

## Checking Out Actuarial Science

Sarah Moss

*Dordt University*, [sarah.moss@dordt.edu](mailto:sarah.moss@dordt.edu)

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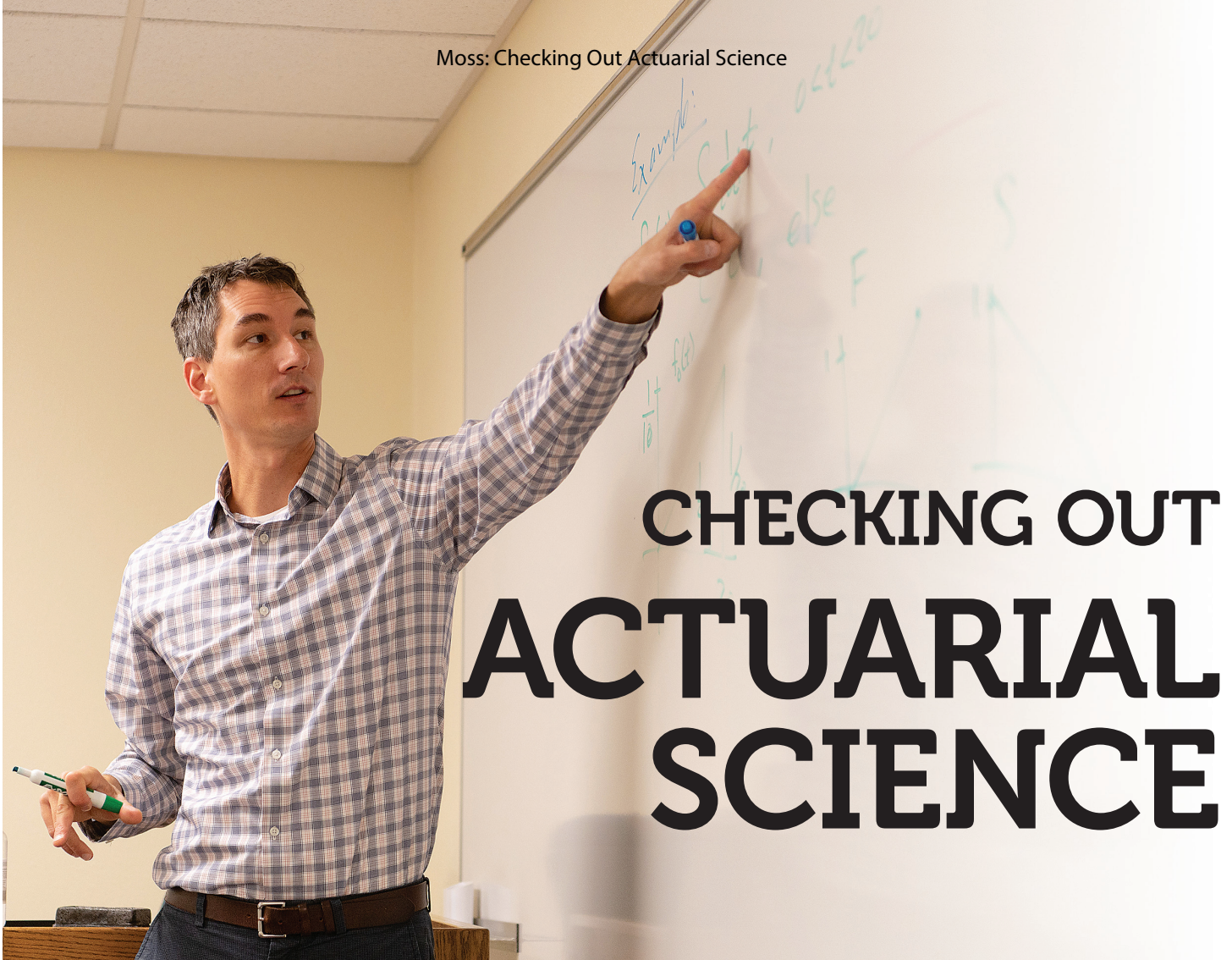
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Dr. Tom Clark teaches his students the mathematics and the strategies they need to pass the exams required to become actuaries.

## What exactly is actuarial science, and what do actuaries do?

In high school, Gabriel Garcia loved taking mathematics courses. When he thought about what he wanted to be when he grew up, he envisioned doing something with numbers—perhaps something related to statistics and finance. That interest in mathematics ran in the family; both of his parents work for insurance companies in Honduras.

During his junior year of high school, he took an accounting course and quickly discovered that accounting wasn't for him. He began to wonder if he should major in biomedical engineering, because he liked the sciences as well.

One day his father pulled him aside. "Have you heard of actuarial science?" he asked Garcia. "I have a friend whose son is studying that in the United States."

When Garcia looked into actuarial science, he quickly became intrigued.

"It focused on finance, statistics—it's a mix of a lot of areas of study that I liked," he says. "I ended up taking an online introduction to actuarial science course, and I remember partway through the course thinking, 'This is something I can see myself doing for the rest of my life.'"

Garcia knew he wanted to attend a university in the United States where he could play men's volleyball, study actuarial science, and receive a Christ-centered education.

"I was also looking for a calm place to start, because as an international student coming to a new country, a new culture, and a completely different background, I wanted to find someplace where I felt at home," he says.

He found that Dordt checked all the boxes for him—an education focused on faith, an actuarial science program,

and a men's volleyball program—and he knew he'd found where he was meant to spend the next four years of his life. Once he got to campus, he was thrilled to find that Dordt's actuarial science program was a close-knit community of students and professors.

"Each actuarial science student has a really personalized experience with professors and classes, and with our adviser, Dr. Tom Clark," explains Garcia. "Professor Clark is great. We have specific time with him, and he knows each actuarial science major well. Through Dordt's program, we get to have unique experiences and build relationships with our professors, which is really helpful for our major."

Clark, who is a mathematics professor, assumed leadership of the actuarial science program last year. He has a Ph.D.



in mathematics and a love of learning, so when he became the champion of the actuarial science program, he threw himself into discovering all he could about what it meant to be an actuary, to best serve his students.

So, what exactly *is* actuarial science, and what do actuaries do?

"The one-sentence answer is, they try to model and project risk," says Clark. "Usually that's financial risk, but it can be in other contexts too. Actuarial science is interdisciplinary in its skill set; you're taking statistics, mathematics, business, economics, and programming classes. You're gaining a broad range of skills that, when put together, help to model risk."

The first class Clark taught for actuarial science was a financial mathematics class, which looks at the financial concept of the time value of money.

"How much do bonds cost? How do you price insurance, or how do you price an annuity? How do you calculate interest over time?" says Clark. "It's more about

learning terminology you'll have to use and the calculations you'll need to make, and then understanding the context in which you would be working."

That class prepares students for the first of many actuarial science exams: the financial mathematics exam. Over

concepts needed for the first actuarial science exam, but it wouldn't necessarily help them to pass the exam.

"To pass the exam, you have to be fast. You have to know all the formulas, how to use the test-specific calculator, and to solve 35 problems in three hours. And

these problems are not easy; you only have five minutes for each question. So, students have to be quick and efficient in how they solve the questions," says Clark.

To help his actuarial students prepare for this aspect of the exam, Clark held a weekly workshop to help students practice for the exam, connecting what they'd learned in the

financial mathematics class to the actual practice of completing the exam.

"We focused on a different topic every session: bonds, stocks, annuities, and perpetuities. We worked together on problems and tried to figure out how they worked—looked for patterns, applied formulas, and kept trying to get faster," says Garcia, who participated in the workshop.

After one year of teaching actuarial science, Clark decided he should take the financial mathematics exam so he would have a better understanding of what his students needed to pass it. On a road trip to Yellowstone in June, he and his family stopped in Rapid City so that he could go to a testing center to take the exam. He finished in two hours and 45 minutes, which gave him 15 minutes to check over his answers. Later he found out that he scored a nine, with 10 being the maximum score possible on the exam.

"It was important to me not just to pass the exam, but to understand the content thoroughly to best teach it, and I think my score reflects that I did," he says. "It was a very valuable experience, because now I better understand what the connections are. There are 40 formulas that students could memorize, but what are the 10 that they *need* to memorize? What are the key concepts that inform everything else? Now I have that level of understanding and can better serve my students."

Actuarial science is interdisciplinary in its skill set; you're taking statistics, mathematics, business, economics, and programming classes. You're gaining a broad range of skills that, when put together, help to model risk.

— Dr. Tom Clark, mathematics professor

the course of their career, actuaries take approximately 10 – 11 exams—and college students are encouraged to take and pass two to four exams during their undergraduate years.

Clark soon discovered that the financial mathematics class would give actuarial science majors the foundational

JAMIN VER VELDE (99)



Gabriel Garcia loves mathematics and numbers; he also loves volleyball. Dordt's actuarial science program allows him to combine those interests in a Christian educational setting.



Garcia has plans to take the financial mathematics exam this fall. He hopes to take a second exam—the probability exam—this spring, and then a third exam during his junior year. He developed this game plan after hearing Derek De Vries ('18), who works as an assistant actuary at Principal Financial Group in Des Moines, give a talk at an evening meetup on campus.

"Actuarial exams are not easy; they can be challenging, and that's probably why some people don't want to study actuarial science, because you have to spend a lot of time studying," says Garcia. "Derek talked about how it's good to take as many exams as you can while you are in college—ideally around three during your four years. And now that I know that, I have a plan for what to do."

De Vries is one of several alumni who have maintained a relationship with Dordt's actuarial science program after graduating. Part of De Vries' role at Principal is to recruit at small colleges and universities in Iowa, including Dordt. He has a goal of connecting with students as early in their college career as possible and to build stronger relationships with faculty like Clark.

"We have a pipeline to Dordt for strong applicants who are interested," he says. "Students from smaller schools, especially Dordt, offer a different perspective and educational experience than those who went to large state schools."

Looking back at his own Dordt education, De Vries says he appreciates that he was able to get involved in co-curriculars like choir and to serve as a sports

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**Derek De Vries ('18) is one of many Dordt actuarial science graduates who found a job right out of college.**

announcer at KDCR. Once he began working and interacting with his colleagues, he realized that being able to do these kinds of things while studying actuarial science was a bit of an anomaly.

"At many other colleges and universities, if you study actuarial science, everything is so centered on studying for exams that you can become tunnel visioned," he says. "Interestingly enough, when I included my work as KDCR sports announcer on my résumé, it stood out to the hiring team at Principal, as they were looking for someone with communication experience. That's an opportunity that wouldn't have happened if I went to a different school."

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— Derek De Vries ('18), actuary

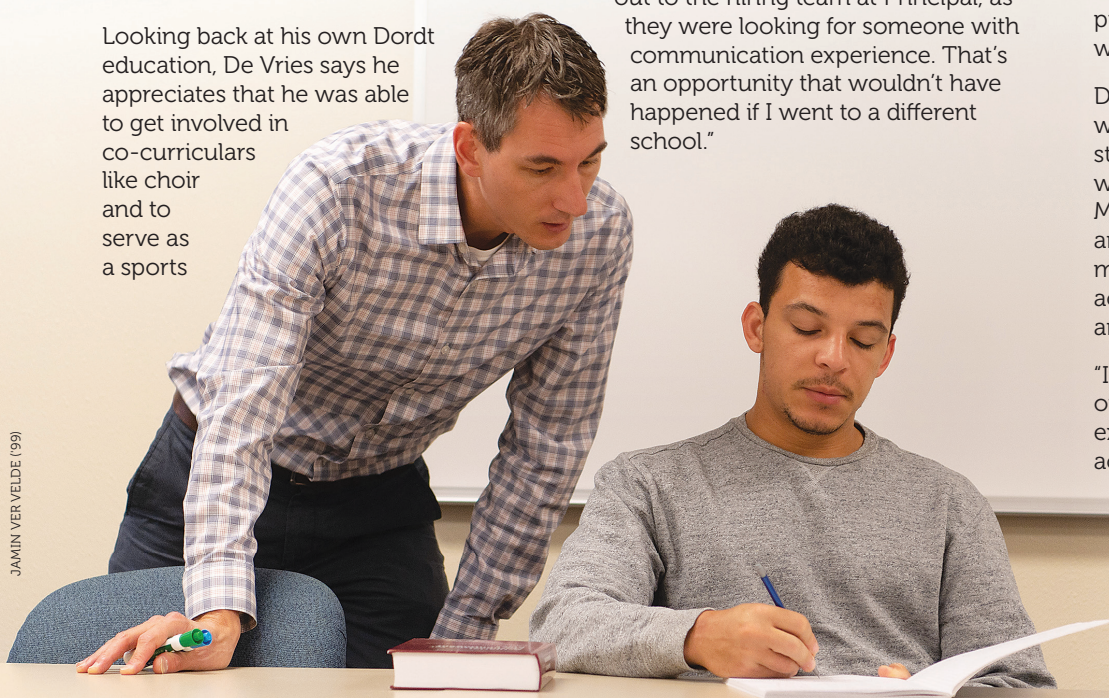
De Vries now visits several universities and colleges to connect with freshmen to help them figure out if actuarial science is the right major for them as soon as possible. He wants to help them get into the internship pipeline.

"A fair number of students have actuarial internships lined up for the summer after their sophomore year, with interviews happening in September and October of their sophomore year," says De Vries. "You've really only had one year of college, which doesn't give you much time to get organized and determine if this major is right for you. I try to answer any questions they have about the profession and help them get a picture of what being an actuary entails."

De Vries isn't the only Dordt graduate who has been a resource for current students. Lucas Vander Berg ('17), who works as an actuarial manager at Milliman in Milwaukee, spoke at Pizza and Presentations, an on-campus meetup for students majoring in actuarial science, math, data science, and more.

"I thought it would be a good opportunity to give some real-life examples of what type of work an actuary can do and perhaps break down

JAMIN VER VELDE ('99)



**Students in Dr. Tom Clark's classes get lots of personalized attention as they study actuarial science.**



some of the common misconceptions about actuaries," says Vander Berg. "For one, there is a large variety of work actuaries do; while many work for insurance companies, there are also actuaries who work on non-insurance projects."

Vander Berg talked about prescription drug pricing and coverage, giving a case study in why an insurance company may choose to cover one drug over another. He also purposely avoided talking about actuarial exams because the testing can be intimidating, he says, which can discourage students who would make good actuaries from ever entering the profession.

At Milliman, Vander Berg leads a team of analysts and spends much of his time consulting with health insurance companies on their Medicare Part D—that is, drug coverage—products.

"I also work with various non-insurance companies on their pharmaceutical drug strategies and help them understand proposed healthcare reforms happening in Washington, D.C.," he says. "I really enjoy using analytics to drive business decisions and to work one-on-one with newer staff to assist in their development."

Clark believes one-on-one interaction with students is also key to getting prospective students to begin to grasp what actuaries are all about.

"Having alumni come back to campus—whether in person or through a virtual presentation—can help students better understand what it means to be an actuary and to see that it's an attainable role," says Clark.

"It's exciting to see Dordt alumni going places," says Clark.

"That's part of Dordt's mission—to go out into the world and to work in different areas of life."

Some alumni give back in other ways. Josh Nymeyer ('14), who works as

an actuary at Zurich North America, started a scholarship for an actuarial science major at Dordt, and he serves as an adjunct faculty member at Dordt for some upper-level actuarial science courses.

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— Lucas Vander Berg ('17), actuary

Jordan Huisman ('17) and his wife, Lindsey, also chose to start a scholarship for an actuarial science major at Dordt. Huisman is an actuary working in corporate risk at Principal Financial Group in Des Moines.

"My position entails quantifying financial risk for the entire enterprise and communicating those risks to Principal's executive management team," he says. "What that involves is working with all our product lines and business units to model stress scenarios similar to what we saw in the 2008 global financial crisis or, more recently, with the Covid-19 pandemic. We model these types of scenarios in advance to prepare for what the implications might be on our financial position, so we can ensure that we can make good on our promises to customers."

Out of gratitude for the educational experience he had at Dordt, Huisman felt called to give back by funding a scholarship.

"I was very blessed at Dordt through my education, my faith life, the friendships I formed, and the scholarships I received," he says. "Funding a scholarship is a way to remain more connected with

Dordt and to be a resource to students. For those studying actuarial science, it's important to connect with other actuaries who are already working full-time; I think that's a big part of what can propel your career forward. By funding a scholarship, I can get to know students personally and encourage them to get connected."

What's even better, adds Huisman, is helping alleviate some financial worries for someone studying actuarial science at Dordt adding, "We need more Christian actuaries. It's

crucial that we have godly people in the corporate environment. There's a lot of



Lucas Vander Berg ('17) works with health insurance companies to help help them make drug coverage choices.

## EXTROVERTS ENCOURAGED

Lucas Vander Berg has often had people tell him that they know a student who was thinking about studying actuarial science but decided against it because they are "too social" or "like working with people."

"I have to laugh, because those analytically-minded, self-motivated high school students with communication skills and the ability to work with others are exactly those who would make great actuaries," he says.



opportunity for greed and selfishness in any career field, and I think it's important that we have Christians who are ready to change things for the better, especially at large financial institutions," he says.

With actuarial or financial roles, the problems aren't always black and white.

"Actuaries are leaders in solving complex problems. It's easy to approach a problem looking for a solution that will maximize money or self-gain, but in doing so, you're potentially missing what might be best for God's kingdom," says Huisman. "There are many ways to influence decisions that will impact customers, employees, and shareholders in ways that are better for a sustainable kingdom of the Lord."

When Clark thinks of faith and actuarial science, he thinks of the term "serviceable insight." As defined in Dordt's *Educational Task*, serviceable insight describes education that is more than mere transmission of information or knowledge; it strives for transformation of the whole person. "This transformation, wholly dependent on biblical wisdom, is cultivated in community and equips us to serve God and neighbor," and to "seek wisdom that enables us to better know, serve, and praise our Creator."

"To me, that's it—it's how you take strong technical skills and a perspectival background to shape you to be the kind of person that's following Christ in a technical field," Clark says. "It's thinking through, for example, if it is ethical to have a minimum payment on a credit card such that a \$500 charge turns into a 30-year loan. What are the implications of faith on these financial calculations?"

Actuaries think through such questions and more every day, and Clark wants to make sure Dordt actuarial science majors have received an education that helps them apply their faith to the technical principles they're learning.

"Dordt is the kind of place that's nimble and cares about its programs," says Clark. "We don't like doing things half-heartedly. Our programs are good because our faculty care, and we want to make sure our students know what they need to in order to succeed."

SARAH MOSS ('10)

It's crucial that we have godly people in the corporate environment. There's a lot of opportunity for greed and selfishness in any career field, and I think it's important that we have Christians who are ready to change things for the better.

— Jordan Huisman ('17), actuary



JAMIN VER VELDE ('99)

Lindsey and Jordan ('17) Huisman are helping support the education of Michael Osgood (center) through a scholarship that they funded for actuarial science majors.