BUSINESS: ACTUARIAL SCIENCE, BBA

Actuarial science deals with the application of mathematics, statistics, and the principles of finance to the construction and management of insurance and pension systems. The Actuarial Science (https://wsb.wisc.edu/programs-degrees/undergraduate-bba/academics/majors/actuarial-science) major curriculum prepares students for careers with insurance companies, consulting firms, and governmental agencies. Courses offered cover the material of the associateship examinations of the Society of Actuaries and the Casualty Actuarial Society, although it is not expected that a student will complete these examinations in the course of the undergraduate program.

MISSION
The actuarial science program distinguishes itself through leadership, innovation, community, connections, networks, and recognition.

RELATED ORGANIZATIONS
Actuarial Club (http://win.wisc.edu/organization/actclub)

HOW TO GET IN
Students wishing to pursue this major must be admitted to the School of Business. Once admitted, students are able to pursue any business major they choose. To find out more about the school's admissions process for undergraduate students, please see Entering the School (http://guide.wisc.edu/undergraduate/business/#enteringtheschooltext).

REQUIREMENTS

UNIVERSITY GENERAL EDUCATION REQUIREMENTS
All undergraduate students at the University of Wisconsin–Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world. Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements (http://guide.wisc.edu/undergraduate/#requirementsforundergraduatetestudytext) section of the Guide.

General Education
- Breadth—Humanities/Literature/Arts: 6 credits
- Breadth—Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits
- Breadth—Social Studies: 3 credits
- Communication Part A & Part B *
- Ethnic Studies *
- Quantitative Reasoning Part A & Part B *

* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

SCHOOL OF BUSINESS REQUIREMENTS
The Wisconsin Bachelor of Business Administration (BBA) degree program is based on a broad educational foundation combined with courses in business and economics. This curriculum is designed for those students who wish to prepare for careers in business. Students completing any School of Business major (http://guide.wisc.edu/undergraduate/business/#requirementstext) are required to satisfy a common set of Pre-Business Requirements, Liberal Studies Requirements, Business Preparatory Requirement, Business Core Requirement, Business Breadth Requirement, and Credits for BBA Degree.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>School of Business BBA Requirements</td>
<td>Complete requirements: <a href="http://guide.wisc.edu/undergraduate/business/#requirementstext">http://guide.wisc.edu/undergraduate/business/#requirementstext</a></td>
<td></td>
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<tr>
<td>Pre-Business</td>
<td></td>
<td></td>
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<tr>
<td>Liberal Studies</td>
<td></td>
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<tr>
<td>Business Prep</td>
<td></td>
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<tr>
<td>Business Core</td>
<td></td>
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<tr>
<td>Business Breadth</td>
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</tbody>
</table>

ACTUARIAL SCIENCE MAJOR REQUIREMENTS
The following courses are required for actuarial science majors. The Risk and Insurance Department also has course sequence information. Please be aware of stated prerequisites for major courses (including business core courses) that need to be completed before taking the course. Specific prerequisites can be found by clicking on the course number below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH/STAT 431</td>
<td>Introduction to the Theory of Probability 1</td>
<td>3</td>
</tr>
<tr>
<td>or STAT/ MATH 309</td>
<td>Introduction to Probability and Mathematical Statistics I</td>
<td></td>
</tr>
<tr>
<td>or STAT 311</td>
<td>Introduction to Theory and Methods of Mathematical Statistics I</td>
<td></td>
</tr>
<tr>
<td>STAT/MATH 310</td>
<td>Introduction to Probability and Mathematical Statistics II 1</td>
<td>3</td>
</tr>
<tr>
<td>or STAT 312</td>
<td>Introduction to Theory and Methods of Mathematical Statistics II</td>
<td></td>
</tr>
<tr>
<td>ACT SCI 300</td>
<td>Actuarial Science Methods I</td>
<td>1</td>
</tr>
<tr>
<td>ACT SCI 301</td>
<td>Actuarial Science Methods II</td>
<td>1</td>
</tr>
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</table>
ACT SCI/MATH 303 Theory of Interest and Life Insurance 3
ACT SCI 650 Actuarial Mathematics I 3
ACT SCI 652 Loss Models I 3
ACT SCI 651 Actuarial Mathematics II
or ACT SCI 653 Loss Models II 3
ACT SCI 654 Regression and Time Series for Actuaries
or ACT SCI 655 Health Analytics 3

Total Credits 23

1 The two statistics courses and the last ACT SCI 654 or ACT SCI 655 (as a group of 3 courses) also fulfill the business analytics requirement found in the BBA Business Prep Requirements.

RECOMMENDED ELECTIVES

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
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<tbody>
<tr>
<td>MATH 234</td>
<td>Calculus--Functions of Several Variables</td>
<td>4</td>
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<tr>
<td>MATH 340</td>
<td>Elementary Matrix and Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>R M I 300</td>
<td>Principles of Risk Management</td>
<td>3</td>
</tr>
<tr>
<td>FINANCE/ECON 320</td>
<td>Investment Theory</td>
<td>3</td>
</tr>
<tr>
<td>COMP SCI 200</td>
<td>Programming I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>or COMP SCI 301 Introduction to Data Programming</td>
<td></td>
</tr>
</tbody>
</table>

Students are encouraged to take MATH 234 Calculus--Functions of Several Variables before taking probability (MATH/STAT 431 Introduction to the Theory of Probability, STAT/MATH 309 Introduction to Probability and Mathematical Statistics I, or STAT 311 Introduction to Theory and Methods of Mathematical Statistics I), courses in risk management and insurance; finance; and computer science.

LEARNING OUTCOMES

1. Recognize and explain the concept of risk, and apply the knowledge to the development of insurance products that are used to manage risk for the consumer as well as the risk of those products on the insurance organization.

2. Describe the actuarial profession, including the major professional organizations, the professional obligations of being an actuary, and the requirements to obtain and maintain a professional actuarial designation.

3. Demonstrate skills in critical thinking, quantitative analysis, and communication, as well as to develop an appreciation for actuarial theory, research, and the link to practical application.

4. Demonstrate the soft skills of being a professional.

5. Communicate their experiences and inspire others across the WSOb learning community.

FOUR-YEAR PLAN

This is a sample four-year plan for students directly admitted into the School of Business from high school. We encourage all students to consult with their academic advisor to develop an individualized plan that meets their specific needs.

Freshman

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
<th>Summer</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 221</td>
<td>5</td>
<td>MATH 222</td>
<td>4</td>
<td>ACCT I S 100</td>
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<tr>
<td>ECON 101</td>
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<td>ECON 102</td>
<td>4</td>
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<td>GEN BUS 110</td>
<td>1</td>
<td>PSYCH 202</td>
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<tr>
<td>Communications A</td>
<td>3</td>
<td>Ethnic Studies</td>
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</table>

Sophomore

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<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
<th>Summer</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 234</td>
<td>4</td>
<td>STAT/ MATH 309, 311, or MATH 431</td>
<td>3 M H R 300 or MARKETNG 300</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ACT SCI 301</td>
<td>1 R M I 300</td>
<td>3</td>
<td>FINANCE/ ECON 300</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ACT SCI/ MATH 303</td>
<td>3</td>
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<td></td>
<td></td>
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<tr>
<td>OTM 300</td>
<td>3</td>
<td>ACCT I S 211</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>GEN BUS 300</td>
<td>3</td>
<td>M H R 300 or MARKETNG 300</td>
<td>3</td>
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</table>

Junior

<table>
<thead>
<tr>
<th>Fall</th>
<th>Credits</th>
<th>Spring</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT SCI 300</td>
<td>1 ACT SCI 653</td>
<td>3</td>
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<tr>
<td>ACT SCI 652</td>
<td>3 ACT SCI 654 or 655</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>STAT/ MATH 310 or 312</td>
<td>3  Humanities, Social Science, or Literature</td>
<td>3</td>
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</tbody>
</table>
### Advising and Careers

#### Advising

Advising is an integral part of any student’s educational journey in the School of Business BBA Program. Starting at Student Orientation, Advising, and Registration (SOAR), we encourage all students to connect with academic advisors. BBA academic advisors have a wealth of knowledge about courses on campus, as well as policies and procedures.

BBA career advisors help students with career exploration, internships, resumes, job search, interviewing and more. We encourage students to connect with their career advisor once they arrive on campus.

BBA advisors want students to succeed. Students experiencing academic difficulty or personal struggles are encouraged to talk to their advisor about how their individual situation may affect their academic performance.

#### Assigned Academic and Career Advisors

For admitted BBA students, advisors are assigned by academic major. If you have more than one major, you may have more than one assigned advisor. You can find your assigned advisor by logging into your student center and looking on the right hand menu under “Program Advisor.”

For students not yet admitted to the WSB, we have a team of pre-business advisors available to you. Information on pre-business advising can be found here (https://bus.wisc.edu/bba/mybiz/advising/#academic).

#### Accessing Advising

If you have a quick question, no more than 15 minutes, please utilize our drop-in advising. You can find up-to-date information regarding drop-in hours here (https://bus.wisc.edu/bba/mybiz/advising/#academic).

You may schedule (https://bus.wisc.edu/bba/mybiz/advising) a 30-minute appointment with an academic and career advisors. Advisors are trained, and have knowledge regarding all ten majors in the BBA, so if your assigned advisor is not available you can be confident to schedule an appointment with any of the BBA advisors.

Pre-business students may also schedule (https://bus.wisc.edu/bba/mybiz/advising) an appointment with a pre-business academic advisor.

If you have a quick yes/no question you may always send an email to your assigned advisor.

For more information on academic and career advising in the BBA please see Advising (https://bus.wisc.edu/bba/mybiz/advising/#academic) on the school’s website.

The Actuarial Club offers advising nights every fall semester to help students plan their course sequencing and professional exams. In addition, students should use these documents (https://bus.wisc.edu/bba/academics/majors-specializations-certificates/~/media/b3b6dcc2c14c4884a4aae031ebc4de65.ashx) to help them prepare their course and exam schedule.

### Careers

Actuaries are problem solvers with expertise in understanding and managing financial risk. They use historical information and models to help predict the future. Actuaries may specialize in life and health (risk of illness, disability or death), pensions (develop and analyze retirement programs) or property and casualty (personal property risks and risks associated with businesses).

Find out more about common industries and essential skills needed to be an actuary on the BBA Actuarial Science website (https://bus.wisc.edu/bba/academics-and-programs/majors/actuarial-science).

### People

#### Faculty and Staff in Risk and Insurance

Dan Anderson (https://bus.wisc.edu/faculty/dan-anderson), BA, MBA, Ph.D. 
Emeritus - Non-teaching  
danderson@bus.wisc.edu

Carl Barlett (https://bus.wisc.edu/faculty/carl-barlett)  
Lecturer  
rbarlett@wisc.edu

Richard Crabb (https://bus.wisc.edu/faculty/richard-crabb), BA, MS, FCAS  
Lecturer  
rcrabb@wisc.edu

Gordon Enderle (http://bus.wisc.edu/faculty/gordon-enderle), BS, FSA  
Lecturer  
genderle@wisc.edu

Edward Frees (https://bus.wisc.edu/faculty/Edward-Frees), BS, MS, Ph.D., FSA  
Professor  
jfrees@bus.wisc.edu

Paul Johnson (https://bus.wisc.edu/faculty/paul-johnson), BS, MS, Ph.D.  
Lecturer

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**Humanities, Social Science, or Literature**  
3

**Elective**  
3 Communications B

<table>
<thead>
<tr>
<th>Senior</th>
<th>Fall</th>
<th>Credits Spring</th>
<th>Credits</th>
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<tr>
<td>ACT SCI 650</td>
<td>3 ACT SCI 651</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ACT SCI 654 or 655</td>
<td>3 FINANCE 330</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>3 GEN BUS 301</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Ethics</td>
<td>4 Science</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>FINANCE/ ECON 320</td>
<td>3 Elective</td>
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</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td><strong>16</strong></td>
<td><strong>15</strong></td>
<td></td>
</tr>
</tbody>
</table>

1 Students must choose one of the following courses: PHILOS 241 Introductory Ethics, PHILOS 243 Ethics in Business, PHILOS 341 Contemporary Moral Issues, ENVIR ST/PHILOS 441 Environmental Ethics
paul.johnson@wisc.edu

Dan Kaiser (https://bus.wisc.edu/faculty/dan-kaiser), BBA, MS, JD
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Margie Rosenberg (https://bus.wisc.edu/faculty/marjorie-Rosenberg), BS, MS, Ph.D., FSA
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Peng Shi (https://bus.wisc.edu/faculty/peng-shi), BS, MS, Ph.D., ASA
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jsydnor@bus.wisc.edu

Yang Wang (http://bus.wisc.edu/faculty/yang-wang), Ph.D.
Assistant Professor
ywang26@wisc.edu

RESOURCES AND SCHOLARSHIPS

If you are good at math and are interested in pursuing a career as an
actuary, apply for our High School Actuarial Scholarship. The first place
award of $2,000 per year for four years will be given to a high school
senior on the basis of mathematical aptitude and expressed interest in
an actuarial career. The deadline for application is March 1, 2017. You
can download the scholarship application here (http://bus.wisc.edu/

ACCREDITATION

AACSB International—The Association to Advance Collegiate Schools of
Business (http://www.aacsb.edu)


CERTIFICATION/LICENSURE

There are several exams and credentials from the Casualty Actuarial
Society (http://www.casact.org) and the Society of Actuaries
(https://www.soa.org) that we prepare students to obtain during their
undergraduate career. Students are encouraged to pass at least two
actuarial exams before graduation in order to obtain an internship and/or
job.