

Course Requirements for Undergraduates in Actuarial Science

1. *Actuarial Science Major Course Requirements.*

- The required courses are: Act Sci 303, probability, statistics, Act Sci 650, Act Sci 652, Act Sci 300 and Act Sci 301.
- You must take **one** of either Act Sci 651 or Act Sci 653. (You can take both courses, but only one counts for satisfying the major requirement.)
- Finally, you must take **one** of Act Sci 654, Act Sci 655 or Gen Bus 656. (You can take more than one of these courses, but only one counts for satisfying the major requirement.)
- Your probability course requirement may be satisfied by either (1) Math 431, (2) Stat 309, or (3) Stat 311. Math 234 is a prerequisite for probability, but can be taken concurrently with one of these probability courses.
- Your statistics course requirement may be satisfied by (1) Stat 310 or (2) Stat 312. **Do not take Gen Bus 306 or 307.**

2. *Actuarial Science Course Sequencing*

- Consider taking Act Sci 365 as early as your first semester pursuing actuarial science, provided you have already completed Math 221 or equivalent.
- We recommend Act Sci 303 as early as your second semester freshman year. You need to have completed Math 222 **prior to** taking this class (it cannot be taken concurrently). Act Sci 301 is a one-credit review class for Act Sci 303 and can be taken concurrently. Act Sci 303 and 301 together cover the material for the Financial Mathematics (FM/2) professional actuarial exam. Act Sci 303 is approved for University Earned Credit by the Society of Actuaries (SOA), meaning if you earn a score of 85% for this course you will receive credit for the FM/2 exam from the SOA.
- You can take either Math 431, Stat 309 or Stat 311 to meet the probability requirement for the major. Act Sci 300 is the review class for probability and can be taken the semester **AFTER** you take one of these three courses.
- Once you have completed Act Sci 303 and your probability course, register for the Act Sci 650 and Act Sci 652 courses, likely in your junior year. These courses can be taken in the same semester or in back to back semesters. If you are pursuing credentials through the SOA, together these courses cover the material corresponding to the Fundamentals of Actuarial Mathematics (FAM) professional actuarial exam. These two courses are approved for University Earned Credit, meaning if you earn a score of 85% or better in both of these courses you will receive credit for the FAM exam. If you are pursuing credentials through the Casualty Actuarial Society (CAS), the MAS-1 exam would be the next exam to consider – you may want to take Act Sci 654 before sitting for MAS-1
- You can take either Act Sci 651 or Act Sci 653 after you have completed Act Sci 650 and Act Sci 652. You only need to take one of these courses for the Actuarial Science major. If you are pursuing credentials through the CAS, Act Sci 653 would be the obvious choice of these two courses. For the SOA, there is a professional exam that corresponds to each course, however you are only required to pass one of the Advanced Long-term Actuarial Mathematics (ALTAM) OR Advanced Short-term Actuarial Mathematics (ASTAM) exams as part of the credentialing requirements of the SOA.
- You can take Act Sci 654, Act Sci 655, Gen Bus 656 after you have completed either Stat 310 or Stat 312 in your junior or senior year.

- If you are interested in advanced analytics and/or have a focus on Property/Casualty insurance, you can take Gen Bus 657 after you have completed one of Act Sci 654, Act Sci 655 or Gen Bus 656.

3. *Actuarial Science Other Recommendations*

- Taking a computer programming course can be extremely valuable for actuarial science students. Consider Comp Sci 220 (Data Programming I - Python), or one or more of the Statistics 303/304/305 one credit courses (R for Statistics I/II/III) which can all be taken sequentially in the same semester.
- It is strongly recommended to take RMI 300 your freshman or sophomore year. This course satisfies a breadth requirement and is very useful for actuaries.
- Math, statistics and actuarial science courses can be challenging. Try not to overload your schedule in any semester. Be especially aware in your first semester at the UW-Madison, as your transition to a new environment can bring its own challenges and opportunities.
- The potential schedules below include the math, statistics, actuarial courses needed for the major, along with those classes needed to satisfy the VEE requirements (see below), and RMI 300. Fill in the rest of your schedule with required pre-business, business, and liberal studies requirements for the degree.

Sample Four-Year Plans

	<u>Potential Schedule I (With AB High school calculus)</u>		<u>Potential Schedule II (No high school calculus)</u>	
	<u>Fall</u>	<u>Spring</u>	<u>Fall</u>	<u>Spring</u>
Freshman	Math 222 (4) Econ 101(4)	Act Sci 303 (3) Act Sci 301 (1) Act Sci 365 (3) Math 234 (4) Econ 102 (4)	Math 221 (5) Econ 101 (4)	Math 222 (4) Econ 102 (4) Act Sci 365 (3)
Sophomore	Probability (3) RMI 300 (3) Acct 100 (3)	Statistics (3) Act Sci 300 (1) Fin 300 (3)	Math 234 (4) Act Sci 303(3) Act Sci 301(1) Acct 100 (3)	Probability (3) RMI 300 (3) Fin 300 (3)
Junior	Act Sci 652 (3)	Act Sci 650 (3)	Statistics (3) Act Sci 300 (1) Act Sci 652 (3)	Act Sci 650 (3)
Senior	Act Sci 651 or Act Sci 653 (3) Act Sci 654 or Act Sci 655 or Gen Bus 656 (3)	Gen Bus 657 (3)	Act Sci 651 or Act Sci 653 (3)	Act Sci 654 or Act Sci 655 or Gen Bus 656 (3)

UW Actuarial Science Program Quick Reference

Actuarial Major Courses and Pre-requisites

Class	Required for Major	Pre-requisites	Other
Act Sci 300	Two credits of either Act Sci 300 or 301*	The semester following either Math 431, Stat 309, or Stat 311	Offered both Fall and Spring semesters and Summer
Act Sci 301	Two credits of either Act Sci 300 or 301*	Concurrent with Act Sci 303	Offered both Fall and Spring semesters
Act Sci 365	No	Math 221 (or equivalent)	Offered Spring semester
Math 431 or Stat 309 or Stat 311	Yes	Math 234 (or concurrent)	Offered both Fall and Spring semesters
Act Sci 303	Yes	Math 222	Offered both Fall and Spring semesters
Stat 310 or Stat 312	Yes	Math 431 or Stat 309 or Stat 311	Offered both Fall and Spring semesters
Act Sci 652	Yes	Stat 310 or 312 or concurrent	Offered both Fall and Spring semesters
Act Sci 650	Yes	Act Sci 303 and either Math 431, Stat 309, or Stat 311	Usually offered only in Fall semester
Act Sci 653	Either Act Sci 651 or 653 required	Act Sci 652	Offered both Fall and Spring semesters
Act Sci 651	Either Act Sci 651 or 653 required	Act Sci 650	Offered in Spring semester
Act Sci 654	One of Act Sci 654, Act Sci 655, or GB 656 required	Either Stat 310 or Stat 312	Offered in Fall and Spring semesters
Act Sci 655	One of Act Sci 654, Act Sci 655, or GB 656 required	Either Stat 310 or Stat 312	Usually offered once a year
Gen Bus 656	One of Act Sci 654, Act Sci 655, or GB 656 required	Either Stat 310 or Stat 312	Usually offered once a year
Gen Bus 657	No	One of Act Sci 654, Act Sci 655 or GB 656	Usually offered once a year

*You may take Act Sci 300 or 301 as many times as you would like, but you can get at most 2 credits per course number.

UW Courses Related to Society of Actuaries (SOA) Requirements

Effective Spring 2022

Actuarial Exam or Requirement	UW-Madison Course
Exam FM ¹ (Financial Mathematics)	Act Sci 303 AND Act Sci 301
Exam P (Probability)	Stat 309 OR Stat 311 OR Math 431 AND Act Sci 300
Exam FAM ² (Fundamentals of Actuarial Mathematics)	Act Sci 650 AND Act Sci 652
Exam SRM (Statistics for Risk Modeling; Predictive Analytics)	Act Sci 654, Act Sci 655, Gen Bus 656, Gen Bus 657
Exam ALTAM (One of) (Advanced Long-term Actuarial Mathematics)	Act Sci 651
Exam ASTAM (One of) (Advanced Short-term Actuarial Mathematics)	Act Sci 653
Economics VEE	Econ 101 AND Econ 102 OR Econ 111
Accounting and Finance VEE	Acct 100 AND Fin 300
Statistics VEE	Stat 310 or Stat 312

¹ Credit for exam FM can be earned through the University Earned Credit program by scoring 85% or better in Act Sci 303

² Credit for exam FAM can be earned through the University Earned Credit program by scoring 85% or better in BOTH Act Sci 650 and Act Sci 652

UW Courses Related to Casualty Actuarial Society (CAS) Requirements

Effective Spring 2018

Actuarial Exam or Requirement	UW-Madison Course
Exam P/1 (Probability)	Stat 309 OR Stat 311 OR Math 431 AND Act Sci 300
Exam FM/2 (Financial Mathematics)	Act Sci 303 AND Act Sci 301
Exam IFM/3F ¹ (Investments and Financial Markets)	Fin 320, Fin 325 AND Fin 330
Exam MAS-1 (Modern Actuarial Statistics - 1)	Act Sci 650 AND Act Sci 652 AND Act Sci 654 AND Math/Stat 632
Exam MAS-2 (Modern Actuarial Statistics – 2)	Act Sci 653 AND Gen Bus 656 AND Other topics
Economics VEE	Econ 101 AND Econ 102 OR Econ 111
Accounting and Finance VEE	Acct 100 AND Fin 300

¹ Exam IFM/3F will be replaced by an online course on data concepts starting 1/1/2023. The last time Exam IFM/3F will be offered is in November of 2022.