculum for an online Calculus II, Differential Equations, as well as Abstract Algebra.
- Encouraged my students to pursue advanced degrees in the field of mathematics.
- Encouraged my students to have regular study groups, as well as provided a number of optional **Skype**-powered study sessions.
- Met regularly with Dr. Martin Yale for instructional training.

## **Teaching Assistant, Texas A&M University-Commerce**

Commerce, TX, Aug 2008-May 2011

Taught, as the teacher of record, a number of Intermediate Algebra and College Algebra courses while working on my masters degree full time.

### **Accomplishments**

- Learned how to deal with a number of class room related issues, everything from behavioral issues to organizational issues.
- Learned that in any situation, there is always someone to go to for advice. Typically, Dr. Pamela Webster, as my adviser filled this roll but every member of faculty, at some point, gave me words of wisdom. This, more than anything, is the most useful skill set that I acquired from this position.
- Developed my own style of teaching thanks to the instruction of my supervisor as well as other members of faculty.
- Identified students who were incorrectly placed in the wrong math course through the implementation of competency exams.
- Developed record keeping skills as well as how to build and maintain a working, professional rapport with the student body.

## **Supplemental Instructor, Texas A&M University-Commerce**

Commerce, TX, Aug 2006-May 2008

Facilitated Supplemental Instructor (SI) labs associated with Intermediate Algebra courses. These SI labs were built-in to the students schedule with an assigned classroom and class time. Attendance was mandatory for all students.

### **Accomplishments**

- Created lesson plans for each SI lab class period.
- Demonstrated, by example, proper student behavior by attending the class to which the lab was assigned and taking notes.
- Met with Dr. Pamela Webster and the other SI leaders every week for instructional training and to discuss and share lesson plan ideas.

### ***SKILL SET***

- Expert at building and maintaining student rapport.
- Expert-level experience at in-class instruction, stressing concept comprehension.
- Expert-level experience maintaining student records.

### ***TECHNICAL SKILL SET***

- Expert-level experience with MyMathLab.
- Expert-level experience with Mathematica.
- Expert-level experience with LaTeX.
- Expert-level experience with WebAssign.
- Expert-level experience with Skype.
- Expert-level experience audio/video equipment.
- Expert-level experience of all Microsoft Operating Systems, Office Suits, and associated programs.
- Expert-level experience with any and all Unix shells.
- Intermediate-level experience with MyLabsPlus.
- Intermediate-level experience with GradesFirst.
- Intermediate-level experience with MATLAB.
- Intermediate-level experience with TI Calculators.
- Intermediate-level experience with Blackboard v9.0.
- Intermediate-level experience with HTML, Java, and C++.
- Intermediate-level experience with Camtasia.

### ***REFERENCES***

Andrzej Korzeniowski, Ph.D.  
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Additional references available upon request.

