

## B.S. in Applied Mathematics & Statistics - Statistics Emphasis

The Applied Mathematics and Statistics (AMS) department supports undergraduate and graduate students in Computational & Applied Mathematics and Statistics and conducts research in multivariate analysis, spatial statistics, biostatistics, scientific computing, numerical analysis, wave theory, multi-scale simulation, Bayesian modeling, partial differential equations, inverse problems, time series, uncertainty quantification and bio-mathematics.

Mathematics and Statistics are the building blocks for engineering and the sciences. Through extensive coursework, AMS students gain the knowledge and skills to succeed in a variety of career paths including computer information and software firms, energy systems firms, government agencies, consulting firms, engineering research labs and academic institutions, to name a few. As an example, the senior practicum engages our students in solving problems of practical applicability for potential employers. This course is designed to simulate an industrial job or research environment; in small teams, students work for a client, make weekly reports and present final written and oral reports. The close collaboration with potential employers and professors improves students' communication, time management skills, and builds a sense of confidence.

### Internships & Careers

Throughout our program, there is substantial focus on the development of practical applications and techniques to enhance the overall attractiveness and competitiveness of our students to a wide range of employers such as Lockheed Martin, Motorola, Raytheon Systems and British Petroleum, among many others. Examples of what Mathematicians and Statisticians do include: deriving and analyzing models to resolve practical problems, comparing inferences from models with observations or experiments, finding and exploring new patterns and principles and developing computational methods and computer codes.

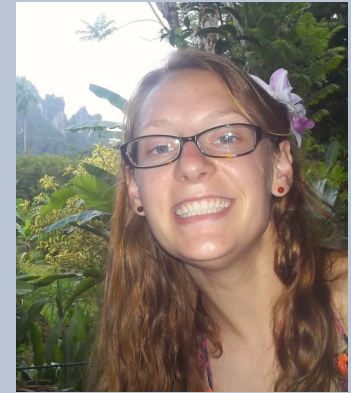
In addition, summer internships provide a tremendous opportunity to learn valuable work skills, hone in on career interests, establish contacts and networks, identify strengths and weaknesses and apply coursework to the world of work. Examples of recent internships include work with LGS Innovations, Salesforce, Raytheon and the National Wildlife Research Center.

According to the 2014 Colorado School of Mines salary survey, Mathematics and Statistics graduates are offered an average salary of \$59,542 and according to the 2012 Bureau of Labor Statistics, employment of mathematicians is projected to grow 34 percent from 2014-2024, much faster than the average for all occupations.

### Student Experience

Mines students will tell you that living in Colorado offers many opportunities to take a break from the books and enjoy a healthy outdoor and community life.

With over 170 student organizations, clubs and recreation activities, Mines students excel in their academics while pursuing diverse interests and enjoying balanced, active college lives. The Society of Women in Mathematics (SWiM), Kappa Mu Epsilon, Math Club, Putnam and the Actuarial Club are of particular interest to AMS students. Not to mention, our campus sits at the foot of the Rocky Mountains - which means Colorado's playground is right in our backyard. At the Colorado School of Mines, life is rich and rewarding both inside and outside of the classroom.



**“Mines taught me how to think critically and solve problems, which is important in my line of work. I spend the majority of my time focused on computer programming, which I had never done before going to Mines.**

**I found programming difficult at first, but have now become proficient and thoroughly enjoy programming in SAS and R. Mines helps me understand the deeper theory behind the practical applications of my work. ”**

**Claire Le Lait**

**B.S. & M.S. Applied Math & Statistic  
- Statistics emphasis  
Biostatistician at RADARS (Researched Abuse Diversion & Addition-Related Surveillance)**

### DEPARTMENT QUICK FACTS

**108 Undergraduate Students**

**32 Graduate Students**

**23 Faculty**

# 2016-17 Statistics Curriculum

## Freshman Year

Fall Semester		Credits	Spring Semester		Credits
MATH111	Calculus for Scientists & Engineers I	4	MATH112	Calculus for Scientists & Engineers II	4
CHGN121	Principles in Chemistry I	4	PHGN100	Physics I - Mechanics	4.5
LAIS100	Nature & Human Values	4	EBGN201	Principles of Economics	3
CSCI101	Introduction to Computer Science	3	EPIC151	Design (EPICS) I	3
CSM101	Freshman Success Seminar	0.5	PAGNXXX	Physical Education	0.5
PAGNXXX	Physical Education	0.5			
<b>TOTAL 16 credits</b>			<b>TOTAL 15 credits</b>		

## Sophomore Year

Fall Semester		Credits	Spring Semester		Credits
MATH213	Calculus for Scientists & Engineers III	4	MATH201	Probability and Statistics for Engineers	3
MATH225	Differential Equations	3	MATH332	Linear Algebra or MATH 342	3
PHGN200	Physics II - Electromagnetism & Optics	4.5	CSCIXXX	Computer Science Elective*	3
CSCI261	Programming Concepts	3	LAIS200	Human Systems	3
PAGNXXX	Physical Education	0.5	FREE	Free Elective	3
			PAGNXXX	Physical Education	0.5
<b>TOTAL 15 credits</b>			<b>TOTAL 15.5 credits</b>		
Summer Session		Credits			
MATH310	Introduction to Math Modeling	4			

## Junior Year

Fall Semester		Credits	Spring Semester		Credits
MATH300	Foundations of Advanced Math	4	MATH301	Introduction to Analysis	3
MATH331	Mathematical Biology	3	MATH335	Introduction to Mathematical Statistics	3
MATH334	Introduction to Probability	3	MATH408	Computational Methods for Differential Equations	3
MATH307	Introduction to Scientific Computing	3	MATH454	Complex Analysis	3
LAIS/EBGN	Humanity and Social Science Elective II	3	LAIS/EBGN	Humanity and Social Science Elective II	3
<b>TOTAL 15 credits</b>			<b>TOTAL 15 credits</b>		

## Senior Year

Fall Semester		Credits	Spring Semester		Credits
MATH424	Introduction to Applied Statistics	3	MATH482	Statistics Practicum (STAT Capstone)	3
MATH432	Spatial Statistics	3	MATHXXX	STAT Elective**	3
MATH455	Partial Differential Equations	3	MATHXXX	STAT Elective**	3
LAIS/EBGN	Humanity & Social Science Elective	3	FREE	Free Elective	3
MATHXXX	STAT Elective**	3	FREE	Free Elective	3
FREE	Free Elective	3			
<b>TOTAL 18 credits</b>			<b>TOTAL 15 credits</b>		

**DEGREE TOTAL HOURS: 128.5 credits**

For the most accurate and up-to-date curriculum information, please refer to the Undergraduate Bulletin

\* May be satisfied by CSCI262 or any other approved computationally intensive course

\*\* STAT area of emphasis electives include: Database Management, Advanced Statistical Modeling, Multivariate Analysis, Stochastic Modeling, Survival Analysis and other appropriate courses with departmental approval.



## PROGRAM CONTACT

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