

ACTUARIAL SCIENCE, B.S.

Begin Campus: Any Penn State Campus

End Campus: University Park

Program Description

An actuary is a business professional who uses mathematical skills to define, analyze, and solve complex business and social problems. The Actuarial Science major stresses the application of mathematical and statistical concepts to the measurement of life, health, pensions, and other contingencies, while at the same time giving the student a broad understanding of the business environment. Students in the Actuarial Science major will be prepared to begin the series of professional examinations leading to Associateship and Fellowship in either the Society of Actuaries (A.S.A./F.S.A.) or the Casualty Actuarial Society (A.C.A.S./F.C.A.S.) while enrolled in the program.

What is Actuarial Science?

The Actuarial Science major provides background in the wide range of knowledge needed to be a professional actuary including calculus, probability and statistics, financial and actuarial mathematics, economics, finance, risk management, pensions, and insurance. Excellent skills in mathematics and statistics is a critical component of this major.

Actuaries are vital to corporate and government agencies, calculating the costs of life or health insurance, or how much an insurance company can expect to pay in claims due to natural disasters, car accidents, and other situations. The curriculum is designed to prepare students for the series of professional examinations needed in order to be a practicing actuary. Students are encouraged to complete several of these exams prior to graduation with employers providing assistance to complete the remaining exams.

Entrance to Major

To be eligible for entrance into the Actuarial Science major, a degree candidate must be enrolled in the Smeal College of Business or the Division of Undergraduate Studies and satisfy requirements for entrance to the major.

Administrative Enrollment Controls

This program currently has administrative enrollment controls. Administrative Enrollment Controls are initiated when limitations of space, faculty, or other resources in a major prevent accommodating all students who request them. Students must follow the administrative enrollment controls that are in effect for the semester that they enter the university.

First-Year Students Entering Summer 2023, Fall 2023, Spring 2024

In order to be eligible for entrance to this major, students must satisfy the following requirements:

- 36-59 graded Penn State credits (excludes transfer and AP credits)
- completed with a grade of C or better:
 - English - ENGL 15 or ENGL 30H or ESL 15 or ENGL 137H or CAS 137H
 - Mathematics - (MATH 140 or MATH 140B) and MATH 141
 - Statistics - SCM 200 or SCM 200H or STAT 200

- completed ECON 102 or ECON 102H
- completed at Penn State (no substitutions or transfers), in addition with a quality grade of "C" or better and no alternative or Pass/Fail (PS) grading:
 - Accounting - ACCTG 211 or ACCTG 211H
 - Management - MGMT 301 or MGMT 301H or MGMT 301M or MGMT 301W
 - Marketing - MKTG 301 or MKTG 301H or MKTG 301W
 - Finance - FIN 301 or FIN 301H
- earned a minimum cumulative grade-point average (GPA) of 3.20

Students Who Entered Prior to Summer 2023

Students who entered the University from Summer 2018 through Spring 2023 should view the administrative enrollment controls in the appropriate Undergraduate Bulletin archive (<https://bulletins.psu.edu/undergraduate/archive/>). Students who entered the University prior to the summer 2018 semester should consult with their academic adviser about the administrative enrollment controls in effect for the semester they entered the university.

Degree Completion

Students accepted into the Actuarial Science (ACTSC_BS) major are expected to enroll at University Park the fall semester after gaining entrance to the major. In addition, Senate Policy 83-80.5 stipulates that the college dean and program faculty may require up to 24 credits of course work in the major to be taken in the college where the degree is earned. Based on this policy, the Smeal College of Business has set the following credit earning limitations for ACTSC_BS majors:

1. Fifteen credits of 300/400 level prescribed actuarial science and risk management courses in the major field must be completed with Actuarial Science and Risk Management faculty at University Park.
2. Six additional credits of 300/400 level additional Actuarial Science elective courses must also be completed at University Park. See the Actuarial Science Suggested Academic Plan for details.

Degree Requirements

For the Bachelor of Science degree in Actuarial Science, a minimum of 120 credits:

Requirement	Credits
General Education	45
Electives	8
Requirements for the Major	82

15 of the 45 credits for General Education are included in the Requirements for the Major. This includes: 6 credits of GWS courses; 6 credits of GQ courses; 3 credits of GS courses.

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 (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/82-00-and-83-00-degree-requirements/#82-44>).

Code	Title	Credits
Prescribed Courses		
BA 342	Socially Responsible, Sustainable and Ethical Business Practice	3
BA 411	Analyzing Business and Industry	3
BLAW 341	Business Law I: Introduction to Contracts, Liability Issues, and Intellectual Property	3
ECON 102	Introductory Microeconomic Analysis and Policy	3
ECON 104	Introductory Macroeconomic Analysis and Policy	3
MIS 250	Introduction to Problem Solving with Spreadsheet Analysis and Information Systems Management	3
<i>Prescribed Courses: Require a grade of C or better</i>		
ACCTG 211	Financial and Managerial Accounting for Decision Making	4
ENGL 202D	Effective Writing: Business Writing	3
FIN 301	Corporation Finance	3
MATH 140	Calculus With Analytic Geometry I	4
MATH 141	Calculus with Analytic Geometry II	4
MATH 231	Calculus of Several Variables	2
MGMT 301	Basic Management Concepts	3
MKTG 301	Principles of Marketing	3
RM 320W	Risk Management and Insurance	3
RM 410	Financial Mathematics for Actuaries	3
RM 411	Long Term Actuarial Mathematics - Fundamentals	3
RM 421	Short Term Actuarial Mathematics - Fundamentals	3
RM 430	Life and Health Insurance	3
STAT/MATH 414	Introduction to Probability Theory	3
STAT/MATH 415	Introduction to Mathematical Statistics	3
Additional Courses		
<i>Additional Courses: Require a grade of C or better</i>		
RM 412	Long Term Actuarial Mathematics - Advanced Topics	3
or RM 422	Short Term Actuarial Mathematics - Advanced Topics	
SCM 200	Introduction to Statistics for Business	4
or STAT 200	Elementary Statistics	
Select 3 credits from the following:		3
ENGL 15	Rhetoric and Composition	
ENGL 30H	Honors Rhetoric and Composition	
ENGL/CAS 137H	Rhetoric and Civic Life I	
ESL 15	ESL Composition for American Academic Communication II	
Select 3 credits from the following:		3
STAT 380	Data Science Through Statistical Reasoning and Computation	
STAT 462	Applied Regression Analysis	
STAT 483	Statistical Programming in SAS	

Supporting Courses and Related Areas

Supporting Courses and Related Areas: Require a grade of C or better

Attainment of 12th-credit level proficiency in a single foreign language. Proficiency must be demonstrated by either examination or course work.	4
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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 (<https://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 and Inter-Domain courses do not meet this requirement.)

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

Breadth in the Knowledge Domains (Inter-Domain courses do not meet this requirement.)

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

Integrative Studies

- **Inter-Domain Courses (Inter-Domain):** 6 credits

Exploration

- **GN**, may be completed with Inter-Domain courses: 3 credits
- **GA, GH, GN, GS, Inter-Domain courses.** This may include 3 credits of World Language course work beyond the 12th credit level or the requirements for the student's degree program, whichever is higher: 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 (<https://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.

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 (<https://senate.psu.edu/policies-and-rules-for-undergraduate-students/32-00-advising-policy/>)

University Park

Advising Center

Smeal College Undergraduate Education
202 Business Building
University Park, PA 16802
814-863-1947
SmealAdvising@smeal.psu.edu

Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2023-24 academic year. To access previous years' suggested academic plans, please visit the archive (<https://bulletins.psu.edu/undergraduate/archive/>) to view the appropriate Undergraduate Bulletin edition (*Note: the archive only contains suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin*).

Actuarial Science, B.S. 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
PSU 6	1 MGMT 301 ^{1,2}	3
MATH 140 ^{1,2}	4 MATH 141 ^{1,2}	4
ENGL 15, 30H, ESL 15, ENGL 137H, or CAS 137H ^{1,2}	3 World Language - Level Three ³	4
ECON 102 (GS) ²	3 SCM 200 or STAT 200 ^{1,2}	4
World Language - Level Two ³	4	
	15	15

Second Year

Fall	Credits Spring	Credits
MKTG 301 ^{1,2}	3 FIN 301 ^{1,2}	3
ACCTG 211 ^{1,2}	4 STAT/MATH 414 ¹	3
ECON 104	3 CAS 100, ENGL 138T, or CAS 138T ¹	3
MATH 231 ¹	2 MIS 250	3
General Education Course	3 General Education Course	3
	15	15

Third Year

Fall	Credits Spring	Credits
RM 320W ¹	3 RM 421 ¹	3
RM 410 ¹	3 STAT 380, 462, or 483	3
BLAW 341 or BA 342	3 BA 342 or BLAW 341	3
STAT/MATH 415 ¹	3 General Education Course	3
ENGL 202D ¹	3 General Education Course	3
	15	15

Fourth Year

Fall	Credits Spring	Credits
RM 411 ¹	3 General Education Course	3
RM 430 ¹	3 General Education Course	3
General Education Course	3 RM 412 or 422 ¹	3
BA 411 (or General Education Course)	3 BA 411 (or General Education Course)	3
General Education Course	3 Elective	3
	15	15

Total Credits 120

¹ Course requires a grade of C or better

² Entrance-to-Major Course – complete prior to attaining 59 cumulative credits at Penn State

³ Attain 12th credit level proficiency in a world language (0-12 credits). Credits required vary based on predetermined skill level. Balance of remaining credits are taken as electives.

University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy Cultural Diversity 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.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ) require a grade of 'C' or better.

All incoming Schreyer Honors College first-year students at University Park will take ENGL 137H/CAS 137H in the fall semester and ENGL 138T/CAS 138T in the spring semester. These courses carry the GWS designation and satisfy a portion of that General Education requirement. If the student's program prescribes GWS these courses will replace both ENGL 15/ENGL 30H and CAS 100A/CAS 100B/CAS 100C. Each course is 3 credits.

Course Planning and Selection Notes:

- I. The Smeal College of Business requires that the following entrance-to-major courses be taken at Penn State: ACCTG 211, MGMT 301, MKTG 301, and FIN 301.
- II. Pursuant to the Association to Advance Collegiate Schools of Business (AACSB) accreditation standards, the Smeal College of Business requires that all upper division courses within the departments sponsoring the major be completed in residence at University Park under the instruction of Smeal College faculty.

Actuarial Science, B.S. at Commonwealth Campuses

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
First-Year Seminar (if required by Campus)	1-0 MGMT 301 ^{1,2}	3
MATH 140 ^{1,2}	4 MATH 141 ^{1,2}	4
ENGL 15, 30H, ESL 15, ENGL 137H, or CAS 137H ^{1,2}	3 World Language - Level Three ³	4
ECON 102 (GS) ²	3 SCM 200 or STAT 200 ^{1,2}	4
World Language - Level Two ³	4	
	15-14	15

Second Year

Fall	Credits Spring	Credits
MKTG 301 ^{1,2}	3 FIN 301 ^{1,2}	3
ACCTG 211 ^{1,2}	4 STAT/MATH 414 ¹	3
ECON 104	3 CAS 100, ENGL 138T, or CAS 138T ¹	3
MATH 231 ¹	2 ENGL 202D ¹	3
General Education Course	3 General Education Course	3
	15	15

Third Year

Fall	Credits Spring	Credits
RM 320W ¹	3 RM 421 ¹	3
RM 410 ¹	3 STAT 380, 462, or 483	3
BLAW 341 or BA 342	3 BA 342 or BLAW 341	3
STAT/MATH 415 ¹	3 General Education Course	3
MIS 250	3 General Education Course	3
	15	15

Fourth Year

Fall	Credits Spring	Credits
RM 411 ¹	3 General Education Course	3
RM 430 ¹	3 General Education Course	3
General Education Course	3 RM 412 or 422 ¹	3
BA 411 (or General Education Course)	3 BA 411 (or General Education Course)	3
General Education Course	3 Elective	3-4
	15	15-16

Total Credits 120

¹ Course requires a grade of C or better

² Entrance-to-Major Course – complete prior to attaining 59 cumulative credits at Penn State

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Course Planning and Selection Notes:

- I. The Smeal College of Business requires that the following entrance-to-major courses be taken at Penn State: ACCTG 211, MGMT 301, MKTG 301, and FIN 301.
- II. Pursuant to the Association to Advance Collegiate Schools of Business (AACSB) accreditation standards, the Smeal College of Business requires that all upper division courses within the departments sponsoring the major be completed in residence at University Park under the instruction of Smeal College faculty.

Career Paths

Actuarial Science has been rated as the No. 1 career path in the nation by The Wall Street Journal. The Actuarial Science major at Smeal prepares students for careers in insurance, consulting, finance, and government agencies that demand quantitative and qualitative skills. This major is also a STEM Designated Degree Program.

Careers

Smeal Actuarial Science students are highly sought by industry and government for internships and full-time jobs. Average starting salaries exceed \$70,000 and internships are paid a competitive wage. Due to the size of the Smeal Actuarial Science program, the college hosts one of the largest actuarial career fairs in the country with more than 30 companies attending each year.

MORE INFORMATION ABOUT POTENTIAL CAREER OPTIONS FOR GRADUATES OF THE ACTUARIAL SCIENCE PROGRAM (<https://www.smeal.psu.edu/risk-management/degrees/actsc/>)

Accreditation

The Smeal College of Business B.S. degree in Actuarial Science (ACTSC_BS) is recognized by the AACSB (Association to Advance Collegiate Schools of Business) as an accredited program after completing a meticulous internal review and meeting all AACSB standards and requirements.

MORE INFORMATION ABOUT THE ASSOCIATION TO ADVANCE COLLEGIATE SCHOOLS OF BUSINESS (<https://www.aacsb.edu>)

MORE INFORMATION ABOUT THE SOCIETY OF ACTUARIES (<https://www.soa.org/>)

Contact

University Park

DEPARTMENT OF RISK MANAGEMENT

355 Business Building

814-865-4172

rm@smeal.psu.edu

<https://www.smeal.psu.edu/risk-management> (<https://www.smeal.psu.edu/risk-management/>)

Ask A Question: <https://directory.smeal.psu.edu/contact/rm> (<https://directory.smeal.psu.edu/contact/rm/>)