

What can I do with a Degree in Mathematics?

Wondering what you can do with your major in mathematics from Albright College? In our technology driven economy, the skills developed by our mathematics majors (quantitative-reasoning, problem-solving, communication, etc.) are becoming highly valued across many different fields. You will find the diversity of positions held by mathematics majors graduating from Albright College to be both surprising and encouraging. Albright graduates have worked for: Metropolitan Edison, AT&T, Wagner Engineering, I.B.M., Aetna Life Insurance, Lockheed Martin and many others. Other graduate/professional school opportunities include law school, engineering school, and medical school, depending upon your interests and background. To give you a better feel for this diversity, some of our recent graduates have offered to share their post-graduation career experiences.



Danielle Yankowsky

Senior Financial Analyst.

B.S. Mathematics (2011)

Welcome to Fabulous Las Vegas! My name is Danielle Yankowsky (class of 2011) and I am currently a Senior Financial Analyst for Casino Marketing Finance with MGM International's Corporate Offices in Las Vegas, NV. I began my career as a Finance Intern at Penn National Gaming during my final semester at Albright. From that experience, Penn National invested in me as a Financial Analyst where I learned about the gaming industry, upcoming technologies, and the business plans of a multimillion dollar company. Ultimately, I made the move across country about two years ago to broaden my experiences and learn from some of the best people in the casino business.

Since my time as an Albright Lion I have been exploring the versatile and challenging world of gaming. The casino industry is not all about calculating the odds on the casino floor; it is also a worldwide leader in hotel, food, beverage, sports, concerts, and other forms of entertainment. One of the reasons I love my job is because it is never the same two days in a row. From predicting and analyzing Las Vegas events to creating and maintaining Profit and Loss statements used around the world, executives look to my team for answers to the questions which have never been asked before.

My math background has always stood out in a financial environment. Not only can I calculate the house advantage for Blackjack on a napkin during a business lunch, but I also come with "a different way of thinking". Being analytical, precise, and dedicated to every analysis I do is what makes me successful and noticed every day. My opportunities would not have been possible without the knowledge and discipline the field of mathematics offered me. I believe the road to success starts with a solid foundation, and I thank Albright College Math Department for giving me that foundation.



Andrew Klinksiek

Traffic Engineer
B.S. Mathematics

I am a Traffic Engineer for HNTB, a national transportation consulting firm. With degrees in mathematics and education from Albright, I had to return to graduate school to become an engineer. My undergraduate course work at Albright thoroughly prepared me for the transition to engineering studies and practice. The mathematics curriculum at Albright is designed to train students to critically analyze and dissect real and abstract problems which are essentially the fundamentals of engineering. The coursework I studied at Albright provided me with a strong foundation to expand into Traffic Engineering, where I model traffic signal systems, design traffic signals, intelligent transportation systems and road signing.

For Traffic Engineers, there are two important certifications to obtain: Professional Engineer (PE) and the Professional Traffic Operations Engineer (PTOE). Both certifications require a minimum of four years of practice and an intensive, all-day exam. Typically the exams are the failure point for aspiring engineers, but a consistency amongst the variety of coursework and teaching styles at Albright provided me with a key skill to pass the exams. The uniformity between the faculty and curriculum was an emphasis on mathematics being based on a set of principles and everything else is developed from those statements. The variety of the course work and teaching styles at Albright showed that this is the key concept to understand and by application of it, success in fields of mathematics, science and engineering is possible. I was able to use the understanding of derivation to break down and solve the mixture of logic and calculation problems for the PE and PTOE exams and passed each one the first time.



Laura Masi

Corporate Actuary
B.S. Mathematics and Spanish

At Albright, I was a dual major in both Math and Spanish. I wasn't quite sure what I wanted to do post-graduation, so I spent a lot of time with the Career Development Center at Albright. The actuarial profession kept surfacing as one of the top jobs, and the counselor put me in touch with several Albright alumni who were actuaries. I interned the summer after my sophomore year at the Pennsylvania Insurance Department, and then the following year for Travelers Insurance in Hartford, CT.

I spent my junior year studying abroad in Seville, Spain. I had such a great experience studying abroad that I knew I wanted to work internationally, so I chose my first full-time job with that goal in mind. I began working for the ACE Group in Philadelphia as an actuarial analyst, while taking the arduous actuarial exams. The great thing about being an actuary is that you can start working straight out of college rather than having to get a Masters or PhD, although the exam process is anything but easy.

After two and a half years, I spoke with my manager about working abroad and she put me in touch with the company's International Chief Actuary.

I moved to London with the intent of only staying for a couple of years, but ended up there for 7 years, all working for the ACE Group. While in London, I held several actuarial positions and qualified as an Associate of the Casualty Actuarial Society (ACAS), as well as becoming an RMS Certified Catastrophe Risk Analyst (CCRA). I also played rugby in London, a sport I had begun playing at Albright.

I am now an AVP and Corporate Actuary for W.R. Berkley Corporation in Greenwich, CT. I support their International Insurance businesses in the UK, Continental Europe, South America and Canada. I use my analytical and logical skills that I learned as a math major at Albright regularly in my job. Studying and working abroad have been amazing experiences, and I would highly recommend it to anyone.



Matthew Smith

Actuary

B.S. Mathematics (2015)

Following graduation, I began working as a Project Engineer at East Penn Manufacturing where I worked in all facets of the engineering process from designing to building as well as testing lead-acid batteries. I specialized in small engine applications. While I was at East Penn, I began studying for the first actuarial exam as well as searching for a job within the actuarial field. Although the engineering industry offers the ability to apply mathematics, my desire was to delve into the heart of mathematical study and application within actuarial science where all topics of mathematics are required and applied. I was quickly able to obtain a job as an actuary with Ace Group Insurance, which is where I am currently working.

I am responsible for assisting all actuarial practices within the Commercial Risk Services group within Ace Group. I am constantly using mathematical methods learned from various courses taken at Albright. A strong emphasis of mathematics is needed to pass the actuarial exams as well as to evaluate and analyze the data used for actuarial purposes. A strong background in computer programming within Access, Excel VBA, and SQL is appropriate for anyone considering this field. Within this profession you will utilize everything you've learned in Statistics, Calculus, Numerical Analysis, Linear Algebra, and Differential Equations as well as knowledge obtained from the applications of mathematics to economics and accounting. These classes will be vital to your advancement through the exams. It really is the perfect career for a pure mathematics major, and a very profitable and rewarding one.

My education at Albright prepared me for both a career within the engineering field and as an actuary. The exposure that an Albright mathematics student gains in all areas of study prepares you to be an integral part of any industry and allows you to be very versatile within the industry you'd like to work. The small classes and one-on-one personal experiences with professors give you both extensive learning capabilities and personal guidance through college as well as into the workforce. The ability to work with Dr. Nawrocki, Dr. Catone, or Dr. Shelton on an Honors Thesis prepares you for self-study as well as

develops your ability to elaborate complex material to a non-mathematical audience. All of which are vital in any workplace and are able to be obtained as a mathematics student at Albright College.



Meghan Tierney

High School Teacher
B.S. Mathematics & Education

I graduated from Albright in May 2014 and had officially accepted my “dream job” by the end of August. I began interviewing for teaching positions in March of my senior year at Albright, and like many other seniors, was nervous about the increasingly competitive job market. However, from March through August, with the continued support of my teachers and mentors at Albright, I was invited to many interviews. I truly believe that my education at Albright played a very significant role in my career search. I felt well prepared to demonstrate what I had learned and to enter the workforce. Since graduation I have worked as a Mathematics Teacher at Wyomissing Area Junior Senior High School in Wyomissing, Pennsylvania.

The liberal arts educational experience at Albright ensured that I was a well-rounded student and that I got the most out of my education. My experience at Albright was not limited to mathematics and education courses. I had the opportunity to take classes in many disciplines and to create an educational program that met my interests and career goals. In addition to my Bachelor of Science in Mathematics and my teaching certificate, I completed the requirements for a co-concentration in Child and Family studies taking classes in Psychology and Sociology alongside my mathematics courses. While the course load was challenging, I feel that I learned more than I ever would have thought possible and was able to explore many of my interests.

In addition to developing well-rounded students in the classroom, Albright supports the exploration of career goals and encourages internships and field work. As part of my education at Albright, I completed a student teaching semester as a requirement for teacher certification. The experience was extremely valuable and provided me with a firsthand look into the career that I had been preparing for through my studies at Albright. I was able to meet numerous professionals in the field, many of whom became resources and helped me as I began my career search and started my position at Wyomissing.

In terms of the relevance of my education, I use math every day at work as a math teacher. Even though I am teaching math below the level that I learned at Albright, I believe that my background in mathematics makes me a better teacher. I have a strong understanding of the material I am teaching, which allows my focus to be on instruction instead of teaching myself the content. In addition, I believe that the critical thinking and problem solving skills that I developed through my study of mathematics at Albright have helped me to think outside the box when creating lessons for my students, analyze problem areas in student performance and develop a plan to address them. My education at Albright taught me how to identify a problem, develop a solution and explain my reasoning and results. I use those skills very often when collaborating with colleagues about remediation and student performance.

I could not be more proud to be an Albrightian. My education far exceeded my expectations and I love teaching. The faculty at Albright are second to none and deserve much of the credit for my success. I would not have done nearly as well at Albright, or have gotten the career of my dreams, if it wasn't for the education, guidance, support and friendship that I found in my relationships with my professors. They are an integral part of the Albright community and I am lucky to have had their support throughout my studies at Albright. I still keep in touch with faculty and mentors, and continue to be supported by them well after graduation. In my current position at Wyomissing, I work alongside many fellow Albright graduates and continue to be a part of the Albright community. I may have only lived at Albright for four years, but it will always be home.

Below you will find a list of positions held by our other graduates. Hopefully, the diversity of this list should convince you of the importance that employers place on the analytical skills of their employees.

POSITION	DEGREE(S) EARNED
Patent Attorney, Buchanan Ingersoll & Rooney	Math
Engineer, East Penn Manufacturing	Math
Data Processing Manager, Intersearch	Math
Manager, Analytics and Fraud, GEICO	Math/Economics
Accountant, Glen Gery	Math/Accounting
Teacher, Muhlenberg High School, Wyomissing, etc.	Math
Life Actuary	Math/Economics
Actuary and Catastrophe Risk Manager	Math
Engineering Group Leader, Litton Electronic Devices	Math/Physics
Statistician, Department of Labor & Industry	Math/Economics
Systems Engineer, AT&T	Math/Physics
Senior Software Engineer, Fidelity Investments	Math/Physics
General Manager, Systems & Computer Technology	Math/CSC
Medical Stop Loss Underwriter, American Insurance Managers	Math/Economics
QA Analyst, Wiesberger	Math
Research Scientist, East Penn Manufacturing	Math/Physics
Editor, Learning Design Associates	Math
Finance Supervisor, Interspace Airport Advertising	Math
Programmer, Lockheed Martin	Math/Economics
Computer Specialist, G.E. Richards Graphics Supplies	Math
Operations Research Analyst, US Army	Math

For more information about jobs for mathematics majors you can visit the following web sites:

1. <http://www.ams.org/employment/undergrad.html> Allows you to search the job profile database via degree earned and contains links to the following sites:
2. <http://www.maa.org/students/career.html>
3. <http://www.amstat.org/>

4. <http://www.beanactuary.org>
5. <http://www.soa.org>
6. <http://www.casact.org>

Other resources available on campus are: *Great Jobs for Math Majors*, Lambert & DeCotis (held in the Career Development Center) and *101 Careers in Mathematics*, Sterrett (held in the library). If you are unsure of the type of career direction you would like to take, you may want to consider a summer internship. This would be a great way to get some work related experience and explore any professions of interest to you. The Career Development Center has a listing of companies that offer summer internships.

GRADUATE SCHOOLS

Graduate school is the option that we in the faculty chose, mainly, because we love mathematics and we wanted to work with and teach it for a living. It's not an easy path, but for us it was well worth the effort. From the Board on Mathematical Sciences (of the National Research Council): advice to potential graduate students in the mathematical sciences:

1. Students should visit prospective programs to obtain more information.
2. It is important that prospective students, before enrolling and accepting an offer, know about the workload for teaching and research assistants and the availability of other support. Generally, spending more than a total of 20 hours a week on work other than studying, such as teaching more than one course or meeting students for more than four class hours a week, impedes satisfactory progress toward a graduate degree.
3. Questions to ask:
 - a. What is the mission of the program? In what areas does it specialize? Are the areas of specialization consistent with the areas in which you would like to specialize?
 - b. At what level does the program begin? What is the completion rate?
 - c. What is the average length of time to a degree? What is the placement record for recent graduates?
 - d. What type of financial support is available? e. How accessible are the faculty advisors?

Graduate school application deadlines are typically in February or March, although, some may be earlier.

If you are interested in a particular school make sure that you contact them well before the deadline to obtain an application form. The application forms are time-consuming to fill out and there may be an essay question or two such as "Why are you interested in attending graduate school?" Unfortunately, there is usually a fee, on average about \$40.00, to apply to each school. Do not limit your choices; you should apply to at least five schools.

Most graduate schools require that applicants take the GRE exams (Graduate Record Examinations), and many schools also require the GRE subject exam. You should plan to take the GRE exam(s) early enough so that the scores can be sent to your schools of interest in time.

For more detailed information about the GRE exams (general versus subject test, sample questions, registration forms and deadlines, etc.) stop by the Career Development Center and pick up a GRE booklet or talk to a faculty member in the mathematics department. Please keep in mind that there are study guides available for the GRE general and subject tests. For more information about obtaining study guides for the math subject test, please see Dr. Nawrocki, Dr. Catone, or Dr. Shelton.

Actuaries

What is an actuary? An actuary is a mathematician who uses mathematics in the service of business. The simplest example of an actuary is a mathematician working for an insurance company. In order for life insurance to be profitable, an insurance company must compile information about life expectancies and charge a premium that will not only cover payments on policies redeemed and operating expenses but also allow for a reasonable profit. This requires a good deal of probability and statistics.

This is just one simple example and there are many others. In order to protect the integrity of the field, actuaries have formed guilds whereby would-be actuaries must pass examinations in order to demonstrate their competency before being able to call themselves actuaries. The first actuarial exam covers probability and the second covers financial mathematics. Passing one or two exams before you graduate would certainly be a nice feather in your cap.

Actuarial careers consistently rank near the top of job satisfaction surveys conducted by magazines and newspapers. If you know your stuff, you can look forward to a good salary, job security, and professional respect.

Statistician

Statistics is the scientific application of mathematical principles to the collection, analysis, and presentation of numerical data. *Statisticians* apply their mathematical and statistical knowledge to the design of surveys and experiments; the collection, processing, and analysis of data; and the interpretation of experiments and survey results. Opinion polls, statements about the accuracy of scales and other measuring devices, and information about average earnings in an occupation are all usually the work of statisticians.

In business and industry, statisticians play an important role in quality control and in product development and improvement. In an automobile company, for example, statisticians might design experiments in which engines are run until failure and breakdown in order to determine the failure time of engines exposed to extreme weather conditions. Working for a pharmaceutical company, statisticians might develop and evaluate the results of clinical trials to determine the safety and effectiveness of new medications. At a computer software firm, statisticians might help construct new statistical software packages to analyze data more accurately and efficiently. In addition to designing experiments for product development and testing, some statisticians are involved in deciding what products to manufacture, how much to charge for them, and to whom the products should be marketed.

Statisticians also may manage assets and liabilities, determining the risks and returns of certain investments. (Taken from Bureau of Labor Statistics).