STATISTICS, B.S.

Begin Campus: Any Penn State Campus

End Campus: University Park

Program Description

This major helps prepare students with interests in mathematics, computation, and the quantitative aspects of science for careers in industry and government as statistical analysts, or for further graduate training in statistics. The major includes five options:

1. An Actuarial Statistics Option for students interested in working as actuaries in the insurance or business fields;
2. An Applied Statistics Option for students interested in a cross-disciplinary program, such as econometrics, or psychometrics;
3. A Biostatistics Option for students interested in pursuing careers with pharmaceutical companies, research hospitals or other fields in which biological data is analyzed;
4. A Graduate Study Option for students planning to go to graduate school in a statistics-related field; and
5. A Statistics and Computing Option for students wishing to combine statistical expertise with programming skills.

What is Statistics?

Statistics is the field of study of that uses mathematics, computing, and analysis, to organize and understand data. Statisticians use critical and abstract thinking through the application of mathematical principles to statistical problems, and combine modeling with computational skills to analyze data.

You Might Like This Program If...

- You enjoy working with numbers and data.
- You are a problem solver who enjoys figuring out how things work or what data means.
- You enjoy applying reasoning and analysis to make sense of information.

Entrance to Major

In order to be eligible for entrance into the Statistics major, a student must have:

1. Attained at least a 2.00 cumulative grade point average.
2. Completed MATH 140 and MATH 141; and earned a grade of C or better in each of these courses.

Degree Requirements

For the Bachelor of Science degree in Statistics, a minimum of 124 credits is required:

Requirement	Credits
General Education	45
Requirements for the Major	80-95

6-15 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 0-9 credits of GN courses; 6 credits of GQ courses, 0-6 credits of GS courses.

General Education

Connecting career and curiosity, the General Education curriculum provides the opportunity for students to acquire transferable skills necessary to be successful in the future and to thrive while living in interconnected contexts. General Education aids students in developing intellectual curiosity, a strengthened ability to think, and a deeper sense of aesthetic appreciation. These are requirements for all baccalaureate students and are often partially incorporated into the requirements of a program. For additional information, see the General Education Requirements (http://bulletins.psu.edu/undergraduate/general-education/baccalaureate-degree-general-education-program) section of the Bulletin and consult your academic adviser.

The keystone symbol appears next to the title of any course that is designated as a General Education course. Program requirements may also satisfy General Education requirements and vary for each program.

Foundations (grade of C or better is required.)

- **Quantification (GQ):** 6 credits
- **Writing and Speaking (GWS):** 9 credits

Knowledge Domains

- **Arts (GA):** 6 credits
- **Health and Wellness (GHW):** 3 credits
- **Humanities (GH):** 6 credits
- **Social and Behavioral Sciences (GS):** 6 credits
- **Natural Sciences (GN):** 9 credits

Integrative Studies (may also complete a Knowledge Domain requirement)

- **Inter-Domain or Approved Linked Courses:** 6 credits

University Degree Requirements

First Year Engagement

All students enrolled in a college or the Division of Undergraduate Studies at University Park, and the World Campus are required to take 1 to 3 credits of the First-Year Seminar, as specified by their college First-Year Engagement Plan.

Other Penn State colleges and campuses may require the First-Year Seminar; colleges and campuses that do not require a First-Year Seminar provide students with a first-year engagement experience.

First-year baccalaureate students entering Penn State should consult their academic adviser for these requirements.

Cultures Requirement

6 credits are required and may satisfy other requirements

- United States Cultures: 3 credits
- International Cultures: 3 credits

Writing Across the Curriculum

3 credits required from the college of graduation and likely prescribed as part of major requirements.

Total Minimum Credits

A minimum of 120 degree credits must be earned for a baccalaureate degree. The requirements for some programs may exceed 120 credits. Students should consult with their college or department adviser for information on specific credit requirements.

Quality of Work

Candidates must complete the degree requirements for their major and earn at least a 2.00 grade-point average for all courses completed within their degree program.

Limitations on Source and Time for Credit Acquisition

The college dean or campus chancellor and program faculty may require up to 24 credits of course work in the major to be taken at the location or in the college or program where the degree is earned. Credit used toward degree programs may need to be earned from a particular source or within time constraints (see Senate Policy 83-80 (http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#83-80)). For more information, check the Suggested Academic Plan for your intended program.

Requirements for the Major

To graduate, a student enrolled in the major must earn a grade of C or better in each course designated by the major as a C-required course, as specified by Senate Policy 82-44 (http://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#82-44).

Common Requirements for the Major (All Options)

Code	Title	Credits
Prescribed Courses		
Prescribed Courses: Require a grade of C or better		
MATH 140	Calculus With Analytic Geometry I	4
MATH 141	Calculus with Analytic Geometry II	4
MATH 220	Matrices	2-3
MATH 230	Calculus and Vector Analysis	4
STAT 184	Introduction to R	1
STAT 200	Elementary Statistics	4
STAT 380	Data Science Through Statistical Reasoning and Computation	3
STAT 414	Introduction to Probability Theory	3
STAT 415	Introduction to Mathematical Statistics	3
STAT 461	Analysis of Variance	3
STAT 462	Applied Regression Analysis	3
STAT 470		3
Additional Courses		
Additional Courses: Require a grade of C or better		
Select 1-3 credits from:		1-3
STAT 480	Introduction to SAS	
STAT 481	Intermediate SAS for Data Management	
STAT 482	Advanced Topics in SAS	
STAT 483	Statistical Programming in SAS	
Requirements for the Option		
Select an option		47-57

Requirements for the Option

Actuarial Statistics Option (53 credits)

Students who major in statistics with the actuarial statistics option and who wish to complete a concurrent major in mathematics may not choose the actuarial mathematics option in mathematics. Any other option in mathematics is acceptable.

Code	Title	Credits
Prescribed Courses		
ECON 102	Introductory Microeconomic Analysis and Policy	3
ECON 104	Introductory Macroeconomic Analysis and Policy	3
Prescribed Courses: Require a grade of C or better		
ACCTG 211	Financial and Managerial Accounting for Decision Making	4
FIN 301	Corporation Finance	3
RM 302	Risk and Insurance	3
RM 410	Financial Mathematics for Actuaries	3
RM 411	Actuarial Mathematics I	3
RM 412	Actuarial Mathematics II	3
STAT 463	Applied Time Series Analysis	3
Additional Courses		
Additional Courses: Require a grade of C or better		
Select one of the following:		3
CMPSC 101	Introduction to C++ Programming	
CMPSC 102	Introduction to Visual Programming	
CMPSC 121	Introduction to Programming Techniques	
CMPSC 200	Programming for Engineers with MATLAB	
CMPSC 201	Programming for Engineers with C++	
CMPSC 202		
Select three of the following:		9
IE 434	Statistical Quality Control	
IE 436	Six Sigma Methodology	
MATH 436	Linear Algebra	
or MATH 441	Matrix Algebra	
MATH 451	Numerical Computations	
or MATH 455	Introduction to Numerical Analysis I	
STAT 416	Stochastic Modeling	
STAT 440	Computational Statistics	
STAT 464	Applied Nonparametric Statistics	
STAT 466	Survey Sampling	
Supporting Courses and Related Areas		
Select 13 credits from department list		13

Applied Statistics Option (47 credits)

Code	Title	Credits
Additional Courses		
Additional Courses: Require a grade of C or better		
Select one of the following:		3
CMPSC 101	Introduction to C++ Programming	
CMPSC 121	Introduction to Programming Techniques	
CMPSC 201	Programming for Engineers with C++	
CMPSC 202		
Select four of the following:		12
IE 434	Statistical Quality Control	
IE 436	Six Sigma Methodology	
MATH 436	Linear Algebra	
or MATH 441	Matrix Algebra	
MATH 451	Numerical Computations	
or MATH 455	Introduction to Numerical Analysis I	
STAT 416	Stochastic Modeling	

STAT 440	Computational Statistics	
STAT 463	Applied Time Series Analysis	
STAT 464	Applied Nonparametric Statistics	
STAT 466	Survey Sampling	
Supporting Courses and Related Areas		
Select 32 credits from department list, including a minor in a supporting field other than Mathematics [1]		32

[1] Neither the mathematics major nor the six sigma minor, nor the risk management major with the actuarial science option may be used to satisfy the minor/concurrent major requirement. If a student wants to work in a supporting field that does not have a minor, he or she can propose a list of six appropriate courses and petition the Statistics Department for approval. It is the student's responsibility to justify the appropriateness of the proposed list. Students must receive a grade of C or better in each of these six courses.

Biostatistics Option (56-57 credits)

Code	Title	Credits
Prescribed Courses		
Prescribed Courses: Require a grade of C or better		
BIOL 110	Biology: Basic Concepts and Biodiversity	4
CHEM 110	Chemical Principles I	3
CHEM 111	Experimental Chemistry I	1
Additional Courses		
Additional Courses: Require a grade of C or better		
Select one of the following:		3
CMPSC 101	Introduction to C++ Programming	
CMPSC 121	Introduction to Programming Techniques	
CMPSC 201	Programming for Engineers with C++	
CMPSC 202		
Select two of the following:		7-8
BIOL 220W	Biology: Populations and Communities	
BIOL 222	Genetics	
BIOL 230W	Biology: Molecules and Cells	
BIOL 240W	Biology: Function and Development of Organisms	
Select 6 credits from 400-level BIOL courses		6
Select four of the following:		12
IE 434	Statistical Quality Control	
IE 436	Six Sigma Methodology	
MATH 436	Linear Algebra	
or MATH 441	Matrix Algebra	
MATH 451	Numerical Computations	
or MATH 455	Introduction to Numerical Analysis I	
STAT 416	Stochastic Modeling	
STAT 440	Computational Statistics	
STAT 463	Applied Time Series Analysis	
STAT 464	Applied Nonparametric Statistics	
STAT 466	Survey Sampling	
Supporting Courses and Related Areas		
Select 19-20 credits from department list		19-20

Graduate Study Option (47 credits)

A student completing the Graduate Study option will have earned a minor in mathematics in addition to a B.S. in Statistics. However, a student must fill out and submit the appropriate paperwork to the Mathematics Department in order for this minor to be officially recognized.

Code	Title	Credits
Prescribed Courses		
Prescribed Courses: Require a grade of C or better		
MATH 312	Concepts of Real Analysis	3
MATH 403	Classical Analysis I	3
MATH 404	Classical Analysis II	3
Additional Courses		
Additional Courses: Require a grade of C or better		
Select one of the following:		3
CMPSC 101	Introduction to C++ Programming	
CMPSC 121	Introduction to Programming Techniques	
CMPSC 201	Programming for Engineers with C++	
CMPSC 202		
Select three of the following:		9
MATH 310	Elementary Combinatorics	
MATH 311W	Concepts of Discrete Mathematics	
MATH 421	Complex Analysis (does not require a grade of C or better)	
MATH 422	Wavelets and Fourier Analysis: Theory and Applications	
MATH 426	Introduction to Modern Geometry (does not require a grade of C or better)	
MATH 429	Introduction to Topology (does not require a grade of C or better)	
MATH 456	Introduction to Numerical Analysis II	
MATH 468	Mathematical Coding Theory	
Select four of the following:		12
IE 434	Statistical Quality Control	
IE 436	Six Sigma Methodology	
MATH 436	Linear Algebra	
or MATH 441	Matrix Algebra	
MATH 451	Numerical Computations	
or MATH 455	Introduction to Numerical Analysis I	
STAT 416	Stochastic Modeling	
STAT 440	Computational Statistics	
STAT 463	Applied Time Series Analysis	
STAT 464	Applied Nonparametric Statistics	
STAT 466	Survey Sampling	
Supporting Courses and Related Areas		
Select 14 credits from department list		14

Statistics and Computing Option (47 credits)

Code	Title	Credits
Prescribed Courses		
Prescribed Courses: Require a grade of C or better		
CMPSC 121	Introduction to Programming Techniques	3
CMPSC 122	Intermediate Programming	3
CMPSC 465	Data Structures and Algorithms	3
Additional Courses		
Additional Courses: Require a grade of C or better		
CMPSC 360	Discrete Mathematics for Computer Science	3

or MATH 311W	Concepts of Discrete Mathematics	
Select 9 credits of the following:		9
CMPSC 221	Object Oriented Programming with Web-Based Applications	
400-level CMPSC (other than CMPSC 451/MATH 451 or CMPSC 455/MATH 455.)		
Select four of the following:		12
IE 434	Statistical Quality Control	
IE 436	Six Sigma Methodology	
MATH 436	Linear Algebra	
or MATH 441	Matrix Algebra	
MATH 451	Numerical Computations	
or MATH 455	Introduction to Numerical Analysis I	
STAT 416	Stochastic Modeling	
STAT 440	Computational Statistics	
STAT 463	Applied Time Series Analysis	
STAT 464	Applied Nonparametric Statistics	
STAT 466	Survey Sampling	
Supporting Courses and Related Areas		
Select 14 credits from department list		14

Integrated B.S. in Statistics and Master of Applied Statistics (M.A.S.)

The Integrated Undergraduate-Graduate (IUG) degree with B.S. in Statistics and Master of Applied Statistics (M.A.S.) is designed to be completed in five years. This integrated degree will enable a select number of highly qualified and career-oriented students to obtain training in statistics focused on developing data analysis skills and exploration of core areas of applied statistics at the undergraduate and graduate levels. The M.A.S. degree is a professional master's degree that emphasizes applications and does not provide as much training in the mathematical and statistical theory. The degree prepares students with interests in mathematics, computation, and the quantitative aspects of science for careers in industry and government as statistical analyst. Research divisions in the pharmaceutical industry, quality control and quality engineering divisions in manufacturing companies, clinical research units, corporate planning and research units, and other data-intensive positions require persons with training in mathematics, computation, database management, and statistical analysis, which this program will provide.

Application Process

The number of openings in the integrated B.S./M.A.S. program is limited. Admission will be based on specific criteria and the recommendation of faculty.

Applicants to the integrated program:

1. Must be enrolled in the Statistics B.S. program.
2. Must have completed at least 60 credits of the undergraduate degree program including the two courses: STAT 414 and STAT 415, and the students must apply to the program prior to completing 110 credits.
3. Must submit a transcript and a statement of purpose.
4. Must present a departmental-approved plan of study in the application process in consultation with the M.A.S. program director.
5. Must be recommended by the chair of the department's undergraduate program committee.
6. Must be accepted into the M.A.S. program in Statistics.

For the IUG B.S./M.A.S. degree, 120 credits are required for the B.S. and 30 credits for the M.A.S. The following twelve graduate-level credits can apply to both B.S. and M.A.S. degrees; six of these are at the 500 level:

Code	Title	Credits
STAT 414	Introduction to Probability Theory	3
STAT 415	Introduction to Mathematical Statistics	3
STAT 501	Regression Methods	3
STAT 502	Analysis of Variance and Design of Experiments	3

Assuming all requirements for the B.S. are completed, students in the program can complete the B.S. degree and not advance to the M.A.S. Degree if they desire.

Degree Requirements

IUG Statistics B.S. prescribed Statistics courses: See above, but note that students in IUG Statistics B.S. take STAT 501 and STAT 502 instead of STAT 460 and STAT 462.

IUG Statistics M.A.S. requirement (30 credits)

Code	Title	Credits
STAT 414	Introduction to Probability Theory	3
STAT 415	Introduction to Mathematical Statistics	3
STAT 501	Regression Methods	3
STAT 502	Analysis of Variance and Design of Experiments	3
STAT 580	Statistical Consulting Practicum I	2
STAT 581	Statistical Consulting Practicum II [1]	1
Electives		
Select 15 credits of STAT 503- STAT 510 and the departmental list of additional courses for the M.A.S. program with the approval of the adviser		15

[1] For all students in the M.A.S. program, the STAT 581 course will have a comprehensive written project report required as part of the course, which serves as the culminating experience.

Academic Advising

The objectives of the university's academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers.

Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The advisee's unit of enrollment will provide each advisee with a primary academic adviser, the information needed to plan the chosen program of study, and referrals to other specialized resources.

READ SENATE POLICY 32-00: ADVISING POLICY (http://senate.psu.edu/policies-and-rules-for-undergraduate-students/32-00-advising-policy)

University Park

Undergraduate Statistics Office
Academic Advising
323 Thomas Building
University Park, PA 16802
814-865-1348
stat-advising@psu.edu

Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2019-20 academic year. To access previous years' suggested academic plans, please visit the archive (http://bulletins.psu.edu/undergraduate/archive) to view the appropriate Undergraduate Bulletin edition (*Note: the archive only contain suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin*).

Applied Option at University Park Campus

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits	Spring	Credits
MATH 140*‡#†	4	MATH 141*‡#†	4
STAT 200*†	4	STAT 380*	3
STAT 184*	1	ENGL 15, 30, or ESL 15‡	3
First Year Seminar	1	General Education Course	3
General Education Course	3	General Education Course	3
General Education Course	3		
	16		16

Second Year

Fall	Credits	Spring	Credits
MATH 220*†	2	STAT 414*	3
MATH 230*	4	STAT 461*	3
CMPSC 121 or 131*†	3	ENGL 202C‡	3
General Education Course	3	Course for required minor*	3
General Education Course	3	General Education Course	3
		General Education Course (GHW)	1.5
	15		16.5

Third Year

Fall	Credits	Spring	Credits
STAT 415*	3	STAT 416*	3
STAT 464 or 466*	3	STAT 462*	3
CAS 100, 100A, 100B, or 100C‡	3	Course for required minor*	3
Course for required minor*	3	Course for required minor*	3
Supporting course (consult with an academic adviser for options)	3	General Education Course	3
	15		15

Fourth Year

Fall	Credits	Spring	Credits
STAT 480*	1	STAT 470*	3
STAT 463*	3	MATH 451*	3
Course for required minor*	3	Course for required minor*	3
General Education Course	3	Course for required minor*	3
General Education Course (GHW)	1.5	Supporting course (consult with an academic adviser for options)	3
Supporting course (consult with an academic adviser for options)	3		
	14.5		15

Total Credits 123

* Course requires a grade of C or better for the major
‡ Course requires a grade of C or better for General Education
\# Course is an Entrance to Major requirement
† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy University Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of 'C' or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

All incoming Schreyer Honors College first-year students at University Park will take ENGL/CAS 137 in the fall semester and ENGL/CAS 138 in the spring semester. These courses carry the GWS designation and replace both ENGL 30 and CAS 100. Each course is 3 credits.

Program Notes:

The applied statistics option requires that the student complete the requirements for a supporting minor or concurrent major. Neither the mathematics major/minor nor the six sigma minor, nor the risk management major with the actuarial science option may be used to satisfy the minor/concurrent major requirement. If a student wants to work in a supporting field that does not have a minor, he or she can propose a list of six appropriate courses and petition the Statistics Department for approval. It is the student's responsibility to justify the appropriateness of the proposed list. Students must receive a grade of C or better in each of these six courses.

Actuarial Option at University Park Campus

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes

in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits	Spring	Credits
MATH 140*‡#†	4	MATH 141*‡#†	4
STAT 200*†	4	STAT 380*	3
STAT 184*	1	ECON 104†	3
First Year Seminar	1	General Education Course	3
ECON 102†	3	ACCTG 211*	4
General Education Course	3		
	16		17

Second Year

Fall	Credits	Spring	Credits
MATH 220*†	2	STAT 414*	3
MATH 230*	4	STAT 461*	3
CMPSC 121 or 131*†	3	ENGL 202C‡	3
ENGL 15, 30, or ESL 15‡	3	FIN 301*	3
General Education Course	3	RM 302*	3
		General Education Course (GHW)	1.5
	15		16.5

Third Year

Fall	Credits	Spring	Credits
STAT 415*	3	STAT 416*	3
STAT 464 or 466*	3	STAT 462*	3
RM 410*	3	RM 411*	3
CAS 100, 100A, 100B, or 100C‡	3	General Education Course	3
RM 415 (Recommended Supporting Course)	3	General Education Course	3
	15		15

Fourth Year

Fall	Credits	Spring	Credits
STAT 480*	1	STAT 470*	3
STAT 463*	3	STAT 440*	3
RM 412*	3	General Education Course	3
General Education Course	3	RM 420 (Recommended Supporting Course)	3
General Education Course (GHW)	1.5	Supporting course (consult with an academic adviser for options)	3
Supporting course (consult with an academic adviser for options)	3		
	14.5		15

Total Credits 124

* Course requires a grade of C or better for the major

‡ Course requires a grade of C or better for General Education

\# Course is an Entrance to Major requirement

† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy University Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of 'C' or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

All incoming Schreyer Honors College first-year students at University Park will take ENGL/CAS 137 in the fall semester and ENGL/CAS 138 in the spring semester. These courses carry the GWS designation and replace both ENGL 30 and CAS 100. Each course is 3 credits.

Biostatistics Option at University Park Campus

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits	Spring	Credits
MATH 140*‡#†	4	MATH 141*‡#†	4
STAT 200*†	4	STAT 380*	3
STAT 184*	1	CHEM 110*†	3
First Year Seminar	1	CHEM 111*†	1
BIOL 110*†	4	ENGL 15, 30, or ESL 15‡	3
General Education Course	3	General Education Course (GHW)	1.5
	17		15.5

Second Year

Fall	Credits	Spring	Credits
MATH 220*†	2	STAT 414*	3
MATH 230*	4	CMPSC 121 or 131*†	3
STAT 461*	3	ENGL 202C‡	3
BIOL 220W, 222, 230W, or 240W*†	3-4	General Education Course	3
General Education Course	3	BIOL 220W, 222, 230W, or 240W*†	3-4
	15-16		15-16

Third Year

Fall	Credits	Spring	Credits
STAT 415*	3	STAT 416*	3
STAT 464 or 466*	3	STAT 462*	3
CAS 100, 100A, 100B, or 100C‡	3	BIOL 400 level selection*	3
General Education Course	3	General Education Course	3
Supporting course (consult with an academic adviser for options)	3	Supporting course (consult with an academic adviser for options)	3
	15		15

Fourth Year

Fall	Credits	Spring	Credits
STAT 480*	1	STAT 470*	3
STAT 463*	3	MATH 451*	3
BIOL 400 level selection*	3	General Education Course	3
General Education Course	3	Supporting course (consult with an academic adviser for options)	3
General Education Course (GHW)	1.5	Supporting course (consult with an academic adviser for options)	3
Supporting course (consult with an academic adviser for options)	3		
	14.5		15

Total Credits 122-124

* Course requires a grade of C or better for the major

‡ Course requires a grade of C or better for General Education

\# Course is an Entrance to Major requirement

† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy University Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of 'C' or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

All incoming Schreyer Honors College first-year students at University Park will take ENGL/CAS 137 in the fall semester and ENGL/CAS 138 in the spring semester. These courses carry the GWS designation and replace both ENGL 30 and CAS 100. Each course is 3 credits.

Computing Option at University Park Campus

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits	Spring	Credits
MATH 140*‡#†	4	MATH 141*‡#†	4
STAT 200*†	4	STAT 380*	3
STAT 184*	1	ENGL 15, 30, or ESL 15‡	3
First Year Seminar	1	General Edcuation Course	3
General Education Course	3	General Education Course	3
General Education Course	3		
	16		16

Second Year

Fall	Credits	Spring	Credits
MATH 220*†	2	STAT 414*	3
MATH 230*	4	STAT 461*	3
CMPSC 121 or 131*†	3	CMPSC 122 or 132*†	3
General Education Course	3	ENGL 202C‡	3
General Education Course	3	General Education Course	3
		General Education Course (GHW)	1.5
	15		16.5

Third Year

Fall	Credits	Spring	Credits
STAT 415*	3	STAT 416*	3
STAT 464 or 466*	3	STAT 462*	3
CAS 100, 100A, 100B, or 100C‡	3	CMPSC 221*	3
MATH 311W*	3	CMPSC 465*	3
Supporting course (consult with an academic adviser for options)	3	General Education Course	3
	15		15

Fourth Year

Fall	Credits	Spring	Credits
STAT 480*	1	STAT 470*	3
STAT 463*	3	MATH 451*	3
CMPSC 400 level selection*	3	CMPSC 400 level selection*	3
General Education Course	3	Supporting course (consult with an academic adviser for options)	3
General Education Course (GHW)	1.5	Supporting course (consult with an academic adviser for options)	3

Supporting course (consult with an academic adviser for options)	3		
	14.5		15

Total Credits 123

Graduate Studies Option at University Park Campus

The course series listed below provides **only one** of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an **Academic Requirements** or **What If** report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

First Year

Fall	Credits	Spring	Credits
MATH 140*‡#†	4	MATH 141*‡#†	4
STAT 200*†	4	STAT 380*	3
STAT 184*	1	ENGL 15, 30, or ESL 15‡	3
First Year Seminar	1	General Education Course	3
General Education Course	3	General Education Course	3
General Education Course	3		
	16		16

Second Year

Fall	Credits	Spring	Credits
MATH 220*†	2	STAT 414*	3
MATH 230*	4	STAT 461*	3
CMPSC 121 or 131*†	3	ENGL 202C‡	3
General Education Course	3	MATH 312*	3
General Education Course	3	General Education Course	3
General Education Course (GHW)	1.5		
	16.5		15

Third Year

Fall	Credits	Spring	Credits
STAT 415*	3	STAT 416*	3
STAT 464 or 466*	3	STAT 462*	3
CAS 100, 100A, 100B, or 100C‡	3	MATH 403*	3
MATH 311W*	3	MATH 310*	3
Supporting course (consult with an academic adviser for options)	3	General Education Course	3
	15		15

Fourth Year

Fall	Credits	Spring	Credits
STAT 480*	1	STAT 470*	3
STAT 463*	3	MATH 436*	3
MATH 404*	3	Math 400 level selection (consult with an academic adviser for options)*	3
General Education Course	3	Supporting course (consult with an academic adviser for options)	3
General Education Course (GHW)	1.5	Supporting course (consult with an academic adviser for options)	3
Supporting Course (consult with an academic adviser for options)	3		
	14.5		15

Total Credits 123

* Course requires a grade of C or better for the major

‡ Course requires a grade of C or better for General Education

\# Course is an Entrance to Major requirement

† Course satisfies General Education and degree requirement

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy University Requirements (United States and International Cultures).

W, M, X, and Y are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

GWS, GQ, GHW, GN, GA, GH, and GS are abbreviations used to identify General Education program courses. General Education includes Foundations (GWS and GQ) and Knowledge Domains (GHW, GN, GA, GH, GS, and Integrative Studies). Foundations courses (GWS and GQ) require a grade of 'C' or better.

Integrative Studies courses are required for the General Education program. N is the suffix at the end of a course number used to designate an Inter-Domain course and Z is the suffix at the end of a course number used to designate a Linked course.

All incoming Schreyer Honors College first-year students at University Park will take ENGL/CAS 137 in the fall semester and ENGL/CAS 138 in the spring semester. These courses carry the GWS designation and replace both ENGL 30 and CAS 100. Each course is 3 credits.

Career Paths

Statistics can be applied in a broad range of fields, including business, agriculture, finance, public policy, and many more. As data in all forms become more easily stored and accessed, so does the demand and opportunity for statisticians to help others discern what can (or cannot) be learned from the information available. In fact, statisticians are also frequently sought after for their disciplined approach to problem solving and critical thinking, even when no formal data analysis is needed.

Careers

Statisticians in the pharmaceutical industry work with doctors and research scientists to design and execute experiments and clinical trials. - Statisticians at technology and manufacturing companies work to advance product development from ensuring reliability and quality of hardware components to software development. - Statisticians collaborate with epidemiologists and public health agencies like the NIH and CDC to study infectious disease dynamics among threatened populations. - Statisticians at government agencies like the U.S. Department of Education, Census Bureau, and Department of Labor help inform public policy and assess impact of legislative changes. - And much more...

MORE INFORMATION ABOUT POTENTIAL CAREER OPTIONS FOR GRADUATES OF THE STATISTICS PROGRAM (http://thisisstatistics.org/jobs-in-statistics)

Professional Resources

- The American Statistical Association (http://www.amstat.org)

Contact

University Park

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http://stat.psu.edu/about-us/contact-us