

# STATISTICS 347003BS

## Bachelor of Science in Statistics/Actuarial Science

Attention students who were admitted to this program prior to Fall 2015, please refer to the curriculum guide found on page 5. The curriculum guide below on this page is for students admitted to this program for Fall 2015 or later.

The following information has official approval of the **Department of Statistics**, but is intended only as a supplemental guide. Official degree requirements are established at the time of transfer and admission to the degree-granting college. Students should refer to the Degree Auditing Reporting System (DARS) which is definitive for graduation requirements. *Completion of this degree within the identified time frame below is contingent upon many factors, including but not limited to: class availability, total number of required credits, work schedule, finances, family, course drops/withdrawals, successfully passing courses, prerequisites, among others.* The transfer process is completed through an appointment with your academic advisor.

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### CURRICULUM GUIDE FOR STUDENTS ADMITTED TO THIS PROGRAM FOR FALL 2015 OR LATER:

1 <sup>st</sup> Year	Fall Semester	Credit Hours	Prerequisites
	<i>English Composition I Requirement (Note a)</i>	3	Appropriate placement by advisor
	<i>Physical Education/Wellness Requirement</i>	1	
	<i>Social Science Requirement (Not from Economics Set)</i>	3	
	Beginning Language I (Note b)	4	Appropriate placement by advisor
	<b>-OR-</b>	<b>or</b>	
7700:101	American Sign Language I	3	
3450:221	<i>Analytic Geometry &amp; Calculus I</i>	4	3450:149 with a grade of C- or better or equivalent
<b>Total</b>		<b>14-15</b>	

1 <sup>st</sup> Year	Spring Semester	Credit Hours	Prerequisites
7600:105	<i>Public Speaking</i>	3	
	<b>-OR-</b>		
7600:106	<i>Effective Oral Communication</i>		
	<i>English Composition II Requirement (Note a)</i>	3	3300:111 or equivalent
	<i>Natural Science Requirement</i>	4	
	Beginning Language II	4	Beginning Language I
	<b>-OR-</b>	<b>or</b>	<b>or</b>
7700:102	American Sign Language II	3	7700:101
3450:222	<i>Analytic Geometry-Calculus II</i>	4	3450:221 with a grade of C- or better or equivalent
<b>Total</b>		<b>17-18</b>	

2 <sup>nd</sup> Year	Fall Semester	Credit Hours	Prerequisites
	Intermediate Language I	3	Beginning Language II
	<b>-OR-</b>		<b>or</b>
7700:201	American Sign Language III		7700:102
	<i>Natural Science Requirement</i>	4	
3450:223	<i>Analytic Geometry-Calculus III</i>	4	3450:222 with a grade of C- or better
3470:461	Applied Statistics	4	3450:222 or equivalent
<b>Total</b>		<b>15</b>	

2 <sup>nd</sup> Year	Spring Semester	Credit Hours	Prerequisites
	Intermediate Language II	3	Beginning Language II
	<b>-OR-</b>	<b>or</b>	<b>or</b>
7700:202	American Sign Language IV <b>-AND</b>	3	7700:201

7700:222	Survey of Deaf Culture in America	2	Sign Language students only
3450:312	Linear Algebra	3	3450:223 with a grade of C- or better
3470:462	Applied Regression and ANOVA	4	3470:461 or equivalent
3250:244	<i>Intro to Economic Analysis (Social Science Requirement)</i>	3	
<b>Total</b>		<b>13-15</b>	

### 3<sup>rd</sup> Year Fall Semester

3400:210 or 3400:221	<i>Humanities in the Western Tradition</i> <b>-OR-</b> <i>Humanities in the World Since 1300</i>	4	32 credits & 3300:112 or equivalent
3460:209	Intro to Computer Science	4	32 credits & 3300:112 or equivalent
3470:451	Theoretical Statistics I	4	3450:145 or 3450:149 or equivalent with a C- or better
3470:471	Actuarial Science I	3	3450:223
6200:201	Accounting Principles I	3	3470:451 or 3470:461
<b>Total</b>		<b>17</b>	24 credits completed

### 3<sup>rd</sup> Year Spring Semester

	<i>Area Studies/Cultural Diversity Requirement</i>	2	
	<i>Humanities Requirement</i>	3	3400:210 or 3400:221
3470:452	Theoretical Statistics II	3	3470:451 and 3450:223
3470:472	Actuarial Science II	3	3470:471
6200:202	Accounting Principles II	3	6200:201
<b>Total</b>		<b>14</b>	

### 4<sup>th</sup> Year Fall Semester

3470:480	Statistical Data Management	3	3470:461
6400:301	Principles of Finance	3	3250:200; 3450:145; 6200:201, 6200:250
	Actuarial Science Course Option (Note d)	3	
	<i>Humanities Requirement</i>	3	3400:210 or 3400:221
	<i>Area Studies/Cultural Diversity Requirement</i>	2	
<b>Total</b>		<b>14</b>	

### 4<sup>th</sup> Year Spring Semester

	Actuarial Science Course Option (Note d)	3	
3470:495	Statistical Consulting	2	3470:480 or permission
6400:415	Risk Management Life & Health Insurance	3	
	Upper Level Elective (Note e)	6	
<b>Total</b>		<b>14</b>	

	<b>Minimum Credits for Degree</b>	<b>120</b>	
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**ALERT: 1) By the end of your first 48 credit hours attempted, you should have completed your General Education English, Math, and Oral Communication (Speech) requirements; 2) By the end of your first 48 credit hours attempted, you should have declared a major and transferred to (been accepted by) a degree granting college at The University of Akron.**

### NOTES:

- For English Composition I, 3300:111 (English Composition I) or 3300:113 (African-American Language and Culture I) are the recommended classes to meet the General Education English Requirement. 2020:121 (English) fulfills the English Composition I requirement. For English Composition II, 3300:112 (English Composition II) or 3300:114 (African-American Language and Culture II) are the recommended classes to meet the General Education English requirement. 2020:222 (Technical Report Writing) fulfills the English Composition II requirement.
- Demonstration of ability to use another language by completion of the second year of a foreign language or sign language is required. See your advisor for placement. Please note that all four semesters must be completed in the SAME language and it's recommended you begin your first language class as soon as possible.

- c. For students who are intending to go on to graduate school, the following electives are recommended: 3450:421,422 Advanced Calculus I and II.
- d. Select two of the following Actuarial Science Course Options: 3250:427 Economic Forecasting, 3450:335 Introduction to Ordinary Differential Equations, 3450:436 Mathematical Models, or 3470:469 Reliability Models.
- e. Free electives can be any course not already required by your major and upper level (300/400) electives can be any course in or outside your major excluding workshops.

**Contact for Department of Statistics – Susan Baker, CAS 424, E-mail: sbaker@uakron.edu**

**IN GENERAL:** The world is becoming more quantitative. The need to gather and interpret data is increasing in every field of study – business, education, engineering, government, behavioral and social sciences, and industry. As a result, the demand for qualified statisticians is on the rise. People from almost any discipline can improve their marketability and productivity through training in statistics. The Department of Statistics at The University of Akron provides an excellent opportunity for statistical study through faculty who has expertise in data analysis, probability, mathematical statistics, experimental design, regression analysis, design and analysis of surveys, nonparametric statistics, robust statistics, statistical computer application, statistical quality control, actuarial science, and biostatistics.

**JOB DESCRIPTION:**

**I. Teaching** - Job openings in teaching exist in junior high and high schools, in community or junior colleges, and in colleges and universities. These three have different requirements as to degree levels and subject matter taken as electives.

**II. Industry** – In recent years, the field of statistics has enjoyed a period of renewed vigor, due to an increased demand for effective means to analyze data. Industrial statisticians are in demand, and it is estimated that three-fourths of them need training beyond a Bachelor’s degree. Many courses of a theoretical nature are needed, but the primary concern of a statistician in industry is to design and analyze the experiments to improve the quality of goods and services. Particular types of jobs include consulting, research, computing, and teaching and it is very desirable to have collateral training in engineering or business administration.

**III. Government** – How many people are unemployed this month? What do we export to China, and what do we import? Are rates of violent crime increasing or decreasing? Government wants data on issues like these to guide policy, and government statistical agencies provide them by surveys of households and businesses? Are consumer tastes in television programs changing? What are promising locations for new retail outlet? Market researchers use both government data and their own surveys to answer questions like these. Statisticians design the elaborate surveys that gather data for both public and private use.

**III. Actuarial profession** - This is not primarily a mathematical profession; but it does require a competent mathematical and statistical ability, adequate economic and financial knowledge and wide social information. Most actuaries are hired by life insurance companies, and their primary concern is with calculating premium rates and preparing tables of death rates. However, there are casualty and fire actuaries and consulting actuaries; the latter is often involved with pension plans, retirement, and welfare. A Bachelor’s degree is very useful, and a broad cultural foundation is helpful. Actuarial examinations do not require work in pure mathematics.

**IV. Health Care and Medical Research** - One of the areas of greatest demand for statisticians is the field of biostatistics. Biostatistics is the application of statistical methods to scientific research in biology and health-related fields, and the development of new statistical tools to study these areas. Health care, medicine, pharmaceuticals, biotechnology, bioformatics, and environmental science are all sectors in which there is a strong demand for biostatisticians.

**V. Salary Level** - The starting salary range for various degree levels depends on the job category, the employer, and the job locale. It appears to fluctuate with the cost of living; there is no particular starting salary. Statisticians in industry, with a bachelor degree, can expect to earn in the range of \$2,500-\$4,000 per month.

**PLACEMENT:**

A student is encouraged to check with his/her major department and with the Career Center, Student Union 211, (330) 972-7747, regarding employment opportunities in the field.

**TRANSFER TO COLLEGE OF ARTS & SCIENCES:** Students should apply to the college upon the attainment of:

- ✓ a cumulative GPA of 2.0 or better (includes transfer coursework until 30 credits are earned at UA)
- ✓ a major GPA of 2.0 or better (includes transfer coursework until 30 credits are earned at UA)
- ✓ 30 credits completed including both required English composition courses and 3 credits of mathematics or statistics that meets the General Education requirement

A student can arrange their inter-college transfer through an appointment with his/her advisor in the Center for Academic Advising & Student Success, Simmons 205, (330) 972-7430, or Center for Academic Advising & Student Success, Simmons 301, (330) 972-5723 or College of Applied Science and Technology, Polsky 301, (330) 972-7220, depending upon the advising office in which they reside.

**COLLEGE OF ARTS & SCIENCES:**

Degree requirements in Arts & Sciences include the demonstration of ability to use another language by completion of the second year of a foreign language or sign language and a minimum of 40 credits of upper level courses (excluding workshops) consisting of either:

- Upper level (300/400) courses both in and outside the student's major
- Any courses outside the major department as specified in and approved by the student's major department chair (permission should be obtained prior to enrollment) except workshops

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The following information has official approval of the **Department of Statistics**, but is intended only as a supplemental guide. Official degree requirements are established at the time of transfer and admission to the degree-granting college. Students should refer to the Degree Auditing Reporting System (DARS) which is definitive for graduation requirements. *Completion of this degree within the identified time frame below is contingent upon many factors, including but not limited to: class availability, total number of required credits, work schedule, finances, family, course drops/withdrawals, successfully passing courses, prerequisites, among others.* The transfer process is completed through an appointment with your academic advisor.

*Italicized* courses fulfill General Education requirements. Unless a course is specified, refer to the General Education guide at [http://www.uakron.edu/advising/docs/General\\_Education\\_Guide.pdf](http://www.uakron.edu/advising/docs/General_Education_Guide.pdf).

### CURRICULUM GUIDE FOR STUDENTS ADMITTED TO THIS PROGRAM PRIOR TO FALL 2015:

1 <sup>st</sup> Year	Fall Semester	Credit Hours	Prerequisites
	<i>English Composition I Requirement (Note a)</i>	3	Appropriate placement by advisor
	<i>Physical Education/Wellness Requirement</i>	1	
	<i>Social Science Requirement (Not from Economics Set)</i>	3	
	Beginning Language I (Note b)	4	Appropriate placement by advisor
	<b>-OR-</b>	<b>or</b>	
7700:101	American Sign Language I	3	
3450:221	<i>Analytic Geometry &amp; Calculus I</i>	4	3450:149 with a grade of C- or better or equivalent
<b>Total</b>		<b>14-15</b>	

1 <sup>st</sup> Year	Spring Semester	Credit Hours	Prerequisites
7600:105	<i>Public Speaking</i>	3	
<b>or</b>	<b>-OR-</b>		
7600:106	<i>Effective Oral Communication</i>		
	<i>English Composition II Requirement</i>	3	3300:111 or equivalent
	<i>Natural Science Requirement</i>	4	
	Beginning Language II	4	Beginning Language I
	<b>-OR-</b>	<b>or</b>	<b>or</b>
7700:102	American Sign Language II	3	7700:101
3450:222	<i>Analytic Geometry-Calculus II</i>	4	3450:221 with a grade of C- or better or equivalent
<b>Total</b>		<b>17-18</b>	

2 <sup>nd</sup> Year	Fall Semester	Credit Hours	Prerequisites
	Intermediate Language I	3	Beginning Language II
	<b>-OR-</b>		<b>or</b>
7700:201	American Sign Language III		7700:102
	<i>Natural Science Requirement</i>	4	
3450:223	<i>Analytic Geometry-Calculus III</i>	4	3450:222 with a grade of C- or better
3470:461	Applied Statistics	4	3450:222 or equivalent
<b>Total</b>		<b>15</b>	

2 <sup>nd</sup> Year	Spring Semester	Credit Hours	Prerequisites
	Intermediate Language II	3	Beginning Language II
	<b>-OR-</b>	<b>or</b>	<b>or</b>
7700:202	American Sign Language IV <b>-AND</b>	3	7700:201

7700:222	Survey of Deaf Culture in America	2	Sign Language students only
3450:312	Linear Algebra	3	3450:223 with a grade of C- or better
3470:462	Applied Regression and ANOVA	4	3470:461 or equivalent
3250:244	<i>Intro to Economic Analysis (Social Science Requirement)</i>	3	
<b>Total</b>		<b>13-15</b>	

### 3<sup>rd</sup> Year Fall Semester

3400:210 or 3400:221	<i>Humanities in the Western Tradition</i> <b>-OR-</b> <i>Humanities in the World Since 1300</i>	4	32 credits & 3300:112 or equivalent
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6200:201	Accounting Principles I	3	24 credits completed
<b>Total</b>		<b>17</b>	

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	<i>Area Studies/Cultural Diversity Requirement</i>	2	
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3470:452	Theoretical Statistics II	3	3470:451 and 3450:223
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### 4<sup>th</sup> Year Fall Semester

3470:480	Statistical Data Management	3	3470:461
6400:301	Principles of Finance	3	3250:200; 3450:145; 6200:201, 6200:250
3470:471	Actuarial Science I	3	3470:451 or 3470:461
	<i>Humanities Requirement</i>	3	3400:210 or 3400:221
	<i>Area Studies/Cultural Diversity Requirement</i>	2	
	Upper Level Electives (Note e)	3	
<b>Total</b>		<b>17</b>	

### 4<sup>th</sup> Year Spring Semester

3470:472	Actuarial Science II	3	3470:471
3470:495	Statistical Consulting	1	3470:480 or permission
6400:415	Risk Management Life & Health Insurance	3	
	Upper Level Electives (Note e)	6	
	Elective Course (Note c)	4	
<b>Total</b>		<b>17</b>	

	<b>Minimum Credits for Degree</b>	<b>128</b>	
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**III. Government** – How many people are unemployed this month? What do we export to China, and what do we import? Are rates of violent crime increasing or decreasing? Government wants data on issues like these to guide policy, and government statistical agencies provide them by surveys of households and businesses? Are consumer tastes in television programs changing? What are promising locations for new retail outlet? Market researchers use both government data and their own surveys to answer questions like these. Statisticians design the elaborate surveys that gather data for both public and private use.

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**PLACEMENT:**

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**TRANSFER TO COLLEGE OF ARTS & SCIENCES:** Students should apply to the college upon the attainment of:

- ✓ a cumulative GPA of 2.0 or better (includes transfer coursework until 30 credits are earned at UA)

- ✓ a major GPA of 2.0 or better (includes transfer coursework until 30 credits are earned at UA)
- ✓ 30 credits completed including both required English composition courses and 3 credits of mathematics or statistics that meets the General Education requirement

A student can arrange their inter-college transfer through an appointment with his/her advisor in the Center for Academic Advising & Student Success, Simmons 205, (330) 972-7430, or Center for Academic Advising & Student Success, Simmons 301, (330) 972-5723 or College of Applied Science and Technology, Polsky 301, (330) 972-7220, depending upon the advising office in which they reside.

**COLLEGE OF ARTS & SCIENCES:**

Degree requirements in Arts & Sciences include the demonstration of ability to use another language by completion of the second year of a foreign language or sign language and a minimum of 47 credits of upper level courses (excluding workshops and General Education courses) consisting of either:

- Upper level (300/400) courses both in and outside the student's major
- Any courses outside the major department as specified in and approved by the student's major department chair (permission should be obtained prior to enrollment) except workshops and General Education courses