

# STATISTICS (B.S.)

The B.S. program in Statistics at Lehigh University provides a body of principles for designing the process of data collection, for summarizing and interpreting data, and for drawing valid conclusions from data. Mathematical principles, especially probability theory, underlie all statistical analyses. Statistics forms a fundamental tool in the natural and social sciences as well as business, medicine and other areas of research. This program offers a concentration in Actuarial Science.

## REQUIREMENTS (for students entering fall 2018 and later)

### **Three course calculus sequence:**

MATH 021, MATH 022, MATH 023 12  
(may substitute honors calculus or use credit earned by AP or IB)

### **Core courses:**

<i>Linear Algebra</i>	one of MATH 043 or 205 or 242 or STAT 342 STAT 342 (Fall) is recommended	3-4
<i>Introductory Statistics</i>	one of MATH 012 or 231 or 264 MATH 264 (Spring) is recommended	3-4
MATH 263	Introduction to the Theory of Probability (Fall)	3
MATH 310	Random Processes and Applications (Spring)	4
MATH 312	Statistical Computing and Applications (Fall)	4
MATH 334	Mathematical Statistics (Spring)	4
MATH 338	Linear Models in Statistics with Applications (Spring)	4
MATH 374	Statistical Project	3

### **Major electives:**

At least three additional courses (12 credits) with specific mathematical or statistical content chosen with approval of the faculty advisor. 12

Two approved computer science courses (minimum of 5 credits) 5-6  
(These course must contain a significant programming component.)

### **Professional Electives:**

Courses selected from two or three fields of application of statistics and probability. 21

The college writing intensive requirement is satisfied by MATH 374.

## RECOMMENDED COURSE SEQUENCE

Students should complete the calculus sequence MATH 021, 022, 023 as well as MATH 263, MATH 264 and STAT 342 as soon as possible. There are other options for introductory statistics and linear algebra. However we recommend MATH 264 and STAT 342. In all cases, students should speak to an advisor in the mathematics department to appropriately match courses to interests and mathematical background.

### Students starting with MATH 021 in their first semester:

<i>Fall</i>	<i>Spring</i>
<b>First year</b>	
MATH 21	MATH 22
Possible Computer Science course	Possible Computer Science course
<b>Second year</b>	
MATH 23	MATH 264
STAT 342	Consider Major Elective
Possible Computer Science course	Possible Computer Science course
<b>Third year</b>	
MATH 263	MATH 310
MATH 312	MATH 334 or MATH 338 or Major Elective
<b>Fourth year</b>	
MATH 374	MATH 334 or MATH 338 or Major Elective
Major Elective	MATH 334 or MATH 338 or Major Elective

### Students entering with credit for MATH 021 (AP, IB or transfer):

<i>Fall</i>	<i>Spring</i>
<b>First year</b>	
MATH 22	MATH 23
Possible Computer Science course	MATH 264
	Possible Computer Science course
<b>Second year</b>	
MATH 263	MATH 310
STAT 342	Consider Major Elective
Possible Computer Science course	Possible Computer Science course
<b>Third year</b>	
MATH 312	MATH 334 or MATH 338 or Major Elective
Major Elective	MATH 334 or MATH 338 or Major Elective
<b>Fourth year</b>	
MATH 374	MATH 334 or MATH 338 or Major Elective
Major Elective	MATH 334 or MATH 338 or Major Elective

### Students entering with credit for MATH 021 and MATH 22 (AP, IB or transfer):

Students should follow the table for students starting with MATH 021 above, but starting from the second year. STAT 342 should not be taken in their first semester, but pushed to the second year. The fourth year is available for Major and Professional Electives.

Note: the Professional Electives are distributed among the four years according to the specific interests of the student.

In all cases, students should speak to an advisor in the mathematics department to appropriately match courses to interests and mathematical background.