

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.

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.

1. The degree candidate must be taking, or have taken, a program appropriate for entry to the major as shown in the bulletin, including approximately 40 to 59 credits of course work.
2. Complete the following entrance to major requirements: ACCTG 211*, ECON 102, SCM 200* or STAT 200*, ENGL 15* or ENGL 30* or ESL 15*, FIN 301*, MATH 140*, MATH 141*, MGMT 301*, MKTG 301*.
3. A minimum cumulative grade point average of 3.20

* Course must be completed with a grade of C or better

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	11
Requirements for the Major	76

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

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	Actuarial Mathematics I	3
RM 412	Actuarial Mathematics II	3
RM 430	Life and Health Insurance	3
STAT 414	Introduction to Probability Theory	3

Additional Courses

RM 401	Fundamentals of Private Pensions	3
or RM 420	Property, Casualty, and Health Insurance	
RM 415	Modeling for Actuarial Science	3
or STAT 483	Statistical Programming in SAS	

Additional Courses: Require a grade of C or better

SCM 200	Introduction to Statistics for Business	4
or STAT 200	Elementary Statistics	

Supporting Courses and Related Areas

Attainment of 12th-credit level proficiency in a single foreign language. Proficiency must be demonstrated by either examination or coursework.	4
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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

Advising Center

Smeal College Undergraduate Education
202 Business Building
University Park, PA 16802
814-863-1947
uge@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 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*).

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, 30, ESL 15, ENGL 137H, or CAS 137H ^{1,2}	3 World Language - Level Three ³	4
ECON 102 (GS) ^{1,2}	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 ⁴	3 General Education Course (IL) ⁴	3
	15	15

Third Year

Fall	Credits Spring	Credits
RM 320W ¹	3 RM 411 ¹	3
RM 410 ¹	3 Elective ⁴	3
BLAW 341 or BA 342	3 BA 342 or BLAW 341	3
General Education Course (N) ⁴	3 General Education Course ⁴	3
ENGL 202D ¹	3 General Education Course ⁴	3
	15	15

Fourth Year

Fall	Credits Spring	Credits
RM 412 ¹	3 General Education Course ⁴	3
RM 430 ¹	3 General Education Course (US) ⁴	3
RM 415 or STAT 483	3 RM 401 or 420	3
BA 411 (or General Education Course) ⁴	3 BA 411 (or General Education Course) ⁴	3
General Education Course (Z) ⁴	3 Elective ⁴	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.

⁴ When planning general education and elective courses, students should factor in all possible degree requirements to satisfy multiple criteria such as:

- (GN) – General Education Natural Science
- (GA) – General Education Arts
- (GH) – General Education Humanities
- (GS) – General Education Social Sciences
- (GHW) – General Education Health and Wellness
- (US) – United States Culture course
- (IL) – International Culture course
- (N) – Inter-domain course
- (Z) – Linked course

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.

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.

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, 30, ESL 15, ENGL 137H, or CAS 137H ^{1,2}	3 World Language - Level Three ³	4
ECON 102 (GS) ^{1,2}	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 ⁴	3 General Education Course (IL) ⁴	3
	15	15

Third Year

Fall	Credits Spring	Credits
RM 320W ¹	3 RM 411 ¹	3
RM 410 ¹	3 Elective ⁴	3
BLAW 341 or BA 342	3 BA 342 or BLAW 341	3
General Education Course (N) ⁴	3 General Education Course ⁴	3
MIS 250	3 General Education Course ⁴	3
	15	15

Fourth Year

Fall	Credits Spring	Credits
RM 412 ¹	3 General Education Course ⁴	3
RM 430 ¹	3 General Education Course (US) ⁴	3
RM 415 or STAT 483	3 RM 401 or 420	3
BA 411 (or General Education Course) ⁴	3 BA 411 (or General Education Course) ⁴	3
General Education Course (Z) ⁴	3 Elective ⁴	3
	Elective	0-1
	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
- 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.

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Career Paths

Actuarial Science has been rated among the top career paths in the nation by media outlets including The Wall Street Journal and Forbes magazine. Smeal Actuarial Science students are highly sought by industry and government for internships and full-time employment. Due to the size and success of the Actuarial Science program, one of the largest career fairs in the country is held in the Business Building attracting more than 30 companies annually.

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

Accreditation

The Bachelor of Science degree in Actuarial Science (ACTSC_BS) is part of the Smeal College's accreditation by The Association to Advance Collegiate Schools of Business (AACSB). It is also recognized by the Society of Actuaries as a Center for Actuarial Excellence.

MORE INFORMATION ABOUT AACSB INTERNATIONAL (<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://php.smeal.psu.edu/smeal/contact/?contactID=ire>